### IMPROVED SPOKE-SETTING MACHINE.

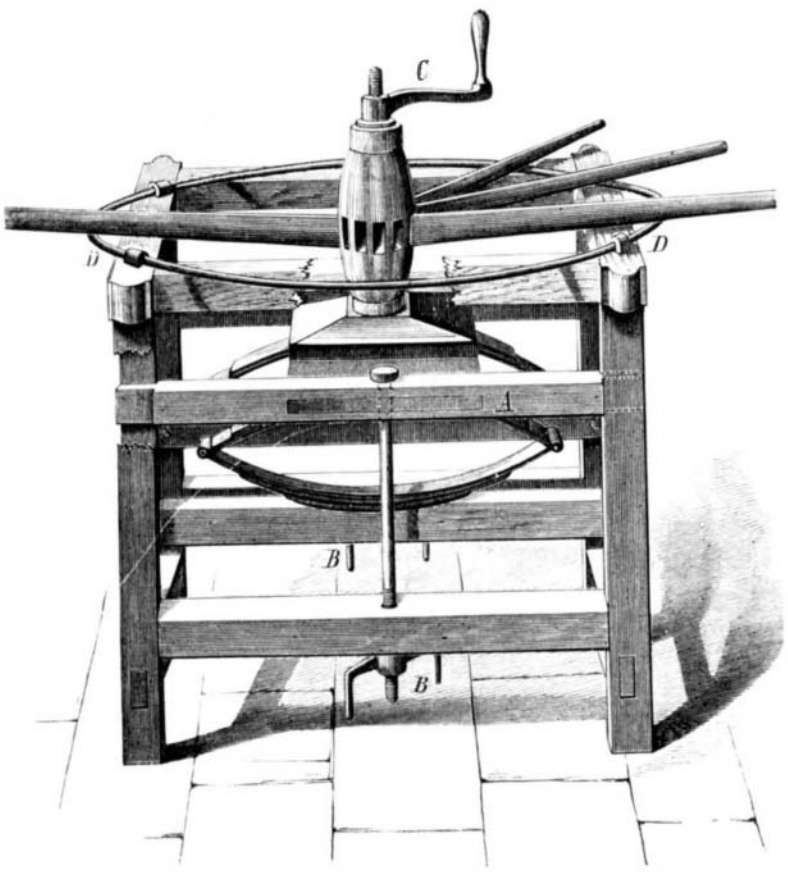
We illustrate herewith an improved apparatus for setting and driving spokes in a rapid and convenient manner, and in such a way that an exact inclination of all the spokes in a wheel is obtained.

A is an adjustable frame which is supported on springs, as shown, so as to be moved vertically by the bolts and crank nuts, B. The hub is placed on a central bolt, and is rigidly secured by a crank nut, C. Above the main frame is the guide or set ring, D, on which the spokes are placed while being set and driven into the hub.

After the hub is fastened in place, the adjustable frame, B, is screwed down until the center line of the hub is on a level with the circle. The hub is then dotted above the leveling straight edge, and the bolts are screwed down until the desired dish or set of the spokes is obtained. This is necessary, as all hubs are made with straight front and sloping back mortises, throwing the outer ends of the spokes forward at the same inclination. It now only remains to rest the spokes upon the guide ring, and to drive them into the hub.

The inventor claims the apparatus to be a valuable aid to the wheelwright, inasmuch as it can fill four wheels while one is being filled in the usual manner. It can easily be constructed by any good workman, and needs no skill for its manipulation. It sets all the spokes at one setting; and in driving, each spoke is tapped in turn until all are driven, thus protecting the brace between the mortises. Being adjustable, any length of hub can be filled. Finally, the machine is well suited for refilling wheels, as the set is got by the mortises and not by the end of the hub.

Patented through the Scientific American Patent Agency, March 25, 1876. For further information relative to sale of rights or machines, address the inventor, Mr. Thomas S. Morgan, New Columbia, Massac county, Ill.



