

The Value of Small Inventions.

An excellent exemplification of the large returns which a small invention may often bring to its fortunate originator is found in the experience of Mr. Charles W. Cahoon, who recently died at Portland, Me. Mr. Cahoon possessed much inventive ability, besides that quality of persistent determination to succeed which usually characterizes the successful inventor. It is said that he realized sixty thousand dollars out of a little lamp burner, which had an appliance for lifting the chimney so that the wick could be reached for lighting or the mouth of the lamp for filling. This saved the frequent removal of the chimney while hot, and so doubtless prevented many fingers from being burned and many chimneys from being broken. Simple as was this device, Mr. Cahoon studied hard over it, and nearly lost his eyesight by persistent watching of the lamp flame under different conditions. It was the first invention of the kind patented (February, 1861), and infringers were plenty, but Mr. Cahoon protected his rights manfully and triumphed in the end. It is to be regretted that he could not have lived longer to have enjoyed the fruits of his strivings.

NEW BOOKS AND PUBLICATIONS.

BLUE AND RED LIGHT. By S. Pancoast, M.D., Philadelphia, Pa.: T. M. Stoddart & Co., 723 Chestnut street.

This appears to be an attempt to galvanize new life into the moribund blue glass mania, through the production of some alleged benefits to invalids, supposed, this time, to be derived from red glass. A sense of duty to our readers has impelled us to devote some utterly wasted time to the examination of this work, which we now consign to the waste basket with the conviction that it contains more profound bosh than it has ever been our misfortune to find in so few pages—Pleasanton's book not excepted.

DIGEST OF COTTON BALE TIES. By Messrs. L. W. Jinsbaugh and T. C. Tipton. Price \$10. Published by the authors.

This is another one of those very valuable digests of special classes of inventions, several of which works have already been prepared by gentlemen connected, as are the present authors, with the United States Patent Office. We have no doubt but that this volume will prove exceedingly useful to inventors, manufacturers, and patent experts interested in its subject-matter. It is admirably compiled, and all the drawings are given complete, on a reduced scale. We should like to see more digests of this kind appear, one for instance on churns, another on cultivators, and another on beehives. The railroad people have been asking for just such a work on car couplers for a long time.

ANNUAL RECORD OF SCIENCE AND INDUSTRY FOR 1876. Edited by Spencer F. Baird. Price \$2. New York city: Harper & Bros., Franklin square.

This volume purports to be a complete history of the progress of science and industry for the past year. It consists, first, of a series of summarized reviews by Professor Barker, Dr. Dana, Professor Holden, and others, and, second, of a compilation of receipts mostly from technical periodicals.

DECISIONS OF THE COURTS.

Supreme Court of the United States.

PATENT FLOUR PROCESS.—WILLIAM F. COCHRANE, WILLIAM WARDER, RODNEY MASON, W. S. COX, et al., APPELLANTS, vs. JOSIAH W. DEENER, GEORGE W. CISELL, JAMES H. WELCH, et al.

[Appeal from the Supreme Court of the District of Columbia.—Decided October term, 1876.]

The powers of the supreme court of the District of Columbia, in patent cases, are the same as those of the circuit courts of the United States.

Upon a bill in equity for the infringement of a patent it is a matter of discretion, and not of jurisdiction, whether a case shall be first tried at law; and in this matter, the courts of the United States, sitting as courts of equity in patent cases, are much less disposed than the English courts are to send parties to a jury before assuming to decide upon the merits.

The jurisdiction of the circuit courts in cases arising under the patent and copyright laws is not changed by the Revised Statutes, and consequently the original cognizance of the circuit courts sitting as courts of equity in patent cases is retained.

Where it is discretionary with a court of equity whether it will first send a case to be tried at law, and it exercises its discretion to decide the case upon its merits without the aid of a jury of any sort, such action is not a ground of appeal.

But if the appellate court were convinced that the case was not properly decided, and could not be properly decided without such a reference, it might, in the exercise of its own discretion, remand it to the court below for that purpose.

It does not detract from the validity of a patent that the inventions of others are made use of in carrying out the patented invention. One invention may include within it many others, and patents for each and all be valid at the same time, but in such case each inventor would be precluded from using the inventions made and patented prior to his own, except by license from the owners thereof.

A process is a mode of treatment of certain materials to produce a given result, an act, or a series of acts, performed upon the subject-matter to be transformed or reduced to a different state or thing, and if new and useful it is patentable.

The patentability of a process is entirely independent of the instrumentalities employed, and it is immaterial whether or not the machinery pointed out as suitable to perform the process be either new or patentable.

The process requires that certain things should be done with certain substances and in a certain order; but the tools to be used in doing this may be of secondary consequence.

In the language of the patent law a process is an art. One device may be the equivalent of another in the general combination with other elements, and yet, when taken by themselves as separate pieces of machinery, they may not be the same, and the use of one not the infringement of a patent for the other.

While the parts of machinery which go to make up a combination could not when separately considered be regarded as identical or conflicting with those described in a patent, yet having the same purpose in the combination, and effecting that purpose in substantially the same manner, they are the equivalents of each other in that regard.

A foreign patent in order to invalidate an American patent must antedate the invention patented.

Mr. Justice Bradley delivered the opinion of the court: This is a suit in equity, instituted in the supreme court of the District of Columbia for injunction and relief against an alleged infringement of various patents belonging to the complainants. The bill was dismissed, and the complainants have appealed.

