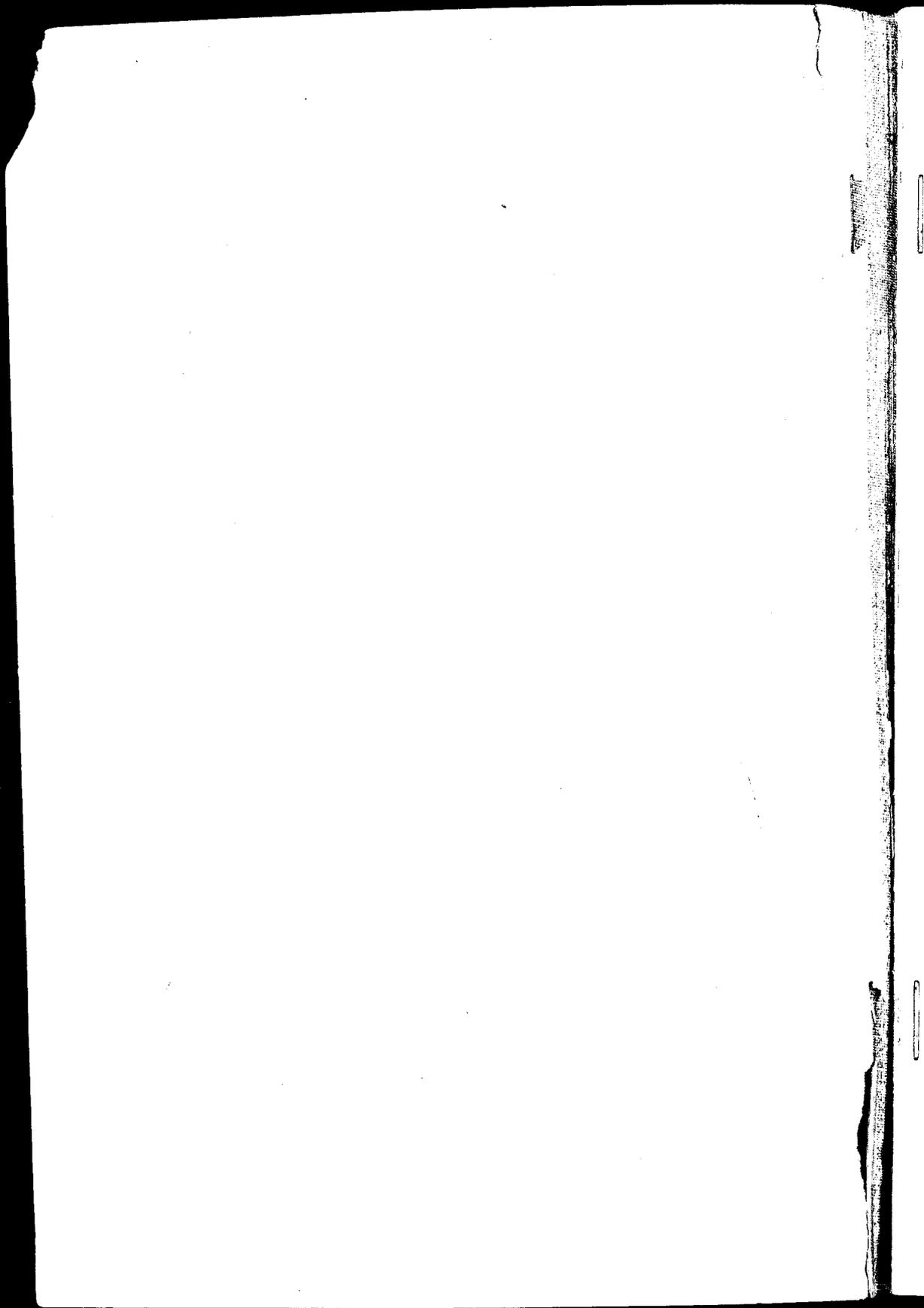


THE INVENTOR'S FRIEND;

OR SUCCESS WITH PATENTS.

ILLUSTRATED.

BY
JOSEPH
ALLEN
MINTURN



THE INVENTOR'S FRIEND;

OR,

SUCCESS WITH PATENTS.

A PRACTICAL BOOK TELLING HOW TO DISCRIMINATE
BETWEEN VALUABLE AND WORTHLESS INVEN-
TIONS; HOW TO AVOID MISTAKES AND
DISAPPOINTMENT; HOW TO PATENT
AND PROTECT INVENTIONS, AND
HOW TO DISPOSE OF
THE MONOPOLY.

BY

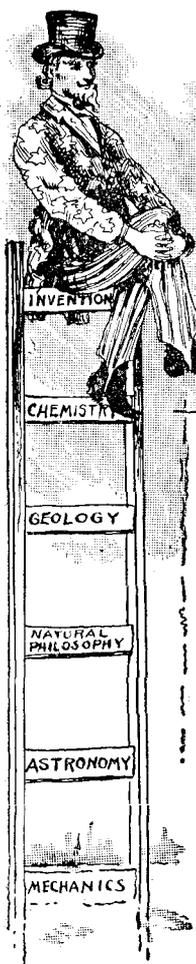
JOSEPH ALLEN MINTURN, C. E., PH. B.

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1893

JOSEPH A. MINTURN.



WHAT IS INVENTION?

INVENTION IS THE TOP ROUNG OF THE LADDER OF HUMAN ATTAINMENT AND THE AMERICAN INVENTOR OCCUPIES THAT.

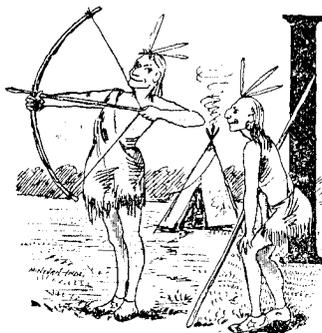
A successful man once said "the way to get rich is to find a want and fill it" Success to an inventor means exactly the same. But invention means more than the mere knowing of a want. Chemistry, geology, astronomy, general physics and the various branches of science discover the laws and properties of bodies, but they only furnish the material which the inventor must combine and arrange. Science may discover but invention is science applied. But even discovery is dependent upon invention. Columbus would never have discovered the New World if some one had not previously invented the mariner's compass. Invention is creative. It applies knowledge to a useful purpose and creates a form that did not exist before.

The steam engine, the telephone, the electric motor, and the whole long list of appliances that together form our modern civilization, are the direct result of the inventive faculty that combines the mental discovery with the raw material into a new creation.

Of what value is knowledge if it is not applied to some useful purpose? Long before the invention of the steam engine, scientific men knew that "heat expands" but the expansion of water due to heat, which is the underlying principle of the steam engine was not applied until thousands of years had passed.

The wonderful accuracy and cheapness of the modern photograph is due to the practical application by the inventor, of discoveries in Chemistry, Mineralogy, and Natural Philosophy. Physics taught that an image of any object could be thrown on a flat surface by a lens, and the chemicals sensitive to light, by which the image was preserved on that surface were made known by Chemistry and Mineralogy. A knowledge of the earth's structure is furnished by Geology and acting on the Geologist's suggestions, thousands of driven wells are furnished us by the inventor.

Necessity the Mother of Invention.



IT is an old maxim that called necessity the mother of invention. If, in imagination, we could conceive primitive man, we should probably see his proud satisfaction when he learned that by attaching a thong at a tension to the two ends of an elastic stick, he could produce a far more effectual weapon than his club, or fire pointed shaft. Yet it took 6,000 or more years of intense thought and cumulative invention to develop the 100-ton gun. He probably viewed his first rude canoe

with the same satisfaction that we now look upon a modern steamship, and considering the poverty of his materials the bow and arrow probably tried his faculties quite as much as it does ours now to produce a 100-ton gun. Invention has transformed the first rude tent, made of untanned hides into palaces; transformed the rude clothing of skins into marvellous fabrics. The man who invented the spinning wheel and the rude loom probably had his mind set that way by a scarcity of hides. Possibly some petty accident gave him the hint that fibers interlocked and crossed could be indefinitely extended; but whatever it was one can see the same busy brain and deft hands evolving the machine that was to make him independent of the animal:.

Invention not Genius, but Hard Work.

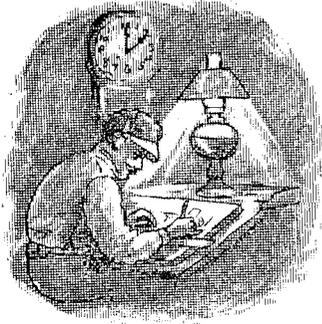


THE inventive faculty is common to all mankind and the capacity to invent improves with effort, precisely as one may learn to play a musical instrument by continued practice.

There is a widely prevalent error that the inventive faculty is something born in a man, and he who has not the gift may never acquire it. An acquaintance who is interested in market gardening was so favorably impressed with the operations of a hand cultivator that he purchased an interest in the patent and commenced its manufacture only to find after considerable outlay that the imperfections and cost of construction were so great as to make the machine impracticable. Previously he had disclaimed all inventive ability but by constant thought and experiment he surmounted all difficulties in less than a year and made the cultivator a pronounced success, and has secured valuable patents in the United States and several European countries on his improvements.

Napoleon was a great general and possessed an inventive faculty of high order. His combinations were broader, more simple and more profound than his antagonists, but

when he was asked the secret of his success, he replied it was "the capacity to work twenty hours a day." Thomas Edison, so-called "The Wizard," has probably done



"Twenty hours a day."

the work of two ordinary lives, with his mind at full tension. If it had been pure "genius" he should have invented the phonograph when he was a boy instead of merely constructing various forms of fluid batteries. It was by thus beginning on the simple experiments every school boy tries, and keeping his mind on that subject that has made one step lead to another, and so broaden and deepen his experience and his mental power, that the phonograph naturally developed out of it all in the maturity of his life. The reason the companions of his school-boy experiments did not develop was be-

cause they abandoned the subject, grew tired or were discouraged because some bright vision did not work when it was first tried. The first telephone would convey only musical and vocal sounds and was more cumbersome and costly than the present. But the inventor of the telephone undoubtedly had in his mind an instrument that would transmit articulate speech but it took months of experiment to bring the telephone to that degree of perfection.

Nearly every physical invention is at first of low efficiency and tending very much to drive the inventor into despair but if he has evidence that he is on the right track, he should persevere against all difficulties and not abandon the field to others who will take up the work where he leaves it and succeed.

It is this bright picture we all have of some imaginary construction, which if realized would lead to fortune and fame that underlies the inventive faculty, and if we have failed by middle age to realize it or any part of it, it is because we gave up the problem and became discouraged. Mr. Edison clung to his and in time they blossomed out of his mind. The mind is strengthened by what it feeds on, or is weakened by misuse just as the arm of the pugilist is created by exercise or dwindles by disuse. Do not, therefore, trust to accident; nor to inspiration; nor to any mythological spirit or genius to make your invention for you and do not expect the invention to come to you, without any exertion on your part. But you may be assured that the habit of careful and earnest attention to your surroundings will sooner or later lead you to the discovery of some want, the filling of which by a new and useful device will prove profitable.



"Practice makes Perfect."



Who may Invent.

It may therefore be positively affirmed that everybody unless idiotic or mentally unsound, may invent, and that so called "genius" and "talent" are not necessary. In truth there is no such thing as "genius" and "talent." The words are only an excuse for indolence on the part of those who use them. When a man succeeds how easy it is to credit it all to his "genius" and excuse ourselves because we have no "genius" in that direction. We forget the artist always has his pencil in his hand and is forever making pictures; the musician is always practicing and the inventive "genius" is forever tinkering around. Practice makes perfect, and that is the beginning and the end of genius and talent.

It is true a person may have a taste for his work and be only happy when so engaged. But tastes are notoriously a matter of education. Tobacco is naturally repulsive to the human taste but by persistent effort thousands are able to cultivate a taste for tobacco, and apparently are not happy unless using it.

It is nonsense for any man to say he cannot invent; that he has no talent in that direction. The man who is able to meet an emergency of any kind or to plan a day's work ahead is an inventor in the truest sense of the word and for one to say he cannot invent is to admit that he is of unsound mind.

Why Americans Invent.

The way to invent is to try and to keep on trying. Americans are an inventive people and have a reputation that is world wide solely as the result of a wise system of governmental encouragement that has kept him hard at work for a hundred years and as a result has revolutionized all of the time honored slow going ways of doing things. It is startling to realize the influence the inventor has had on our lives. Nothing has been too great or too small for him to improve. The clothes we wear, the food we eat, the knife and fork we eat it with and every thing we have about us bears the universal label "Patented." Millions of dollars are invested in the manufacture of patented articles and the comfort and happiness of every one of us, whether we realize it or not depends in a large measure on the inventor who in turn has been stimulated to action by the liberal encouragement offered by our patent system. What we as a Nation have been able to accomplish has been done by continuous effort and the world is astonished at the result, and it is also true that



what we as a nation of inventors have been able to accomplish may be proportionately accomplished by every one who reads this who will put forth a corresponding amount of effort.



Inventors must study Physical Laws.

T must not be understood by what has been said that inventions contrary to natural physical laws, can ever be successfully realized, no matter how intently followed. It is absolutely necessary for every inventor to learn that natural laws cannot be disregarded. He may learn this by personal experiment and if he could live two or three thousand years might be able to find out unaided all that is to be known. But by far the most economical plan is to take advantage of other people's experience which has been accumulated through ages of experiment and study and recorded in books on natural philosophy, chemistry, geology, etc. He would then know how useless it would be for an inventor to set his mind determinedly to invent,

for instance, a machine with perpetual motion. He would know in advance that the cohesion of bodies called friction leaves the problem impossible. When an inventor is working in a special line he should make it a point to read and study everything obtainable on that particular subject.

Thoroughness in Detail Essential.

THE person who desires to become an inventor must cultivate a habit of close and careful observation of the methods by which the arts of life are performed. Without this, efforts to improve them would be merest haphazard, and unavailing. He must study each motion and piece, and the part it performs in producing the result. This mental habit should be carried along with thorough study of the elementary branches, in the special fields he intends to work in. Thus if he goes into steam engineering or electricity these should be thoroughly gone over in books and other publications and fortified by careful study of the machines or devices already invented that involve a similar principle. A man who was ignorant of the

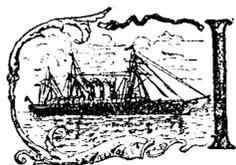


Perpetual Motion Dead and Buried.

principle of the construction of the steam engine might re-invent the same as honestly as Watt did years ago but he would gain neither reputation nor money because the steam engine is already known and in use. It is necessary then to keep posted and while it is possible to strike a good thing by accident just as it is possible to draw the capital prize in a lottery, the chances are against it. True, many excellent inventions have been made by uneducated men, that is men who could not conjugate a verb or find the value of x in an algebraic equation, but they have invariably been observing men, who were thoroughly acquainted with the nature of the machine they sought to improve and in that respect were well posted. Scientific truths are the very best tools an inventor can work with and it makes no difference to him who discovered them or when. He simply cares to know them and is at perfect liberty to make use of scientific facts wherever he can find them.

The principles or facts combined to produce every great invention were previously known to others in nearly every instance but were usually not found in the same department of knowledge but required for instance the combination of a chemical with an electrical fact or a heat principle with an electrical or an acoustic one. It was the inventor's work to search out these widely separated principles and bring them together into a new combination which always seems very easy and simple after it has once been done but generally requires an endless amount of investigation, study and experiment to first accomplish. As the inventor seldom discovers the scientific principles but uses old principles and facts as his tools it follows that if the facts and principles had not been known the invention would not have been made and if past inventions have been made in this way it is reasonable to believe future inventions may be made in the same manner.

To Improve an Article Involves Invention.

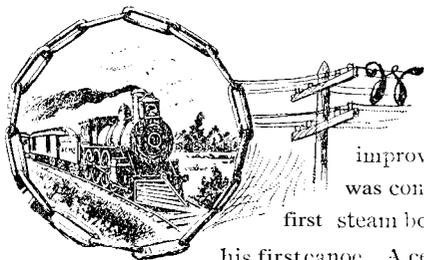


IT is not essential that an inventor should try to invent everything. He may, and indeed it is his duty, to profit by what has gone before. Occasions are quite rare where an inventor may produce something absolutely new, in the full sense of the word. The demand for improvement is continuous and without limit. Compare the first clumsy sewing machine with the machine of to-day, or the first piano or steam engine made even thirty years ago. Those of the present tell the story of gradual progressive development—one inventor improving a part here and another there, but never reaching a point where improvement is impossible, because human wants are changing and also progressive, spurred on by his infinite mind. The common lawn mower of to-day is perfection beside the first reaper, that left the straw on the ground where it had stood. This was fatal to the machine until it was improved

with a table and an automatic rake. lint even then two or three men had to follow the machine to bind the straw, until another inventor added the self-binder. The comparison of the lawn mower is also instructive as teaching how a nearly identical act may be accomplished by a fundamental change in the method of action. Here is a complete adaptability along with great simplicity.

The reciprocating knives necessary to cut high standing grass or hay, would equally as well cut the grass of a lawn but would have been expensive and troublesome. The series of revolving knives are perfectly effective with short grass and add both simplicity and cheapness. There is room to improve the method of sharpening a lawn mower so that each user could keep his machine in order.

Always Room for Improvement.



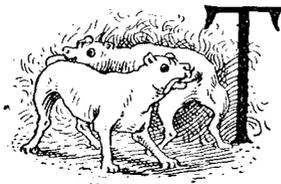
ITH inventors there is often a feeling that a given machine is now so perfect, improvement is out of the question. The same was considered of the first locomotive and the first steam boat. Probably primitive man so regarded

his first canoe. A certain Western inventor had given a good

deal of time to the improvement of the steam engine, but after Corliss made his famous invention of automatic governing control of the valves, concluded that it was useless to go any further. Yet the same principle has been since applied in an entirely different way to engines of high speed. The heavy slow moving engine has been so greatly improved that the results of Corliss, the inventor referred to, deemed as perfection, have been distanced, not so much by inventions on the valve gear, but in a very different direction. Sortie inventive thinker saw that the steam from the education valve contained a large proportion of energy, and so added another and larger cylinder, and then another, until a pound of coal will propel a ton one mile on the water. The inventor referred to actually produced a compound engine thirty years ago, but either from some crudeness that could have been removed with more perseverance, or because capital could not be interested, he abandoned it and later abandoned the whole field of steam engineering, and went into electricity, in which field he has achieved marked success.

There is an inventive faculty that does not invent anything but ideas. Jules Verne's romance wherein he created a submarine vessel, would almost furnish specifications for the submarine boats that have actually been built. Perhaps they will not go three thousand leagues, but when the inventor demonstrates that a vessel may go a single league, the three thousand is only a matter of time invention—and intensive pursuit of the objective.

Inventors Should not Persevere in Mistakes.

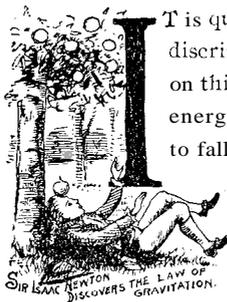


THERE is a danger to inventors that should carefully be considered. Intensive thinking and perseverance are essential to any success, in any line of life. But perseverance in a mistake is often a bar to success. There is the Scylla and Charybdis of inventors. Want of perseverance foredooms failure, perseverance in mistakes leads equally to failure and disappointment.

A bulldog is the very exponent of perseverance, but his want of intellect destroys any good results.

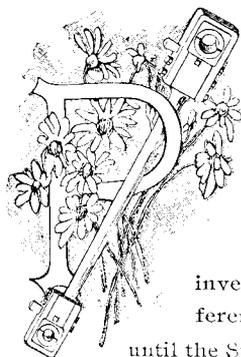
For a man to persevere in trying to invent perpetual motion until his life blood runs out, does not bespeak that equality of mind that leads to success, any more than does that instability that leads men to fly from object to object without objective purpose. We have seen men with well developed inventive capacity who no sooner had an idea fairly studied out than they flew off to a different scheme. We have also seen men waste the energies of a life upon a thing they should have known in the beginning was impossible.

How to Discriminate for the Practical.



IT is quite difficult for an inventor, or for that matter anybody, to discriminate between the practical and the impossible. Judgment on this requires familiarity with the laws that govern matter and energy, or motion. We know that gravitation causes a dense body to fall 16 feet in the first second of descent, while a feather may require several seconds. But we also know that after the body has once fallen, it can never rise again without the application of some outside force. True, appearances may sometimes deceive one, and lead to attempts to produce perpetual motion and other impossibilities. An animal may fall from a certain height, and be enabled to jump or fly back again. But while the falling would be an effect of gravity simply, the going back represents a certain degree of force developed through the food, that acts precisely as the fuel used in the steam boiler. Hydrogen gas seems to have a tendency opposed to gravity, but this is due only to the difference in weight of equal volumes of air and gas, and is exactly on the same principle that wood will rise and float in water, but in the air will fall, and hydrogen gas in a perfect vacuum will fall with the same velocity as lead. To perfectly distinguish the impossible from the practicable requires, then, a general knowledge of the properties of matter as taught in works on physics chemistry, etc. Within these limits nothing is theoretically impossible, and there is scarcely a limit to the field of the inventor.

Seemingly Impossible Things Sometimes Possible.



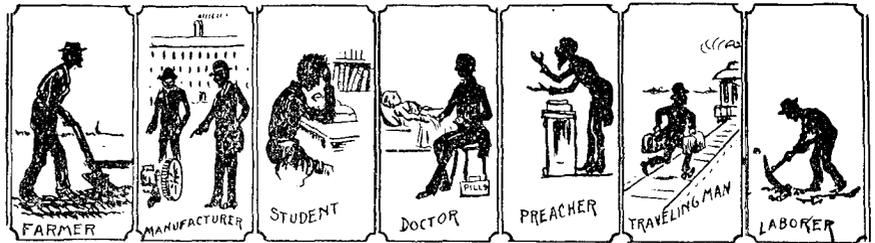
PERHAPS a great many things seem impossible, that one inventor after another demonstrates was easy and simple. But this is due to the successful inventor having investigated the properties of the materials and forces he was dealing with, with deeper insight and more thoroughness than the superficial minds that called his combination impossible. Sometimes the success of an inventor is dependent upon success of other inventors in different fields. The incandescent electric lamp was a failure until the Sprengel pump for exhausting air was invented, and even then was a partial failure until the platinum filament was displaced by the discovery that vegetable fibers carbonized offered the proper resistance and also great refractory properties. In short, how to distinguish between the possible and the unreal is to know every condition thoroughly and then the balance of the invention is only a matter of proper combination.

How to Begin to Invent.



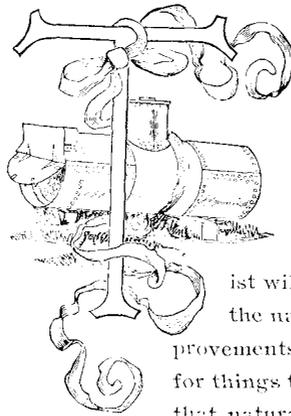
SUCCESS of others no doubt has attracted the attention of many people who would like to invent and have an idea they could if they knew how to get started. The very first thing is to find something that needs to be improved. A man with a gun may fire at random but the sportsman who bags the game always hunts for something to shoot before he fires. The inventor likewise must have a target. He must aim at something. It has been pretty well demonstrated in invention that a problem discovered is half solved. And problems to be solved by the inventor exist everywhere. They can be found by studying the need of the people about you. A farmer will see the need of improvements in machinery for harvesting corn like other grain is handled. Many unsatisfactory attempts have been made to change the reciprocating movement of a wind mill for pumping, into rotary movement for grinding corn, churning, etc., and while the weight of the operator has been utilized to push a hand cultivator, no successful plan has

been devised by which the weight of the woman may be used to run a sewing machine. Millions of dollars are made and invested in mammoth factories for the production of patented farm machinery. Every manufacturer who studies his business will find expensive methods employed which eat into the profits and



which if corrected and covered by letters patent would give him an exceptional advantage over his competitors. There are problems great and small to be solved and whether a man be a farmer, manufacturer, student, doctor, preacher, traveling man or laborer, if he keeps his wits about him he will find plenty of opportunities for the exercise of invention.

Inventors should Pursue the Lines of Their Closest Experience.



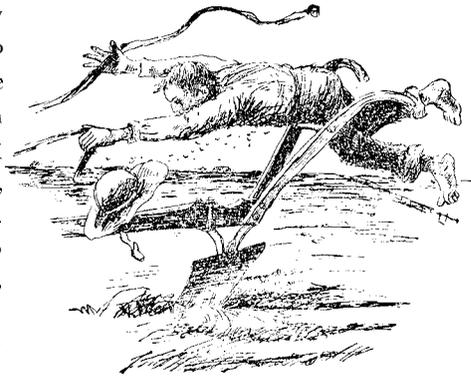
THE line that an inventor wishes to work on, as electricity, steam, photography, etc., must be a matter of individual taste or the accident of personal surroundings. A farmer will more naturally have his mind on agricultural machinery and labor saving devices than upon electrical inventions removed from his experience. The machinist will naturally seek to improve his own tools, but, from the nature of his trade is quite likely also to make improvements on machinery he is helping to construct. Seeking for things to improve, is the very first step for an inventor, and that naturally comes from personal contact with, and knowledge of conditions, or devices, the person is working with. In the early days of the steam engine there was no provision for opening and closing the valves, and a boy was employed for that service. As it must be continuous hour after hour there was no time for him to even turn around but by studying the parts he soon rigged up a device with cords and levers that made the work automatic. A friend while plowing in stony ground when a youth was frequently annoyed

and one time quite seriously hurt by falling over the plow when it came to a sudden stand-still against a large stone. A little reflection showed him that a couple of strong coiled springs attached to the whiffle tree, relieved the discomfort and danger. A patent was applied for, only to find some one else was ahead of him, on an identical device.

An inventor spent a couple of years in making improvements on oil cups, producing several styles, all good ones, but each one had been anticipated in the patent office. He finally succeeded in getting an automatic oil feed for wrist pins of steam engines that is still in demand for that service. He was a steam engineer, and had learned the lacking point where improvement was possible. If one wanted to invent something in the photographic line, he would first have to learn the art, and the existing means and devices used. It is not essential to take up entirely new lines, as the most familiar subjects are usually the easiest to manage and improve upon. There is room for improvement in everything, but don't lose courage if you find you have invented that which proves to have been invented before. It will make you more careful and more apt to secure usefulness and novelty next time.