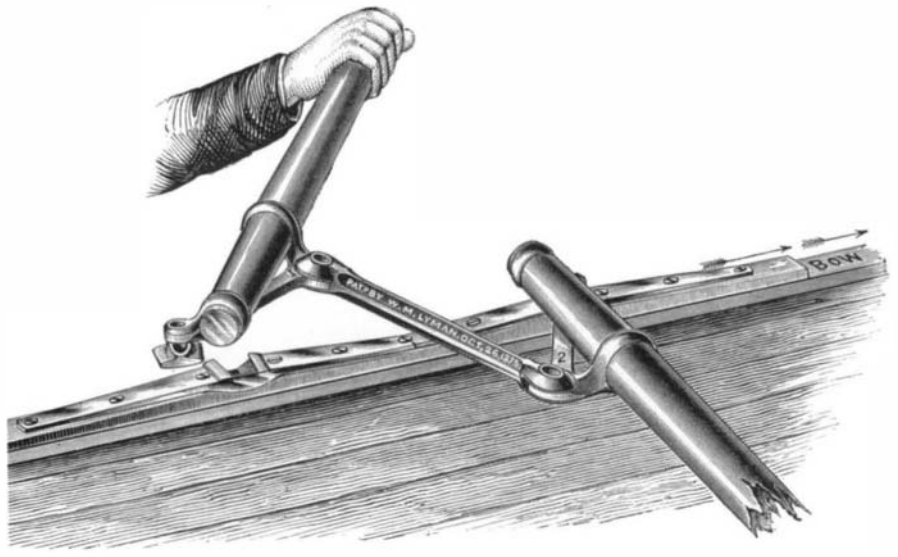

MORGAN'S SPOKE-SETTING MACHINE.

### IMPROVED ROWING GEAR.

There are two cardinal objections to the present mode of propelling boats by rowing. The first is that the oarsman is obliged to travel backward and to rely upon occasional glances over his shoulder to direct his course, and the second is that his power is applied to the oar at a very decided disadvantage. The second objection is perhaps the most serious one of the two, inasmuch a sit is well known that, just at the most effective part of the stroke, the end, there is where the power is weakest and worst applied. A new device has recently been patented (October 26, 1875) by Mr. William Lyman, of Middlefield, Conn., which gets rid of both of these objections in a very simple and practical manner, and, besides, secures some other advantages which will tend to commend it to oarsmen generally.

Mr. Lyman cuts his oar in two, and secures each part in a separate iron, as represented in Fig. 1. Each iron has a ball and socket joint which connects to a button, and each button slips into a slot made in the metal facing of the gunwale, and is there secured by turning a pivoted catch. Lastly, the two parts of the oar are connected by a rod hinged to each iron at 1 and 2, Fig. 1.

A moment's consideration will show that when the handle of the oar is pulled in one direction, the blade of the oar will travel, not in the opposite direction, as is usually the case, but in the same direction. Consequently, when the oarsman, seated as in Fig. 2, facing the bow, pulls in the usual way, he propels his boat bow foremost, instead of backing her, as he would do had he ordinary oars. Again, the arrangement of the lever is obviously such that the




LYMAN'S ROWING GEAR.—Fig. 1.

Fig. 2.

strength of the rower is applied to excellent mechanica advantage, enabling him to pull a stronger stroke and to keep it up much longer than would otherwise be possible. Steering is also rendered much easier, and the catching of crabs is avoided through the oarsman seeing his blade at the beginning of the stroke. The parts of oars can easily be folded together for transportation, or may be closed up along the side of the boat, without detaching them from the gunwale, when not in use. A pair of the oars thus arranged weighs about five pounds more than ordinary oars, but this additional weight, it is claimed, has the advantage that, at the beginning and end of the stroke, it helps to lower and raise the blade, owing to the peculiar position of the oar.

The inventor informs us that last summer he rowed some 400 miles with this gear, spending his vacation in the Adirondacks and the Thousand Islands, and ending his cruise by a row down the Connecticut river. The oars will be found on exhibition at the Centennial.

For further information, etc., address the inventor as above. The patents for foreign countries are for sale.

### Underground Telegraphy in New York City.

The Western Union Telegraph Company have begun the work of laying the telegraph wires in this city underground. Experimental sections, made of iron pipes of a capacity of 125 wires each, are being placed in position, between the Cotton Exchange, the Telegraph Company's buildings, and other points. At the same time, pneumatic tubes for the transmission of written messages by the air blast are also being located on the line of the telegraph pipes. The pneumatic tubes are made of brass.

It is greatly to be hoped that this system of underground telegraphy may be extended throughout the whole city, to the exclusion of the present unsightly poles. That the plan is fully practicable has been amply demonstrated in London and other European cities.