The patents sued on are six in number, originally five granted to the appellant Cochrane on the 13th of January, 1863, and numbered respectively 37,317, 37,318, 37,319, 37,320, and 37,321. They all related to an improved method of bolting flour, the first being for the general process, and the others for improvements in the different parts of the machinery rendered necessary in carrying on the process. Three of the original patents, Nos. 37,317, 37,318, and 37,321, were surrendered, and reissues taken in 1874, which reissues were numbered 5,841, 6,029, and 6,030, the first being for the process, and the other two for portions of the machinery. Reissue 6,029, being in place of the original patent numbered 37,321, was also subsequently surrendered, and two new reissued patents substituted therefor, numbered 6,594 and 6,595.

The case has been mainly argued on the question of infringement, the defendants using a bolting apparatus constructed according to letters patent issued to Edward P. Welch, in April, 1873, for improvements upon machines patented to Jesse B. Wheeler and Ransom S. Reynolds, which, as well as the process employed, they contend, are radically different from the apparatus and process of Cochrane.

A preliminary question is raised with regard to the jurisdiction of the court below to hear the case on a bill in equity, before a determination of the rights of the parties in an action at law.

The powers of the supreme court of the District of Columbia, in patent cases, are the same as those of the circuit courts of the United States. (See Revised Statutes relating to the District of Columbia, sections 760, 764.)

\* \* \* \* \* The principal patent sued on in this case was granted on the 21st of April,

1874, being a reissue of a patent granted to William F. Cochrane on the 6th of January, 1863. The original patent was numbered 37,317, and the reissue 5,841. The alleged invention is for a process in manufacturing flour. The patentee in his specification says:

"The object of my invention was to increase the production of the best quality of flour; and my improvement consisted in separating from the meal first the superfine flour, and then the pulverulent impurities mingled with the flour-producing portions of the middlings meal, so as to make 'white' or 'purified' middlings, which, when reground and rebolted, would yield pure white flour, which, when added to the superfine, would improve the quality of the flour resulting from their union, instead of deteriorating its quality, as had heretofore been the case when the middlings were mingled with the superfine."

The process employed for producing the result here indicated is then described. It consists in passing the ground meal through a series of bolting reels clothed with cloth of progressively finer meshes, which pass the superfine flour and retard the escape of the finer and lighter impurities; and, at the same time, subjecting the meal to blasts or currents of air introduced by hollow perforated shafts furnished with pipes so disposed that the force of the blast may act close to the surface of the bolting cloth; the bolting chest having an opening at the top for the escape of the air, and of the finer and lighter particles therewith, through a chamber where the particles are arrested, while the floor and sides of each compartment of the chest are made close so as to prevent the escape of the air in any other direction than through the said opening. By this means the superfine flour is separated, and the fine and light specks and impurities, which ordinarily adhere to the middlings and degrade the flour produced therefrom, are got rid of, and when the middlings are now separated from the other portions of the meal, they are white and clean, and capable of being reground and rebolted, so as to produce superfine flour equal in quality, and even superior to the first installment.

This is the process described; but the patentee claims that it is not limited to any special arrangement of machinery. He admits the prior use of currents of air in the interior of the reels, introduced by means of hollow perforated shafts, for the purpose of keeping back the speck and increasing the quantity of superfine flour; but not for purifying the middlings preparatory to regrinding. His improvement, therefore, does not consist in using drafts and currents of air, but in the process as a whole, comprising the application of the blast, and the carrying off of the fine impurities, whereby the middlings are purified preparatory to regrinding after being separated from the other parts.

The defendants deny that they use this process. They purify the middlings of the flour, as before stated, by means of machines constructed according to letters patent issued to Edward P. Welch, in April, 1873, for improvements upon machines patented to Jesse B. Wheeler and Ransom S. Reynolds.

In this process reels are not used for purifying the middlings, but a flat and slightly inclined vibrating screen or sieve is used for the purpose, over which the ground meal is passed, and while passing is subjected to currents of air blown through a series of pipes situated close underneath the screen, which currents pass up through the screen and through an opening at the top of the chest into a chamber, carrying with them the finer and lighter impurities, whereby the middlings are rendered clean and white, and capable of being reground into superfine flour. The bolting chest is made tight and close on all sides except the opening at the top, so that the currents of air may be fed to escape by that exit.

Now, except in the use of a flat sieve or screen in place of reels, it is difficult to see any substantial difference between these two methods. The defendants use, in addition, brushes which revolve on the under side of the screen, so as to keep the meshes thereof constantly clean and free; but this is merely an addition, which does not affect the identity of the two processes in other particulars. We have substantially the same method of cleaning the middlings preparatory to regrinding by means of currents of air passed through them while being bolted, and while being confined in a close chest or chamber, said chamber having an opening above for the escape of said currents of air and the impurities with which they become loaded. The middlings being thus purified are reground and rebolted, producing a superfine flour of superior grade, a new, useful, and highly valuable result.

The use of a flat screen instead of a revolving reel for bolting and cleaning the middlings is a mere matter of form. It may be an improved form, and, perhaps, patentable as an improvement. But it is at most an improvement.