IN the domain of physical invention many minds are engaged on the problem of how to produce electricity at low cost. Every thunderstorm demonstrates that the earth and atmosphere contains it in prodigious quantity, and that the solar energy is constantly producing it. No inventor has yet solved a means for utilizing this store of energy, but some day it will likely be accomplished. Electrical storage batteries have been perfected so as to render possible the application of electricity as a source of power in propelling buggies and other road vehicles and for many reasons a four wheeled vehicle is preferable but a simple, quick and effective method of steering it is yet to be invented. In the field of electricity which is now only in its infancy and promises better returns for inventive study than any other, there are numberless problems confronting the inventor.



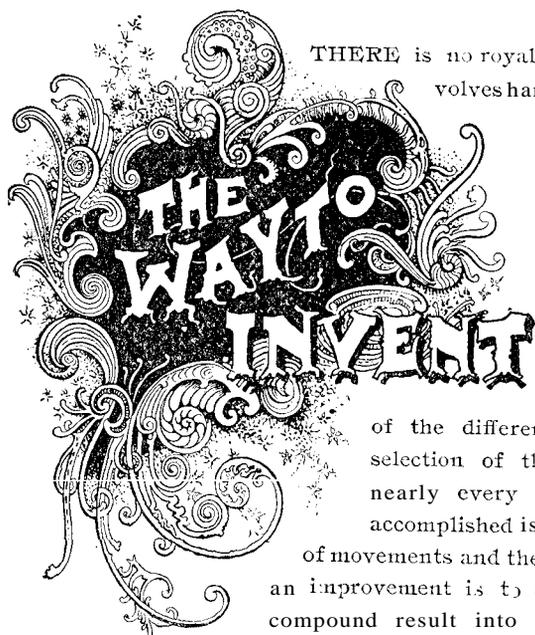
A Sudden Stop.



The Simplest Method Wins.

AFTER the inventor has settled on the problem he will solve it is important to find the simplest and best way of accomplishing his object. A man at Chicago may reach New York by many different routes. He may go down the Mississippi to New Orleans and thence by steamer via the Gulf and Atlantic coast to New York; he might go by way of the great lakes and St Lawrence and thence along the Atlantic coast; A very long and tedious route but still practicable would be westwardly by rail to the Pacific ocean, thence to Asia and around the world, returning by Atlantic steamer from Liverpool. A man could get to New York by other routes but if he was a business man or had goods to ship he would take the Lake Shore or one of the direct lines by rail like everybody else does because it is the quickest and best. So in invention it is necessary to find the simplest method of doing the work and that is the great secret of success in invention. A man often gets an idea and rushes into the patent office with the first machine that enters his head. He may be granted a patent because no body else had been foolish enough to try and will be very mad and denounce the whole patent system as a fraud because, after he gets his patent he cannot find a purchaser.

It is therefore of prime importance that an invention be perfected before it is patented and as the success or failure in disposing of the patent after one is secured, hinges more on this than any other one point, it cannot be too strongly impressed on the mind of the inventor. The advice of Davie Crockett, "Be sure you are right and then go ahead," is pertinent in matters of this kind and if heeded will save the expense of constantly taking out patents on improvements at the same cost of the original patent, and will also save giving others the hint and starting them on the same hunt with the inventor himself. In the days when Ruth gleaned, the sickle was the tool used by the reapers. After that came the scythe and cradle, greatly superior to the sickle, but the reaping machine of McCormick was better than all and while it made the inventor rich his patent no doubt attracted others, and enabled them to divide the profits by producing the self binder and other improvements over McCormick's first machine.



THERE is no royal road to invention. It involves hard work and study and worry,

more so than any other science because the inventor is working with unknown quantities. The result to be obtained is known but the means of accomplishing it must be determined, and makes it necessary to study out all

of the different combinations before a selection of the best can be made. In nearly every invention the result to be accomplished is made up of a combination

of movements and the very first thing in making an improvement is to analyze and separate the compound result into its several parts. Each of

these parts may also be compound. An analysis such as this is extremely important and every person who expects to strengthen his inventive faculty should make it a practice to divide results whether, new or old into sub-results.

In the sewing machine the mechanism for locking the stitches whether by knotting or by twisting the threads forms the principal patentable feature and as there are almost numberless ways of tying a knot, machines may continue to be invented until all of the different kinds of knots are exhausted. Suppose it is desired to invent a new sewing machine, an analysis is the first thing in order.

The general result we find is to connect two pieces of cloth by stitches so as to form one continuous piece. It may be subdivided as follows:



Chain Stitch.



Double Chain Stitch.

First, means for giving a reciprocating movement of the thread through the cloth (done at present by a reciprocating needle) 2nd, means for preventing some portion of the thread, after it is forced through the cloth, from returning. This is where the greatest field for diversity of invention lies, and admits of many combinations. 3rd, means for feeding the cloth the length of a stitch at the proper interval, 4th, means for feeding the thread to the needle. 5th,



Lock Stitch.

means for giving the proper tension to the thread as may be required by the varying thickness of the cloth. 6th, means for giving each of the required motions at the required time by a rotating shaft. 7th, means for transmitting a reciprocating movement from the foot of the operator and of converting this reciprocating into rotary movement of the shaft. Other divisions may likewise be made and many of the steps given may be subdivided, and in this way a complicated result is divided into a number of simple problems.

History of the Sewing Machine.



IN the sewing machine we have an excellent illustration of the gradual growth of most inventions and the history of the sewing machine brings out in strong relief many of the points which the writer has attempted to make plain in the foregoing pages. The steam engine invented by Watt, the locomotive of Stephenson, the mowing machine of McCormick, the steam boat of Fulton, the telegraph of Morse and the later inventions in electricity are all of gradual growth and have brought wealth and fame to the inventor whose diligence and patient study enabled him to supply the link that transformed the experimental into the practical machine.

The sewing machine, as is the case with most mechanical inventions, is the result of the efforts of many ingenious persons, although it would appear that the most meritorious of these worked in entire ignorance of the labors and successes of others in the same field. Many of the early attempts to sew by machinery went on the lines of imitating the ordinary hand sewing, and all such inventions proved conspicuous failures.

Entirely New Methods Often Necessary to Success.

THE method of hand sewing is of necessity, slow and intermittent, seeing that only a definite length of thread is used, which passes its full length through the cloth at every stitch, thus causing the working arm, human or otherwise, to travel a great length for every stitch made, and demanding frequent renewals of thread. The foundation of machine sewing was laid by the invention of a double pointed needle, with the eye in the center, patented by Chas. F. Weisenthal in 1755. This device was intended to obviate the necessity for inverting the needle in sewing or embroidering, and it was sub-

sequently utilized in Heilmann's well-known embroidery machine. Thus it will be seen, success often depends on a radical departure from the familiar hand method of doing work, and requires that it be done in a manner not previously tried, or thought of.

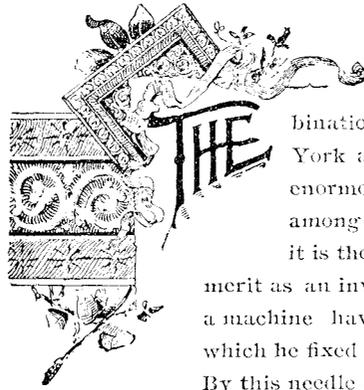
Old Ideas may be Utilized.



ANY of the features of the sewing machine are distinctly specified in a patent secured in England by Thomas Saint in 1790, in which he, *inter alia*, describes a machine for stitching, quilting, or sewing. Saint's machine which seems to have been intended principally for leather work, was fitted with an awl which, working vertically, pierced a hole for the thread. A spindle and projection laid the thread over the hole, and a descending forked needle pressed a loop of thread through it. The loop was caught on the under side by a reciprocating hook; a feed moved the work forward the extent of one stitch; and a second loop was formed by the same motions as the first. It, however, descended within the first, which was thrown off by the hook as it caught the second, and being thus secured and tightened up, an ordinary chain stitch was formed. Had Saint hit on the idea of the eye-pointed needle his machine would have been a complete anticipation of the modern chain-stitch machine.

The inventor who first devised a real working sewing machine, was a poor tailor, Barthelemy Thimonier, of St Etienne, who obtained letters patent in France in 1830. In Thimonier's apparatus the needle was crocheted, and descending through the cloth it brought up with it a loop of the thread which it carried through the previously made loop, and thus formed a chain on the upper surface of the fabric. The machine was a rather clumsy affair, made principally of wood, notwithstanding which as many as eighty were being worked in Paris in 1841, making army clothing when an ignorant and furious mob wrecked the establishment and nearly murdered the unfortunate inventor. Thimonier, however, was not discouraged, for in 1845 he twice patented improvements on it, and in 1848 he obtained both in France and the United Kingdom, patents for further improvements. The machine was then made entirely of metal, and vastly improved on the first model. But troubles of 1848 blasted the prospects of the resolute inventor. His patent rights for Great Britain were sold; a machine shown in the great exhibition of 1851 attracted no attention, and Thimonier died in 1857 unfriended and unrewarded.

American Ingenuity at the Front.

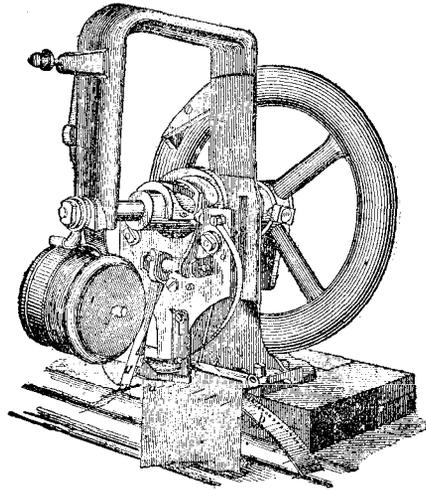


most important ideas in the construction of the sewing machine, namely, the eye-pointed needle and a double thread or lock-stitch are strictly of American origin and that combination was first conceived by Walter Hunt of New York about 1832-34. Hunt reaped nothing of the enormous pecuniary reward which has been shared among the introducers of the sewing machine, and it is therefore all the more necessary that his great merit as an inventor should be insisted on. He constructed a machine having a vibrating arm, at the extremity of which he fixed a curved needle with an eye near its point. By this needle a loop of thread was formed under the cloth to be sewn, and through that loop a thread carried in an oscillating shuttle was passed, thus making the lock-stitch of all ordinary two-thread machines. Hunt's invention was purchased by a blacksmith named Arrowsmith, and a good deal was done toward improving its mechanical details, but no patent was sought, nor was any serious attempt made to draw attention to the invention. After the success of machines based on his two devices was fully established, Hunt in 1853 applied for a patent; but it was then too late and his claim was disallowed on the ground of abandonment. This is only one of numerous instances where valuable improvements are lost to the first inventor because of his lack of "due diligence" in applying for a patent. The law holds on this subject that an inventor who has made an improvement must follow it up promptly. If he fails to do this when it was in his power so to do, he will be considered as having forfeited his rights, and a patent will be given to a later inventor who has exercised "due diligence" in reducing his invention to practice and filing his application.

It is a curious fact that important inventions are often made by independent inventors at approximately the same time. That this is true is strikingly apparent to any person who will take the trouble to inquire into the matter. Take for instance Gatling who invented the screw propeller for vessels just in time to find Ericsson had forestalled him by a few months, also the controversy between Bell and Gray over the telephone and further in this article it will appear that all of the important features of the sewing machine were patented by different inventors in rapid succession and Howe's promptness in obtaining an early patent, alone secured him from the fierce competition of Singer and others and enabled him to reap a rich harvest of profits from the royalties which all manufactures of sewing machines were finally obliged to pay to him.

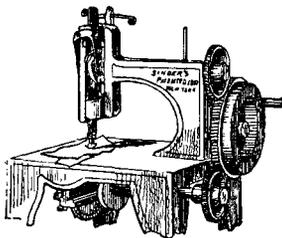
Apparently quite unconscious of the invention of Walter Hunt the attention of Elias Howe, a native of Spencer, Mass., was directed to machine sewing about the year 1843. In 1844 he completed a rough model, and in 1846 he patented his sewing machine (see illustration).

Howe was thus the first to patent a lock stitch machine, but his invention had the two essential features the curved eye-pointed needle and the under-thread shuttle which undoubtedly were invented by Walter Hunt twelve years previously. Howe's invention was sold in England to William Thomas of Cheapside, London, a corset maker, for £240 (about \$1,250). Thomas secured in December 1846 the English patent in his own name, and engaged Howe on weekly wages to adapt the machine for his manufacturing purposes. The career of the inventor in London was chequered and



Howe Sewing Machine 1846.

unsuccessful and having pawned his American patent rights in England, he returned in April 1849 in deep poverty to America. There in the mean time the machine was beginning to excite public curiosity, and various persons were making machines which Howe found to trench on his patent rights. The most prominent of the manufacturers, if not of inventors, ultimately appeared in the person of Isaac Merritt Singer who in 1851 secured a patent on his machine and immediately devoted himself with immense energy to push the fortunes of the infant industry. Howe became alert to vindicate his rights and after regaining

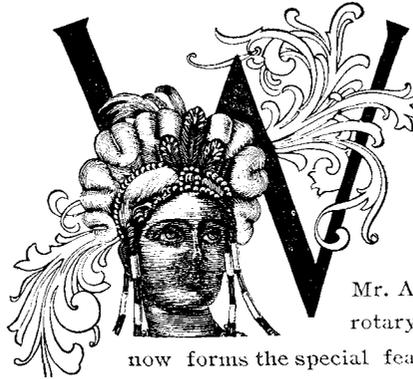


Singer's First Machine.

possession of his pawned patent, he instituted suits against the infringers. An enormous amount of litigation ensued, in which Singer figured as a most obstinate defendant, but ultimately all makers became tributary to Elias Howe. It is calculated that Howe received in the form of royalties on the machines made up to the time of the expiry of his extended patent, Sept. 1867, which was also the month of his death, a sum not less than

two millions of dollars.

The Great Value of Improvements on Patented Machines.



WHEN the practicability of machine sewing had been demonstrated, inventions of considerable originality and merit followed in quick succession.

One of the most ingenious of all the inventors who worked also without knowledge of the previous efforts was Mr. Allan B. Wilson. In 1849 he devised the rotary hook and bobbin combination, which

now forms the special feature of the Wheeler & Wilson machine.

Mr. Wilson obtained a patent for his machine which included the important and effective four motion feed, in November 1850. In Feb. 1851 Mr. William O. Grover, tailor, of Boston, patented his double chain stitch action, which formed the basis of the Grover & Baker machine. At a later date, in 1856, Mr. Jas. A. E. Gibbs, a Virginia farmer, devised the improved chain stitch machine now popularly known as the Wilcox & Gibbs. These together—all American inventions—form the types of the various machines now in common use all over the world. Several thousands of patents have been issued in the United States and Europe, covering improvements in the sewing machine; but, although the efficiency of the machine has been greatly increased by numerous accessories and attachments, the main principles of the various machines have not been affected thereby."

Begin On Easy Things First.

INVENTORS should not begin on intricate problems. What would be thought of an apprentice who tried to build a steam engine before he had even learned to chip the burr off of a rough casting? Enthusiasm is an essential qualification for success, not of the sort that is at a fever heat today, and then drops all for a new plan to-morrow, but of the kind that keeps the mind interested in its work. Intensity of thought can never be created when the mind is diverted by too much change.

Inventions not Made by Accident.

Inventions are rarely produced through accident. We do not mean by this, ideas do not flash into the mind to change entirely the direction of an invention. Perhaps a machine has failed either to fulfill the inventor's ideal, or because

there was no market demand for it. But it often happens that it has suggested something that perfectly succeeds in both these conditions. In saying that inventions are rarely the result of accident, it is not meant that accident does not often lead to invention.



First Suggestion of the Balloon.

The trained mind is constantly on the alert, and the merest suggestion often leads to a train of thought and experiment that ends in the happiest results. Montgolfier, who invented the balloon was led to it by seeing a petticoat on the clothes line, fill with wind, and fly from the line. It happened that fire was burning on the ground close by, and as the open petticoat floated over it, the air filled in and it immediately rose, and floated a considerable distance.

Necessity for Mental Relaxation.

EVERY one knows that by looking too long at a brilliant object, say bright red, that after a time it will look green. The phenomena is one of the mind, that gets worn out by too much intencness. The reason why the red seems green is because the nerves are too tired to respond to the red impulse, and the two other colors—yellow and blue— are all that the nerves of vision respond to, and hence green. An inventor when entirely nonplussed and worn out had better rest. Every school boy has had his unfathomable puzzle worked out in his dreams, and simply because the mind at perfect rest could concentrate all its energies. Diversion is essential where prolonged mental study is involved, and the man who has become puzzled over his problem, let us say on electricety, had better turn his energies in reading dime novels or making toy engines, for perhaps just when he is least looking for it, the missing link will “bob up serenely.” It is like one trying to remember airs from an opera. Ten to one he will fail to recall a single bar. Maybe in a week or two he will unconsciously hum over the whole score. The phenomena is due to an ability of the memory and mental faculties to work independently of the will.



ERIOUS mistakes are often made by an inventor in accepting the first result by which he achieves the objective he is seeking, as the best and only one. Commercial failure often results because the inventor has failed to consider his invention from every side, and make it answer every objection that he may possibly imagine a purchaser or an expert user to urge against it, not only as an entirety, but in every part and every movement. It will not be until every objection has been overcome, that he may reasonably anticipate that his invention will not soon be superseded by the improvements of other inventors, who have really had the great benefit of the labor and experience of the first, and are able to begin at a point nearer to complete success than the first inventor did. It will often happen as illustrated in the history of the sewing machine, that an invention is being created by several inventors at the same time, and the fruit of it may be lost so far as protection by patent is concerned. Dr. Gatling invented a screw propeller, but John Ericsson had anticipated him by a few days. The Doctor grew discouraged and gave up invention for a long time, but having his attention drawn to guns, he made a grand success of the famous Gatling. The fact shows the necessity of perseverance, and also the equal one of not confining attention to one thing too much. The mental effort, even though failure may follow at the first, will strengthen the mind for work in many other directions. Edison is noted for his versatility and the number of diverse machines and devices he has constructed. It will be found that nine out of every ten inventors have either failed or made only indifferent success at the beginning.



The Ancient Loom.

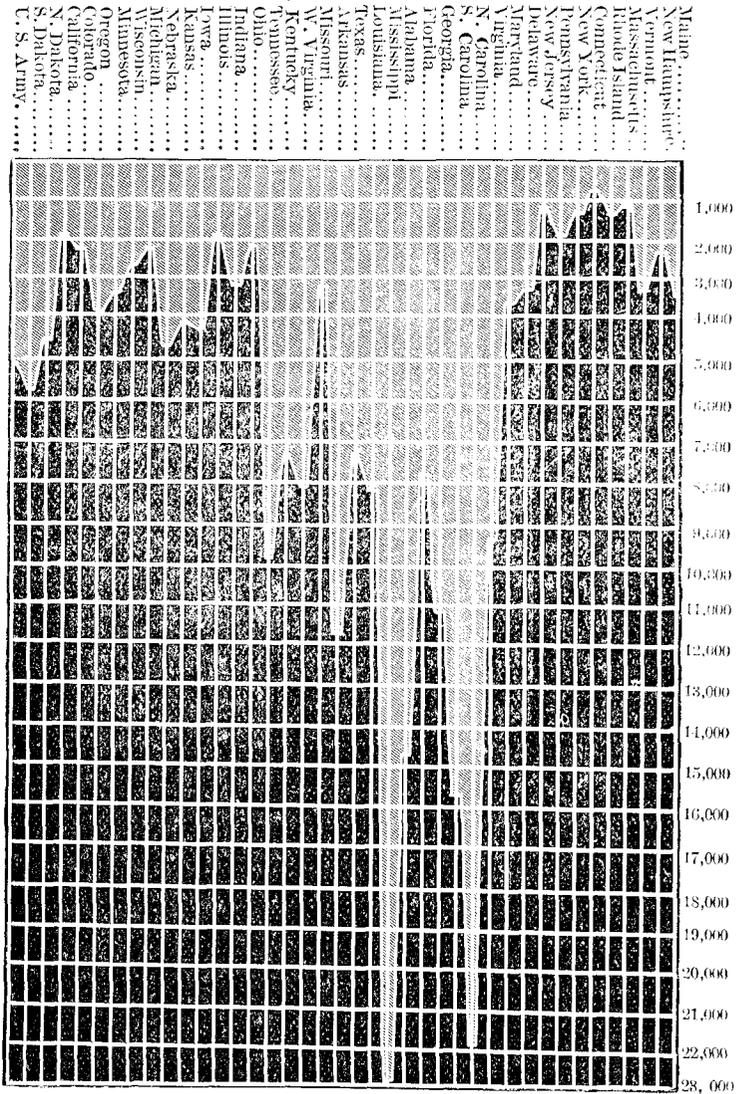


Women are recognized as having the same rights as men when it comes to patenting inventions, but an examination of the Patent Records shows that only a few women compared with the number of men, have taken advantage of their opportunities. Whether, as one writer suggests, this is because they confide in the male members of the family and the men appropriate their ideas, is true or not, the fact remains that less than three thousand women have procured patents.

No doubt many women are overworked, or are too busy with other things to invent, just as some men are, but the men who invent the most, probably have less time to spare than their wives and sisters. Women whose circumstances do not require them to work for a living often waste a lifetime in unsatisfied longing for something useful to do. Outside of society literature and art, an ambitious woman has very little chance for distinction. But the open door of invention admits her to a wide field of useful employment where she is on absolute equality with men. The inventor, though he makes his millions, always gives to the world more than he receives and often he is reduced to poverty while the world is made rich by his inventions. But the Bible says "It is more blessed to give than to receive." and so the true inventor like the true artist feels there is something higher and nobler to work for than mere dollars and cents and no matter how considered there is no field open to women that offers as much as invention. Besides the reward of fame and wealth and the knowledge of doing only good, the act of invention itself, being the nearest approach to the Divine act of Creation, affords the highest type of earthly happiness. Edison has said he was happiest when inventing and this indeed explains why inventors, though financially unsuccessful, will continue to invent.

It is curiously instructive to examine the relation that exists between the prosperity and culture of a people and the number of inventions that altogether make up the total of civilization. It will show that not only does the inventive faculty become a measure of the average culture, but the reverse—that culture in turn develops the inventive faculty.

The following diagram is based on the report of the Commissioner of Patents for 1890 and shows the ratio of population to each patent granted.

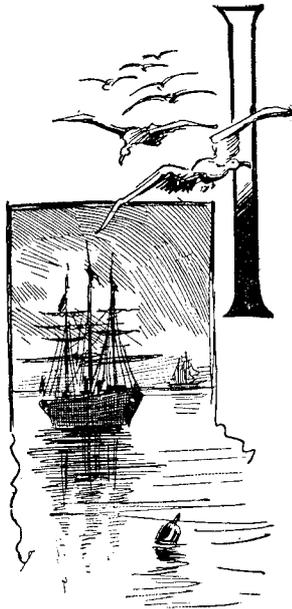
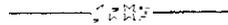


The above diagram bears out fully the view that invention and prosperity are synonymous. For instance we notice that Massachusetts and Connecticut are above the line 1000, that is that more than one out of every thousand inhabitants is an inventor, while the other extreme is seen with Mississippi, where there is only one inventor to every 23,447 of population, while North Carolina follows with one to 21,864 of population. All know that the curse of these states is the one crop, cotton, upon which these people almost solely depend for their cash, and the extreme simplicity of their lives, that lead in illiteracy as well as general poverty. In Massachusetts the number of readers of daily and weekly newspapers, according to the census of 1880, was 230,399 readers of dailies and 1,732,500 readers of weeklies, while in Mississippi there were but 4,200 readers of dailies and 83,704 readers of weeklies. Out of 753,693 persons above the age of 10 years, 315,612 were returned from Mississippi as unable to read, or nearly 53 per cent, while in Massachusetts, out of 1,432,136 returned above the age of 10 years, only 75,635 or 5 per cent were unable to read. North Carolina follows the indication of the diagram almost exactly, as out of a population of 959,951, above the age of ten, 367,890 or 38 per cent were unable to read. South Carolina and Alabama being about equal are third on the scale for lack of invention, and so, also we find they occupy about the same position on the scale of illiteracy with above 27 per cent who cannot read, while Connecticut stands with only 4 per cent, standing at the head of culture, as at the head of invention, surpassing even Massachusetts by one per cent.

On the score of wealth, or at least of prosperity, the same ratio will hold. Perhaps New York might lead owing to New York City being the financial and commercial metropolis of the United States, but Massachusetts and Connecticut lead in manufactures, as they do in fiscal institutions as insurance, and being generally lenders of money for the promotion of western mines, manufacturing and agricultural progress. It must not be forgotten also that as much activity as the southern states display in manufacturing is due mostly to New England capital, while their illiteracy is largely due to the predominance of colored population, and solely the result of accident. The same culture, and the same ambition, and the same inventiveness, when they are once all aroused, will be as productive in Mississippi and North Carolina as in Connecticut and Massachusetts. It will happen when the people there set themselves seriously to thinking, to inventing, and in the ways of progress.

The diagram, drawn true to the statistics of the real condition, is instructive in almost every conceivable way the reader has a mind to investigate it. It will tell the story of the clothes worn, of the kind of houses lived in, of all the multiform comforts of life. Because they all flow from that vital source that takes its rise in the human brain in human thought, and bears its fruits of power and comfort in invention.

Decisions in Patent Cases.



IN a few of the succeeding pages it is the purpose to give such information pertaining to patent law and the securing of letters patent as is most commonly desired by inventors and others interested in patent matters.

The experience of many years has familiarized the writer with the more common inquiries coming from inventors and manufacturers and it has been the design here to state only the leading and correct points of law and Patent Office practice. Further and more detailed information will be given on application to Joseph A. Minturn, Patent Attorney, Indianapolis, Ind.