### The Discoverer of Bromine.

SCIENCE in general, and photography in particular, has just suffered a considerable loss in the death of M. Balard, who died recently in his 74th year. The illustrious chemist, to whom we owe the discovery of bromine, succeeded Baron Thénard in the professional chair in the Faculté de Sciences, in 1844, and Darcet as member of the Academy. He replaced Pélouse in the College de France, in 1851. M. Balard was President of the French Photographic Society, where his zeal for the new art, his great attainments, and his charming urbanity, won the respect and affection of all

### Spontaneous Combustion.

"Yesterday, about three o'clock, a disagreeable odor was observed in and about R. H. Delmage's carpenter shop; a search was immediately instituted, and smoke was discovered issuing through a small crack in the floor, but in such a thin vapory state that it was at first taken for dust; a more careful examination revealed the fact that it was really smoke. There being no other means of access, the floor was immediately torn up, when it was found that sawdust had accumulated to the depth of some five or six inches, and of course some saw filings and other *débris* had become mixed with the sawdust; this combination was thoroughly saturated with boiled linseed oil, which had leaked from a large can placed immediately above it; from this mass the smoke was issuing, and further examination verified the startling conjecture that beneath the surface this composition was all on fire and was actually in a charred state. The surface was entirely unbroken, and smoke oozed slowly out, something as from a coal pit. There was no means of ingress to render it possible to have been the work of an incendiary, and no possible means of the fire in any way having come from above. The only solution of the matter seems to be that it was a case of spontaneous combustion. Mr. R. H. Delmage, the owner of the shop, is a man whose veracity will not be questioned, and, besides, we have the same facts attested by several others who are among the most reliable and intelligent men in this community. Here, now, is a question for scientists. Will a combination such as the above generate fire? If so, the sooner that matter is settled the better. But for the timely discovery, great damage would certainly have been the result.—*Afton (Iowa) Tribune*, May 4.

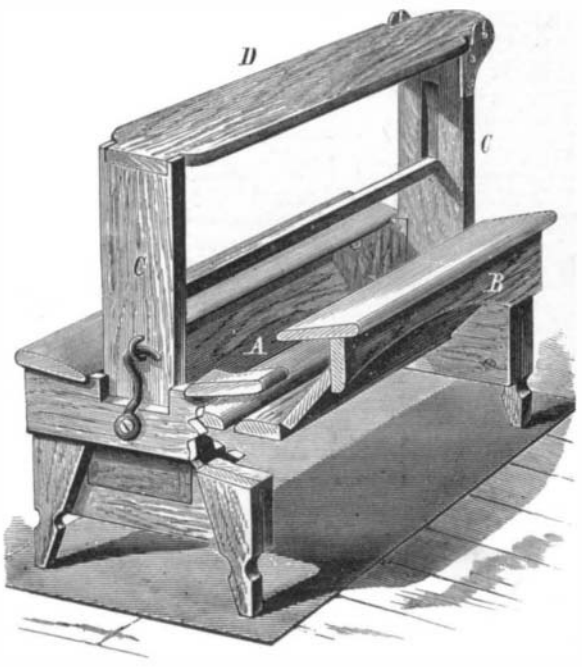
[We would inform our cotemporary that it is very well known that a combination of oil and combustible materials, such as that above described, will produce spontaneous combustion. Many such examples have been recorded in the pages of the SCIENTIFIC AMERICAN.—EDS.]

### Purification of Sulphide of Carbon.

Instead of the usual method of purification with mercury salts, S. Kern recommends the nitrate of lead, pulverized and mixed with a little metallic lead. The bisulphide is shaken with fresh quantities of the salt as long as it continues to blacken it; then it is decanted and distilled. The affinity of lead for sulphuretted hydrogen and sulphur in general leads us to believe that Mr. Kern's method will prove a good one. Strips of bright metallic copper will also soon remove the color and much of the odor from bisulphide of carbon. Unfortunately exposure to light causes both odor and color to return.

### WHITE'S IMPROVED WASHTUB STAND.

Housekeepers will, we think, be pleased with the new invention herewith illustrated, which is intended as a useful convenience for the laundry. It combines a hollow stand in which clothes may be kept until the arrival of wash day, an arrangement for supporting washtubs, and an ironing board. The clothes are placed in the receptacle, A, and the inclined opposite ledges, B, serve to receive the tubs. C C are hinged sections which sustain the ironing board, D. The latter fits between two studs at one end, and has at the other two side pivots that enter into section bearings, one of which is open to permit the ready removal of the ironing board when not required for use. The hooks shown on the ends of the stand also serve to hold the sections, C, in vertical position. By closing the sections, C, and placing the ironing board on the stand, a very good bench is formed. The



apparatus can be cheaply made, and, the inventor states, can be sold at large profit.

Patented through the Scientific American Patent Agency, March 21, 1876. For further information relative to salo ef rights, etc., address the inventor, Mr. John J. White, 279 Church street, Norfolk, Va

## DECISIONS OF THE COURTS.

### United States Circuit Court—Western District of Michigan.

PATENT PHOTO-PLATE HOLDER.—SIMON WING, ALBERT S. SOUTHWORTH, AND MARCUS ORMSBEE *vs.* JOSEPH H. TOMPKINS.