The forcing of the air currents upward through the screen and film of meal carried on it and against the downward fall of the meal, instead of forcing them through the bolting cloth in the same direction with the meal, is also a mere matter of form, and does not belong to the substance of the process. The substantial operation of the currents of air in both cases is to take up the light impurities and bear them away on the aggregate current through the open space and thus to separate them from the middlings. This, too, may be an improvement on Cochrane's method, but it is only an improvement.

The defendants admit that the process has produced a revolution in the manufacture of flour; but they attribute that revolution to their improvements. It may be, as they say, that it is greatly due to these. But it cannot be seriously denied that Cochrane's invention lies at the bottom of these improvements, is involved in them, and was itself capable of beneficial use, and was put to such use. It had all the elements and circumstances necessary for sustaining the patent, and cannot be appropriated by the defendants, even though supplemented by, and enveloped in, very important and material improvements of their own.

We do not perceive that the patent of Cogswell and McKiernan, if valid at all as against Cochrane (a point which will be more fully considered hereafter), affects the question in the least. That patent is not at all for the patent which Cochrane claims. If valid, and if, in using his process, Cochrane is obliged to use any device secured to Cogswell and McKiernan, it does not detract in the slightest degree from his own patent. One invention may include within it many others, and each and all may be valid at the same time. This only consequence follows, that each inventor is precluded from using inventions made and patented prior to his own except by license from the owners thereof. His invention and his patent are equally entitled to protection from infringement as if they were independent of any connection with them.

That a process may be patentable irrespective of the particular form of the instrumentalities used, cannot be disputed. If one of the steps of a process be that a certain substance is to be reduced to a powder, it may not be at all material what instrument or machinery is used to effect that object, whether a hammer, a pestle and mortar, or a mill. Either may be pointed out, but if the patent is not confined to that particular tool or machine, the use of the others would be an infringement, the general process being the same. A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful it is just as patentable as a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable, while the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances and in a certain order; but the tools to be used in doing this may be of secondary consequence.

The machine patents come next to be considered. As to No. 6,030, which is a reissue of the original patent No. 37,318, the defendants clearly infringe, at least the last claim, which is in these words:

"In combination with the screen incased in a chest, the perforated blast pipe and the suction pipe, arranged to operate on opposite sides of the screen, substantially as set forth."

As to the patent next in order, namely, the original patent No. 37,319, which relates specially to the use of what the patentee calls the pump for introducing the meal into the chest and reels, while the valve arrangement used by the defendants may be an equivalent in the general combination with the said pump described by Cochrane, yet, taken by themselves, as separate pieces of machinery, they are not the same, and the use of the one is not an infringement of a patent for the other. (Curtis, sec. 332; Foster vs. Moore, 1 Curtis, C.C.R. 279.) Nor can we perceive that the defendants infringe the next patent, No. 37,320, which is for certain combinations of machinery, including the bolting reels, dead air chambers therein, slotted shaft, and reciprocating board for discharging the meal, etc., which it is unnecessary to describe more particularly.

The two remaining patents, No. 6,594 and 6,595, being reissues of original patent No. 37,321, are for combinations of essential parts of the machinery required for bolting flour and purifying the middlings according to the general process described in the first patent. The principal claim of the original patent was for the condensing or collecting chamber, through which the currents of air on leaving the bolting chest make their escape, and where they leave the fine particles with which they become loaded. This claim, it is said, was found to be too broad, inasmuch as a collecting chamber somewhat similar had been used in another connection, though not in the combinations presented in Cochrane's bolting process. The original patent, therefore, was surrendered, and the two patents now under consideration were issued in place thereof, claiming the use of the collecting chamber in combination with the various material parts of the bolting apparatus. The reissue, No. 6,594, contains three claims, and No. 6,595 one claim.

The first claim of reissue No. 6,594 is for the collecting chamber (used for the purpose aforesaid) in combination with the bolter, air pipes, and valves for feeding and delivering the meal without allowing the air to pass therewith. Now, although the defendants use a flat bolter instead of a reel, and use different kinds of valves for feeding and delivering the meal without allowing the air to pass, yet they employ the combination of devices described in this claim. They use the collecting chamber for the same purpose as that pointed out in the patent, and use it in connection with a bolter, air pipes, and valves for feeding and delivering the meal without allowing the air to pass therewith, each effecting the same separate purpose, and all combined effecting the same general purpose, which the like parts are intended to accomplish in Cochrane's bolting apparatus. Though some of the corresponding parts of the machinery, designated in this combination, are not the same in point of form in the two bolting apparatuses, and, separately considered, could not be regarded as identical

or conflicting, yet having the same purpose in the combination, and effecting that purpose in substantially the same manner, they are the equivalents of each other in that regard. The claim of the patent is not confined to any particular form of apparatus, but, in regard to the valves for example, embraces generally any valves for feeding and delivering the meal without allowing the air to pass through. We are of opinion, therefore, that the combination here claimed is infringed by the apparatus used by the defendants.

It is unnecessary to make a separate examination of the other claims embraced in the two patents under consideration. They are all susceptible of the same observations which we have made with regard to the first claim. In our opinion the defendants do not infringe them.