The Foundation of the U. S. Patent Laws,

rests upon Article I, Section 8, of the Constitution of the United States which gives Congress power to promote the progress of science and the useful

arts by securing a monopoly for a limited time to inventors for their respective discoveries. A copy of the "Patent Laws," now in force, will be sent without charge, to any one who will request the same by letter or postal card addressed to the "Commissioner of Patents, Washington, D. C."

THE WORD "DISCOVERY" as used in the Constitution and Statutes does not mean the finding out of something that previously existed such as the discovery of America by Columbus, or of the electric current by Stephen Gray, but means simply invention as the result of original creative thought.

The laws of nature may be discovered but can never be invented by man, but when discovered a law of nature may be utilized by means of an art, a machine

a manufacture or a composition of matter. The invention, by which the law of nature is utilized, may be rewarded by a patent but not the discovery of that law.

Principle is not Patentable.--As stated above, a law of nature being in other words a law of God cannot be monopolized and is therefore not patentable. This law of nature is often spoken of as a "principle."

Difference Between a Principle and a Process.--A principle or law of nature is not a material substance but exists only in the mind and a process likewise can only be seen by noting the results of certain acts as they are being performed. Because of their intangible nature, principles and processes are frequently mistaken for each other, and as a process may be patentable while a principle is not, it is important to distinguish between them.

The rule governing this is "A patent for a process is a patent for the described combined use of all the laws of nature utilized by that process. A patent for a principle is a patent for one only of the laws of nature used in a process." (Walker on Patents p. 12. McClurg vs. Kingsland, 1 Howard, 202, 1843; O'Rielly vs. Morse, 15 Howard, 112, 1853; Mowry vs. Whitney, 14 Wallace, 620 1871; Tilghman vs. Proctor, 102, U. S. 707, 1880)

For example in the case O'Rielly vs. Morse. Professor Morse utilized in his telegraph several distinct laws of nature, and lacking any one of which his invention would have proved a failure. The most important was the electric current discovered by Gray, and the next that of electro-magnetism well known in natural philosophy before the time of Morse. The eighth claim of Morse was a broad one for the use of an electric current for telegraphing without including the combined use of electro-magnetism and was declared void by the Supreme Court because it was a patent for a principle. Had the claim included electro-magnetism as a positive element, or had there been a combination of two or more laws of nature to produce the result, the claim would doubtless have been sustained.

Any operation performed by rule to produce a result, by means not wholly mechanical, is patentable as a process. If the means are wholly mechanical then the operation cannot be patented but the machine itself may be. (Corning vs. Burden, 15 Howard, 267, 1853.)

Invention.--Judge Swayne of the United States Supreme Court defines invention in the following language:--

"Invention is the work of the brain, and not of the hand. If the conception is practically complete, the artisan who gives it reflex and embodiment in a machine is no more the inventor than the tools with which he works. Both are instruments in the hands of him who sets them in motion, and prescribes the work to be done. Mere mechanical skill can never rise to the sphere of inven-

tion. The latter involves higher thought, and brings into activity a higher faculty. Their domains are distinct. The line which separates them is sometimes difficult to trace; nevertheless, in the eye of the law, it always subsists. The mechanic may greatly aid the inventor, but cannot usurp his place." (Blandy vs. Griffith, vol. iii, Fisher's Patent Cases, p. 616.)

The late Judge Hall of the U. S. Circuit Court says:—

"An invention, in the sense of the patent law, means the finding out, the contriving, the creating of something which did not exist and was not known before, and which can be made useful and advantageous in the pursuits of life, or which can add to the enjoyment of mankind. In other words, the thing patented must be new; and it must be useful to an appreciable extent, though the measure of that usefulness is not material. Any degree of utility appreciable by a jury is sufficient, upon the question of utility to sustain a patent." (Conover vs. Roach, vol. 4, Fisher, p. 16.)

Not Invention.—To produce a device or process which any skilled person could have produced when required. (Corn-Planter Patent, 23 Wallace 232, 1374; Vinton vs. Hamilton, 104 U. S. 491, 1881; Atlantic Works vs. Brady, 107 U. S. 199, 1882.) But lack of invention cannot be claimed if the result accomplished had long been wished for and sometimes sought, but unsuccessfully, on the ground that the means was so simple that many believe they could easily have produced it if desired.

Concerning the simplicity of an invention, the late Judge Story of the United States Supreme Court remarks,

the simplicity of an invention, so far from being an objection to it, may constitute its great excellence and value.

"Indeed, to produce a great result by very simple means, before unknown or unthought of, is not unfrequently the peculiar characteristic of the very highest class of minds." (Ryan vs. Goodwin, vol. i, Robb's Patent Cases, p. 729.)

Change in Material not Invention.—There is no invention in substituting superior for inferior materials in making all or any parts of a thing; except where the substitution involves a new mode of construction, or new uses, or properties of the article made. If the superiority of the new material used could not be known beforehand and was found by practice to give greater efficiency as well as securing a cheaper and more durable construction, Judge Shipman, in Dalton vs. Nelson (13 Blatch, 357, 1876) held such substitution to amount to invention.

Aggregation is not Invention.—In Reckendorfer vs. Faber (92 U. S. 357, 1875) the patent passed upon was for the well known lead pencil with a rubber tip and the Supreme Court held the patent as void because there was no joint operation performed by the pencil and rubber.

In *Mailes vs Van Wormer* the patent was for a heating stove in which many good features previously scattered through several had been gathered into one stove but without performing any joint operation though making a more desirable article. The patent was held to be void for lack of invention.

It is not necessary, however, that all of the elements of a combination should act at the same time.

Justice Curtis, in *Forbush vs. Cook*, says:—"To make a valid claim for a combination, it is not necessary that the several elementary parts of the combination should act simultaneously. If those elementary parts are so arranged that the successive action of each contributes to produce some one practical result, which result, when attained, is the product of the simultaneous or successive action of all the elementary parts, viewed as one entire whole, a valid claim for thus combining those elementary parts may be made."

To omit parts of a machine.—With a corresponding loss of function is not invention. Judge Blodgett, in *Stow vs. Chicago* (3 Bann & Ard, 92, 1877) says: "A reconstruction of a machine so that a less number of parts will perform all the functions of the greater, may be invention of a high order, but the omission of a part with a corresponding omission of function, so that the retained parts do just what they did before in the combination, cannot be other than a mere matter of judgment, depending upon whether it is desirable to have the machine do all, or less, than it did before."

New Combinations of old Devices.—Are patentable, and because every part of a patented thing is old does not deprive it of novelty. In such cases the whole is different from the sum of all its parts just as this printed page is different from what it would be if the same words were alphabetically or promiscuously arranged. However a collection of old things may only amount to an aggregation and not a patentable combination and a patent, if obtained, would be void for want of invention but not for want of novelty.

Utility.—Or in other words, the capacity to produce a good result, must be present in all inventions. Chancellor Walworth says: "The patent is void if the machine will not answer the purpose for which it **was** intended, without some addition, adjustment or alteration, which the mechanic, who is to construct it, must introduce of his own invention, and which had not been invented or discovered by the patentee at the time his patent was issued."

Patents, however, are never held to be void for want of utility merely because the things covered by them perform their functions but poorly.

To come within the definition of utility the result accomplished must be a good one; that is it must not work an injury to the morals, the health, or the good order of society.

Utility is not negatived because beauty is the sole object sought, for beauty

gives pleasure and happiness and the use of all things is to aid us in the pursuit of happiness.

Public Use.—If the inventor allows his invention to be used either with or without compensation for other than experimental purposes it is public use.

(Elizabeth vs. Payement Co. 97 U. S. 135, 1877; Andrews vs. Hovey 16, Federal Rep. 393, 1883)

“But experimental use is never public use within the meaning of the Statute if it is conducted in good faith for the purpose of testing the qualities of the invention, and for no other purpose not naturally incidental to that. In such a case it is immaterial whether the experimental use disclosed a necessity for improvement or disclosed no such necessity and is also immaterial whether the use was conducted with secrecy or not. It may indeed have been had in the open air, and have continued every day for several years, and have been known to hundreds of persons and have incidentally inured to the profit of the user and of the public, and still not be a public use within the meaning of the statute if the nature of the invention was such that only long continued out door use could show whether the invention possessed utility, or show in what respects, if any it required to be improved.”

(Walker on Patents p. 63; Elizabeth vs. Payement Co. 97 U. S. 134, 1877)

“**On Sale.**” The sale of a single specimen of the invention, or even the offering of it for sale will constitute putting the invention on sale within the meaning of the law. But if a sale was made simply and solely for the purpose of experimental use by others and there is unequivocal evidence to that effect, such sale will not be obnoxious to the law. (Henry vs. Soapstone Co. 5 Bann and Ard, 108, 1880; Graham vs. Mfg. Co. 11 Federal Reports 142, 1880.)

State Interference with Patents: No state law can interfere with the sale of a patent right. The United States Court in the case of John Robinson (2 Bissel 313, 1870) held that this kind of state legislation is unauthorized; that property in inventions exists by virtue of the laws of Congress, and that no State has a right to interfere with its enjoyment. That a state may require the venter of patent rights to file with the county clerk copies of the letters-patent, and an affidavit that the letters are genuine and unrevoked and that he has authority to sell. See Hankey vs. Downey (1888), 116 Ind. 118; Pape vs. Wright (1888), 116 Ind. 502; New vs. Walker (1886), 108 Ind. 365; Robison on Patents, p. 680, vol. 3.

But a distinction should be kept in mind between the selling of patents and patent privileges and the selling of goods or manufactured articles. All who sell goods whether patented or not patented must conform to the local state laws relating thereto.

Taxes:—The patent and all its rights are under the owner's control, and after a patent is issued it is not subject to additional payments or to taxes of any kind, whether national, state or local. Herdic r. Roessler, 30 Hun (S-Y.), 198.

Joint Invention.—A mere suggestion, suggested upon by the person making it, but carried out and perfected by another, will not entitle the former to be considered a joint inventor; nor is it necessary that exactly the same idea should have occurred to two persons at the same time, and they should work out together the embodiment of this idea in a perfected machine, to constitute them joint inventors. If an idea is suggested to one and he even goes so far as to construct a machine embodying the idea, but it is not a complete and working machine, and another person takes hold of it, and by their joint labors—one suggesting one thing and the other another—a perfect machine is made, a joint patent may properly issue to them. II, upon the other hand, one person invents a distinct part of a machine, and another person invents another distinct and independent part of the same machine, then each should obtain a separate patent for his own invention. (21, O. G. 1977.)

Joint Inventors.—Joint inventors are entitled to a joint patent, but neither can claim one separately.

Joint Ownership of Patents.—It is important that the exact relationship between joint owners of a patent be understood. There is no difference in the character of this relationship, whether the parties be joint inventors and patentees, or whether one or more of the parties are assignees.

The joint ownership in a patent differs from an ordinary copartnership materially. In the latter case the partners are mutually bound to account to each other for all profits, and are all liable for the debts of the concern. In the case of a patent, the joint owners are not bound to account to each other for their business operations under the patent, nor for their individual profits when working the patent separately. When there are several owners to a patent the exclusive right is divided up, and each part owner can exercise all the right as far as his energy and means will permit. But if the part owners have a contract forming a business partnership between them to work the patent, then they will be mutually bound to each other, because of contract.

So also there will be no liability on the part of one of the part owners of the patent, because of debts contracted by another of the part owners working the patent, unless there is a partnership contract between them to work the patent in conjunction.—(Pitt vs. Hall, 3 Blatch. C. C. R., 291.)

Employer And Employee.—“An employee may agree to devote his inventive faculties to the service of his employers, and thus confer upon them all the fruits of his inventive skill during the period covered by his contract. But an agreement of this character must be unequivocal, and cannot be implied from a general bargain for his time and skill and labor; nor is it proved conclusively by the fact that the experiments resulting in the invention were made at the request and expense of the employers. But such an agreement may be evidenced by

circumstances; and the conduct of the employee in permitting his employers to claim and treat the invention as their own, may operate as an estoppel to prevent him from denying their asserted rights. An agreement of this nature relates only to the period of service, and inventions made prior to that period or after its expiration belong to the employee and are patentable by him alone." (Robinson on Patents, Book 2, p. 584.)

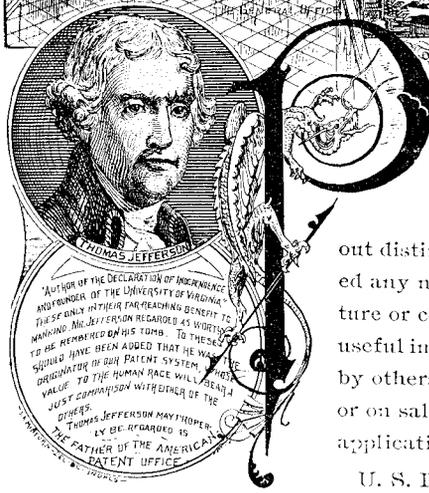
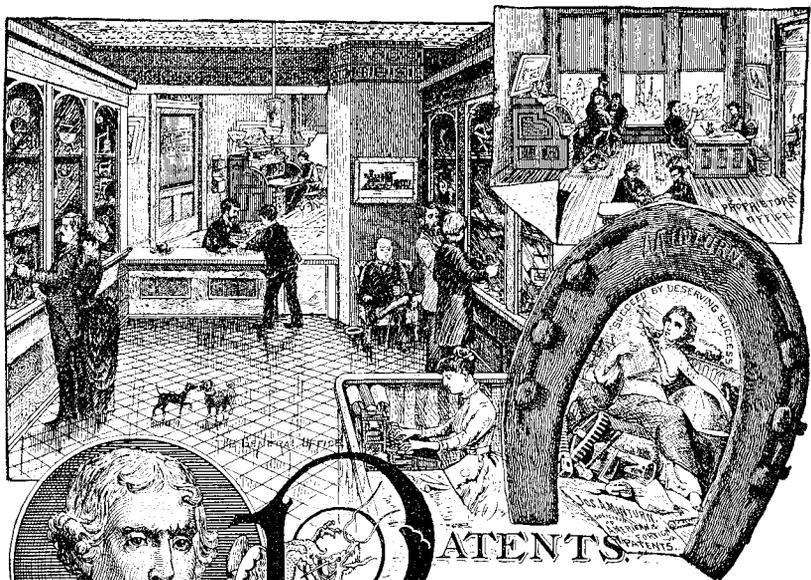
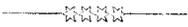
But that claims are regarded with disfavor when made by mechanics or draughtsmen who have been called in to assist in the embodiment of a new idea, and having been paid for their material, time, and skill, turn upon their employers and claim to be independent inventors. (see Commissioner's Decision. 7. 12. 97. 1870.)

To constitute a man an inventor it is not necessary for him to have skill enough to embody his invention in a working machine or a model or even in a working drawing. If a man furnishes all of the ideas needed to produce the invention aimed at, he may avail himself of the mechanical skill of others to practically embody or represent his contrivance and still be the sole inventor thereof. (Sparkman vs. Higgins 1 Blatch, 209. 1846.)



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Patents for Inventions.



PATENTS.

Are granted in the United States to any person,—man, woman or child,—without distinction as to age or sex, who has invented any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof, not known or used by others in this Country and not in public use or on sale for more than two years prior to his application.

U. S. Patents are granted for the term of 17 years, during which time the inventor, his successors or assigns, has the exclusive right to manufacture and sell the invention and the monopoly of his inventive skill.

SHOULD AN ATTORNEY BE EMPLOYED?

It is optional with an inventor whether he will employ an attorney or prepare and conduct his own application for patent. If he decides not to employ an attorney, he can secure a copy of the "Kules of Practice" in the Patent Office and also a copy of the "Patent Laws" now in force free of charge by writing for same to the "Commissioner of Patents," Washington, D. C., and guided by the plain forms and instructions given therein he can at least get an official action on his application. But "As the value of patents depend largely upon the careful preparation of the specification and claims, the assistance of competent counsel will in most cases be of advantage to the applicant, and the value of their services will be proportionate to their skill and honesty, and too much care cannot be exercised in their selection."—U. S. Patent Office, 1888.

To better answer the important question, of the employment or non-employment of an attorney let us first ascertain the object in securing any patent at all. The law entitles one who has produced a new and useful invention to an exclusive monopoly for 17 years as his reward, but makes it necessary that he file in the Patent Office a written description of his invention which will fully and clearly define and distinguish it from any other. This description becomes the gauge by which the value of the monopoly is measured and it is this monopoly, depending wholly on the wording of the specification and claims that is valuable to the inventor and not the mere fact of having a patent of some kind.

The legal meaning of a word or phrase is often different from the popular understanding of the same, and so in the early history of patents much uncertainty existed as to the exact meaning of the terms used in describing and claiming an invention. This uncertainty has been removed by the many hundreds of court decisions by which the legal meaning has been very clearly defined, and naturally can only be familiar to persons who make it their daily business to familiarize themselves with and to study into such matters. A machinist or carpenter may not claim to be naturally smarter than any other man, but a mechanic of any kind who has spent years in learning his trade and a lifetime in following it would be justified in claiming to know more about his business than a novice, and a patent attorney who had followed the same course in his profession would fall below the average man in intelligence if he was not able to draw up and conduct to successful issue an application for patent with stronger claims than could an amateur. A patent solicitor might attempt to bore out a cylinder or build an elaborate winding stair, and might even do a botch job to his own satisfaction, but anybody competent to judge would condemn the work as a botch just as the judge of a court would condemn a patent drawn up by an incompetent person. A weak patent not only secures no monopoly but it misleads

the owner and causes him to spend time and money before he finds his mistake.

It is a queer commentary on human nature that a man in buying a piece of property worth only a few hundred dollars, will invariably employ an attorney to draw up the papers, but if he has an invention which he always values at from two thousand to a hundred thousand dollars, he will undertake to secure his own patent.

The late Judge Sprague warned inventors in the following words: "As specifications are legal instruments, no less than descriptions of mechanical and philosophical and sometimes chemical improvements, it is desirable that they should always, before filed, be examined by some experienced lawyer, as well as by some machinist or other expert fully acquainted with its subject-matter. Infinite expense and trouble would be yearly saved by this. The advice of legal counsel is as useful in the preparation of such an instrument as in preparing a difficult deed or will". (*Hovey vs. Stevens*, 2 Robb p.579.)

Judge Grier says:—"There are few things more difficult, even for well-educated and practical lawyers, than to describe a new invention clearly, and point out the principle which distinguishes the subject of it from all things known before. As inventors are rarely experts, either in philology or law, it has long been established as a rule, that their writings are to be scanned with a great deal of charity. But it is easy to abuse this liberality to the purposes of fraud. The public has rights to be guarded also, and these exact that the patentee's specification shall set forth his invention so fully and definitely that it cannot be readily misunderstood." (*French vs. Rogers*, vol. 1. *Fisher's Patent Cases*, p. 138.)

Some twenty-five years ago the court called attention to the importance of clearly and distinctly describing the use and operation of the invention:—"The intention of the inventor, so as to effect the object designed, is to govern the construction of the language he employs. Inventors are not always educated or scientific men. Some of the most useful inventions have sprung from an illiterate source. Genius is not always blessed with the power of language. Courts look to the manifest design, in order to remove any ambiguity arising from the terms employed. But this ambiguity must not be such as would perplex an ordinary mechanic in the art to which it applies." (*Page vs. Ferry*, vol. 1. *Fisher's Patent Case* p. 298.)

Judge Miller's concise and forcible words are: "The growth of the patent system in the last quarter of a century in this country has reached a stage in its progress where the variety and magnitude of the interests involved require accuracy, precision, and care in the preparation of all of the papers on which the patent is founded. It is no longer a scarcely recognized principle struggling for a foot-hold; but is an organized system with well-settled rules, supporting itself at once by its utility, and by the wealth which it creates and commands. The developed

and improved condition of the patent law, and of the principles which govern the exclusive rights conferred by it, leave no excuse for ambiguous language or vague descriptions.

"The public should not be deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights.

"The genius of the inventor, constantly making improvements in existing patents,—a process which gives to the patent system its greatest value,—should not be restrained, by vague and indefinite descriptions of claims in existing patents, from the salutary and necessary right of improving on that which has already been invented. It seems to us, that nothing can be more just and fair, both to the patentee and public, than that the former should understand and correctly describe just what he has invented, and for what he claims a Patent." (Merrill v. Yeomans, vol. xi. Patent-Office Gazette, p. 070.)



THE Selection of an Attorney. Nearly every Commissioner of Patents has had occasion repeatedly to warn inventors against cheap and incompetent solicitors and particularly those who procure patents on the "no patent, no pay" plan. It seems to be the nature of some men to try to get something for nothing and because the outward appearance of the parchment, ribbon and seal of a worthless patent is identical with the appearance of a patent embodying the greatest of learning, care and experience, the inventors hoping to get proper professional service at reduced rates allow themselves to be deceived. Robert Grimshaw the well known engineering expert and writer says on the subject: "In getting a patent avoid, as the devil does holy water, the 'no patent, no pay' solicitors; and those who offer to get you full protection for about half the regular fee. The first are like quack doctors, the second like shoddy dealers. Get your patent through reputable solicitors, who will charge a good living price and give you something that the next comer cannot drive a circus wagon through, band and all."

The late Judge Grier of the United States Supreme Court rings out these solemn words of warning against employing any but an experienced Patent Attorney:—

"The courts always labor to protect a man when they clearly see that he has made a good invention, but has got among a set of bungling fellows to draw his patent; and many a time we have had to stretch almost our consciences to help through a good invention, against a bad description drawn by some blockhead.

The difficulty has been mechanics did not understand the law and lawyers did not understand mechanics."

The Application for Patent.—The description in a patent must be so full and plain that a fairly competent workman in the art could take it and exercis-

ing the then existing knowledge of the trade construct an operative machine without any experiment or invention on his part. If it requires experiment and invention to make and use the matter described the patent is void. (Curtis on Patents Sec. 225; McFarlane vs. Price, 1 Stark 158; Turner vs. Winter 1 D. and E., 602.)

Section 4888 of the Revised Statutes enacts as follows:

"Before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor in writing to the Commissioner of Patents, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it in such full, clear and concise terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct compound, and use the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery; and said specification and claim shall be signed by the inventor and attested by two witnesses."

The Claims.--The actual value of a patent is measured by the character of the claims. A patent disclosing a most meritorious and valuable invention may be practically worthless by reason of its narrow and restricted claims, and, on the other hand, a patent disclosing an invention of little practical value in the form shown and described in the patent, may be of enormous value by reason of its broad and comprehensive claims. The Bell telephone patent is a prominent example of the last mentioned class. At one time the impression prevailed to a great extent that the essential thing to insure protection was in a patent of some kind, and little attention was given to the claims, but the manufacturing public has now been educated to understand that the vital and all-important part of a patent is its claim. Little or no respect is now paid to a patent with narrow and restricted claims. The owner cannot dispose of it; neither can he enforce it as against flagrant infringers of the real invention of the patent. But if the invention is valuable and well covered and protected by strong and properly-worded claims, the patent is not only respected, but is readily indorsed by manufacturers, their consulting counsel, and meets with prompt sale and adoption. If applications for patents were properly prepared and prosecuted at the outset, it would greatly decrease patent litigation, because the rights of the inventors would stand out in such clear and unmistakable language in the claims of their patents that rival parties or would-be infringers would not care or dare to trench upon or invade the protected territory

of the patentee. Infringers rarely, if ever, copy a patented device, but make such alterations in form and construction as will enable them to attain the same result as the patentee without infringing the terms of his claims. When a patentee learns that his claims are so loosely worded that infringers can and are driving through them with impunity, the only recourse left him is to surrender his patent and obtain a reissue with broader and more substantial claims. But by many recent decisions of the courts, the rule is now firmly established that it is only in exceptional cases that the original patent can be corrected by a reissue. The exceptional cases will be referred to in a subsequent paragraph devoted to Reissues. However, it is a great misfortune to be obliged to reissue a patent, even though it can be done, and this is true for several reasons. It costs but a little, if any, more to secure a good patent at the outset than a poor one, and hence, if applications are entrusted to skilled and competent attorneys in the first instance, no necessity will thereafter arise for the extra expense and delay incurred in procuring a re-issue. Again, when a patented invention is valuable, infringements are liable to follow in the wake of the patentee, and should suit be brought on an original patent, even after the lapse of several years, the patentee is entitled to collect damages or profits that have accrued from the date of his original patent. But if it is found that by reason of defective preparation and prosecution of the original patent, a reissue must be obtained in order to maintain a suit, the patentee is obliged to relinquish all claims for damages or profits that have accrued prior to the date of his reissue.

Drafting Claims.--Great skill and care must be exercised in drafting claims, so that they will be interpreted and construed by the courts in such manner as to be sustained and fully protect the invention. This requires a thorough knowledge of court decisions and Patent Office practice. The claims must not be functional or cover a result merely, and they must not be for mere aggregation of parts. They must not be worded in such general language as to be anticipated in terms by a prior invention; and on the other hand, they must not be so restricted as to but partially cover the invention of the applicant.

Reasons for Securing a Number of Claims.--The question is often asked, if a single broad claim covers and protects the invention, why should more than one claim be secured in a patent?

The following are among the reasons that induce attorneys to secure a number of claims in addition to the broad claim:

Should a suit be instituted on a patent containing but a single broad claim, and the defendant should succeed in unearthing an anticipation of the broad and general terms of the claim, the patent would be declared invalid and the complainant would of course fail in his suit; but if, in addition to the broad claim, the patent contained a number of claims, graduated in scope and of less scope than the broad claim, the

defendant might fail to anticipate the more restricted claims, so that the patent might be sustained broadly enough to warrant the court in enjoining the defendant and compelling him to account for his infringement.

The better practice is to draft as many claims as are necessary to cover the invention, not only broadly, but specifically, as well, and to graduate the scope of the claims by slight restrictions from the broad claim downwardly to the narrowest claim. It costs the patentee no more to secure a dozen claims than it does to secure one. If a single one of the claims does in fact effectually protect his invention, the remaining claims can not injure his patent; but if, after it is too late to correct his patent, he finds that a single claim does not protect him, he may have reason to thank his attorney for his perseverance in securing a number of claims, some of which afford the desired protection.

Combination Claims.—Nearly all the patents that are now being granted are based on Combination Claims; but owing to the fact that a large number of such patents have been found to be practically worthless, capitalists and patentees view such patents with much suspicion, and hesitate in embarking in an enterprise based on the protection afforded by a Combination Patent. The evil existing in this class of patents has its source not in the form of the claim, not because of the Combination Claims, but in the character and scope of the claim, because the most valuable patents in existence are dependent for their value on combination claims.