[In equity—Before Withey, J. Heard January 25, 1867. Decision April 5, 1876.]

WITHEY, J.:

Letters patent were issued to Albert S. Southworth, April 10, 1 55, which were surrendered and canceled—and September 25, 1860, upon amended specifications, re-issued letters were granted for a new and useful plate holder for cameras. The claim is "bringing the different portions of a single plate, or several smaller plates, successively into the field of the lens of the camera, substantially in the manner and for the purpose specified." In describing his invention the patentee, in his specification, states that it had "been customary to use a separate plate for each impression, the plate being removed from the camera and replaced by another; where several impressions of the same object were to be taken, as in multiplying copies, or for the purpose of selecting the best timed pictures, this caused considerable time and trouble, to obviate which is the object of my present invention."

Complainants are assignees of the patentee, and it is admitted if the patent is valid that defendant has infringed. The only question I have occasion to examine and decide is whether the patentee was the first and original inventor. Incidentally the question is raised of abandonment.

It is insisted that the evidence shows Southworth to have conceived and perfected his invention as early as the winter of 1847-8, if not earlier. And it is shown that in 1861 the validity of the patent was declared, Wing *vs.* Richardson, 2d Fisher's patent cases 535; also that there have been sixteen other decrees upholding the letters patent, not all contested cases, however.

On the other hand it is claimed that the proofs show the patented improvement of a sliding plate holder for cameras was known and practised by photographers as early as 1847 or 1848, and that the patentee did not perfect his invention until the fall of 1854, long after the machine was in use by others: That in 1869, Mr. Justice Nelson, in Wing *vs.* Schoonmaker, 3d Fisher's patent cases 607, held the patent invalid. The last case was appealed to the Supreme Court of the United States, which court was equally divided, four of the judges for and four against the patent.

But one case, it is said, has since been decided: Wing *vs.* Dunshee, in the United States Circuit Court for the District of Massachusetts, not reported, in which the previous ruling in that circuit by Mr. Justice Clifford in the Richardson case was followed. The last reported case is that against Schoonmaker, holding the patent for a sliding plate holder invalid, and in which there was apparently important and material testimony not put into the case against Richardson, decided eight years earlier. Presumptively, this would account for the different judgments of the two eminent judges.

In considering the additional testimony in this case, I have necessarily been led to examine the evidence in previous cases, stipulated into this. Briefly, Southworth's patent, owned by complainants, rests upon the fact that one Coburn, in 1846, made for the patentee a camera box, having wings on its side, in which a sliding plate holder could be placed, but no plate holder was made or used in connection with it, or otherwise. The camera was found to be too expensive, and was discarded. Then Southworth had one Stewart make a sliding front to a camera, by which he moved the lens over the plate on which impressions were taken at any desired point; but this process in multiplying pictures on one or more plates required either the camera or sitter to be moved at each separate impression taken, and was in my judgment far from being identical in principle with the sliding plate holder, by which pictures may be multiplied on one or several plates without moving the camera, the sitter, or object.

Nothing further was accomplished by Southworth in perfecting the idea which he evidently had, of multiplying pictures by some sort of an adjustable plate holder, and which he seems to have abandoned when he discarded the Coburn camera, until 1854, sometime after his return from California. In 1849 he went to California and remained nearly two years, till January, 1851, during which time he worked in the mines and gave no attention to the art of photography. When he returned to Boston he experimented some time in reference to the stereoscope, and was in poor health, altogether occupying him till the fall of 1854. In this time he perfected and took out one or more patents for the stereoscope. In the fall of 1854 he had the varioloid, confining him to his room for more than two weeks, and then again he turned his attention to the adjustable plate holder. During that fall he perfected his invention and applied, in December, for and obtained a patent, April, 1855. Southworth states, as a reason why he did not earlier make application for the patent, that he had not perfected the mechanical parts to his satisfaction, so as to carry out his idea readily. Then the California excitement came on, and he followed others to the land of gold.

After he was taken with the varioloid in the fall of 1854, he says, he shut himself up in his room, and "I applied myself to this idea of taking pictures rapidly in the center of the lens by adapting the movement in a frame which would fit any ordinary camera." This view of the progress of his invention is not substantially changed by any subsequent testimony, and in my opinion dates his invention of a movable plate holder in the fall of 1854.

This was the judgment of Mr. Justice Nelson in the case against Schoonmaker, in 1869, and in which I fully coincide.