But a question is raised with regard to Cochrane's priority of invention. A patent was granted on the 12th of June, 1860, to Mortimer C. Cogswell and John McKiernan for improvements in ventilating bolting chests, which, it is contended, antedates and nullifies Cochrane's apparatus as patented to him in the original patent 37,321, and in the two reissues thereof before mentioned. This patent (of Cogswell and McKiernan) we have examined and find that it does contain five of the elements embraced in those reissues, namely (besides the bolting chest and bolter which are always used), it contains the perforated air pipe extending inside of the bolting reel, the fan for producing a blast of air therein, and a collecting chamber for arresting the flour carried off by the blast. The purpose was simply to cool the meal and keep the bolting cloths dry. The flour which collected in the chamber was returned to the chest. The parts contained in this apparatus are those which are patented in combination in Cochrane's reissue 6,595, which was separated, it is said, from reissue 6,594 on account of this patent of Cogswell and McKiernan. The combinations patented in reissue 6,594 embrace other parts not contained in Cogswell and McKiernan's patent, and the defendants contend that this reissue is void as not being sustained by the original patent 37,321.

The latter position we think is untenable. Cochrane's apparatus, as exhibited in his model, and described in his original patent, and in the series of patents taken out at the same time, all having relation to the same general process, and referred to in patent 37,321, contained all the parts which go to make the combination claimed in reissue No. 6,594. We see no reason, therefore, why such reissue was not properly granted to him by the Patent Office—the claim being, in fact, a much narrower one than that of the original patent.

The same observations apply to reissue No. 6,595. But, as to that, as before stated, the particular elements of the combination claimed in it are found in Cogswell and McKiernan's machine; and if this is entitled to the precedence over Cochrane's, reissue No. 6,595 is void. He contends that it is not entitled to such precedence; but that, in fact, Cogswell and McKiernan surreptitiously obtained a patent for his invention. We have examined the evidence relating to this matter and are satisfied that the improvement claimed by Cochrane was his invention; that Cogswell and McKiernan obtained their knowledge of it from him; and that there is nothing connected with their patent which ought to invalidate the reissued patent in question.

A French patent dated 27th of September, 1860, granted to one Perigault, is also referred to as anticipating the combinations in these patents. But it being shown that Cochrane's invention was actually made before that date, the point was not pressed in the argument. By the act of 1870 a foreign patent, in order to invalidate an American patent, must antedate the invention patented.

Our conclusion is that the patent for the process being reissue No. 5,841, and the several reissued patents for combinations of mechanical devices, numbered respectively 6,030, 6,594, and 6,595, are valid patents, and are infringed by the defendants; and that the other two patents named in the bill of complaint, numbered respectively 37,319 and 37,320, are not infringed by the defendants.

The decree of the court below is, therefore, reversed, and the cause is remanded with directions to enter a decree for the complainants and to proceed therein in conformity with this opinion.

Mr. Justice Clifford, dissenting.

I dissent from the opinion and judgment of the court in this case, for the following reasons:

1. Because the mechanical means employed by the respondents to effect the result are substantially different from those described in the complainant's patent.

2. Because the process employed by the respondents to manufacture the described product is materially and substantially different from the patented process employed by the complainants.

3. Because the respondents do not infringe the combination of mechanism patented and employed by the complainants. (Proby vs. Ruggles, 13 Pet. 341; Vance vs. Campbell, 1 Black, 428; Gill vs. Wells, 22 Wall, 26.)

4. Because the respondents do not infringe the process patented by the complainants, the rule being that a process, like a combination, is an entirety, and that the charge of infringement in such a case is not made out unless it is alleged and proved that the entire process is employed by the respondents. (Howe vs. Abbott, 2 Story C. C. 194; Gould vs. Rees, 15 Wall, 193.)

I concur in this dissent.—Strong, J. [R. Mason and Chas. F. Blake, for complainants. A. L. Merriman and Howard C. Coody, for respondents.]

United States Circuit Court—District of Maryland. INJUNCTION AGAINST THREATENING PATENTEES.—JOHN C. BIRSELL vs. THE HAGERSTOWN AGRICULTURAL IMPLEMENT COMPANY.

[In equity.—Before Bond, C. J., and Giles, J.—Decided March, 1877.] Motion to join complainants from bringing suits against the defendants' vendees.

In this case, an injunction had been issued restraining defendants from infringing on the reissued patent granted complainant May 18, 1858; reissued April 8, 1862; for an improvement in machinery for hulling and thrashing clover. The defendants afterwards changed the construction of their machine and proceeded to sell clover hullers of the changed construction. On a motion made by complainant to commit them for contempt of court, for violating the injunction issued against them, by selling machines of this changed construction, the court held that, on the showing made, the machines were substantially different from Birdsell's patented machine; and, therefore, dismissed the motion. (See Official Gazette, March 13, 1877.) Thereafter complainant notified several of the vendees of defendants—some of whom were using the original machine that had been enjoined, and some of whom were using the machine as it had been changed—that, unless settlement were made with him forthwith, suit would be brought against them. Defendants, thereupon, moved upon a cross petition filed in the original case, for an injunction to issue against the complainant, restraining him, while the original suit was still pending against them, under which damages and profits could be collected for all the machines that they made and sold, from bringing any suit, or threatening to bring any suit against any vendees of theirs, based upon a user of a machine that might become subject of account in the original case.