A combination claim is not infringed unless all of the elements specified in the claim or their mechanical equivalents are combined or arranged in substantially the same way and adapted to produce substantially the same result. Hence the greater the number of the elements specified in the claim the easier it will be to avoid it. A combination claim consisting of six elements can be evaded much easier than one comprising three elements. Again, a combination claim consisting of several elements, each limited to a specific form or construction, is more easily evaded than a claim in which the parts are referred to generally instead of specifically. For these reasons an attorney in drafting combination claims should first ascertain just what parts of the machine or device are the controlling or salient features and indispensable to its operation. He should then draft a claim and cover broadly a combination consisting of the least number of the prominent and important elements of the machine that can possibly be selected which will comprise a legitimate combination of parts which would accomplish the same result and evade the claim. Should an alternative combination occur to him, he should then revise the wording of the claim, and employ terms of such scope in meaning that the claim will cover not only the combination of parts shown and described, but other and equivalent combinations as well. The same course should be pursued in drafting the remaining claims of the application. By giving each case full and careful consideration and preparing the claims in the manner specified, the invention can be

securely protected by combination claims.

"A patentee may limit his claim in his specification to one particular form of machine and exclude all others. In such a case he is secured only to the particular form claimed. The patent law was intended to secure to the inventor his whole invention or discovery, but not unless he claimed to be secured in the whole. If he claims only a part, such part is only secured to him," (*American Pin Co. v. Oakville Pin Co.*, 3 Blatchf, 193.)

Process or Method Claims.--There is a class of inventions in which the means employed for carrying the invention into effect are of comparatively little importance. In fact, there are many cases in which it would be impossible to cover and protect the invention by claims on the machine, or apparatus or devices resorted to in practising the invention, and this is owing to the fact that the real discovery and invention consists in a new method rather than in any particular means for accomplishing a certain result.

In view of the fact that claims to a process or method, and to the apparatus or the means for carrying the method into effect can not be included in the same application for patent, the attorney must be capable of determining at the outset whether his client's interests will be best protected by a method or a machine patent, and act accordingly in the preparation of the application.

Drawings.--The value and even the validity of a patent often depends on the character, clearness and sufficiency of its drawings. There are thousands of existing patents in which the improvements are partially or very poorly illustrated, and when an attempt is made to dispose of such patents, the vagueness, defects and inaccuracies of the drawings often prejudice capitalists and manufacturers against the invention, which, in fact, may be of decided merit and value, and would have met with ready sale had the drawings of the patent portrayed the invention in a skillful and artistic manner. Again, when patents of this kind are brought into court, the uncertainty and ambiguity of the drawings often enable the opposing experts to mistify the judges as to the construction, relative arrangement, and combinations of parts which were actually intended to be covered and protected by the patent.

Models.--Under the present practice of the Patent Office, models need not be furnished unless specially called for by the Commissioner of Patents. But this requirement is rarely ever made.

Prosecution of an Application in the Patent Office.--An application prepared and executed in due form when filed in the Patent Office has recorded thereon the day of filing, which date, for the purpose of a contest with any other application, is the presumptive or record date of invention by the applicant. As an early record date often confers a great advantage upon an applicant in an interference proceeding, it is the wiser plan not to unduly delay the

preparation and filing of an application after the invention has once been completed.

The application is then assigned to the Examiner having charge of the particular class to which the invention relates, and must take its turn for examination with others in the order of filing, the rule being rigidly enforced that no application will be examined out of its regular order. The Examiner in due time takes the case up for examination, his first duty being to determine whether or not the papers and drawings are properly prepared, and, secondly, to ascertain whether more than a single invention is described and claimed in the application. Should the case present and claim two or more inventions a division of the application is called for. From the Examiner's decision on the question of division an appeal may be taken to the Commissioner in person, but no action will be made on the merits of the case until the question of division is settled. Provided the specifications and drawings are properly prepared and the application discloses and claims only a single invention, the Examiner proceeds to investigate the prior art to test the novelty of the invention. Should no references be found that anticipate the claims, or any of them, the application is immediately allowed and the patent granted on the payment of the final Government fee of twenty dollars. Should the Examiner discover a prior patent or publication—one or more—either American or foreign, which, in his opinion, anticipates any or all of the claims or the complete invention, he proceeds to reject the case, giving his reasons or citations on which each claim is refused, and the letter of rejection is forwarded to the attorney in charge of the case.

The fate of the application or value of the patent, if granted, depends on the work of the attorney at this stage of the case. An incompetent or dishonest attorney will often cancel all claims that have been rejected by the Examiner and let the case go to allowance on some meagre and limited claim that may have escaped the rejection, or, in the event that all the claims are rejected, will substitute a single narrow claim in lieu of the original claims, and in this way obtain an allowance. Such practice results in a worthless patent, but insures the attorney his fee provided it is contingent on success. In a great many cases the references of rejection simply anticipate the terms of the claim and not the real invention, and, in this event, the attorney should simply change the wording of the claim without limiting its scope in the least, and in this manner secure as full protection for the invention as would have been accomplished by the claims originally filed. Should the references actually anticipate the claim, then it becomes necessary to redraft and restrict it; but great care should be exercised in placing no unnecessary limitation on the claim. It should be pared down in scope barely sufficient to avoid the references, but not a whit more, and thus save everything possible of the invention that can be protected by a patent. On

the other hand, should the attorney conclude that the references cited do not fairly anticipate the spirit or terms of the claims, he should decline to change or amend them, but take prompt measures to convince the Examiner of his client's right to their allowance.

It is a dangerous thing to cancel a claim in an original application without substituting another claim therefor, provided, of course, the claim is not fully and squarely anticipated by a prior patent; and this is true for the following reason: Should suit be brought on a patent, and it be established that in the prosecution of the application a broad claim which would have clearly and fully covered defendant's device was cancelled by the attorney, and the patent allowed to issue on claims so restricted in terms as to require a most liberal interpretation by the courts in order to cause it to cover the defendant, the courts would hold that the inventor in such case cannot recover, as he abandoned his claim to such broad invention by erasing the claim thereto while the case was pending in the Patent Office. Again, it is dangerous to cancel a claim to which the inventor is fairly entitled, because the original patent cannot be reissued and the cancelled claim reinstated in the reissue. In such case the courts hold that the inventor is bound by the act of his attorney, and if, through a mistake in judgment or the incompetency of the attorney, a claim was wrongfully and unnecessarily cancelled in the prosecution of the original application, the invention cannot secure such claim by way of a reissue.

Appeals.---After having exhausted all other resources without convincing the Examiner that the invention is patentable in view of the prior art, the applicant may take an appeal to the Board of Examiners-in-Chief. While it is not necessary in the majority of cases to resort to an appeal, it is in some cases. It rarely happens that it is necessary, in *EX PARTE* appeals, provided the case presents any merit whatever, to carry the case beyond the Board. However, it is sometimes necessary to carry the case up on appeal, to the Commissioner in person.

inventor's Rights may be Secured for More than Seventeen Years.
An inventor without forfeiting his rights, may, for two years after the invention is completed and reduced to practice, place it on sale and in public use provided that he files his application for a patent *before* the expiration of the two years of public use and sale.

The law does not require that the patent be issued during the two years above mentioned, but only that the application be made *within that time*.

After the application is once filed it can be kept alive by amending it once in every two years (Sect. 4894, Rev. Stat. U. S.) and by taking advantage of this provision of the law it is possible by proper management to keep an application alive for an indefinite number of years.

In order to do this the amendments must be drawn so as not to fully meet the requirements of the Examiner in charge of the application at Washington, otherwise the patent might be prematurely allowed after which to avoid forfeiture of the application the final fee must be paid and the patent issued *within six months* from date of allowance. But it is evident if the application is not at once allowed and each amendment is delayed two years by the applicant, he can keep his right to a patent alive for years, even though the invention has been on sale or public use more than two years before the grant of the patent.

It is often six or eight years, perhaps more, before inventions can be introduced and placed on a paying basis. During this unprofitable period the life of the patent if issued at once would be passing and most of its seventeen years lived up by the time the monopoly became valuable. Would it not be better if the seventeen years commenced to run only after the value of the invention had been demonstrated and the harvest of profit was ripe for the inventor? This can be done, and while there are of course exceptions to the rule, in most cases it is better to KEEP AN APPLICATION PENDING IN THE PATENT OFFICE UNTIL THE INVENTION HAS BECOME PROFITABLE.

Interferences.—Are proceedings instituted by the Patent Office “for the purpose of determining the question of priority of invention between two or more parties claiming substantially the same patentable invention. The fact that one of the parties has already obtained a patent will not prevent an interference; for although the Commissioner has no power to cancel a patent, he may grant a patent for the same invention to another person who proves to be the prior inventor.” After the preliminary declaration of an interference, each party thereto is required to file a statement under oath, setting forth when he first conceived the invention; first disclosed it to others; first made a drawing; first made a model, and first reduced it to practice. In the subsequent taking of testimony each party is bound by the averments made in their preliminary statements, and cannot avail themselves of any proofs that carry the date of their invention prior to the date set up in their preliminary statement. To prepare a correct statement requires an intelligent appreciation of the scope and intent of the “issue” involved, and owing to the fact that but few inventors have such information, the safest plan for an inventor is to have a personal interview with an attorney and obtain his assistance in the drafting of a preliminary statement. Under the Rules of Practice, neither party to an interference can inspect the case of his opponent until after the preliminary statements have been opened. Immediately after the statements are opened, the attorney should examine his opponent’s application for the purpose of ascertaining for a certainty whether or not the interference has been properly declared. If not, motion should be made at once for a dissolution of the interference. On the other hand

if the interference is well grounded, times are fixed for the taking of testimony. In view of the fact that questions concerning "reduction to practice," "abandonment," "public use," "joint inventorship" and other similar questions are constantly arising in the interference proceedings, the testimony should be taken and the interference proceedings conducted by any attorney having a thorough knowledge of and familiarity with Patent Office practice. The fee in interference proceedings is dependent on the labor and time required in the care and conduct of each particular case.

Reissues:—During the past few years the courts have adopted a radically new policy and rule in their treatment and disposition of reissue patents. From the time of the enactment of the Patent Laws up to within a comparatively recent date it was the universal practice of the courts to uphold and sustain the claim of a reissue patent (though expanded in scope and made to cover much more territory than the claims of the original patent,) provided it could be shown that the inventor was rightfully entitled to the expanded and corrected claims in his original patent, but failed to secure them originally through error of judgment, inadvertence, accident, or mistake on the part of the inventor, or by reason of some blunder or unskilled work on the part of an incompetent solicitor in the prosecution of the original application, and the right to reissue and secure broader claims was not in anywise abridged by reason of delay in filing the reissue application. When the old and liberal practice of granting reissues prevailed, the inventors were not so particular about the claims of their original patents, because they were assured that they could reissue and correct their patents at any time should it be deemed necessary so to do. But, as stated, the practice relative to the granting of reissues has been radically changed. Under the present practice claims will not be granted in a reissue for anything and everything that might have been claimed in the original, but only for the invention that was actually patented in the original patent. Again, if any claim or claims were cancelled in the prosecution of the original application, such claim or claims cannot be incorporated in a reissue. Again, a reissue will not be granted with claims broader than the claims of the original patent unless the reissue application is filed within two years after the date of the original patent. (*Miller vs. Bridgeport Brass Co.* O. G. 21 page 201; *Swain Turbine and Mfg. Co. vs. Ladd* 19 O. G. p 62)

See, also, *James v. Cambell*, 21 O. G., 27; *Kells v. McKenzie*, 20 O. G., 1663; *Powder Company v. Powder Works*, 98 U. S., 126; *Combined Patents Can Co., v. Lloyd*, 21 O. G., 713; *Matthews et al. v. The Boston Machine Co. et. al.*, 21 O. G., 1349 *Heald v. Rein*, 21 O. G., 1443; *Bantz v. Frantz et al.*, 21 O. G., 2037.

The above decisions are all of recent date. Under the present rulings of the courts patentees will be obliged to abandon the course heretofore adopted by

many which consists in securing an original patent regardless of its claims, with the intention of re-issuing and perfecting the claims at some future time. It will be clear to every inventor that the only safe course of procedure now is to have the original patent secured with the most perfect claims to be obtained "HAVE YOUR WORK IN THE OUTSET DONE HONESTLY, AND FOR AN HONEST PURPOSE, AND BY COMPETENT HANDS, AT WHATEVER COST."

Rejected Cases.—Many valuable and important inventions are now numbered among rejected cases of the Patent Office. Although a case may have been rejected several times, a valid patent can be procured by filing a new application, provided the invention has not been put in public use or on sale more than two years prior to filing the new application.

Caveats.—Money expended in filing a caveat had much better be spent in filing an application. A Boston Attorney very aptly says on this subject:

"Caveats are generally an imposition on the credulity of the inventor. A caveat affords no real protection to the inventor that is not better and more cheaply secured by a patent application.

A caveat is only a promise (and sometimes broken) that the Patent Office will notify the caveator when an application for a patent similar to his caveated invention is made. This notice gives the caveator an opportunity to make his patent application, so that the first inventor may be determined by an interference contest.

But a formal patent application, once made, is a perpetual caveat, without cost; because the office is bound (as long as the application remains pending) to inform an applicant when another inventor has filed a patent application for an invention similar to what is claimed in the first application.

Hence it is far safer, more economical, and better in every way, for an inventor to file his patent application at once, and avoid caveats."

Foreign Patents.—Owing to the great demand in foreign countries for the improvements of American inventors, and the large remuneration often derived by American patentees from the sale of their foreign patents, the soliciting of foreign patents has rapidly increased.

To obtain valid patents in this and foreign countries without curtailing the life of the home patent, requires the exercise of the greatest care and skill, and also a thorough knowledge of the patent laws and requirements of the different countries. With but few exceptions foreign patents are granted as applied for without subjecting the invention to an examination, the validity of the patent when granted resting with the courts. Hence, the mere grant of a foreign patent is no criterion as to its scope, strength, or validity, as these points are in a great measure dependent upon the skill, experience, and accuracy of

the attorney who prepares the application.

Applications for foreign patents must be made at the proper time to insure a valid patent. As a rule, foreign applications should be made before the American patent is allowed to issue. Our Official Gazette, containing the claims and the drawings of all American patents, is published weekly and mailed to foreign countries. If the description is such as to amount to a publication in law and the Gazette reaches certain foreign countries, notably Great Britain and Germany, before the applications for patents are there made, it will defeat the grant of a valid patent in such countries. Again, care must be taken not to disclose the invention in this country before filing the foreign application, as in Great Britain a patent is granted to the first applicant whether or not he is the real inventor; and hence American inventors are often forestalled by far-sighted patent speculators, who, upon learning of a valuable invention in this country, immediately file an application and obtain a foreign patent, thereby depriving the real and meritorious inventor of a most valuable monopoly in foreign countries.

Marking Articles, Patented or Otherwise.--By the act of Congress approved July 8, 1870, it is provided that all articles made or vended under the protection of a patent must be marked by affixing thereto the word "patented," together with the day and year that the patent was granted.

In cases where it is impracticable to mark every article, the law provides that they may be sold in packages, and the word "patented," with the date of patent, shall be printed on the outside of the packages.

No damages can be collected for an infringement of a patent where the inventor fails to comply with those rules, unless the infringer is specially notified.

Stamping or marking the words "patented," "letters patent" or the like, upon any article not patented, subjects the offender to a fine of \$100 for each offense.

To mark an unpatented article with "patent applied for" is not an offense. (Schwibel v. Bothe 40 Fed. Rep. 478, 1889; 49 O. G. 1696.)

INFRINGEMENT.

The general rule of law is, that the first original patentee is entitled to a broad interpretation of his claims. The scope of any patent is therefore governed by the inventions of prior date. To determine whether the use of a patent is an infringement of another generally requires a most careful examination of all analogous prior patents. An opinion based upon such research requires for its preparation much time and labor.

Infringements occur much less frequently than most people think and an action for damages should never be brought till a patentee is sure that his invention is being infringed, or when too late he might find he was mistaken, and not only have the costs to pay but have his position reversed from that of

plaintiff to defendant. Never allow yourself to be drawn into an infringement suit till you have first had an attorney examine carefully into the matter.

The following decisions will assist the patentee in determining his position, but in any matter of importance a patent attorney should be consulted before positive action is taken.

Infringement of Process Patents—A patent for a process is infringed by him, who, without any authority from the patentee or his legal representative uses substantially the apparatus described by the patent and this may occur where the process used is not precisely identical with that claimed. (*Tilghman vs. Proctor*, 103 U. S. 730, 1880)

Addition is Infringement—Addition to a patented machine even where the added device facilitates the working of one of the patented parts enabling it to do quicker and better work, does not avoid the charge of infringement (*Walker on Patents* p. 251. *Co. hrane vs. Deener*, 94 U. S. 786. 1876.)

Changing the relative positions of the parts of a machine or manufacture where the parts so changed perform the same functions as before, is infringement (*Adams v. Manufacturing Co.* 3 Bann and A. 1. 1877; *Knox v. Q. M. Co.* 6 Sawyer. 438. 1878.) But changing the relative positions of the parts of a machine where the changes thus made give a substantially different mode of operation may be infringement even though the machine accomplishes the same result. (*Brooks v. Fisk*. 15 Howard. 221 1853.)

Omission of one of the elements of a combination averts any charge of infringement of a claim covering that combination. Every part of a combination is necessary when the parts are claimed in combination and not separately. (*Water-Meter Co. v. Desper* 101 U. S. 332. 1870; *Pronty v. Ruggles*, 16 Peters, 341 1843; *Dunbar v. Myers*, 94 U. S. 187, 1876; *Fuller v. Yentzer*, 94 U. S. 279, 1876.)

Patentee Entitled to Equivalents—No substitution of an equivalent for any ingredient of a combination covered by any claim of a patent can avert a charge of infringement of that claim. But like substitution of something which is not an equivalent will have that effect. The doctrine of equivalents may be invoked by any patentee whether he claimed equivalents in his claim or described any in his specification, or omitted to do either or both of those things. Combination patents would generally be valueless in the absence of a right to equivalents, for few combinations now exist or can hereafter be made, which do not contain at least one element, an efficient substitute for which could readily be suggested by any person skilled in this particular art (*Walker on Patents* p. 253)

A man may be an infringer without knowing it but his ignorance of an existing patent will not relieve him of the charge of infringement (*Parker v. Harworth*, 4 McLean 373, 1848; *Parker v. Hulme*, 1 Fisher, 54, 1849.

Damages for Infringement.—Suit may be brought by the patentee, assignee or grantee, and the law allows the court to enter judgment for any sum above and not to exceed three times the actual damages sustained, according to the circumstances of the case, together with the costs,—the amount of actual damages being determined by the verdict of the jury.

Profits refer to what the defendant has gained by the unlawful use of the invention, and “damages” refer to what the plaintiff has lost. That in equity both profits and damages are recoverable, see *Williams v. Rome*, Watertown, and Ogedensburg R. R. Co. (1880) 17 O. G. 1117; 10 Blatch 181; 2 Fed. Rep. 702; *Goodyear Dental Co. v. Van Antwerp* (1876) 9 O. G. 497; 2 Bann and A. d. 252.

Design Patents.

A patent may also be obtained by any person who, by his own industry, genius, efforts, and expense has invented and produced any new and original design for a manufacture, bust, statue, alto-relievo, or bas-relief; any new and original design for the printing of woolen, silk, cotton or other fabrics; any new and original impression, ornament, pattern, print or picture to be printed, painted, cast or otherwise placed on or worked into any article of manufacture; or any new, useful, and original shape or configuration of any article of manufacture, the same not having been known or used by others before his invention or production thereof. (Revised Stat. sec. 4929)

The proceedings in applications for patents for designs are substantially the same as in applications for other patents.

Design patents are granted for three and one half, seven or fourteen years, as the applicant may elect.

Trade-Marks.

A trade-mark is defined to be “an arbitrary symbol affixed by a manufacturer or merchant to a vendible commodity,” and its principal purpose is to denote the origin of the product and to guarantee its genuineness.

Their Protection.—The right to a trade-mark arises under the common law and is based upon the principle that every man, having a natural right to the results of his skill and enterprise, may adopt a symbol not before adopted, publish it to the world and affix it to his products, and thereby acquire a right which the Courts will protect. This right is now recognized in all civilized countries and has been for many years, and is extended to both citizens and aliens. By means of treaties, citizens of one country can now register trade-marks in nearly all other civilized countries and when so registered will be protected.

Statutes.—In many foreign countries and in the United States, and in the several States, statutes have been adopted to protect trade-marks. The United States Act of 1870 was declared unconstitutional by reason of its containing

unfortunate phraseology and another Act was passed in 1881, but it applies only to those engaged in commerce with foreign countries or with our own Indian tribes in the Territories. The exclusive right to use a trade-mark is not created by any statute but is a common law right which the statute enables the owner to enjoy with more security.

Essential Characteristics of a Trade-mark.—They are these: Invariability.—It must be fixed, positive and unmistakable. Individuality.—It must so differ from other symbols as to indicate origin and ownership. Universality.—That is a right to use it as a substitute for the owner's name everywhere. Exclusiveness.—That is an exclusive right to use it. It must be applied to merchandise; used in a lawful business, with truthfulness and good faith, and be limited only by the trade itself.

What it May Consist of.—It may consist of the owner's name if printed, written, branded or stamped in a manner peculiar to itself: in a seal, a letter, a cipher, a monogram, or any symbol or emblem that will enable a purchaser to distinguish the products of one man from that of another; such as a cross, bird, quadruped, castle, star, comet, sun, etc., or a combination of objects copied from nature, art or fancy; it may be adhesive, or non-adhesive, be placed on the inside or outside of the article; it may be printed, written, stamped, branded, painted, stenciled or otherwise on the article itself or on its case, wrapper covering or envelope.

Must be Well Defined and Certain.—A grouping of flowers and fruits, an elaborate landscape with no salient features, a mere advertisement and the common print of a man's name are unsuitable. An elaborate picture forms an uncertain trade-mark, but there are cases where a mere picture has been held to be a valid trade-mark. The mark should be a distinctive one readily recognized.

Effect of Registration.—The certificate runs for thirty years, and it operates to supply the place of long use of the mark at common law. In foreign countries it is a prerequisite to bringing a suit. The advantages of Registration are that it creates prima-facie evidence of ownership; establishes the precise description of the symbol, defines the class of merchandise which it is applied to, fixes the date of adoption, tends to a uniform practice in the courts, gives the United States courts cognizance in certain cases, gives a right to damages in case of a false representation by a rival registrant, deters infringements, gives an appearance of permanency to the trade-mark, enables a title by assignment to be traced, and is a prerequisite to a criminal prosecution for counterfeiting.

A failure to register a trade-mark does not affect the title to it. Neither does the expiration of the registration, as no right is created by it.

Labels and Wrappers—Will also be protected on the principles that are applied

to trade-marks. For example: One sold a preparation called "Ohio Liniment," using labels and directions the same as on the complainant's preparation called "Chinese Liniment," and an injunction was granted. A petitioner used a label "1-2 Gross L. Broadman's No. 2340 Wire Strengthened French Tipped Teaspoons," and the defendants read "1-2 Gross Meridian Brita. Co's No. 2340 Wire Strengthened French Tipped Oval Thread Teaspoons," the court enjoined the defendant.

A copy of the "Rules of Practice," and the Act of Congress relating to both Trade-marks and Labels, will be sent, without charge, to any person who will send, by letter or postal card, a request therefor to the "Commissioner of Patents, Washington, D. C."

Copyrights.

Must be recorded by the Librarian of Congress. Washington, D. C. The government fee is fifty cents for recording and fifty cents additional for a certificate. After the copyright is recorded, two copies of the book or of the sample of the composition to be copyrighted must be sent to the Librarian of Congress within ten days after publication.

Copyright Law.—The law of Congress in regard to Copyrights is as follows:

The author, inventor, designer or proprietor of any book, map, chart, dramatic or musical composition, engraving, cut, print, photograph or negative thereof, or of a painting, drawing, chromo, statue, statuary; and of the models or designs intended to be perfected as works of the fine art, and the executors, administrators, or assignees of such person, shall upon complying with the provisions of this chapter, have the sole liberty of printing, re-printing, publishing, completing, copying, executing, finishing and vending the same; and, in the case of a dramatic composition, of publicly performing or representing it, or causing it to be performed, or represented by others. And, authors may reserve the right to dramatize or to translate their own works.

Other sections provide that the words "engraving," "cut," and "prints," shall be applied to pictorial illustrations, or works connected with the fine arts; that prints or labels designed to be used on any article of manufacture, shall not be entered as copyrights, but may be registered as prints and labels upon the payment of a fee of six dollars.

By the copyright laws of 1891 foreigners are allowed to secure copyright protection in the U. S. provided the Country to which they belong affords equal rights to our citizens.

Length of Life. The term of a copyright shall be for the term of twenty-eight years, with a right to a further term of fourteen years by the author or inventor, or his widow or children, upon another recording of the title, or description of the work six months before the expiration of the first term, and

publishing such record in one or more newspapers for four weeks within two months after such renewal.

The Question of Infringement.—Readers may after the publication of a book, use the author's ideas and knowledge, clothed in their own language in a lecture or treatise. The question of an infringement is not whether the defendant has made a new work requiring invention and learning, or has made a mere transcript of the whole or parts of the original.