Southworth testifies again in Wing *vs.* Anthony, in 1874, stipulated into this case. On his cross examination he says: "I think I used the sliding plate holder in a camera as early as 1852." For him to swear to what he thinks he did in 1852, does not establish any fact. It is too late to change ground as to the time of his invention, unless the proofs are stronger than anything before me.

It may be worthy to notice in this connection that if Southworth perfected his invention in 1846-7 or '48, and did not apply for a patent until the spring of 1855, there would seem to be a grave question whether he had not by laches abandoned to the public what he had invented. He makes a faint showing of ill health and want of pecuniary means during some part of the interval, but he had health to visit California and there engage in digging for gold for about two years. After his return he had health enough and money enough to engage "in considering new ideas, new plans, and new inventions relating to the stereoscope and other things connected with our (his) business, studying upon and taking out patents," before he turned his attention to applying for his patent.

If it had not been said in Wing *vs.* Richardson that there was no abandonment, because the reasons assigned, poor health and want of pecuniary means, excused want of diligence—I should be disposed to say that the six or seven years' delay was fatal to the validity of this patent. The point is raised in this case, but I need not rest my judgment upon it.

The next consideration is whether the sliding plate holder, for multiplying pictures on one or several plates, had been known and used in cameras prior to 1854, and if so, when. I make but brief reference to testimony.

The testimony of W. A. Pratt, taken December, 1873, in the case of Wing *et al* *vs.* Tompkins, is quite satisfactory on the point, corroborated as he is in material portions of his statements.

He says he invented the sliding plate holder at Alexandria, Va., in 1845—presents a model of it and pictures taken by that method—four on one plate, of his son, on his birthday, with the date of taking, at Richmond, Va., endorsed on the back of the plate at the time, "March 6th, 1847."

He opened a gallery at Richmond in 1846. On his sign were the words: "Virginia Daguerrean Gallery, established 1846;" here he made many thousand pictures for sale, by this method of the sliding plate holder. He thus made pictures of the members of the Constitutional Convention of Virginia, in 1850-1—names several members whose pictures were taken—also members of the legislature of that State in session in 1850-1. He explained his method of multiplying pictures to others; among them, one N. P. Simons, who testifies to the same fact, and that he used the method in taking impressions. The camera and plate holder used by Pratt were burned at Richmond in the great fire of 1865, hence they are not produced.

William Stroud learned of the movable plate holder and process for multiplying pictures on one plate, at Philadelphia in 1852, and in that year used a camera and adjustable plate holder in multiplying pictures.

He fixes the time by a bill rendered for poplar boards used in his gallery in making a revolving platform for taking stereoscopic pictures by this method, bearing date December, 1852, made an exhibit in this case. He also produces a leaf from his daguerrean register, in which, under date of August 11, 1852, is an entry of pictures which were taken by this method. One of the pictures is made an exhibit. He also produces the camera and sliding plate holder used by him in taking and multiplying these and many other pictures.

I pass over other testimony of prior use of complainant's patented invention, remarking, however, that the evidence to discredit the testimony of Pratt, and to show that certain exhibited pictures could not have been taken in the center of the focus of the lens, nor by the patentee's process and plate holder, is fully met by the testimony on behalf of defendant on the same subject.

Satisfied, as I am, upon both of the topics discussed, that the patent is invalid, I have no hesitation in so ruling. My judgment is supported by that of Mr. Justice Nelson, in Wing *vs.* Schoonmaker, in which that learned Judge said: "The proofs are full that the idea of making the same impression on different parts of the same plate by the use of a sliding plate holder existed and was carried into practical operation by working machines as early as 1847-8, and was in use by several practical photographers, some seven or eight years before the date of the patent of Southworth, and before he had perfected his machine."

There has been no ruling in this circuit upon this patent, so far as I know. This fact, taken in connection with the different judgments in Wing *vs.* Richardson and Wing *vs.* Schoonmaker, eight years apart, and upon somewhat different facts, leaves me at liberty to follow my own judgment, and especially so in view of the additional testimony put into this case.

A decree will be entered for defendant.

### United States Circuit Court—District of Massachusetts.

BOSTON ELASTIC FABRIC COMPANY *vs.* EAST HAMPTON RUBBER THREAD COMPANY.

[In equity.—Before Shepley, J.—Decided October term, 1875, to wit, April 4, 1876.

SHEPLEY, J.:

A former suit between these parties commenced for alleged infringement of letters patent granted to Liveras Hull, dated January 20, 1863, for an improvement in cutting sheets of rubber into threads, was dismissed upon the ground that the patent, as it then stood, was for a machine, and that the machine used by Hull was substantially the same machine as one of prior date know to manufacturers of rubber thread as "the bottle machine."