Counsel for defendants, seeking the injunction against complainant, based their motion upon the general equity jurisdiction of the court; that, inasmuch as complainant had submitted himself to the jurisdiction of the court to obtain relief against the defendants, he was also subject to the order of the court in relation to any matter relating to the granting of that relief; that the defendants were thoroughly responsible; and that upon the original suit being carried on to completion, if recovery was made, the complainant would recover in that suit all the profits that defendants had obtained from the wrongful manufacture, and the damages that he had suffered by reason of the wrongful manufacture, and that complainant would, therefore, be put in the same position as if he had originally sold all the machines. That, this being the case, he ought not to be allowed to interfere with the vendees of defendants while the suit against them was pending. In support of their position they cited the decrees of Judge Drummond in the case of Isaac W. Barnum vs. Herman B. Goodrich, entered in United States Circuit Court for the northern district of Illinois, July 2, 1873, wherein the complainant having brought suit against the defendant and obtained an order for defendant to keep an account of the sale of the devices alleged to be an infringement, was enjoined from prosecuting suits, already begun by him in other circuits, against the defendants' vendees, and from bringing any further suits against defendants' vendees; also the decree entered by the Hon. H. H. Emmons, United States Circuit Judge, and Hon. P. B. Swing, United States District Judge, in the circuit court of the United States for the southern district of Ohio, in the case of Hezekiah B. Smith vs. J. A. Fay & Co., restraining the complainant from bringing suit against the defendants' vendees in other circuits, the complainant in this case having obtained an interlocutory decree and a reference to the master, and the suit being, at that time, pending before master on the question of the account.

The defendants relied upon the fact that the complainant was a resident of Indiana, and not before the court, and had sought the jurisdiction of the court for the purpose of bringing the suit, and for no other purpose. He was not, therefore, subject to any order upon him; but that the court could not enforce an order if it made one, and it would not do an idle thing.

The respondents asking the order were represented by Hatch & Parkin-son, of Cincinnati; the complainant by M. D. Leggett & Co., of Cleveland. The court did not deliver a written opinion; but, having considered the matter, entered the following order:

DECREE.

Bond, J.: This cause coming on to be heard upon the petition of the defendant herein for an injunction to issue against the complainant to restrain him from commencing or prosecuting, or threatening to prosecute, any suits against any of the vendees, or vendees of defendant, for the use or sale of clover hullers manufactured by the defendant at Hagerstown, and sold by them or their agents, and it appearing to the court that the complainant has been threatening to bring suits against said vendees while suit is still pending by him in this court against the defendant, the manufacturer, and the case having been fully argued by the counsel for the respective parties, the court doth order: That said John C. Birdsell, the complainant herein, be restrained and barred from commencing or prosecuting,

or threatening to commence or prosecute, any suit against any vendee of this defendant, or any vendee of a vendee of this defendant herein, for any alleged infringement of the reissued letters patent involved in this case, and on which this case is brought, based upon a use or sale by said vendee of any clover machine purchased of this defendant.

Provided said defendant shall within thirty days file a bond in this case in the sum of five thousand dollars, with securities to be approved by the court, for the payment of any damages that may be adjudged against the defendant in the above entitled suit, and that defendant shall file in this court a sworn monthly statement of the number of clover machines herein-after made and sold by them.

#### Inventions Patented in England by Americans.

From May 8 to May 14, 1877, inclusive.

BUTTON HOLE SEWER.—W. Randel et al., Troy, N. Y.  
 CAR FARE REGISTER.—H. E. Towle, New York city.  
 CLEANING GUNS, ETC.—B. L. Budd, New York city.  
 GLOVE STRETCHER.—J. Herts, New York city.  
 LAMP BURNER.—Benedict & Burnham Co., Waterbury, Conn.  
 MOTIVE POWER FOR VESSELS.—T. S. Seabury, New York city.  
 PAINT OIL.—G. Walker et al., Chicago, Ill.  
 ROLLING LEATHER, ETC.—A. F. Stowe, Massachusetts.  
 SCREW, ETC.—H. A. Harvey, Orange, N. J.  
 SHOE-FASTENING.—F. G. Farnham, Hawley, Pa.  
 SPEED GOVERNOR, ETC.—G. Westinghouse, Jr. (of Pittsburgh, Pa.), Liverpool, England.  
 WINDING REEL.—W. Grover et al., Holyoke, Mass.  
 WOOD PAVEMENT.—F. C. Taylor, Chicago, Ill.

#### Recent American and Foreign Patents.

##### Notice to Patentees.

Inventors who are desirous of disposing of their patents would find it greatly to their advantage to have them illustrated in the SCIENTIFIC AMERICAN. We are prepared to get up first-class wood engravings of inventions of merit, and publish them in the SCIENTIFIC AMERICAN on very reasonable terms.

We shall be pleased to make estimates as to cost of engravings on receipt of photographs, sketches, or copies of patents. After publication, the cuts become the property of the person ordering them, and will be found of value for circulars and for publication in other papers.

#### NEW MECHANICAL AND ENGINEERING INVENTIONS.

##### IMPROVED BLACKSMITHS' TONGS.

James H. Gregory, Columbia, Tenn.—These tongs are so constructed that they may be used for holding two pieces of iron together, either straight or at any desired angle, for welding. They may be used as a clamp, for holding the two ends of a tire with any desired lap, for holding a piece or splice to be inserted in a tire, or for holding various kinds of blades and cutters to be ground, and for other similar purposes.

##### IMPROVED MILL SPINDLE BUSH.

Harvey T. Ashworth, Chatham, Va.—This consists of a bush for the eye of the bedstone, which is made of a block of hard wood or metal, and recessed for the reception of the cushioned journal blocks or followers. The latter are recessed near the upper end, and filled with a suitable lubricating mixture. The top of the journal block is tightly closed by a rubber cap fitting tightly around the spindle.