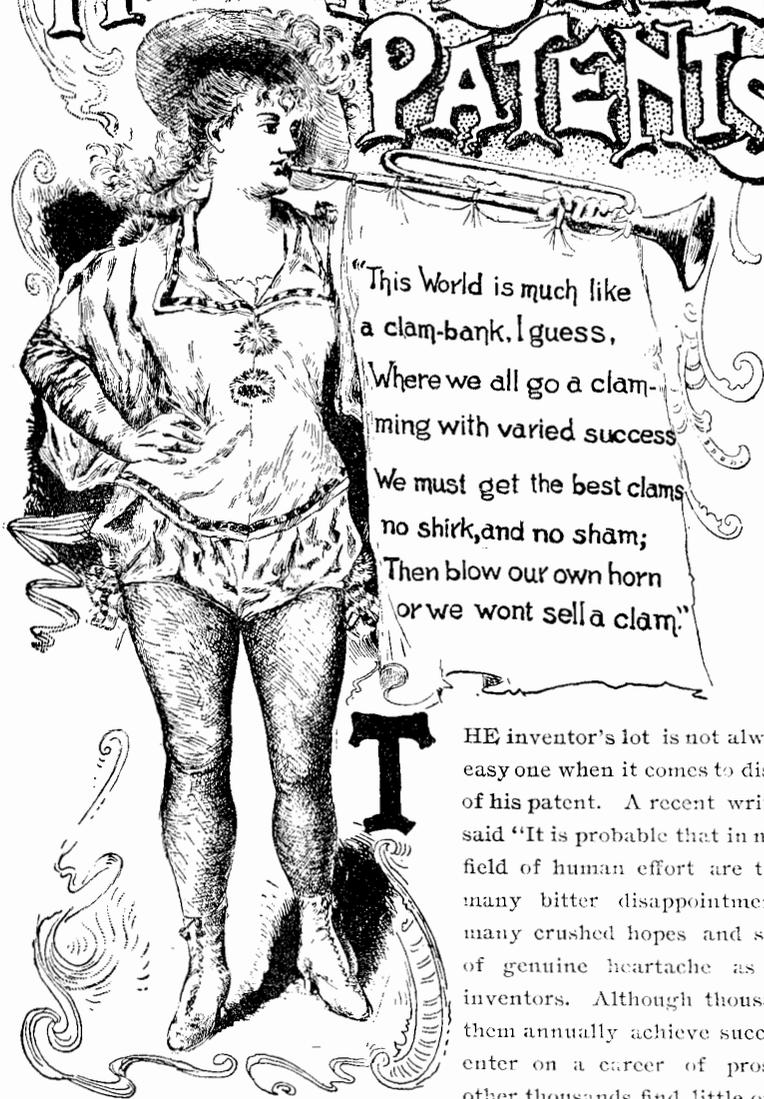
A translator of an author's ideas is not an infringer; a fair abridgement of a book is deemed a new work. A copy of a book must be a transcript; the resemblance must be so close and uniform as to fairly lead to the conclusion that one is a substantial copy of the other. It is not necessary that the whole work be copied, or even a large part of it.

Quantity vs. Quality. It does not depend upon the quantity taken, but more upon the value of the materials taken and their importance to the work. It is enough if the portion taken sensibly diminishes the value of the work. The directions in a dramatic composition of the movements and gestures are protected by copyright.

A compiler of a book using common sources of information can secure no monopoly; one compiler cannot copy the arrangement of another. In the case of dictionaries, some similarities and copying of small parts are allowed.



HOW TO SELL PATENTS



"This World is much like
a clam-bank, I guess,
Where we all go a clam-
ming with varied success
We must get the best clams
no shirk, and no sham;
Then blow our own horn
or we wont sell a clam."

THE inventor's lot is not always an easy one when it comes to disposing of his patent. A recent writer has said "It is probable that in no other field of human effort are there so many bitter disappointments, so many crushed hopes and so much of genuine heartache as among inventors. Although thousands of them annually achieve success and enter on a career of prosperity, other thousands find little or no reward; the devices from which they confidently expected affluence have only

added to their poverty. Many an intelligent man toils for years, denying himself all the luxuries and most of the comforts of life, to bring out an invention seemingly full of promise but destined to utter failure."

The thing invented may be very ingenious, may have cost a vast deal of mental labor and may attest the intellectual superiority of the inventor; but if it be deficient in practical utility; if its introduction will not be profitable to those for whom it is intended, it goes to the lumber yard of oblivion. The invention in a practical sense is not an article of merit.

In catering to the demands of fashion, elegance and luxury, there are many inventions brought out that do not pay, because there is not and cannot be a large demand for them. There is no field for the invention. Then again the field may be limited by the nature of the invention to one or two customers, such for example as the Government, in improvements in handling mail bags, or some big Corporation that could not be hired for reasons best known to themselves, to work the invention free of charge. There must then be a field for the invention.

Again, failure is frequently encountered because of lack of capital to perfect, construct and demonstrate. Many inventions of great value are lying dormant because a good deal of money would be required to show the world what they are and what advantages they possess. This is especially true of inventions that menace great interests. When a patent threatens annihilation of vast values, when it proposes to sweep away plants that represent millions of dollars, capital hesitates to develop it, for its introduction means a fight to the death between gigantic conflicting interests. Capital then is sometimes essential.

But an article of merit having a field to work in and capital behind it will not succeed unless its introduction is managed with ability.

In the successful handling of patent rights then, three things are always necessary and sometimes four:

1. An article of merit;
2. A field for it;
3. Capital (sometimes);
4. Ability—

but the greatest of these is ability. No success can be attained with any three of these without the fourth; temporary success has been achieved in the absence of all but the fourth, in most cases the third may be dispensed with but the fourth must always be present and for permanent and honorable success the first and second must go hand in hand with the fourth.

The best element of success in a patent is adaptation to a universal or general want, making it do some simple thing that is done by the masses and do it cheaper and better than before. Guided by this statement and by the first twenty five pages of this book the inventor can hardly fail to determine

whether or not his invention fulfills the first two requirements. IF the invention is found lacking an attempt to sell the patent will only be to invite failure with its attendant loss of time and money.

A man's ability to do many things depends largely on his education in that line. The experience of successful inventors should point out many ways to success for others and it is believed the following pages will be found so explicit that no man of ordinary intelligence need fail for lack of the fourth qualification—ability to make a sale provided his invention has any commercial value.

PRELIMINARY PREPARATION.



Robert Fulton.*

Models.—Many inventions are patented before the inventor knows by practical experiment whether it will work or not. It is safe to say hundreds of patents are secured that would never be issued if the Patent Office required a working model with the application as was formerly done. The model would demonstrate in many cases the impracticability of the invention. Whatever the inventor may have left undone before securing his patent he should not attempt any serious effort to negotiate a sale until he has fully demonstrated that his invention will work. He should be able to tell the customer where, when and under what conditions it has been tested, and if not too large and costly should have a full sized machine made and finished to perfection and so perfect that it will work without any halting and awkward movements. The inventor at best will find enough to apologize for without being called on to excuse defective workmanship. A small working model that can be taken from place to place to show to proposed buyers is also essential. A working machine is always attractive and enables the mind to grasp the idea more quickly than in any other way and while a model for convenience in carrying is important, a full sized working machine to show the customer that the invention is past the experimental stage, is an important adjunct to success amounting to almost an imperative necessity.

Let then the construction of a working machine and a model be the first thing an inventor sets his mind to after he gets his patent and if he has skill enough to do the work himself it will be far cheaper and safer to do so but if not, then let him employ home talent, somebody in his own town if possible where he can watch the progress of the work and supply whatever details may be found lacking. Changes are almost invariable in making the first machine and often very valuable ideas suggest themselves. For this reason it is extremely dangerous

* Robert Fulton; b. Little Britain, Pa., 1765; d. 1825; artist painter; invented steamboat 1793; submarine torpedoes 1797-1801; builds steamboat in France 1803; launches passenger boat Clermont at N. Y. 1807, and steams to Albany; 1812 builds steam ferry boats; 1814 builds first steam war-vessel.

to place work of this character in the hands of professional model makers in distant cities removed from the constant supervision of the inventor, for, seeing where improvement can be made they are quick to take advantage of it for their own benefit.

Engraving.--And now let me call your attention to another matter so frequently passed by as of little importance by the average inventor. That is in regard to representing the invention by means of an engraving in circulars and other printed matter. Beyond all question many really meritorious inventions are condemned because the cut which the inventor sends broadcast as representing his device, is cheap-looking and meaningless and fails to convey its intended impression.

It seems like folly for an inventor, after having expended months of time and considerable money to perfect and patent an invention, to have his fond hopes crushed out by a little, insignificant, cheap burlesque of an illustration, when, by a very small additional expense, a first class wood engraving could be made that would be attractive and in every way invite the attention of the public, which it would utterly fail to do if it looks "cheap and common." Good pictures speak any language; they appeal at once to the mind by the eye. The better the illustration the more favorable is the impressions produced and as **A GOOD CUT IS A GOOD SALESMAN** it is very important that the inventor should have the best engraving he can get.

A nicely shaded and tinted engraving will always give a better idea of the construction of a machine, and in this age, all successful business men acknowledge the value of first class engravings by adapting them to represent their goods in every case where it is practicable.

If you desire to give an invention a good start on the market, business methods must be used that are up with the times; therefore, if you have not already ordered a first class wood engraving, to properly present your invention to the public, be sure to have one made. Let this be the first step toward giving you an advantage in the market. (Several specimens of wood engraving are given in the last pages of this book to show the style of illustration best suited to the inventor's purpose.)



Necessary Information.--While the practical machine and the working model are being perfected the inventor should be thoroughly posting himself on several matters that are important for him to know before attempting to market his invention.

He must be well informed on the first cost of manufacturing his device. He should also know the market price of similar articles already in use, and

* Thomas Blanchard, b. 1778, Sutton Mass.; d. 1861; invented tack machine 1806; steam carriage 1825 steam wheel, steam boats and in 1843 patents lathes for turning irregular forms as lasts, spokes, ax-handles, gun-stocks, etc.

the profit they now afford to the dealers. He should also know how extensive a market there is for his invention, what competition, if any, he will have to meet in introducing his goods, and the probable amount of money that will be required to work the invention. Knowing all this thoroughly, the inventor will be able to set a price to be asked for the invention as an entirety or for territorial interests. If the invention is really valuable he should know it as well or better than his customer and will be able to back up his claims for a good price with facts. On the other hand his thorough knowledge will enable him to know a reasonable offer and will help him to let go at the right time. To know just when to let go; to be able to recognize a golden opportunity and sell, is often evidence of signal ability and nothing tends so much to insure a perfect judgment in this respect as thorough preparation.

First Cost.—The actual cost of manufacturing the improved article will be the first thing to be ascertained. Some idea of this will be had from the inventor's



experience in making the first practical machine, but as the actual cost in this case always includes experimental and unusual expenses not afterwards met with, this cost will be from two to ten times (and probably more) in excess of what it should be. By far the most reliable plan is to get bids from several responsible firms for the construction of a certain number of the machines or other things, and by comparing the several bids an average price very nearly correct can be ascertained. It frequently happens that special patterns and dies must be made before the article can be economically produced and on that account the price wanted by the manufacturers for the first lot will be far in excess of the subsequent cost; therefore it is best in getting prices, to ask the price on the first machine or in small inventions like a cuff-holder or wire rat trap, on the first gross and then the price of each machine or gross after the first. When the article is small and inexpensive it is well to have a number actually made, to positively demonstrate the cost and to show that the manufacture has already been commenced.

The Profit. The difference between the first cost and the price at which the invention can be sold is the profit. It is this profit that will attract the buyer and it is the inventor's business to hunt up the facts so as to be able to show the purchaser where the profit can be made. Mere guesswork will not do, and neither will it do to misrepresent or exaggerate the facts, for misrepresentation either from ignorance or dishonesty always lays the inventor open to contradiction by some well informed person, perhaps at a critical moment in a

* Benjamin Franklin; b. Boston, 1706; d. 1790; at 12 printer's apprentice; fond of useful reading; 27 to 40 teaches himself Latin, etc; makes various useful improvements; at 40 studies electricity; 1752 brings electricity from the clouds by kite and invents lightning-rod. Did more than any other man of his day to call attention to electric invention and study.

sale causing the intending buyer to at once mistrust everything the inventor may have said.

To the first cost of an article must be added (1) the manufacturer's profit, (2 generally) the commission merchant or jobber's profit, (3) the wholesaler's profit, and (4) the retailer's profit, and the retail price in any new article must be such as to allow all of these people to make more than they could on the old article or they will not interest themselves in the sales. The percentage of profit for each of these is not fixed by any common standard but may generally be learned by questioning some friendly dealer in the same or similar line of goods. It is well to adhere to the scale of prices and profits of similar articles already on the market and depend on the merits of the improvement to increase the sales rather than to cut on prices. If the new goods can be made cheaper than the old, so much the better as it affords a larger percentage of profit to all concerned and is an additional inducement to extra effort on the part of all.

The Market. After the first cost and the selling price are determined the inventor should find out how many of the improved article could be sold, provided everybody having use for the invention could be induced to purchase. This is the entire possible market but the actual market is considerably below the possible one. Probably less than one third of the possible buyers can ever be reached or induced to purchase.

The entire possible market varies so much with different inventions that it is only practicable here to suggest what information will be found useful and how it may best be obtained. Take, for example, the invention of a rubber heel for shoes. Every person in the United States would be a possible buyer and the possible market would be indicated by the entire population.

An improvement in corsets would be limited to women and the number of women is about one fourth of the population, while an improvement in suspenders would be limited to men and boys, or less than one half of the population, because very small boys do not wear suspenders. So if the invention was a sewing machine, a cook stove, clothes wringer, or any article only one of which is used in each family, the entire possible market would be indicated by the number of families which is about one eighth of the number of the entire population because there is in an average of about eight people to every family.

Then there are inventions used only by blacksmiths, carpenters or some special trade or profession and the number of such people will indicate the entire possible market.

The census reports are so full and complete that nearly every question, as to the number of people engaged in a specified business, can be settled by consulting the statistics given therein.

Another point to be considered is the durability of the article. Some things may last so long that there is small probability of selling more than one or two to the same person during the life of the patent while other articles will require frequent renewal.

Capital Required. The probable amount of money required to put the invention on the market should be carefully estimated by the inventor in order that he may be able to answer questions when necessary.

If considerable capital is needed to handle the invention it is well for the inventor to dwell upon the fact as little as possible, but he should be prepared to make as favorable showing as the case will admit when called on. Some men will do twice as much as others and with less money, so that it is hard at best for the inventor to give reliable figures.

The Price to be Asked will always depend on the nature of the invention and will be governed by the profit that can be derived. As this is always a matter of theory until it has been practically tested by experience, it is necessary to give the buyer the lion's share of the profits in order to induce him to invest his money. By calculating the theoretical entire profit as outlined in the



foregoing paragraphs and taking one third of this as about what the actual profit would be, and then allowing the buyer three fourths of this as his share the price the inventor might reasonably expect would be the remaining fourth or one twelfth of the theoretical entire profit. This will be governed by many considerations depending on the nature of the invention and on existing circumstances. Many patents are not worth anything, some few are worth millions but the vast majority should undoubtedly be sold whenever the inventor gets an offer at a price that pays him a good percentage on the time and money he has expended in perfecting the invention and securing the patent.

The price to be asked for state, county and other territorial rights, can be readily calculated when the price for the entire patent has been fixed upon.

Supposing the price of the whole right to be fixed at \$20,000 and it is desired to find the price of county rights in Indiana. According to the census of 1890 the population of the United States was 62,480,540 and the average of population of the 92 counties of Indiana, as shown by the accompanying table is about 23,794. In theory the price of the county right would be $\frac{23,794}{62,480,540} \times \$20,000 = \$76$. but the right of a county should be worth more in proportion to population than the entire right, because it will take more time and trouble to dispose of

*Cyrus H. McCormick, inventor of harvesting machinery; b. Walnut Grove, Va., 1809. In 1851 exhibited his invention at the World's Fair, London, with practical success. The mowing of one acre was man's work per day but now a boy with mowing machine cuts ten acres a day. McCormick's patents made him a millionaire.

the patent by ~ ~ untie \ The price of the county right should be at least doubled, or say \$200 for a single county or the entire state of 92 counties at \$150 per county.

TABLE TO ASSIST IN CALCULATING THE VALUE OF PATENT RIGHTS.

COMPILED FROM THE CENSUS OF 1890.

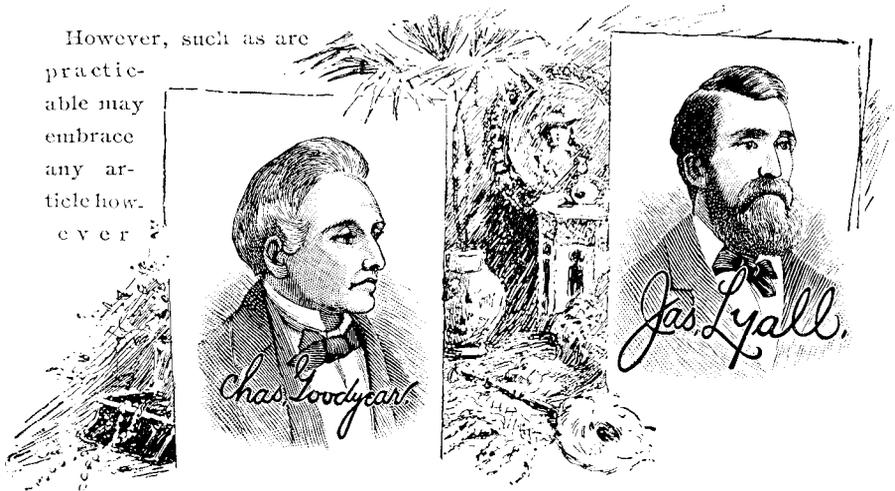
STATES.	SQUARE MILES.	POPULATION.	NO. OF COUNTIES.	AVERAGE POPULATION PER CO.
Alabama,	52,250	1,508,073	66	22,849
Arkansas,	53,850	1,125,385	75	15,005
California,	158,360	1,204,002	53	22,717
Colorado,	103,925	410,975	55	7,473
Connecticut,	4,990	745,861	8	93,233
Delaware,	2,050	167,871	3	55,957
Florida,	58,680	390,435	45	8,677
Georgia,	59,475	1,834,366	137	13,390
Idaho,	84,800	84,229	18	4,679
Illinois,	56,650	3,818,536	102	37,437
Indiana,	36,350	2,189,030	92	23,794
Iowa,	56,025	1,906,729	99	19,259
Kansas,	82,080	1,423,485	106	13,430
Kentucky,	40,400	1,855,436	119	15,592
Louisiana,	48,720	1,116,828	59	18,930
Maine,	33,040	660,261	16	41,266
Maryland,	12,210	1,040,431	24	43,351
Massachusetts,	8,315	2,233,407	14	159,529
Michigan,	58,915	2,089,793	83	25,178
Minnesota,	83,365	1,300,017	80	16,250
Mississippi,	46,810	1,284,887	74	17,363
Missouri,	69,415	2,677,080	115	23,279
Montana,	146,080	131,769	17	7,751
Nebraska,	76,855	1,056,793	88	12,009
Nevada,	119,700	44,327	14	3,174
New Hampshire,	9,305	375,827	10	37,583
New Jersey,	7,815	1,440,017	21	63,573
New York,	49,170	5,981,934	60	99,699
North Carolina,	52,250	1,617,340	96	16,848
North Dakota,	74,312	182,425	49	3,723
Ohio,	41,060	3,666,719	88	41,667
Oregon,	96,030	312,490	31	10,080
Pennsylvania,	45,215	5,248,574	67	78,327
Rhode Island,	1,250	345,343	5	69,069
South Carolina,	39,570	1,147,161	35	32,776
South Dakota,	76,620	327,848	56	5,855
Tennessee,	42,050	1,763,723	96	18,373
Texas,	265,780	2,232,220	222	10,055
Vermont,	9,565	332,205	14	23,729
Virginia,	42,450	1,648,911	100	15,490
Washington,	69,180	349,516	34	10,280
West Virginia,	24,780	760,448	54	14,082
Wisconsin,	55,040	1,683,697	68	24,760
Wyoming,	97,890	60,589	12	5,049
Territories,	387,460	702,548	72	9,753
Total,	3,602,990	62,480,540	2,752	22,704

By calculating the price per thousand inhabitants the value of a township or

town right will be quickly ascertained. In making estimates the advancement in manufacturing, etc., in different sections of the country should be considered.

Royalties. A royalty is a tax paid for the privilege of using a patented invention belonging to another. The most common plan is to place a tax on each article or quantity produced and sold. Another plan is to retain ownership of all machines, and license their use which may be by stated rental, or by royalty of a certain per cent upon the product of the machine. This latter method, however, is generally only practicable in cases where the machine covers a process, or a certain portion of a process, which could not be profitably completed without the invention, and for which a substitution as by another device that would not infringe the patent could not be made. For illustration, it would be impracticable to exact a royalty on the product of a telephone, while it would be perfectly feasible to exact it on the product of a cotton or a flour mill, say a tenth of a cent on every yard of cloth of a certain grade or two cents on every barrel of flour manufactured. On this the telephone litigation and the midlings purifier litigation will throw ample light, both in their legal and commercial aspects.

However, such as are practicable may embrace any article however



great or trivial. The patentee of the chimney-spring, now so commonly used to fasten glass chimneys upon lamps, was accustomed to grant licenses to manufacturers on receiving a royalty of a few cents per dozen. His income was at one time reported to be \$50,000 a year from this source. Howe, the inventor of the sewing machine, received a royalty of from five to ten dollars on each machine, and his annual income was estimated at \$500,000. Goodyear, the inventor of vulcanized rubber, divided his patent up into many different rights, licensing

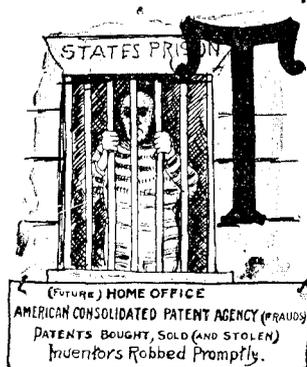
one company for manufacturing rubber combs, another for hose-pipes, another for shoes, another for clothing, another for wringers, etc. Each company or partner paid a tariff. Lyle, inventor of the continuous loom, in like manner divided his patent into many different rights; one company weaves carpets, another corsets, another bags, another sheetings.

The price to be asked depends on the demand there will be for the improvement. For clothing, shoes etc., used in large quantities a royalty of two per cent of the manufacturers selling price will be enough, but for scientific appliances and articles in small demand the royalty should be as high as twelve and fifteen per cent. For improvements in bicycles, farm machinery and inventions of good price and fair demand occupying a middle ground, six or seven per cent of the manufacturer's price would be proper.

In all cases the manufacturer should be bound by contract to push the sale of the patented article with energy and to the exclusion of any similar article and should be required to make at least a certain minimum number annually. The payment of royalties should be required at certain frequent periods, say quarterly or semi-annually and the right to examine the manufacturer's books and to require a statement under oath should be insisted on in the agreement.

Having completed the model and full sized working machine; having provided a good wood engraving to advertise with and having fortified himself with a thorough knowledge of the first cost, extent of the market, price to be asked, etc., as indicated in the foregoing pages, the inventor is ready to present his invention to the notice of probable buyers. It is presumed of course that a patent has already been secured as it would be folly to attempt a sale before the inventor has anything to sell.

Methods of Sale.



The Patent Broker.—Before entering into a discussion of the proper procedure in the successful handling of patent rights, it is necessary to caution the inventor against the many so-called Patentees' or Traders' Unions and Exchanges, Patent Sales Agents, Patentees Protective and Novelty Companies, etc., etc., who lie in wait to defraud and swindle the inexperienced inventor. The Patent Office Gazette is a weekly publication issued by the Government and contains the name and address of every inventor to

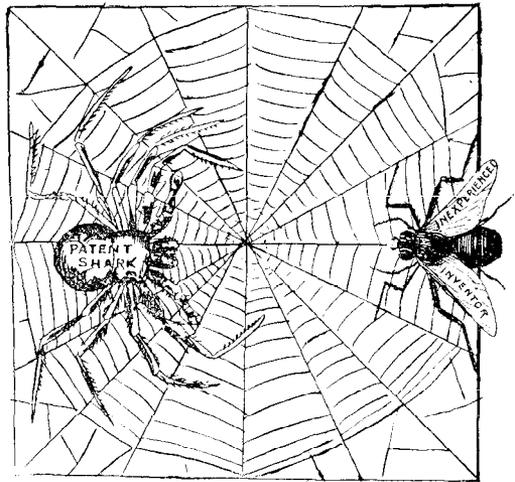
whom a patent has been issued during that week. As soon as the names appear in the Gazette the inventors are deluged with circulars and letters all claiming unusual facilities for selling patent rights and urging the inventor to place his patent

with them for sale "on commission." These people will lay great stress on the amount of commission they must have if sale is made and then apparently as a matter of secondary importance and perhaps not till several letters have been exchanged, will ask for an advance fee of sums ranging from \$5 to \$25 according to their "plan," to defray the expense of advertising, printing, engraving, etc.

It is needless to tell inventors who have taken out several patents and perhaps have learned by experience, that this advance money goes down into the pocket of the "Agent" and stays there. That lie never tries to make a sale, and all he is after is the advance money.

The young inventor who has just had his name published for the first time in the Patent Office Gazette, is flooded with printed matter from these parties who claim to be greatly impressed with the immense value of his patent and make plausible offers to sell it for him. The inventor is naturally elated over his new patent and is in a frame of mind to be easily flattered. It is gratifying to him to see how quick people recognize the value of his invention. He writes to some of the "Agencies" and they reply on flaming letter-heads which show immense facilities. He is asked his price and both sides talk big money to be made on sales, and as the plan of the agency unfolds, he is asked for "an advance." Of course when the returns will be so large it would not do to quibble over a mere bagatell. of \$25, and would show a lack of confidence in his own invention to refuse to risk a mere song for advertising, and so the money is sent.

The campaign generally opens with a request by the so-called Agents to fill out a question blank from which by intermixing with a lot of immaterial matter, the agent receives an exact diagnosis of the case. He knows whether a model has been made (if not patentee must have a model at once which agent will have made for him at a good round price and if he has a model inventor is asked to place it on exhibition in "our hall" or "exhibition wagon" etc.) Agent also learns whether inventor has an engraving made or circulars printed, in fact is informed at once just how things stand and how best to work his swindling game.



"Walk into my parlor, said the spider to the fly."

It is the old story of the spider and the fly and every cent given them might as

Direct Personal Effort.—In the majority of cases the inventor will find the sale of territorial rights, such as township, county, or state rights, the most profitable and the quickest method of realizing on his invention, but this requires the exclusive attention of either the inventor or some other person who is willing to travel from place to place and who has perseverance enough to withstand all sorts of disheartening obstacles. If the inventor has nerve enough to strike out for himself and proves to have the necessary ability to make a successful salesman, he will find it much better to conduct the campaign personally than to rely upon another, who may prove to be dishonest both in representations made to the public and in dealing with the inventor himself.