Since the decision in that cause, the patent has been reissued to the complainants, as assignees of Liveras Hull, by reissue 5,903, dated June 2, 1874, as a patent for an art or process, the claim being "for the improved mode of manufacture, consisting in cutting the sheet into a series of threads by a continuous cut of one cutter," as described in the specification.

At the hearing of the former cause it clearly appeared that Liveras Hull without any knowledge of any prior machine, or of any prior use of an art of cutting rubber threads in the mode described in his specification, had invented both the machine and the mode of manufacture. But it also appeared as clearly that there was proof of a machine of an earlier date than his invention, although it was unknown to him.

It did not quite satisfactorily appear, from the evidence in the former case, that the process or mode of manufacture described by Hull, and now, but not then, claimed, had been practised on the anticipating machine, although that mode of manufacture could have been practised on that machine, or at least on one differing from it only in the enlarged size of the drum on which the sheet rubber is wound. There was no conclusive evidence in that case that Hull was not the first, as he undoubtedly was in one sense an original, inventor of his mode of manufacture. But this issue was not directly involved in that case, the patent, as it then stood, being for the machine, and not for the art or process. Evidence has now been introduced, much of it coming from witnesses who were not examined before, which seems to prove satisfactorily that a machine was constructed by one Helm during the fall of the year 1860, and completed before the 1st of January, 1861; that a sheet of rubber, many yards in length, was wound round and round upon the drum of said machine; that the machine had a single circular cutter which was pushed up to the drum through the rubber at one end of the cylinder; that the drum was then caused to rotate slowly, and the circular cutter to rotate rapidly, and at the same time to traverse slowly along the face of the drum until it reached the other end of the drum, by which operation the sheet of rubber was cut into a series of threads by a continuous cut of one cutter.

That this was the same process claimed and described in complainants' patent is too clear to admit of dispute. Complainants contend that the process was only imperfectly carried on, that the thread made was imperfect, and that the use of the Helm machine was merely experimental, and the experiment was abandoned before Hull made his invention.

The law upon this subject is too well settled to require the citation of any authorities.

A patent may be defeated by showing that the thing secured by the patent had been invented, and put into actual public use, prior to the discovery of the patentee, however limited such use (other than experimental) or knowledge of the prior discovery may have been.

Seven witnesses, who are unimpeached and uncontradicted, testify to the public and practical, not merely experimental, use of the patented process, in New Brunswick, on the Helm machine, prior to the time of the alleged invention by the patentee. They prove that the threads cut by that machine were good marketable threads, well cut, and publicly made and used in large quantities in the manufacture of both shirred goods and suspenders, and that the fabric made from them was a good salable fabric and regularly sold in the market. There is some conflict in the testimony as to the subsequent history of the Helm machine on which this was first cut by the patented process. That history is not material to this inquiry. We are dealing with the mode of manufacture of the thread. The evidence shows that mode of manufacture to have been practised, not for experiment, but in the regular course of business, openly, successfully, and practically, within the knowledge of a large number of persons at a time prior to the date of the alleged invention.

Bill dismissed.

[*James E Maynadier*, for complainants.
*George Gifford*, *Hillard*, *Hyde*, and *Dickenson*, for defendants.]

### United States Circuit Court—District of Massachusetts.

HELEN MARIE MCDONALD *vs.* S. M. BLACKMER *et al.*

[In equity.—Before Shepley, J.—Decided October term, 1875, to wit, April 4, 1876.]

SHEPLEY, J.:

Since the disclaimer, which was filed before the date of the bill in this case, the claim of the complainant is limited to that only which was described in the specification of her patent, namely, "as a new article of manufacture, a skirt protector, having a fluted or plated border bound with or composed of enameled cloth or other waterproof material." I see no reason to doubt that she was the first and original inventor of this article, as distinguished from a skirt facing, which is an entirely different article, and from a skirt protector, which, being made of wiggan or similar material, was substantially useless for the purpose, as compared with the complainant's invention.

Decree for injunction and account, as prayed for in the bill.

[*George E. Betton*, for complainant.
*Browne* and *Holmes*, for defendants.]

### United States Circuit Court—District of Massachusetts.

PATENT GAS APPARATUS.—THE GILBERT AND BARKER MANUFACTURING COMPANY *vs.* THE WALWORTH MANUFACTURING COMPANY.

[In equity.—Before Shepley, J.—Decided April 4, 1876.]

SHEPLEY, J.