##### IMPROVED RAILROAD SIGNAL.

Charles Haise and Frank Haise, Atlanta, Ill.—This is an improved device to enable an approaching train to be signaled from the office, so that there may be no delay in making the signals when promptness is necessary. Wires and levers are so arranged that a lantern can be turned through a quarter of a revolution, so as to show a white or a colored light, as may be necessary.

##### IMPROVED CAR COUPLING.

Gurdin D. Lease, Jeffersonville, Vt.—This coupling couples in automatic manner by the entrance of the link. It consists of a longitudinally slotted drawhead with centrally pivoted and weighted lever bar, and curved or hook-shaped coupling pin, that is pivoted to the rear end of the lever bar, and dropped with the same by the action of the coupling link into a top recess and bottom pinhole of the drawhead, coupling thereby the link.

##### IMPROVED APPARATUS FOR CARRYING RAILROAD RAILS.

Andrew J. Gustin, St. Albans, Vt.—This is an improved apparatus by which the rails are taken up and conducted to the cooling bed, after having been passed through the bending rolls that impart the proper camber, so as to compensate for the unequal shrinkage of the rail while becoming cold. The device may also be used for moving the rails *en masse* from the position where they are left to cool to the end where they are taken off to the straightening machine. The invention consists of a bed frame with lateral chains and rail carrying shoes, the chains and shoes being guided in grooved rails, flush with the bearing rails of the bed, and the chains automatically adjusted to expansion and contraction by movable and weighted pulley bearings; also, two long screws with suitable bearings at the ends, and dogs shaped to fit the screws, and guided in grooves to hold them in position. The dogs are provided with trip latches, and the screws are connected with reversible driving shaft with gears.

##### IMPROVED PLATE PRINTING PRESS.

Horatio W. Browne, Philadelphia, Pa.—This consists in a novel device for moving the bed under the impression roll, the object being to increase the rapidity with which the impressions may be taken from the plates.

##### IMPROVED ROCK-DRILLING MACHINE.

Aaron J. Mershon, Warsaw, Ind.—This invention consists in the combination of a disk secured to a shaft, and having an arc-shaped slot, in the end of which is journaled a concave roller, with an arm placed loosely on the drill rod, and extending through the slot of the disk, so as to be engaged by the concave roller as the disk is revolved. It was fully described and illustrated on page 358, current volume.

##### IMPROVED REVOLVING ORE ROASTERS.

John Howell, Benton, Cal.—This is an improved rotary tubular furnace for chloridizing silver ores and desulphurizing copper, gold, lead, tin, and zinc ores. There is a revolving tube with a furnace at the receiving end, having the chambers, and a furnace at the lower end having a pit, into which the ore is discharged after treatment.

##### IMPROVED IRON MOULDING.

Joseph Hursh, New York city.—To the pattern is secured a male screw, projecting sufficiently to allow a key to be firmly screwed upon it. The screw is covered with a small slightly tapering cap, while the sand is being packed upon it, and which protects the threads of the screw from being filled with sand. When the cope is raised from the pattern the cap is either left upon the screw or taken off with the sand, and can then be drawn, in either case leaving a smooth hole in the sand, which can be easily filled. By this construction no time need be lost in freeing the screw threads from sand, and the same will not be worn by the latter.

##### IMPROVED SQUARE.

Charles A. Schrier, Holyoke, Mass.—The object is to so improve the universal square in general use that a line may be drawn along the whole length of the tongue or blade without removing the square from the roll or other object. To this end the square has a crossbar with curved or raised portion above the central edge of the tongue to admit the continuation of the line along the same.

##### IMPROVED GRAIN CRUSHER.

Joseph Reid and Robert Reid, Philadelphia, Pa.—This is a machine for crushing and pulverizing grain. Grain to be crushed is delivered to a hopper, and the machine being in motion, it is caused by vibratory motion to flow rapidly down a chute to the rolls by which it is crushed and delivered to another chute, through which it passes to a suitable receptacle.

##### IMPROVED PIPE TONGS.

Christian States and Harry I. Cook, Topeka, K n.—This combines the advantages of a pipe tong, wrench, and screwdriver. It consists of a double jaw, with curved end and notches, in connection with a single jaw and lever sliding in the double jaw, and having projecting pivot pins for entering into the notches. This invention was illustrated and described on page 310, current volume.

#### NEW HOUSEHOLD INVENTIONS.

##### IMPROVED PICTURE FRAME.

Samuel Sargeant, Brooklyn, N. Y.—This consists in a frame formed of metal tubes, halved to each other, and secured to a back frame or board by screws passing through said back frame or board, through the inner sides of the said tubes, and screwing into pieces of wood placed within said tubes.

##### IMPROVED BOOTJACK.

John Niver, Sherman, N. Y.—This is an improved bootjack designed to be attached to a wall, and to be turned up against the wall when not in use.

##### IMPROVED LAMP BURNER.

Jonas Rasch, Christiania, Norway.—This is an improved round burner for petroleum lamps, on which the chimney may be adjusted to different heights, for the purpose of obtaining a more perfect combustion and better light. The chimney is quickly set at the proper elevation above the aperture of the burner by a simple mechanism.