The outfit for this kind of an expedition must include the handsomely finished and perfect working machine and model previously mentioned, and also circulars with a good illustration and matter descriptive of the operation and use of the invention. These circulars should avoid the use of the term "Patent for Sale" or even the word "patent." There is a decided prejudice in the mind of the public which it is just as well not to antagonize. Let the circular be worded in such language as a manufacturer offering goods, but not the patent, would use.

The inventor or salesman on reaching a town should select the most frequented hotel in *the* place and engage his board by the week. He should settle himself down prepared to stay until *he* has made a sale, which may require more or may take less than a week's time. In any event the board bill will be less by the week than by the day.

He should set up his full sized machine in the hotel office and make it a point to be ever ready to explain it to everybody who will give him attention. He should have plenty of circulars always in sight and invite the public by written notices or otherwise to "Take One."

He should make the acquaintance of everybody who frequents the hotel, and should interest the landlord or some person who can post him in reference to all who might possibly become buyers, and who can also be relied on to say a good word for the invention at the right time. It is a fact that most people depend on others to do their thinking, and are more apt to adopt the opinion of others than to form one of their own. For this reason if one of their fellow townsmen recommends the invention as being a good thing the rest will acquiesce in that opinion. The inventor by promising a commission on sales, should interest some person who will be able to suggest possible buyers, and who will accompany him and assist in interesting the parties suggested. This helper should be a man of some enterprise and standing in the community, and if he has been known to have formerly made money on patents so much the better.

The salesman should make an early visit to the editors of the local newspapers and pay for the insertion of a notice announcing an opportunity for se-

curring an interest in a new and profitable business and asking all who are interested to call on him at the hotel. The offer to pay for the advertisement will insure the attention of the editor, and if there is merit in the invention he will generally agree to make a news item for the reading columns of his paper without additional charge. Public exhibitions, especially when previously announced, always attract people, and seldom fail to interest some of them if the inventor comes up to his promises. I have in mind the patentee of an ice cream freezer who announced that he would make ice cream on a certain day in the show window in a store in Nashville. He had a machine that would freeze a quart of cream in less than a minute's time. He took a number of orders on the spot from persons wanting freezers, and attracted so much attention that the proprietor of a rival store offered to pay him if he would repeat the exhibition in his show window. This same salesman spent several weeks in practice with his machine before he tried to show it, and was thoroughly posted in every detail. It is needless to say he found no difficulty after his exhibition to interest purchasers. Another man has followed inventing and sale of patents as his only means of support for years. He seems to be making a specialty of wagon-jacks, and has invented and sold six jacks in county right sales at prices varying from fifty to two hundred dollars per county. He believes the plan of personal solicitation as above outlined to be the only right way to handle patents.

Negotiating Sales by Mail.—One of the cheapest and most effective ways as well as the quickest way to advertise an invention is by direct communication with firms or persons already established in the kind of manufacture, or who have to do with matters related to the invention to be sold.

It is necessary first to procure a list of firms or people to be addressed. In many instances a directory of a particular trade is published, such for instance as the American Carriage Directory, and the Metal Trades Directory published by the Price & Lee Co., New Haven, Conn.; The Blue Book of the Furniture Trade; Poor's Railroad Manual, etc. By asking any large dealer the inventor will be able to ascertain whether such a directory for his trade is published and where same can be had, or he can get the information by writing to the editor of a trade journal published in the interest of the particular trade to which his invention belongs. In most of the large cities the inventor will find persons who make it a business to furnish at a reasonable charge just such lists as will be wanted.*

As soon as the list is procured, the inventor should write a personal letter to each one named, and should accompany the letter with a neat and attractive

*Inventors unable to procure such lists may obtain them by addressing Jos. A. Minturn, Indianapolis, Indiana.

circular simply describing the invention and its operation and uses. This circular should by all means have a handsome picture of the invention, such as is mentioned in a former paragraph on engraving. Good paper, good press-work and good ink are all essential in printing an engraving as it ought to be, and a few extra dollars expended on the circular to insure a first class job will be a good investment. A good black ink, plated paper, plain neat type, devoid of all mere ornament and "ginger-bread" effect, and good press-work will commend the invention at first sight just as a well-dressed person does.

The letter should call attention to the improvement described in the accompanying circular, and should be written in a good plain hand. A correct business style is to be preferred, and as the same reading matter will do for all the letters, it is important that the original be composed with great care. The letter should state the need of improvement, and should show wherein the inventor's device is superior to the nearest thing like it on the market; should also state the first cost, and the profit that can be made on each article; who can be expected to buy and use the improvement, and the number of probable buyers in the country. The letter should suggest, but not state positively, what the profit should be if only a part, as one-half or two thirds, of the entire possible market be reached, and should conclude with a statement that the inventor would be pleased to have an offer to manufacture on a royalty, or to purchase the invention outright, either in whole or any part of it. By following the suggestions as to first cost, profit, market, etc.,



U. S. Patent Office Building and Model Rooms.

given in preceding pages, the inventor will be able to supply all the necessary facts and give reasons for his statements when asked.

Always try to get the manufacturer to name a price after he has shown some interest in the matter by answering your letter. State to him that his experience qualifies him to do this more accurately than you can, but if it is finally necessary for the inventor to name a price, let him give such a price as he has already decided upon, (see suggestions on this subject in another paragraph,) and in so doing say that for such and such reason (giving same, whatever they may be,) he considers such a sum very reasonable. When you do get a bona fide offer that suits you of course you will take it at once, but if the offer is not up to your expectations do not reject it hastily. It may be after all the best to be had, and it is wise to hold on till you can look further. In a case of this kind, state in your reply that the offer falls so far short of what you had reason to expect that you must consider the matter further. Always remember to thank the party for the very kind offer, and never be rude or peremptory under any circumstances, but express yourself just as kindly and pleasantly as you know how.

Stock Companies.—Where a large capital is required, whether to demonstrate the real working capacity and utility of an invention, or to market it after these qualities have been demonstrated, the inventor has little refuge from the joint stock company plan, unless he happens to have a fortune of his own, or a wealthy friend who has plenty of confidence in the inventor. Where the capital required is large, the inventor will usually be obliged to content himself with a minor interest, and in this case it should be expressed in paid up stock, with a salary attached, or, better still, an out-and-out sale to the company, which probably will be glad to retain his services on a salary. Very valuable inventions, where the major interest is controlled by a company, usually invite a struggle for supremacy of control, which continues until the lions and the lambs lie down together in peace with the lambs inside.

The general plan for organizing a stock company will be something as follows; suppose the inventor desires to realize \$15,000 in stock and \$10,000 in cash and it will require \$10,000 in cash to meet the actual expenses of the business. A nominal capital of \$100,000 for the company would not be unreasonable.

In the start a reserve of \$30,000 of the nominal capital should be made, \$15,000 of which will be retained by the inventor as his share, and the other \$15,000 will be used to pay for the services of one or more men of influence who will assist in securing subscriptions to the balance of the stock. Let it be understood between the inventor and his assistants that the latter are to be paid in stock which will be transferred to them when they have completed their work. In selecting men to help him, the inventor should avoid mere adven-

turers and schemers and should enlist men of means and influence,—in fact he should make it a point to have the latter or none at all, and good men of course will not spend their time on an enterprise that promises them nothing in return. It is proper to pay those who effectually help you, but it is not necessary to explain all of the details of the arrangement to others. In an arrangement of this kind, the work of securing subscriptions to the balance of the stock of the company should belong to those who are to be paid by the transferred stock for such service.

The inventor having thus reserved \$30,000 of the capital stock for himself, the remaining \$70,000 must be sold so as to realize \$20,000 in cash, half of which, \$10,000 belongs to the inventor and the other \$10,000 to be used for the actual expenses of the business. This, in order to realize \$20,000 on \$70,000 of stock, will require that each share shall sell for a little over one-fourth of its face value, and if the inventor is able to show a tolerably sure prospect of paying six or eight per cent. dividend on the nominal capital, it will not be hard to dispose of the stock at the price necessary to raise the needed cash.

If the inventor is not able to show by reliable facts and figures that his promises will "pan out" it is not likely that he will meet with success, as the inducement he can hold out to investors is mainly hope of gains from dividends, although the prospect of a position with the company, may act as a stimulant.

Of course if the inventor is willing to take stock for his share, or is willing to put the invention as against an actual cash capital contributed by others to be used in running the business, he will find it easier to organize and get to manufacturing.

As the laws governing the organization of stock companies differ in the various States, it is important that a competent lawyer be employed to see that the local laws governing such matters are complied with, and also to see that no personal responsibility to the inventor is allowed to attach.

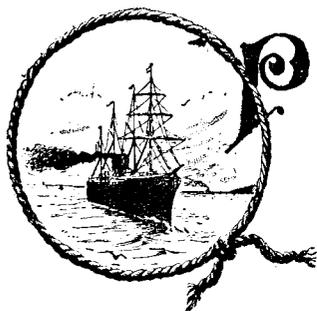
If the invention be one that the inventor can readily manufacture, it is far better that he do so and either sell his goods himself or through agents, or wholesale them to dealers such as would be most likely to handle such articles. When the merits of the invention become known and a business established, the inventor may sell the business and patent outright, or may sell the business and retain an interest in the patent.

It often happens where inventors finally get into manufacturing on their own account that their inventions are solely diverted to the improvement of their own goods and in extending their manufacturing, and not for general sale. This, where possible, is a conservative, far-seeing plan, as it enables the manufacturer always to keep in a lead once attained.

It is impossible to give competent advice fitting to each particular case.

There are exceptions to all rules, and nothing will take the place of native judgment and good "horse sense."

Are Patents Really Profitable Investments?



POSITIVELY to demonstrate by actual facts whether or not inventors were subject to more disappointments than other people, the writer has compiled, from the Patent Office Reports, the inventors in the State of Indiana who had taken out the most patents during the ten years ended 1891.

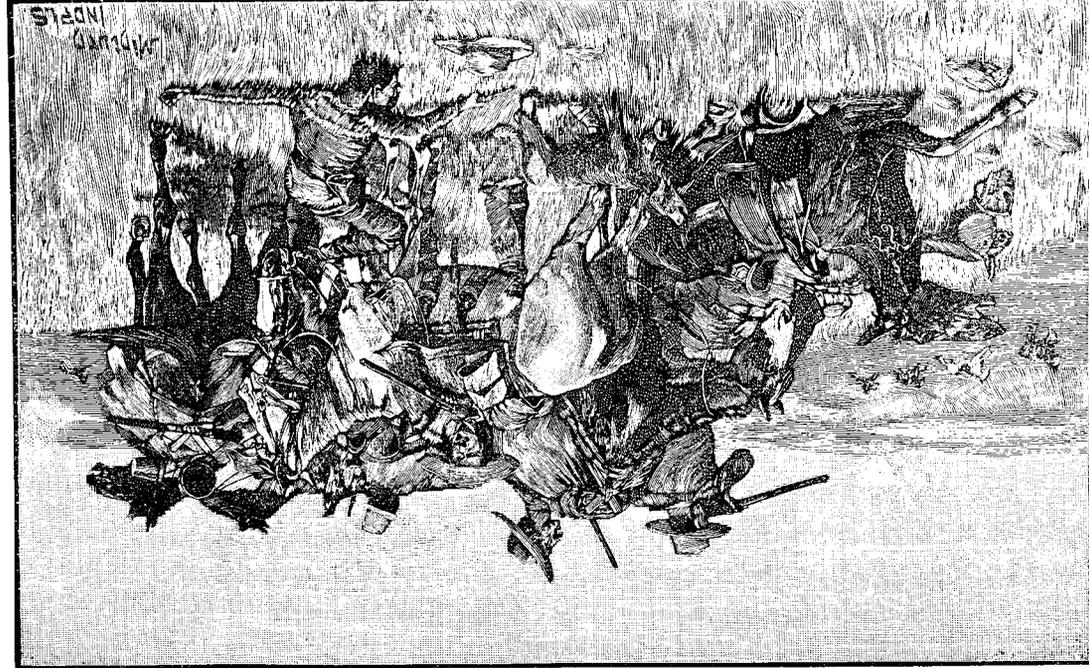
Indiana was chosen as having about the average amount of inventiveness as shown by the diagram on page 22, in which it will appear that the number of states showing more inventiveness than Indiana is about equal to the number having less.

Many interesting facts were developed. The total number of patents issued to Indiana inventors during the ten years from 1880 to 1891 is a little less than six thousand, and of this number thirty inventors have taken out five patents or more. The result shows that those who have taken out the most patents were all prosperous and prominent men. Most of them are at the head of extensive manufactories in the line of their inventions, which seems conclusively to answer the query—Do patents pay the inventor?—in the affirmative.

The following inventors stand highest in the list and have taken out more than ten patents each:

1. George J. Cline,	Goshen,	26 patents.
2. Horace R. Allen,	Ind'pls,	23 "
3. Wallace H. Dodge,	Mishawaka,	23 "
4. Charles Anderson,	South Bend,	23 "
5. John B. Deeds,	Terre Haute,	20 "
6. David M. Parry,	Ind'pls,	19 "
7. E. C. Atkins,	Ind'pls	16 "
8. Calvin G. Udell,	Ind'pls,	16 "
9. Robert Poindexter,	Ind'pls,	14 "
10. Charles G. Conn,	Elkhart,	14 "
11. Harrison Ogborn,	Richmond,	14 "
12. Francis M. Roots,	Connersville,	13 "
13. Joseph A. Gent,	Columbus,	13 "
14. Micajah C. Henley,	Richmond,	13 "
15. Wm. L. Casady,	South Bend,	11 "

Several of the above have kindly furnished the author with their experience



FACTORY AT GOSHEN IND. WHERE THE OVAL CHURN IS MADE

as inventors, especially with reference to the practical business management of their patents, which led to their success. Their example, if followed, could scarcely fail in any case where the invention presented the prime merit of utility.

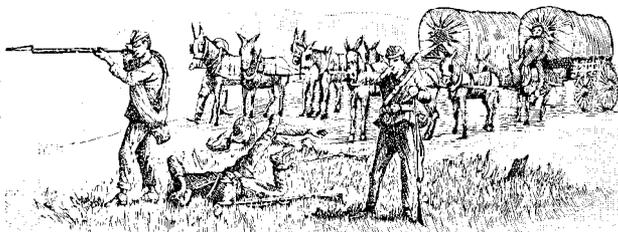
George J. Cline.



George J. Cline.

MR. GEORGE J. CLINE is entitled to the distinction of having taken out more patents in the ten years from 1880 to 1891 than any other man in Indiana. Mr. Cline's inventions cover a wide range of subjects, and include twenty-six different patents issued to him within the ten years above mentioned. He has taken out numerous other patents both before and since that time and has several applications now pending. His success in disposing of his inventions is perhaps the most phenomenal feature of his career as an inventor, when taken in consideration with the great variety of different subjects which his patents cover. Many inventions have been made and patented by one man, but they are almost invariably improvements in the same class, and generally improvements on parts of the same machine, and the purchaser of the first patent is also the purchaser of the later improvements, but Mr. Cline, from the nature of his inventions, is obliged to hunt a new customer for every patent, and the plan or system by which he has been able to dispose of a 1 of his inventions, except the four he is now personally manufacturing, will certainly be of interest and profit, especially to those who find it hard to dispose of a single patent.

Mr. Cline was born at Rochester, N. Y., in December, 1845, and was apprenticed in 1860 to an uncle at Cleveland, O., to learn the cooper



Ticklish Times in Arkansas.

trade. As he informed the writer, all the educational advantages he ever had were derived from reading the Scientific American, which excellent journal lie

very naturally believes is the fountain head of knowledge. The country was on the verge of our great civil war at the time young Cline began his apprenticeship. As he was too young to enlist, he remained at his trade for a while but the excitement growing more intense, we soon find him as a drummer boy in the 41st Ohio Volunteers, and in 1864 as an enlisted man. It does not lie within the province of an article like this to enter into the portrayal of soldier life, although Mr. Cline's experience in the army, and especially near its close, when he was detailed as part of the escort to guard the army trains in Missouri and Arkansas from bushwhackers and other armed marauders, would furnish many thrilling incidents, as would also his later experience with the companies of United States troops sent into the northwest to suppress the uprising of the Sioux and Cheyenne Indians. This outbreak was horrible in the outrages committed.

The accompanying illustrations represent actual incidents in Mr. Cline's experience, and it is regretted that an extended notice of the events portrayed can not be given here.

After receiving his discharge from the army, Mr. Cline resumed work at his trade in Chicago, and in 1866 made his first invention, a barrel churn. Soon after this he obtained employment with Conclin Bros., wholesale distillers, and while there made the improvement in rectifiers that has been universally adopted and is now in general use. For this invention his employers gave him a raise in his wages of twenty dollars a week to continue as long as he wished to remain in their employ. But the great Chicago fire came and swept all before it, and Mr. Cline, being thrown out of work, went from Chicago to Sturgis, Mich., and from there to Goshen, Ind., where he still resides, and where the most of his inventions have been made. Up to 1877 he had patented a number of small inventions which he sold, but in that year he invented a churn that has since met with unprecedented success, undoubtedly exceeding in the number of its sales that of any other churn on the market. This is the celebrated "Oval Churn" manufactured by the Noble Manufacturing Co., of Goshen, who pay the inventor a royalty of fifteen cents per churn, and are also manufacturing a clothes wringer and step-ladder of Mr.



In the Indian Country.

Cline's invention. The company have already sold over two hundred thousand ladders and considerably over one hundred thousand churns.

At our urgent request Mr. Clint. consented to give an outline of his method of selling patents and what he has to say on this subject is now presented in the inventor's own words, as follows:

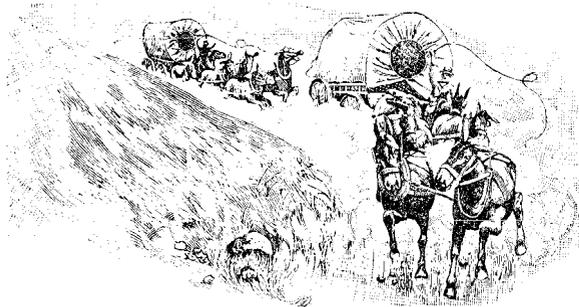
How to Sell a Patent.

MR. CLINE'S ADVICE TO AN INEXPERIENCED INVENTOR, STATING WHAT TO DO AND WHAT NOT TO DO IN SELLING A PATENT.

In my opinion the very first thing to do is to make a full sized practical machine, no model, but the perfect machine and have it painted and finished up as nice as possible. I am a great believer in the importance of making a good first impression. The next thing is to have a good photograph taken, and the very next thing is to have a good cut with a few electrotypes made.

These electrotypes should be sent to friends at different points who will see that the electrotypes together with good descriptions of the device are inserted in the best County-seat newspapers in their vicinity.

The description should fully set forth the advantages of the device, pointing out its superiority over others of its class and the advertisement should appear at three or four places. By so doing you attract the attention of persons at different points, and if you have the patience you will find a customer without the inconvenience and expense of leaving home.



"The Indians are Coming."

In wording your advertisement, by no means say "Patent for Sale," but rather say "Agents Wanted." If you have a house to dispose of and tack up a shingle "For Sale" the people for some reason

naturally shun it, but if instead you put a notice in a live paper with a good circulation that "A desirable residence is for sale in the town of B——", you will attract the attention of thousands of people, and somebody, most likely out of your town, will want it and pay you twenty per cent. more than a local purchaser. For instance, look at the immense sales of real estate in the city of Chicago. It is not all sold to local purchasers, but to people in every city and town in the United States. The way it is done is by attractive advertising, and as soon as a customer is found an agent is sent to him, and before he leaves the he makes , three. Now when an agent strikes a town he

comes well informed, also well dressed, and he is an attraction in himself. Personal appearance has a great deal to do with selling anything, whether it be patents, real estate, or merchandise, and one fault with a great many inventors, and other people as well, is that they do not take the pains to make a good personal appearance. If you lack self-confidence in this respect the thing to do is to interest some well informed person, it makes no odds how rich or poor, so long as he is a man of good address with a practical knowledge of the invention, and let him call upon parties who have answered your advertisements or made inquiries about your invention, and give him a certain interest for his services. You will find it will be but a short time before you will have disposed of your patent right.

Again, there is one great drawback to success among a certain class of inventors, who get extravagant ideas as soon as they have a chance to sell and want so much that the customer is scared off. The result is, they hold their invention for two or three years till the attraction dies out, and though it may be a good thing, it is like a bolt of fine goods which is thrown up on the shelf out of sight while something inferior of the same class is meeting with ready sale below. This I think is one of the greatest drawbacks to success among a majority of our inventors. I have a friend living now in Texas who came to me with a nut lock. I helped him get it into shape and he soon got a patent and a short time afterwards was offered several thousand dollars for it, but nothing under three or four times as much would satisfy him, and the consequence was he got nothing out of it, not even enough to pay the attorney's fee, and the life of the patent is nearly expired. It seems to be the rule, that the poorer the inventor and the needier his circumstances, the higher is the price at which he holds his invention.

I sometimes think there might be a profitable enterprise established to buy up patents of merit and develop them. I believe from my limited experience that customers would soon be found, for you are well aware that every factory and shop in the country is on the lookout for something better than their competitors have and good inventions in their line of manufacture would meet with ready sale if already developed whereas the purchaser would not care to invest if he had to take the patent and develop it. This I might say has been my mode of selling patents on a small scale and the result has been very satisfactory.

The first thing of course is to get my patent and then I put my invention in good running order, build a practical machine paint it up nicely, put it on the market and create a demand for it.

All of the inventions I have patented are sold or disposed of except four that I am manufacturing myself and I can sell them any day I wish to do so.

Horace Russell Allen, M. D.

DISTINGUISHED ORTHOPEDIC SURGEON, INDIANAPOLIS, IND.



Dr. H. R. Allen.

DR. HORACE RUSSELL ALLEN, is probably the best living representative of what is known as orthopedic surgery, which in plain English means the cure of deformities, paralysis etc. Aside from his high position as a surgeon he stands as a leading citizen of Indiana, respected and esteemed by thousands who know and appreciate his great abilities in his profession. Surrounded by all the luxuries of wealth and the refinements of an elevated social position at the capital of the great state of Indiana, and regarded as the highest authority in his specialty, it would seem that he has nothing further to strive for except a fervent desire to relieve the sufferings of humanity.

Dr. Allen was born at Athens, O., October 21st, 1834. He was educated at the Ohio University, located in that city, and in the Medical Department of the Western Reserve University, of Cleveland, O. He served as Surgeon of the One Hundred and Twenty-third Illinois Regiment during the war, making a record in the treatment of the sick and wounded soldiers which rendered him famous in army circles. In 1867 he went to Indianapolis, and opened in a small way what has since come to be the largest private surgical institution in the world—the National Surgical Institute. It was not founded upon printer's ink, nor was it a mere fancy of the brain of an aspiring and determined young physician; but he relied upon his skill in the treatment of the crippled and deformed, and his advanced views upon the old methods of the profession. He gave all his energies to his work, and aided by his great natural creative genius and skill in the construction of instruments and mechanical appliances for each special case as it was presented, his cures of what had hitherto been regarded as hopeless deformities rapidly multiplied, and so his fame has spread until an institution has been built up that has within its walls at this time more than five hundred patients. Fifty thousand cases have been treated during the thirty years of the life of the Institute. The new building required to conduct the business is the largest of the kind in the world. No institution of the kind in Europe or America compares with it in size, beauty, equipments and variety of methods for cure. A corps of trained and experienced medical assistants are constantly in attendance. The instruments used at the institution made under Dr. Allen's direction and used only by him in his practice, number more than

two hundred, while the workshop devoted to their construction is of itself a wonder. — Extract from Frank Leslie's Illustrated Newspaper.

The following testimonial letter received from Dr. Allen is reproduced here by photo-chemical means, and will be interesting as a fac-simile of his chirography:

Indianapolis, Ind. July 17 1888.

Mr J A Minturn Pat Atty
Dear Sir

It gives me pleasure
in recommending you
as an efficient & successful Patent Solicitor
In the score or more ^{being obtained for me} patents you
I have found you quick in understanding
thorough & prompt in the preparation,
and active in the prosecution of my
cases. I do not believe in the method
of grinding patents through by machinery,
not to say, regardless of the patentee's interests
— The solicitor's fees may thus be
obtained but the inventor left with
flimsy or doubtful claims which
lead at least to litigation if not to entire
loss of the patent

Yours Truly
H. R. Allen.

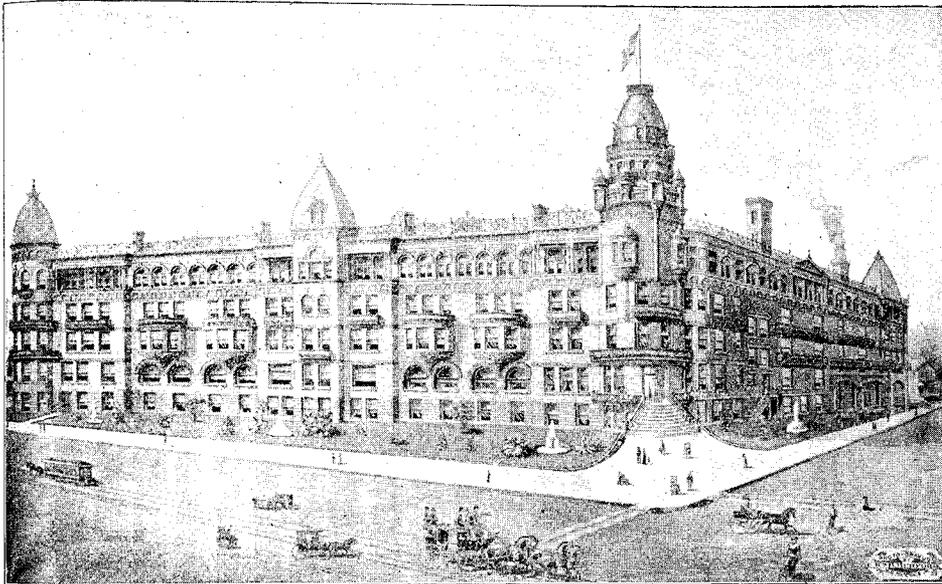
INDIANAPOLIS, IND., JULY 17, 1888.