The complainants are the owners of letters patent of the United States, dated August 3, 1869, No. 93,368, for an improved apparatus for carbureting air. The invention is described in the specifications as relating to the apparatus used for carbureting air in the manufacture of illuminating gas for dwelling houses and factories, and as consisting in the arrangement of the carbureter with the meter wheel or pump for driving the air through said carbureter to the burners, and the coil and heating pipes for evaporating the oil within the carbureter, whereby the whole apparatus is rendered perfectly safe with regard to life and property in the building lighted, the carbureter being situated in a vault or house away from the building to be lighted, while the heating apparatus and the pump or meter wheel are within the building to be lighted, and where they can be easily and quickly reached, and under perfect control of the occupant of the house. There was nothing novel in the meter wheel, or the carbureter, or the combination of a meter wheel with a carbureter, or their connection with the gas pipe, air, or heating pipes, except so far as their location and arrangement was claimed to be new, by placing the carbureter in a vault or house by itself, separate from the building to be lighted, and arranging the meter wheel and the heating coil in the building to be lighted where they could be easily reached, and under control of the occupant of the house without exposure to explosion consequent upon frequent access to the room in which the carbureter is placed, and connected by pipes passing through a wall or the ground, so as to cut off any communication of gas or flame between the room in which the carbureter is placed and the building to be lighted.

It is denied on the part of the defendants that there is any patentability in such a change of location of parts, all of which are confessedly old. Mere change of location is not patentable; but where change of location brings into existence a new combination of devices operating by reason of such new combination to produce a new and useful result, such new combination is patentable. (Woodruff, J., in Marsh *et al. vs.* The Dodge Stevenson Manufacturing Company, 3 *Official Gazette*, 398.)

I am not prepared to say that the new arrangement and location constituting a new form or mode of combination, as described in the patent, taking into consideration the new and useful result claimed for it, was not patentable, if it was novel at the time claimed as the date of plaintiff's invention.*

Without instituting a comparison between the patented invention and all the other prior existing forms of apparatus for carbureting air for illuminating purposes, which have been proved to have existed, I have selected the Meriden machine for the reasons that it is proved to have been constructed and operated successfully in the fall of 1864, while the invention of Gilbert & Barker is not even claimed to have been before June, 1867, and also because this apparatus appears to me to have embodied in 1864, in successful and and practical and public use, every element of the first claim of the complainants' patent of August, 1869.

The Meriden apparatus was used for carbureting air for illuminating a factory. It consisted of an air pump and air receiver, a well known equivalent for the meter, pump wheel, a carbureter, the equivalent of complainants' carbureter, placed in a brick vault built on the surface of the ground ninety-three feet from the main building to be lighted. This was actually both a vault and a house, and therefore identical with complainants' vault or house. There was an air pipe, which connected the pump inside of the building to be lighted with the carbureter in the vault, passing underground and furnishing a conduit from the air in the pump to the carbureter, being thus the equivalent of complainants' pipe A. There was a gas pipe leading from the carbureter in the vault through and underground, and furnishing a conduit for the carbureted air or gas from the carbureter to the building to be lighted. This is identical with complainants' pipe N. There was also a steam pipe with its connections, but that is not material to the inquiry involved in this case, because the defendants do not use any artificial heat, and the complainants do not make their heating coil and pipes a part of the arrangement and combination claimed in the first claim.

The Meriden apparatus contained every element of location, arrangement, and combination claimed in the first claim of complainants' patent.

There are many other references to the patent and the drawings, and other comparisons between the described inventions and arrangements other than those of the Meriden apparatus which might be made confirmatory of the views I have taken; but those already stated are so conclusive to my own apprehension, that further illustration would seem to be superfluous. It follows that the bill must be dismissed.

Bill dismissed with costs.

[*E. W. Stoughton* and *William Stanley* for complainants.
*Causten Browne* and *Jabez S. Holmes* for defendants.]

## NEW BOOKS AND PUBLICATIONS.

ARCHITECTURAL IRON WORK, a Practical Book for Iron Workers, Architects, Engineers, etc. With Specifications for Iron Work, Useful Tables, and Valuable Suggestions. By William J. Fryer, Jr. Illustrated. Price $3.50. New York city: John Wiley & Sons, 15 Astor place.

This book is the best specimen which has reached us of a new trade literature which is now springing up to answer a demand created by the extensive use of iron in architecture, not merely for tie rods and girders, but as a building material. The author is evidently thoroughly acquainted with his subject, and his book is an exhaustive treatise on the science and art of building in iron. The specifications are admirably drawn, and the tables of proportions, weights, and loads for iron work of all kinds are full and complete. The book is well illustrated, and is a clear, practical treatise, adapted for workmen and owners of buildings as well as for the engineering profession. It is, moreover, free from those technical expressions which too often impair the value of such works for practical workmen.