##### IMPROVED SHIRT-DRYING APPARATUS.

John McCartan, New York city.—This is an improved apparatus for drying starched shirts, formed of a hollow metal plate, made of such a shape and size as to be passed into a shirt, which is spread out smoothly upon it. Hollow metal cylinders are made of a proper size for the cuffs of the shirt to be spread out upon them. The hollow plate and cylinders are each provided with a steam inlet pipe, through which steam is introduced from a boiler or other steam generator, and a steam outlet pipe, to enable the said plate to be brought to and kept at a suitable temperature to dry the shirt and cuffs quickly.

#### NEW MISCELLANEOUS INVENTIONS.

##### IMPROVED COMBINED LETTER SHEET AND ENVELOPE.

Leo Ehrlich, St. Louis, Mo.—This invention consists of a sheet of suitable size having sealing flaps that extend at one corner along a portion of the sides, so as to close in the nature of an envelope when the sheet is folded up.

##### IMPROVED PROCESS OF FINISHING CARDBOARD FOR PERFORATING.

Bernard Dreyfuss and Samuel Sachs, New York city.—This consists in coating a suitable quality of cardboard with a mixture of powdered metallic zinc, glue, starch, and wax. The board is given a bright silvery surface, which is very hard, and well prepared for perforation in the usual way.

##### IMPROVED PHOTOGRAPHIC PRINTING APPARATUS.

Oliver Sarony, Scarborough, England.—The object of this invention is to obtain by two successive exposures the title, tint, or fancy border on the same negative with the picture, so as to dispense with the use of registering presses and registering tinting presses hitherto employed, and therefore with the second printing. A print having the appearance of what is known as a chromotype may be thus produced in the ordinary printing frame at one printing instead of two, as at present.

##### IMPROVED SLEEVE BUTTON AND STUD.

Alexander Goll, Frankfort-on-the-Main, Prussia, Germany.—This sleeve button or stud has an elastic piece of metal, double or open slotted, and attached to a flat pivot at the end of its bent shank.

##### IMPROVED APPARATUS FOR WEIGHING LIQUIDS.

John G. Valentine, Florence, Mass., assignor to himself and Edward Valentine, of same place.—This is a receptacle for liquids, that is suspended from a scale lever pivoted in a frame, in the handle of which is pivoted a spring connected by a scale with the said lever, for indicating the weight of liquids contained by the receptacle.

##### IMPROVED COFFEE ROASTER.

John A. Caldwell and Adolph F. Pleitz, Brownsville, Tenn.—This improved coffee roaster is so constructed as to keep the coffee constantly turning over, so that it cannot slide upon the vessel and burn.

##### IMPROVED SUSPENDER.

Leonard V. Richmond, Sand Lake, N. Y.—The suspenders are so made that whatever position the body of the wearer may take, the tautness of some of the straps will take up the slack of the others, so that there will be no perceptible strain upon any of the buttons.

##### IMPROVED GALLEY SUPPORT.

Peter A. Kelly, Baltimore, Md.—This is a support for printers' galleys, which may be readily attached to the case, and which may be folded out of the way when not in use. The device is put into position for use by placing hooks on the edge of the case, and unfolding the brackets so that they are at right angles to the frame.

##### IMPROVED BOX AND BOX HOLDER.

Joseph A. Cotten, Thomaston, Ga.—The object is to provide a means for handling boxes upon high shelves without the use of steps or necessity of climbing. The box has its end slotted and bent inwardly and supported by the strengthening band, the whole being adapted to engage with the grapple or lifter, which has a widened head for the purpose.

##### IMPROVED STRAP FASTENER.

Wesley Hyre, Collins, Ind.—This invention consists in a flat wedge-shaped case, and a wedge provided with the points combined with each other to adapt them for use for fastening a strap. In using the fastener, the strap is passed through the case. The wedge is then placed upon the strap, and the strap and wedge are drawn forward together into the case.

##### IMPROVED WATER CLOSET PROTECTOR.

Benjamin R. Brown, Petersburg, Va.—This consists in a sheet of paper provided with two circles or lines of punctures, forming between them a ring having an inwardly projecting narrow flap and an outwardly projecting wide flap.

##### IMPROVED SPRING FISH HOOK.

John O. King, Altamont, Kan.—This invention relates to that class of fish hooks which are sprung when the fish tampers with the bait, so as to close and catch the same. It consists of fulcrumed grab hooks having outer claws and W-shaped ends back of the fulcrum, in connection with a sliding loop at the end of a coiled hook actuating spring, the hooks being opened by a swinging trip lever, connected by a link to the spring loop, and set to a fulcrumed latch of the sliding and guided bait hook.

##### IMPROVED INDICATOR.

George W. Daniels, Lexington, O.—This is an index for account books, by which the name may be more readily referred to than in the indices usually applied to such books. It consists in a polygonal drum that turns on a vertical axis, and is inclosed in a suitable casing, and arranged to receive upon each of its sides a division of the alphabet, consisting of one or more letters.

##### IMPROVED CIGAR.

James H. Campfield, M.D., Ottawa, Ill.—The object of this invention is to render the smoke of cigars made of tobacco less offensive and injurious. In the process of manufacture, a chamber or cavity is formed in each cigar and a piece of sponge or other suitable absorbent material, which has been saturated with a solution of tannic acid, is inserted therein for the purpose of extracting from the smoke drawn through the cigar the nicotine and empyreumatic oil, which are poisonous and inimical to health.