MR. J. A. MINTURN, Pat. Atty.,

DEAR SIR:—It gives me pleasure in recommending you as an efficient and successful Patent Solicitor. In the score or more patents you have obtained for me, I have found you quick in understanding, thorough and prompt in the preparation, and active in the prosecution of my cases. I do not believe in the method of grinding patents through by machinery, as it were, regardless of the

patentee's interests. The solicitor's fees may thus be obtained, but the inventor is left with flimsy or doubtful claims, which lead at least to litigation if not the entire loss of patent.

Yours truly,
H. R. ALLEN.



The New H. R. Allen National Surgical Institute Building, Indianapolis.

JOSHUA C. GRAVES, of Salem, Mass., to whom we are indebted for many valuable suggestions, advises inventors (and especially those who find it necessary to interest capital to patent and perfect the invention) to protect their interests in advance as follows:

“Make a drawing or sketch of it and get your two brothers or one brother and one sister, or any two persons that you can trust, and go before a Justice of the Peace, and swear before these two witnesses, that this is your own invention, and have your two friends sign the paper, and put it away. If any one asks you if it is patented, say ‘It is protected.’”



David M. Parry.

MR. D. M. PARRY, of the Parry Manufacturing Co., of Indianapolis, who has taken out nineteen patents, and is president of an institution now employing nearly 2,000 people, in manufacturing the Parry road cart and other light vehicles, says:

MR. PARRY'S ADVICE TO INVENTORS.

"The great majority of patents are for small articles of more or less merit, and when the inventor has but limited means it is often a puzzle to determine the best method to pursue in placing the improvement on the market.

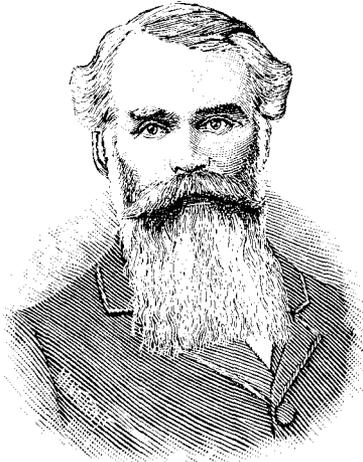
The policy of parting with a controlling interest in a patent in order to raise the money to begin business, is questionable. It is possible, and often the case, that the inventor, by so doing, eventually loses both his patent and his share in the business. The best plan, I think, for a man with limited means, is to have his invention manufactured by some reliable firm, in a small way at first, instead of trying to manufacture the goods himself. By so doing he will be able to devote his undivided attention to pushing the article onto the market, and while it may cost a little more in this way to manufacture, the capital required to fit up a shop and keep it running will be available at the very time it is most needed for advancing the business.

Any meritorious article will sell if an earnest effort is made to sell it, and when the business has increased sufficiently to warrant the expense, there will be ample time to put in a plant and the inventor will then know better what is needed and will have more money to pay for it. If the article has no merit and will not sell, the above course is still the wiser one.

With inventions that require considerable outlay in order to place them on the market, in ninety-nine out of every hundred cases it is better for the inventor to sell out his entire interest, and get up some new article or invention. Of course there are exceptions to this rule, as there are to all rules, but they occur so seldom that no sensible inventor will ever miss an opportunity to sell out at a fair figure, especially if the loss of the money that would be required to develop the invention and place it on the market is at all liable to embarrass him in case matters should not pan out as he expected.

It is an easy thing to get excited over a patent and imagine it is worth a great deal more than it really is. Unless you have decided to place the article on the market yourself, the sooner you sell your patent after it is issued, the better it will be for you. New ideas are being constantly developed, and while you are holding out for an exorbitant price, some other man may patent as good or a little better article and make the money you might have had. I believe a safe rule to follow is this: "If you receive a bona fide offer what would be a fair return to you for the same amount of time and money expended in any other business it should be accepted." *

Elias C. Atkins.



Elias C. Atkins.

MR. E. C. ATKINS, president of the well-known saw and tool manufactory of Indianapolis, and who has taken out sixteen patents, contributes the following interesting letter:

JOSEPH A. MINTURN, Esq.

DEAR SIR:—I am from New England, birth-place Bristol, Conn., where I received a training as apprentice for five years at the trade of saw making. I came to Indianapolis in 1856 and commenced the business of saw repairing and manufacturing. My inventions relate entirely to improvements on machinery and methods used in this business. These inven-

tions are the outgrowth of the necessities of the business, to supplement a limited

*JOS. A. MINTURN, Dear Sir:—We take pleasure in stating for the benefit of those who may desire to procure the services of a competent patent attorney, that you have procured seventeen patents for us within the past six years, and in every instance have rendered prompt and efficient service,

capital, and from a determination to excel all competitors in this line, and have proved the basis of success, as, where the invention relates to improvements on machinery and method of manufacture, being perfectly adapted to the use intended they enable us to produce at a minimum cost perfect goods, such as can be safely warranted in every particular, and where they relate to pattern and style of goods, have secured for our high grade saws, buyers and imitators everywhere. We have not, as you see, undertaken to dispose of our patents, but have used them in our business. We have without difficulty placed all the goods we have been able to manufacture with the jobbers, dealers and consumers of saws throughout the country, and have been obliged to establish branch houses at Memphis and Chattanooga, Tenn., and Minneapolis, Minn., in order to meet the growing demand for these goods. The public have received as great benefit from our use of these patents in the reduction of cost and perfecting of quality, as they would from the direct sale of these patents, our motto being to "Manufacture the very best quality of saws and sell them at reasonable prices."

Wishing you success in your undertaking to forward the interests of inventors and of the general public in furnishing valuable information, I remain

Very truly yours,

E. C. ATKINS.

Robt. E. Poindexter.

SO MANY WONDERFUL INVENTIONS have been made in the last few years that only those bordering on the marvelous are considered worthy of notice. Many improvements having a direct and far reaching influence on our daily lives are over-looked and their advantages ignored until, by some chance, we are compelled to do without them. Of the many changes for the better in the various branches of industry none have been more marked in good results than the improvements made by Robert E. Poindexter in the common cross-cut saw, and if the present generation of saw users had to contend with the cross-cut saws such as were used by Mr. Poindexter in the early days of Indiana, they would feel as he did, the necessity of making radical and immediate changes.

Robert E. Poindexter was born in Mason county, West Virginia, on the 18th day of April, 1825. After attaining his majority, Mr. Poindexter left the farm and began business on his own account as a contractor and builder. Most work in those days was done by hand. Eleven hours constitute a day's work and

We have observed that you have the rare faculty of using the best terms of description the case will admit of and that your drawings, specifications and claims have been very clear and comprehensive. We recommend Mr. Minturn to any one desirous of securing letters patent,

Very Truly Yours, PARRY MFG. CO., D. M. Parry, Pres.

wages ranged from 75 cts. to \$1.00 a day. He did fairly well at contracting until his health failed him so that he had to quit the business and return to the farm, where he remained until all of the money he had previously saved was ex-



Robt. E. Poindexter.

hausted, and he was obliged to do something to support his family. His experience, with cross-cut saws had more than once suggested the need of a better tool, and the idea of improving it had often occurred to him, but no definite plan had ever presented itself. He now went to work with a determination to succeed, and he did his work so thoroughly that the famous "Dexter" cross-cut saw, as manufactured under his patents by the Atkins Saw Works, is almost identical with the original saw he gave to Noah Shock to be tested several years ago.

Before the advent of natural gas, Noah Shock, who lives two miles south of Anderson, Ind., was engaged in furnishing stove wood at so much a cord, and was just the person to thoroughly test a new saw. He gave Poindexter's saw a week's trial, and was so well pleased with it that he was willing to pay the inventor's price—four cords of stove wood—rather than have it taken away.

But even after the saw was improved, and the improvements demonstrated to be a success, the money did not come. There were hungry mouths to feed in the Poindexter household, and though the inventor was confident he had a good thing, he could not find a purchaser and hadn't the means or facilities to manufacture the saws himself. After repeatedly offering to sell his patent at home for a nominal price, he visited Indianapolis without much hopes of success. The Atkins Co., appreciating the merits of the invention, at once offered to manufacture the saw and pay the inventor a royalty on each one made. The sale of the saw has steadily increased from the day it was placed on the market, until now the daily output by the Atkins Co. of this saw alone is over one hundred and eighty, and the sales extend to all parts of the Union where saws are used.

Besides the "Dexter Saw", which now nets the inventor a handsome income, Mr. Poindexter personally superintends the manufacture of a number of other saw tools of his own invention for the Atkins Co.

Mr. Poindexter was asked what his advice would be to an inexperienced inventor who had a patent to dispose of, and the following is his reply:

"My advice in the first place is that the inventor should look very closely to the merits of his invention, and not allow his own enthusiasm to blind his judgment. Don't be afraid to show your invention to those who will have to make it and use it, and who ought to know the most about it. Their criticisms will discover the weak points to you, and enable you to overcome them. Without so doing you can spend a great deal of money and make a failure in the end. When you think your device is as near perfect as you can get it, have it put into practical use by those it was intended to benefit, and instead of constantly thinking of the thousands you are going to make, watch how your invention does the work. Keep close behind it, and the chances are that you will see where it can be improved before any one else does, and will not be cut out by having some one else make something a little bit better. The improvements often amount to more than the original invention.

Inventions generally are in advance of the times, and very few pan out as expected. As soon as the inventor gets his patent he begins to see his thousands floating around him, but he almost invariably fails to get his fingers on the money. Instead of a bonanza he finds he has an elephant on his hands, and realizes his weakness to make things "go." I was one of those once myself, and have great sympathy for poor inventors. I at one time offered to a hardware man for five hundred dollars the patent on a tool that now yields me an income of three thousand dollars a year.

To conclude, my advice to an inventor is this: After you have thoroughly tested your invention and know it to be a success, go to the best wood engraver, and have a fine cut made, to advertise with and help you to describe and explain your invention, then if you are not able to manufacture it yourself, make arrangements with some manufacturer of that class of goods to make it on a royalty and get a situation with the manufacturer to make it. This you can almost invariably do, as you know more about it and are better able to make it than any one else, and by so doing you have your wages to live on and can't lose anything."

Charles Girard Conn.

CHARLES GIRARD CONN, of Elkhart, Ind., has the distinction of being the most successful of the makers of band instruments in the world. He was elected to Congress in November, 1892. He has taken out fourteen patents relating to his specialty, and the following sketch of his career will prove interesting:

He was born in the State of New York in 1844, and in his early boyhood moved with his parents to Elkhart, Ind. He enlisted at the commencement of the Civil War and served to its close, in the 1st Michigan Sharp-Shooters, in which regiment he attained the rank of captain. At the close of the war he commenced to lay the foundation of what has since proved to be the largest and most complete establishment in the world for the manufacture of band instruments. His first achievement in this line was the invention of the Elastic Embouchure Mouthpiece, the

merits of which were speedily recognized by instrumentalists all over the world. The next success was the invention of an improved valve system and wind passage in brass hand instruments, the demand for which was so great as to warrant the erection of a large factory, which was successfully conducted until 1881, when it was totally destroyed by fire, together with all machinery, tools, models, and mandrils. Another factory was soon rebuilt on a much more extensive scale, and in place of confining its product to brass band instruments only, the manufacture of metal flutes, clarinets, saxophones, bassoons and drums was entered into with such success that only the instruments made at Mr. Conn's factory are used by the celebrated soloists and bandmasters of America. As a citizen, Mr. Conn has shown himself public spirited and of great benefit to the community in which he lives, having been twice elected to the mayoralty of Elkhart. He was a member of the Indiana State Legislature of 1886 as joint representative for Elkhart, Noble and DeKalb counties. He is also proprietor and editor-in-chief of the daily, weekly, and monthly Truth, the two former being local publications, and the monthly Truth a paper which is circulated in every city, town, and hamlet in America in the interest of his factory.



Charles G. Conn.

Francis M. Roots.

FRANCIS M. ROOTS, Manufacturer and President of the First National Bank, Connersville, was born in Oxford, Ohio, October 28th, 1824. In 1816 his parents removed from the state of Vermont to that place, where the father, Alanson Roots, established a woolen factory, in which he was assisted by three of his elder sons, our subject giving him his time in the summers, and attending school in the winters. At the age of sixteen he entered Miami University, located in the village, and pursued a scientific course. Mr. Roots' ancestors were descended from the old Puritan stock, who fled to the shores of New England.

In 1846 Francis M. Roots, and his brother Philander H., began making arrangements to move their woolen-mill to Connersville, Ind., being attracted by its fine water power and other facilities, where they erected a building one-hundred by forty feet, five stories high, with a capacity, during the war, of employing one hundred hands on army supplies. This building was consumed by fire in 1875. In 1860 their greatest invention was patented, which is known

all over the world as Roots' Rotary Blower, since which time they have made and sold in this country over 10,000 machines, and as many more in Europe, over 5,000 in England alone. They have been awarded first premiums at three international expositions, in 1867 at Paris, in 1873 at Vienna, and at the Centennial Exposition of our own country at Philadelphia in 1876.



Francis M. Roots.

The invention was suggested from the fact that when they first located at Connersville, the town had no fire protection, and so they studied out a rotary pump and ran a stand pipe up to the building connected with hose. This pump was the start of the blower business, and the idea of making a blower was given them by a mechanic in town who saw the pump work, and who said, "If this pump will pump water so well why won't it blow air?" This set them to thinking, and from this, in an humble way, was started the blower business. The first blower was invented by both the brothers, although the original patent was taken out in the name of P. H. Roots, who was an older brother. After the blower business had been in operation for several years, the business was divided up, P. H. Roots taking the woolen mill, and F. M. Roots the blower business, which he continued to run up to the time of his death.

Richard J. Gatling.

THE EXPERIENCE OF DR. GATLING, inventor of the celebrated gun of his name, which was invented in Indianapolis, is a forceful illustration of the quality of perseverance under difficulties, fortified, however, with a thoroughly good machine. He was asked, "How did it happen that your guns were not used in the war for which they were designed?"

"They were used a little bit," the Doctor replied, "but how they happened not to be more generally used is quite a long story. I conceived the idea in '61, but it was a year before I had a gun with which I was satisfied. I then went to Cincinnati, and in the shops of Miles Greenwood made six guns that cost me \$5,000. Just as I was about starting to Washington to offer the guns to the War Department, Greenwood's shop was set on fire and my guns so injured that they were worthless. I did not lose any more time than I was obliged to, but went to work to build more guns. At another shop I made the unlucky num-

ber of thirteen gun., at a cost of \$10,000. Now came the difficulty of getting those guns adopted. I was green then, and sent a friend to Washington, instead of going myself. My agent left eleven of the guns in Baltimore, and took two to Washington to show to General Ripley, the Chief of Ordnance. General Ripley, you know, was an old fogey who conscientiously believed that the old fashioned muzzle-loading flint-lock was the most serviceable arm in the world, and so he refused even to look at my guns. My agent returned to Baltimore, where he met Gen. Benjamin F. Butler, who was just on his way to take command of the army investing Petersburg. General Butler examined the guns and bought them for \$1,000 apiece. Now, by the way, I never got any of that money, as my agent went to Chicago with it, where he failed in business before he had made a settlement. So you see I was, so far, pretty badly out of pocket."

"What did General Butler do with the guns?"

"He took them to the front and used them there with good effect, but the trial was not altogether satisfactory. You see that we had to use paper cartridges then and they did not work well, as the guns were apt to get clogged up. Indeed, the machine gun was not of much practical use until the metal cartridge had been perfected, and that was not till after the war was ended. When the war was over my friends advised me to go out of the gun business in which I had fared so badly, but my dander was up now, and I meant to persevere until I succeeded perfectly. At the Frankford arsenal, near Philadelphia, I perfected a metallic cartridge, and General Dyer, a very different man from Gen. Ripley, was now chief of ordnance, and he took a great interest in my gun and my efforts to make it work well. It was arranged that I should have a trial of my guns at Fortress Monroe in opposition to the regular field guns, before a board of ordnance officers. As the result of this trial the Government ordered one hundred guns, and, after I had made them at Colt's armory in Hartford, I was paid \$175,000. Since then I have sold them to almost every civilized nation, and to some that have not enough civilization to boast of."

"How did you introduce them in Europe?"

"I took several guns to the great Paris Exposition in 1867. There they attracted very general interest, and were brought to the attention of Louis Napoleon. He was delighted, and at once wanted to make an arrangement that I should make the guns secretly in France and supply them only to the French. This proposition I could not consider for various reasons. The Emperor thought he saw a way out of it, so he put a board of ordnance officers at work to make a machine gun which would be just as effective as mine. The result was the mitrailleuse, with which, in 1870, the French emperor proposed to annihilate the Germans. This gun unquestionably did effective work in the war with Germany, but it failed to come up to expectations. In the first place, paper cart-

ridges were used, and the same difficulties were experienced that hindered the work of my guns before Petersburg. In my guns the locks revolve with the barrel, and the firing is so continuous that there is practically only one recoil. This enabled one to do away with any great weight in constructing my gun, which is very light, and with little power can be quickly taken to the field or from one place to another. To overcome the recoil of the mitrailleuse, the French officers were compelled to make the gun so heavy that eight or ten horses were needed to take it from place to place, and off from good roads it was of very little service."



THE following brief information is given of the others in the list of the fifteen prominent inventors. (See page 67)

WALLACE H. DODGE is the president and founder of the Dodge Manufacturing Co., of Mishawaka, Ind., probably the largest establishment in the world devoted to the manufacture of wooden pulleys and the scientific transmission

of power.

CHARLES ANDERSON is foreman of the pattern department of the great Oliver Chilled Plow Works, of South Bend, Ind., and most if not all of his patents are assigned to the company for which he works. He seems to be devoted to the interests of his company, so much so that he declined to make any statement in regard to his experience as an inventor, without the sanction of his employers. Not being able to get a response by mail, a representative was sent to South Bend to interview Mr. Anderson. An interview at the Plow Works was refused by his company, and it was necessary to call at his residence, which is a very modest home, and does not indicate that the inventor is deriving any great amount of profit from his inventive skill.

CALVIN G. UDELL is the founder of the Udell Wooden Ware Works, of North Indianapolis, Ind., one of the most extensive wooden-ware manufactories in the country.

JOSEPH F. GENT is one of the principal owners of the great Cerealine Mills, of Columbus and Indianapolis, Ind. The Company gives employment to hundreds of men, and has over a million dollars invested.

MICHAEL C. HENLEY made a fortune manufacturing roller skates during the roller skate craze a few years ago, and his name is familiar to nearly everybody.

WILLIAM L. CASADY is President of the South Bend Chilled Plow Works, a large and well known concern, engaged in the manufacture of plows.

CONCLUDING REMARKS.

The INVENTOR must remember that it is the beginnings that are the most difficult. One success renders the next easier, for it inspires confidence, both in the buying public and in the investing capitalist. The above experiences all evidence the virtue of perseverance, accompanied by tact and good judgment.

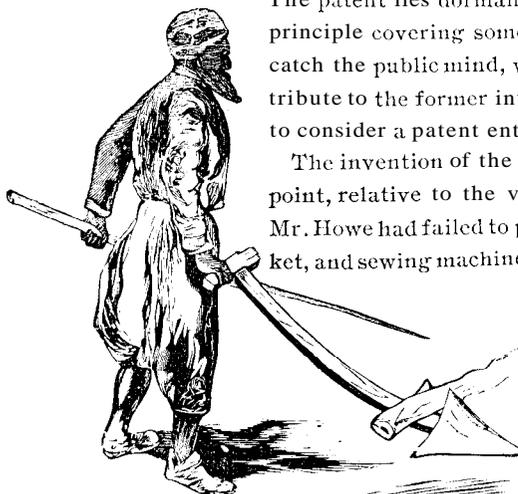
That patents really do pay, where the business sagacity required for success in any business or pursuit is present, is shown by a multitude of successes. Indeed, modern civilization is merely a cumulative result of these many little inventions. Often inventors, through a lack of tact, lose the fruits of their work, in ways that are well shown in the foregoing paragraphs recounting the actual experiences of inventors. These, if taken with reference to the specific nature of the proposed inventions, will scarcely fail to start him in the path of financial success, if he first has created a really useful invention.

But an inventor must not draw his encouragement from the few hundreds whose patents have brought them millions, like Edison, Pullman, Howe and others. Many thousands of patents are issued which realize from five to fifty thousand dollars that create no stir, and are seldom heard of in the sense of fame, the large sums being made with a very paltry outlay, by comparison with the results. Often meritorious patents do not pay because they are premature, and the market, or what is the same thing, the demand, does not respond.

The patent lies dormant, and yet it may represent a principle covering some subsequent patent that does catch the public mind, which compels the latter to pay tribute to the former inventor; so that it is never safe to consider a patent entirely worthless.

The invention of the sewing machine is a case in point, relative to the value of a dormant invention. Mr. Howe had failed to place his machines on the market, and sewing machines were invented and marketed

by other makers: but Mr. Howe controlled the patent covering the possibilities of the sewing machine, as fully described in a preceding chapter.

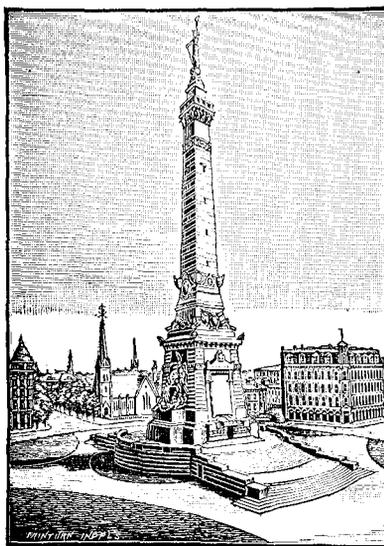


Plowing in Palestine.

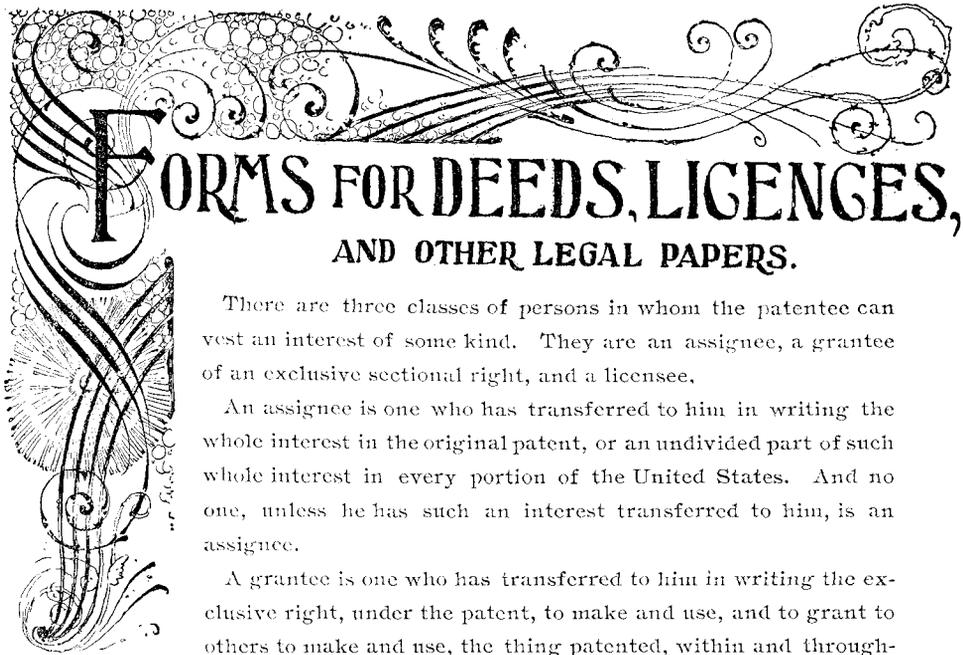
But a word about patents themselves. Many labor under a delusion that the granting of a patent carries with it the legal authority of the government for an exclusive privilege. It does so in the majority of cases, where the patent does not infringe and its ex-

clusive privilege is not denied. But the Patent Office is an executive branch of the government, and can not settle disputes involving titles to an invention, any more than the Interior Department can settle a dispute between two rival claimants to a farm. All this is the office of the courts and the judiciary.

It has been suggested that Congress supply a board for the settlement of rival patent claims, but a little reflection will convince one that even if this could be done under the constitution, its result would be only to establish another court; and would not relieve an inventor from his present liability from rival claimants or infringers, save through the same process that such cases are now settled in the courts. The effect, when the title is once settled, is to make the government a powerful partner with the inventor, as, for instance, the final settlement of the telephone patents, which left Mr. Bell in sole possession of the telephone field. The Patent Office examination into the priority of an invention, and allowance of it as such, is no guarantee that there is no prior invention. Lack of novelty, if it can be proved, would vitiate the patent passed upon by the examiners, and questions of proof, of course, belong to the courts. Even a court decision will not settle a claim if still another should come to dispute the decision, with proof of a still prior invention. It simply amounts to this, — priority gives title, and a title, being in fee simple, cannot be taken from its owner. The real question is to prove the title.



THE INDIANA SOLDIERS' AND SAILORS' MONUMENT. (View from the office of Jos. A. Minturn, Patent Att'y, Indianapolis, Ind.)

A large, ornate decorative flourish on the left side of the page, featuring a large, stylized letter 'F' that curves and flows into a series of intricate, swirling patterns and scrollwork that extends across the top of the page. The design is highly detailed with fine lines and shading.

FORMS FOR DEEDS, LICENCES, AND OTHER LEGAL PAPERS.

There are three classes of persons in whom the patentee can vest an interest of some kind. They are an assignee, a grantee of an exclusive sectional right, and a licensee.

An assignee is one who has transferred to him in writing the whole interest in the original patent, or an undivided part of such whole interest in every portion of the United States. And no one, unless he has such an interest transferred to him, is an assignee.

A grantee is one who has transferred to him in writing the exclusive right, under the patent, to make and use, and to grant to others to make and use, the thing patented, within and throughout some specified part or portion of the United States. Such right must be an exclusive sectional right, excluding the patentee therefrom.