VILLAS AND COTTAGES, OR HOMES FOR ALL: Plans, Elevations, and Views of Twelve Villas and Ten Cottages, Suited to Various Wants and Locations. Designed by William L. Woollett, Fellow of the American Institute of Architects. Price $3.00. New York city: A. J. Bicknell & Co., 27 Warren street.

Judging from the number of books on villa architecture which reach us, there must be a lively demand for rural and suburban residences just now; and it is gratifying to observe the increasing neatness and propriety of design which characterize them, and the gradual disappearance of the grotesque and clumsy attempts at ornamentation which disfigured the homes of the last generation. In internal convenience and sanitary arrangement, there is also a marked improvement. Mr. Woollett's designs, shown in 40 well executed plates, fully justify the above remarks, being marked by good taste and ample provision for supply of light and fresh air. The brick buildings illustrated in this book are especially commendable for the substantial and effective use of this material, which is in most respects the best ever employed in building human habitations.

CHEMISTRY, THEORETICAL, PRACTICAL, AND ANALYTICAL, as applied to the Arts and Manufactures. By Writers of Eminence. To be completed in Forty Parts, price 50 cents each. Philadelphia, Pa.: Lippincott & Co., 715 and 717 Market street. For sale by James Sheehy, 33 Barclay street, New York city.

This book, says the title page, is constructed on the basis of the late Dr. Sheridan Muspratt's "Chemistry as applied to the Artsand Manufactures;" and it is to that widely circulated work that the new publication, an instalment of which is now before us, owes its chief recommendation. There is, however, some new matter in it, and the modern notation is introduced. The work would be more readily adopted as an authority if the names of the "writers of eminence" were given. A work of this magnitude ought not to be published anonymously.

ANNUAL REPORT OF THE UNITED STATES GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES FOR 1874. By F. V. Hayden, United States Geologist. Washington, D. C.: Government Printing Office.

Professor Hayden is engaged in a work of national importance, and is carrying it out in a thoroughly efficient manner. In his account of his labors during 1874, he describes the topography and geology of Colorado and some parts of the adjacent territories; and the botanical and palæontological features of the country explored have not escaped observation. The work now being done by the expedition is an immense one; and a perusal of one of Professor Hayden's reports enables us to fully appreciate it. The book is well and liberally illustrated, the photographers who travel with the expedition being constantly at work as the party progresses.

LADIES' FANCY WORK: Hints and Helps to Home Taste and Recreations. By Mrs. C. S. Jones and Henry T. Williams. Price $1.50. New York city: H. T. Williams, 46 Beekman street.

This is the third of a series of useful volumes which the above named publisher is issuing, with the design of collecting, in permanent form, an immense number of hints and suggestions relative to tasteful household ornamentation, some of which, hitherto, have appeared in family newspapers, while others have been known only to few individuals. The present book tells how to make fancy work of all kinds, including paper and wax flowers, shell, leaf, and moss ornaments, bead and worsted work, and the thousand knick-knacks of ribbon and cardboard which ladies delight to manufacture. It is copiously illustrated, handsomely bound, and the descriptive matter is plain and easily followed.

ENGINEER'S AND MECHANIC'S POCKET BOOK. By Charles H. Haswell, Civil, Marine, and Mechanical Engineer, etc. New York city: Harper & Brothers, Franklin Square.

Mr. Haswell's engineer's pocket book has been before the mechanical public now for over thirty years, so that there is little necessity for here recapitulating its contents. It is one of the best, if not the best, of handy books of reference extant; and it must be a matter of some difficulty to suggest any useful practical facts or tables which are not to be found somewhere among its 700 pages. The present edition is the thirty-second, and is fully up to the times, through fresh and careful revision of the contents. It is strongly and handsomely bound in leather, in pocket book form, and can be obtained, postpaid, by mailing $3.00 to the author, at 6 Bowling Green, New York city.

CATALOGUE OF THE FISHES OF THE BERMUDAS. By G. Brown Goode. Washington, D. C.: Government Printing Office.

This work is one of a series intended to illustrate the natural history collections constituting the National Museum, which were entrusted to the care of the Smithsonian Institution by Act of Congress in 184-.

CENTENNIAL COLLECTION OF NATIONAL SONGS. Price 40 cents. New York city: C. H. Ditson & Co., 711 Broadway.

A collection of songs, more or less familiar, which will probably be welcome to many people in this year of celebrations.

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