##### IMPROVED TOY SKATING RINK.

Sophie E. Bachmann, Tenafly, N. J.—The skating rink consists of a box having its top formed of paper or other thin material, representing ice, on which diminutive figures representing skaters, and weighted by means of iron shoes, are moved about by the attraction of a magnet held in the hand, and applied beneath the paper.

##### IMPROVED GRAIN-REDUCING APPARATUS.

Cyrus Bailey, Akron, O.—This consists of a perforated revolving cylinder or reel, that feeds the oats or other grain to fixed cutting knives, regulating the length of the projecting kernel portions by adjustable guard-plates. The holes through which the oats or other grain are dropped are straight at the end toward the knife, and inclined or countersunk at the other end to carry the grain into position for cutting.

#### NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

##### IMPROVED SASH FASTENER.

Joseph Hatzl, Spades, Ind.—This consists of a sash with sliding and spring-acted bolts entering between guide strips of the window casing and into sockets of the same, the sash bolts being secured into the different positions required for locking, guiding, or removing the sash, by being set into corresponding recesses of the face plates of the bolt sockets.

##### IMPROVED SASH FASTENER.

William Kemp, Jr., New York city.—This consists in the combination of a sliding bolt, placed in a suitable guide that is attached to the upper meeting rail of the lower sash, and provided with a spindle and slotted arm for moving the bolt; and two slotted bars, one of which is attached to a stile of the upper sash, and the other to the roller stile or jamb of the window. The object is to simultaneously lock both sashes by a single operation and by a single bolt.

##### IMPROVED SAW SET.

William H. Smerdon, and Baylies F. Phillips, Taunton, Mass.—This consists of an anvil with pivoted and spring-acted set piece, and a gauge and bevel plate, jointly adjustable, so that there may be simultaneous adjustment of gauge and bevel to the saw teeth.

##### IMPROVED HORSE DETACHER.

Moses Amidon and Edgar N. McKimm, Lathrop, Mo.—The object of this invention is to furnish whiffletrees so constructed that the traces may be instantly released and the horse allowed to go free should he become frightened or unmanageable from other cause.

##### IMPROVED SNOW GUARD FOR ROOFS.

George F. Folsom, Boston Highlands, Mass.—This consists of a right-angled or L-shaped strip of sheet metal that is folded to form a square face, a brace for holding the same, and wings which pass under the slate for supporting the brace. In addition to these features, the square face is slit up for a short distance each side of the brace to form prongs, that spring against the surface of the slate, and, in conjunction with the wings, clamp the slate, so that the guard will not slip from it. The object of the invention is to provide a snow guard for roofs that may at any time be attached to the same, and that will effectually prevent the snow from sliding bodily from the roof.

#### NEW AGRICULTURAL INVENTIONS.

##### IMPROVED BUTTER PAIL COVER.

Joseph G. Fisher, Grand Rapids, Mich.—A spring made of elastic wood crosses the center of a bar on the cover, and its ends project sufficiently to allow metal straps, attached to its said ends, and having elongated holes formed in their free ends, to be passed over the heads of small knobs attached to the sides of the pail, so that the cover may be held securely in place by the elasticity of the spring.

##### IMPROVED PLOW.

Anton Lauer and Julius Hartmann, Louisville, Ky.—This is an improved center draft plow so constructed that there will be no friction upon the landside, and so as to enable the point to be made of steel.

##### IMPROVED COMBINED STALK CUTTER AND HAY RAKE.

William W. Fuller, Elmira, Ill.—This machine is so constructed that it may be readily adjusted for use as a stalk cutter or as a hay rake. The stalk cutter, the stalk adjuster, and the rake can be raised and lowered by operating a lever.

##### IMPROVED POWER CHURN.

William H. Sterns, Humboldt, Neb.—By turning the crank, the churn body will be carried around through the arc of a circle, which will throw the milk contained in said churn body into violent agitation, the ribs breaking up the circular currents that would otherwise be formed in the milk.

##### IMPROVED GATE.

Israel D. Jewett, St. Omer, Ind.—This invention is an improvement in the class of gates which are supported by parallel pivoted bars, and operated by levers, so that in being opened or closed they move in a vertical plane and in the arc of a circle. The improvement relates to the use of a horizontal bar or lever, to which the bars supporting the gate are pivoted, and whose function is to assist in maintaining the gate in a horizontal position.

##### IMPROVED CULTIVATOR.

Nathan T. Brewster and Abraham D. Neher, Roseville, Cal.—This invention consists in the particular arrangement of a double wrought iron frame combined with cultivator teeth, and separating blocks located between the parts of the frame, one set of which blocks in the front, and also in the rear, of the cultivator form bearings for wheeled axles through which the cultivator is raised for transportation or lowered for use; the particular arrangement of the cultivator being such as to impart to the same great strength and durability, and to permit the same to be readily taken to pieces and used independently of its wheels if desired.

##### IMPROVED BEE-HIVING APPARATUS.

Reuben B. Oldt, New Berlin, Pa.—This consists in a pivoted case containing two inclined planes that run downward from slots in the top of the casing over which the hives are placed. One of the inclined planes is pivoted, and is capable of moving upward when the shifting of the bees changes the center of gravity of the casing, so that it turns on its pivots. There is also a new arrangement of a mica trap door, which allows bees to escape from the hive from which they swarm, but does not permit them to re-enter.