A licensee is one who has transferred to him in writing, or orally, a less or different interest than either the interest in the whole patent, or an undivided part of such whole interest, or an exclusive sectional interest. (*Potter v Holland*, 1 Fish, 327.)

Assignments, licenses, and all other grants of power or authority under a patent monopoly, if time and circumstances admit, should be drawn by an experienced hand, thoroughly acquainted with patent law. It is not an uncommon thing for a man to learn, after a wearisome and expensive patent suit, that he has actually lost all his rights under his patent; that he has ignorantly signed them away, under the impression that he has given only a conditional license, grant, or shop-right; or that he has made a complete assignment of his title under a patent, when he supposed it was made conditional on the payment of the consideration. It is often the case, however, in the purchase of a patent, or an interest therein, that the parties to the transaction cannot well delay pro-

ceedings to have the papers prepared by a patent attorney, and frequently in their attempts to draft the papers they make mistakes which prove vexatious and work great injury to one or the other of the parties. The following forms, which for the most part are recommended by the Commissioner of Patents, will be valuable as guides in such emergencies.

OF AN ENTIRE INTEREST IN AN INVENTION BEFORE THE ISSUE
OF LETTERS PATENT.

WHEREAS I, A. B., of L., county of M., State of I., have invented a certain new and useful improvement in harvesters [giving title of the same,] for which I am about to make application for letters patent of the United States; and whereas G. D., of R., county of S., State of I., is desirous of acquiring an interest in said invention, and in the letters patent to be obtained therefor:

Now, therefore, to all whom it may concern, be it known that, for and in consideration of the sum of ——— dollars to me in hand paid, the receipt of which is hereby acknowledged, I, the said A. B., have sold, assigned, and transferred, and by these presents do sell, assign, and transfer, unto the said G. D. the full and exclusive right to the said invention, as fully set forth and described in the specification prepared and executed by me on the ——— day of ———, 18—, preparatory to obtaining letters patent of the United States therefor; and I do hereby authorize and request the Commissioner of Patents to issue the said letters patent to the said G. D., as the assignee of my entire right, title, and interest in and to the same, for the sole use and behoof of the said G. D. and his legal representatives.

In testimony whereof, I have hereunto set my hand and affixed my seal this 4th day of May, A. D. 18—

A. B. [SEAL.]

In presence of—

O. P.

S. T.

OF THE ENTIRE INTEREST IN LETTERS PATENT.

WHEREAS I, A. B., of L., county of M., State of I., did obtain letters patent of the United States for an improvement in car wheels, which letters patent are numbered ———, and bear date the 5th day of June, in the year 18—; and whereas I am now the sole owner of said patent and of all rights under the same, and whereas E. F., of R., county of S., State of I., is desirous of acquiring the entire interest in the same:

Now, therefore, to all whom it may concern, be it known that, for and in consideration of the sum of ——— dollars to me in hand paid, the receipt of which is hereby acknowledged, I, the said A. B., have sold, assigned, and transferred, and by these presents do sell, assign, and transfer, unto the said E. F. the whole right, title, and interest in and to the said improvement in car wheels,

and in and to the letters patent therefor aforesaid; the same to be held and enjoyed by the said E. F. for his own use and behoof, and for the use and behoof of his legal representatives, to the full end of the term for which said letters patent are or may be granted [thus including extension,] as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

In testimony whereof, I have hereunto set my hand and affixed my seal at L., in the county of M., and State of I., this 25th day of July, A. D. 18—.

A. B. [SEAL.]

In presence of—

N. P.

O. T.

OF AN UNDIVIDED INTEREST IN LETTERS PATENT.

Whereas I, A. B., of L., county of M., State of I., did obtain letters patent of the United States for an improvement in hay-rakes, which letters patent are numbered —, and bear date the 3d day of August, in the year 18—; and whereas C. D., of R., county of S., State of I., is desirous of acquiring an interest in the same:

Now, therefore, to all whom it may concern, be it known that, for and in consideration of the sum of --- dollars to me in hand paid, the receipt of which is hereby acknowledged, I, the said A. B., have sold, assigned, and transferred, and by these presents do sell, assign, and transfer, unto the said D. E. the undivided one-half part of the whole right, title, and interest in and to the said invention, and in and to the letters patent therefor aforesaid; the said undivided one-half part to be held and enjoyed by the said C. D. for his own use and behoof, and for the use and behoof of his legal representatives, to the full end of the term for which said letters patent are or may be granted [thus including extension,] as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

In testimony whereof I have hereunto set my hand and affixed my seal at L., in the county of M., and State of I., this 7th day of June, A. D. 18—.

A. B. [SEAL.]

In presence of—

N. P.

O. T.

TERRITORIAL INTEREST AFTER GRANT OF PATENT.

Whereas I, A. B., of L., county of M., State of I., did obtain letters patent of the United States for improvement in grain-binders, which letters patent are numbered —, and bear date the 8th day of June, in the year 18—; and whereas I am now the sole owner of the said patent and of all rights under the same in

the below-recited territory; and whereas C. D., of R., County of S., State of I., is desirous of acquiring an interest in the same:

Now, therefore, to whom it may concern, be it known that, for *and* in consideration of the sum of — dollars to me in hand paid, the receipt of which is hereby acknowledged, I, the said A. B., have sold, assigned, and transferred, and by these presents do sell, assign and transfer, unto the said C. D. all the right, title, and interest in and to the said invention, as secured to me by said letters patent, for, to, and in the State of I., and for, to, or in no other place or places; the same to be held and enjoyed by the said C. D. within and throughout the above-specified territory, but not elsewhere, for his own use and behoof, and for the use and behoof of his legal representatives, to the fall end of the term for which said letters patent are or may be granted [thus including extension,] as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

In testimony whereof I have hereunto set my hand and affixed my seal at L., in the county of M., and State of I., this 3d day of May, A. D. 18—.

A. B. [SEAL.]

In presence of—

S. T.

R. D.

LICENSE—SHOP-RIGHT.

In consideration of the sum of — dollars, to be paid by the firm of J. S. & Co., of I., in the county of M., State of I., I do hereby license and empower the said J. S. & Co. to manufacture in L. [or other place agreed upon] the improvement in cotton-seed planters, for which letters patent of the United States No. — were granted to me November 13, 18—, and to sell the machines so manufactured throughout the United States, to the full end of the term for which said letters patent are granted.

Signed at L., in the county of M., State of I., this 22d day of April, 18—.

A. B.

LICENSE—NOT EXCLUSIVE—WITH ROYALTY.

This agreement, made this 12th day of September, 18—, between A. B., of I., in the county of M., and State of I., party of the first part, and C. D. & Co., of O., in the county of R., and State of I., party of the second part, witnesseth, that whereas letters patent of the United States No. —, for an improvement in horse-rakes were granted to the party of the first part, dated October 4, 18—; and whereas the party of the second part is desirous of manufacturing horse-rakes containing said patented improvement: Now, therefore, the parties have agreed as follows:

I. The party of the first part hereby licenses and empowers the party of the second part to manufacture, subject to the conditions hereinafter named, at their factory in O., and in no other place or places, to the end of the term for which said letters patent were granted, horse-rakes containing the patented improvements, and to sell the same within the United States.

II. The party of the second part agrees to make full and true returns to the party of the first part, under oath, upon the first days of January and July in each year, of all horse-rakes containing the patented improvements manufactured by them.

III. The party of the second part agrees to pay to the party of the first part five dollars as a license-fee upon every horse-rake manufactured by said party of the second part containing the patented improvements: provided, that if the said fee be paid upon the days provided herein for semi-annual returns, or within ten days thereafter, a discount of fifty per cent. shall be made from said fee for prompt payment.

IV. Upon a failure of the party of the second part to make returns or to make payment of license-fees, as herein provided, for thirty days after the days herein named, the party of the first part may terminate this license by serving a written notice upon the party of the second part; but the party of the second part shall not thereby be discharged from any liability to the party of the first part for any license-fees due at the time of the service of said notice.

In witness whereof the parties above named have hereunto set their hands the day and year first above written at L., in the county of M., and State of I.

A. B.

C. D. & Co.

LICENSE (EXCLUSIVE) WITH CONTRACT FOR ROYALTY.

This agreement, made this 20th day of January, 18—, between James Braden, of York, Pennsylvania, party of the first part, and the Pittsburgh Bridge Works, a corporate body under the laws of said State, located and doing business at Pittsburg, in said State, party of the second part, witnesseth:

That whereas, Letters-Patent of the United States, No. — were, on the twenty-eighth day of March, 18—, granted to said party of the first part, for an improvement in Bridge Gates, which said patented article said party of the second part is desirous to make and sell, now, therefore, the parties have agreed as follows:

I. The party of the first part gives to the party of the second part the exclusive right to manufacture and sell said patented improvements, to the end of the term of said patent, subject to the conditions hereinafter named.

II. The party of the second part agrees to make full and true returns. on the

first days of January, April, July, and October, in each year, of all of said patented Bridge Gates made by them in the three calendar months last past; and if said party of the first part shall not be satisfied, in any respect, with any such return, then shall he have the right, either by himself or by his attorney, to examine any and all of the books of account of said party of the second part containiug any items, charges, memoranda, or information relating to the manufacture or sale of said patented Bridge Gates, and upon request made, said party of the second part shall produce all such books for said examination.

III. The party of the second part agrees to pay the party of the first part five dollars as a license-fee upon every one of said patented Bridge Gates made by them, the whole of said license-fee for each quarterly term of three months, as hereinbefore specified, to be due and payable within fifteen days after the regular return day for that quarter. And said party of the second part agrees to pay to the party of the first part at least two hundred dollars, as said license-fee, upon each of said quarterly terms, even though they should not make enough of said patented Bridge Gates to amount to that sum at the regular royalty of five dollars.

IV. Said licensee shall cast or otherwise permanently place upon every such Bridge Gate made under this license, the word "Braden" and in close relation thereto the word "Patented." and the number and date of said patent.

V. Said licensee shall not, during the life of this license make or sell any article which can compete in the market with said Bridge Gates.

VI. Upon the failure of said licensee to keep each and all of the conditions of this license, said licensor may, at his option, terminate this license, and such termination shall not release said licensee from any liability due at such time to said licensor.

In witness whereof, the above-named parties (the said Pittsburgh Bridge Works, by its president) have hereunto set their hands this day and year first above written.

JAMES BRADEN.

PITTSBURG BRIDGE WORKS,

By JOHN HANCOCK, President.

TRANSFER OF A TRADE MARK.

We, A—B—, and C—D—, of M., in the County of N., and State of O., partners under the firm name of —, in consideration of — dollars to us paid by—, of the same place, do hereby sell, assign, and transfer to the said — and his assigns, the exclusive right to use in the manufacture and sale of —, a certain trade mark for —, deposited by us in the United States Patent Office and r corded therein—, 188—: the same to be held, enjoyed and used by

showing capital stock of \$100,000, were filed in the office of the Secretary of State of the State of Indiana, on the 4th day of April 1893.

In compliance with the provisions of an Act entitled, "An act for the Incorporation of Manufacturing and Mining Companies, for Mechanical, Chemical and Building Purposes," approved May 20 1852, and the various Acts amendatory thereof, and supplementary thereto, said articles being now of record in said office of the Secretary of State, therefore this certificate shall be, and is hereby constituted, the authority of said Company to transact business under the provisions of said Acts.

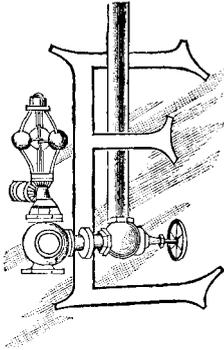
In Witness Whereof, I have hereunto set my hand and affixed the seal of the State of Indiana, at the City of Indianapolis, this 4th day of April, A. D. 1893.

WILLIAM R. MYERS,

Secretary of State.

[SEAL.]

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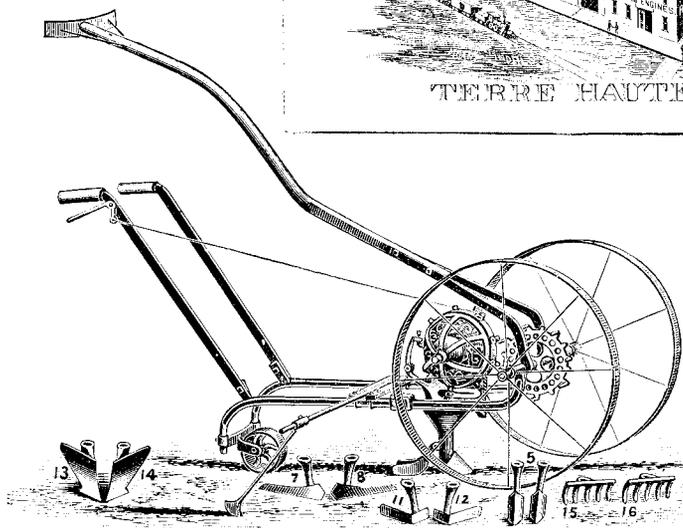
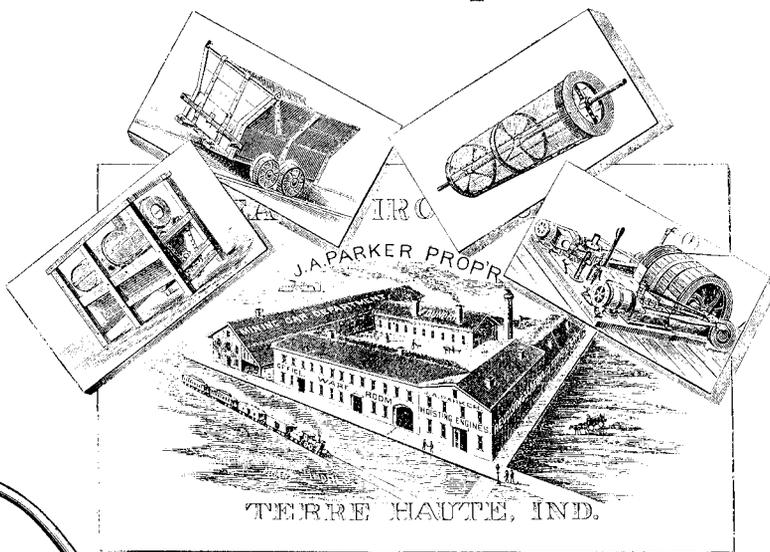
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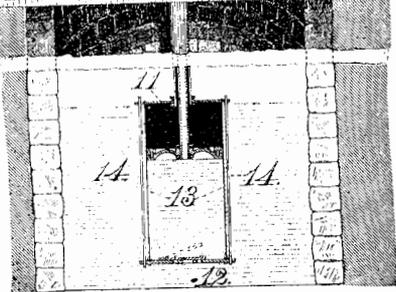
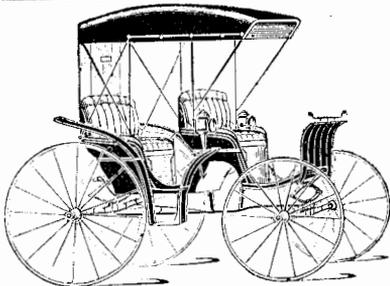
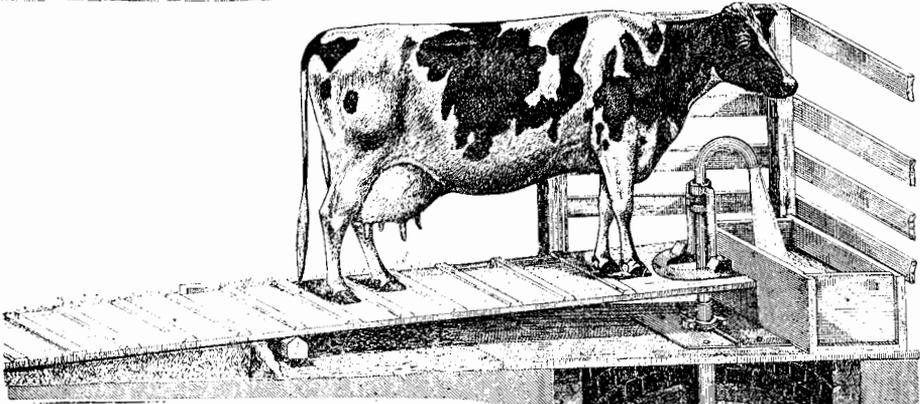
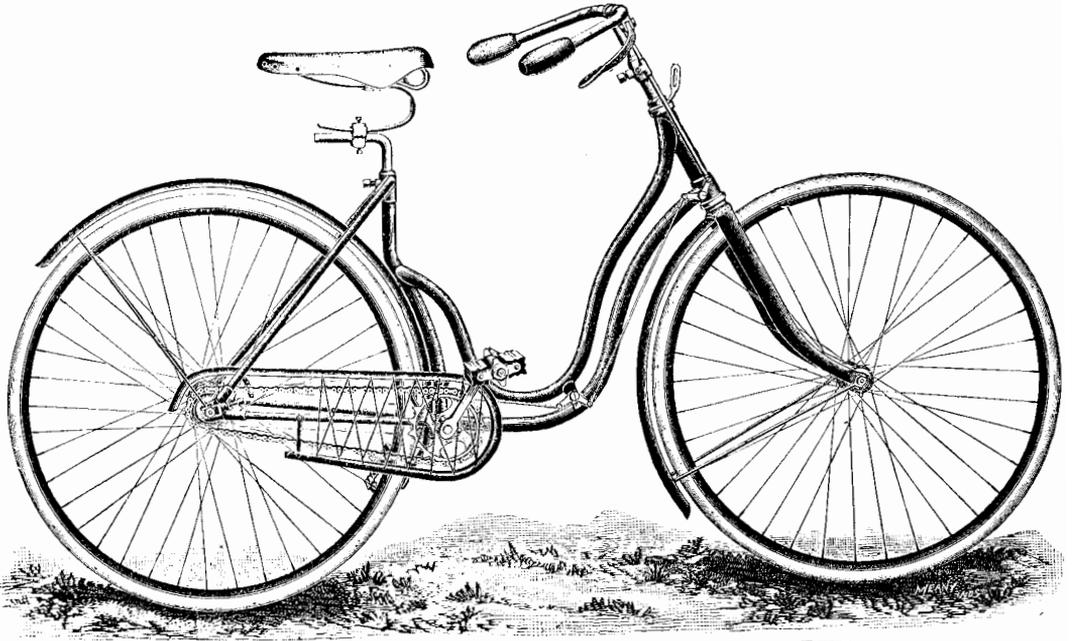
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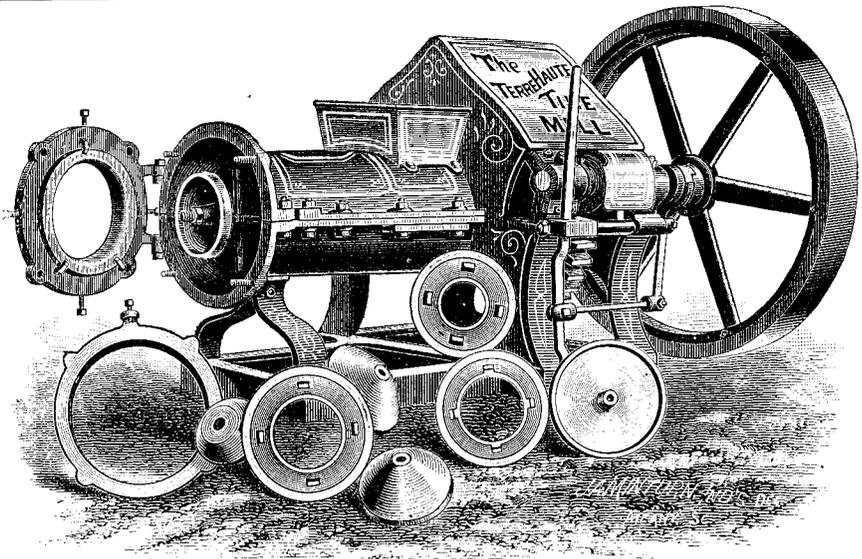


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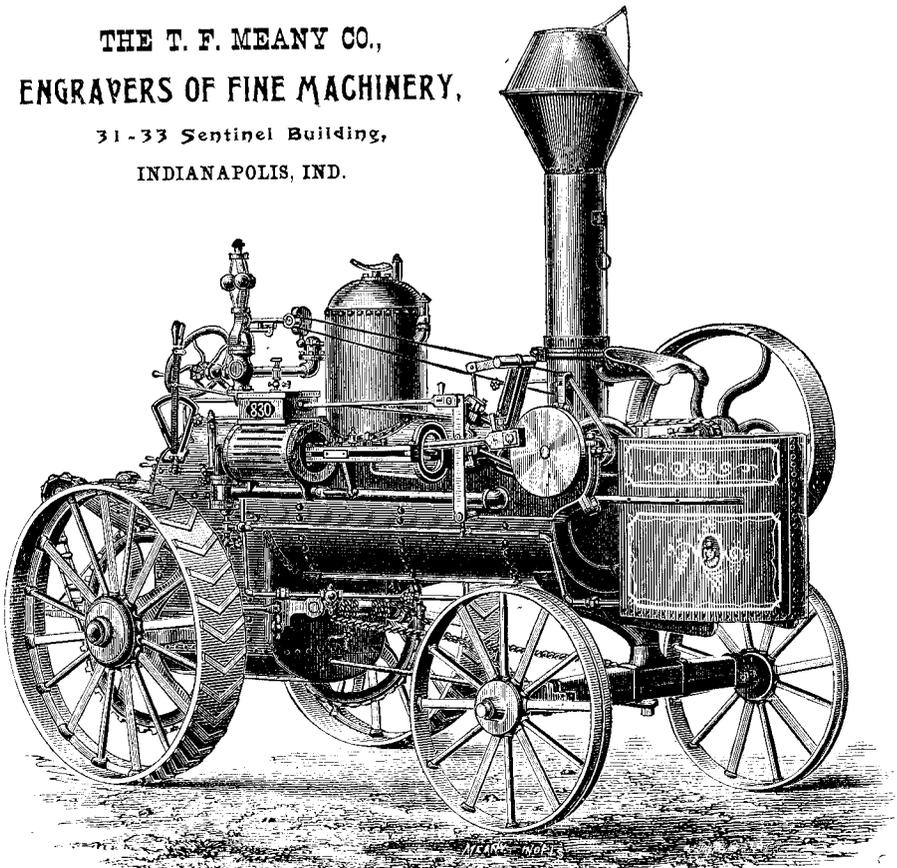


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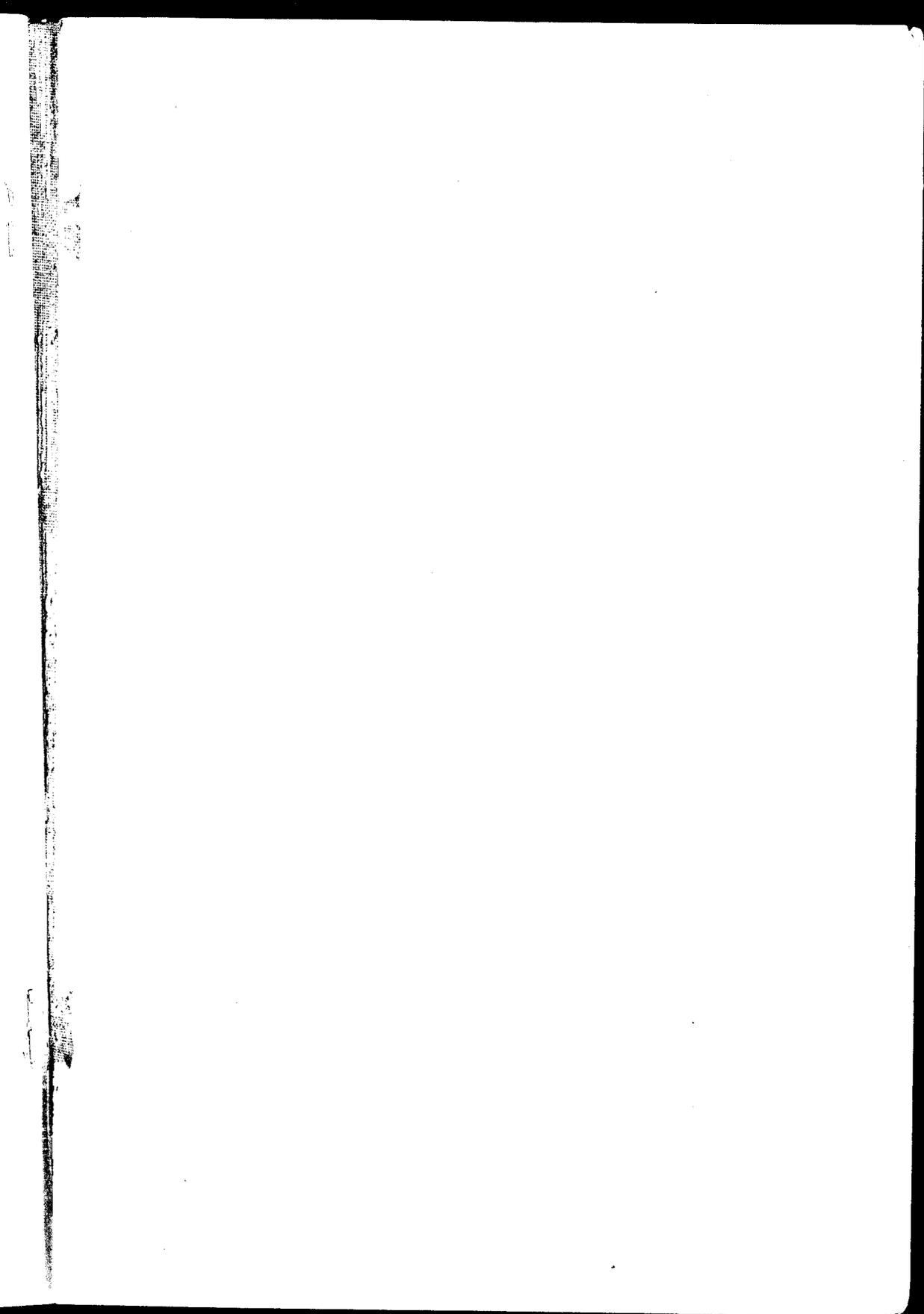


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