

**Remarkable Whirlwind.**

A terrible visitation at Hazel Green, Wis., on the 10th of March last, is described in a special despatch to the Chicago *Tribune* as the result of a collision between two sections of a cloud, which had divided and come together again:

The clouds joined, and a long cylindrical shaft shot down. The cylinder was about 120 feet in circumference and 70 feet in height. It struck the ground a mile southwest of Hazel Green, and, ploughing a furrow 600 feet long, 4 feet wide, and several feet deep, seemed to absorb the earth and the rocks. As it moved along in a northeasterly direction, it looked like a clay-colored column whirling with incredible speed around a central vacuum. It was a solid mass of heavy rubbish. As the cylinder came up the slope, the rush and yell and whirr of the column—sounding like the rush and shrieks of the wind on the sea, and like the thunder of guns—attracted the attention of the people of Hazel Green, and they flocked to their doors and windows. Steadily it came on, sometimes bounding fifty feet into the air, then rushing down again. In two minutes it descended on the little hazel grove just southwest of the town. The trees were snatched up by the roots and whirled ninety feet into the air and supported there.

The cap of the column was a stone 8 feet long, 4 feet wide, and 3 feet thick. This stone was held in its position while the column covered a space of three quarters of a mile. Just between the grove and the town, 250 feet from either, the column halted and spun around over a small space, and then recommenced its march. The air was filled with the yells and lamentations of the people.

Tearing off a corner of a frame house, the column rose some thirty feet into the air, and then, hovering for an instant, fell perpendicularly upon the roof of the Masonic Hall, a stone building. The structure was mashed flat. This was at half past four, and a meeting had been called for five o'clock. Half an hour later seventy persons would have been assembled in the upper portion of the building. The next house was of frame, and occupied by Mrs. Richards and her family. A daughter in law and her two children were saved by the scantlings above them, while the rest of the family were killed outright. A frying pan containing three cakes was on the stove, and the frying pan, still containing the cakes, was found a mile and a half northeast of the village. Twenty-six houses were carried beyond the ken of mortals. Where they went no one can tell. The track of the column is filled with sawdust and bits of wood, as though a sawmill had belched out a half finished lumber yard. The trees for several miles are filled with chairs, bits of furniture, carpets, clothing, bits of window shades, and household materials. Mrs. Looney was sitting in her kitchen. The house disappeared as if touched by the magician's wand, and the crushed body of Mrs. Looney was found 400 feet off, stripped of clothing and with the skin peeled off her back from her neck down.

Of the rest of those killed nothing can be said, beyond that the bodies were found not less than 200 feet from where they started. A boy and girl were found out on the prairie, wandering about helplessly. They were in a house of which no account has been received. They remembered being lifted into the air, and, when found, were nearly a quarter of a mile from where the house used to be, badly bruised and unable to account for their condition. Probably the most remarkable spectacle was that Dr. Kittoe's horses, which, with barn, buggy, and harness, were lifted 60 feet into the air, and the horses dropped at least 100 rods from the former site of the barn. The column was then a huge mass of debris, and a spectator says that the horses went up through the center of the column, whirling around so swiftly that they looked as if torn in pieces. They were found utterly unbruised but stone dead, and not more than 10 or 20 feet apart. The whole affair was over in two minutes, but the devastation was most complete.

**Successful Progress of the Galveston Harbor Improvements.**

The completion of the survey of Galveston harbor, Texas, by Lieut. Quinn, shows that the western point (where, in June, 1875, there was only five feet of water) has entirely disappeared, and the soundings at that particular spot, in crossing the inner bar, are entirely closed. The deep water of Galveston harbor channel has united with deep water opposite the end of the jetty, and lacks only 750 feet of uniting with the deep water of Bolivia channel. When this connection is made, there will be a depth of over 18 feet on the inner bar. The gabions in the jetty are covered with sand. The old Swash channel is obliterated, and is now connected and forms a continuation of Galveston Island. The depth of water in the shallowest spot at low tide is 14½ feet; at ordinary high tide, 16 feet. Before the city commenced the pile breakwater, there was only 9 feet of water on the inner bar. The recent work by the government has confined the water to a single channel. The results already obtained are very satisfactory; and there appears no doubt but that the jetty system, as being applied, will terminate in giving Galveston 18 to 20 feet of water over the bar.

**The Utilization of Tannery Refuse.**

Tannery refuse consist of untanned dried pelt or glue pieces, fleshings, hair, lime deposit, and spent tan. The glue pieces are used for two purposes, the principal of which is the manufacture of gelatin and isinglass. For this industry thousands of tons of the scraps are sold, and few would imagine that the delicately tinted and flavored molds of jelly sold by skillful confectioners ever had their origin in the foul-smelling waste heap of the tan yards. The dry untanned portions find their second utilization in papermaking, and

they are also used for the manufacture of peckers or hammers, for knocking to and fro the ever-flying shuttle. Ordinary size is made from the flesh refuse of the hide, and is extensively used by paper hangers, cotton spinners (to give firmness to the thread), and carpet manufacturers. As to the hair, there has been little demand for it since speculative builders have discovered a mode by which ceilings can be made to retain their positions for a time without its use. Unhappily the demand for cheapness (says the *Journal of the Society of Arts*, whence we take the facts here given) has stimulated the makers of inferior clothing and blanketing to mix hair with wool, thus rendering the fabric heavy without in any way adding to its warmth-retaining capacity. Hair is also used in the fabrication of horse cloths and railway rugs, and, strange to add, the cheap (so-called) sealskin jackets largely sold in England are made from the same material.

A profitable use for spent tan, other than as fuel, remains yet to be discovered. Liebig says that it is valuable as a manure when wholly rotten; some have tried to turn it into charcoal, and to light their tanneries with its gas, but the results have not been very satisfactory. A new process for using this refuse instead of charcoal in the manufacture of tin plates has lately been tried in Wales, and seems likely to be advantageous and useful.

The lime grounds or deposit, although not used for the purpose, is an excellent manure. It contains a mixture of salt, blood, lime, and gelatin. Its analysis is as follows: Moisture 54.05, organic matter 6.80, silica 2.55, iron and alumina 0.84, phosphate of lime 1.85, carbonate of lime 12.42, caustic lime 17.44, common salt 4.05; total 100.00.

**A Telegraphic Swindle.**

A rather neat swindle was recently perpetrated, on a bank in Dallas, Texas, by three scamps who evidently possessed considerable knowledge of telegraphy and likewise the means of carrying their knowledge into practice. Scamp No. 1, in the character of a wealthy New York cotton buyer, presented himself at the bank with a check for \$10,000 to be cashed. He brought strong letters of endorsement, and the check, which had been drawn by the bank's New York correspondent, appeared all regular. In order the more thoroughly to assure the bank, the stranger requested the officials to telegraph to New York for advice. An answer speedily came back, saying that both check and man were good, and the cash was paid. Meanwhile scamps Nos. 2 and 3 went a few miles out of town, rigged a battery and the necessary instruments, and tapped the wires of the telegraph line. When the bank's message was sent, they received it, and sent back the false answer, thus assuring the bank officers, and of course victimizing the unfortunate institution.

**Useful Recipes for the Shop, the Household, and the Farm.**

The *Housekeeper* gives the following suggestions for utilizing old tin cans. Take off the top of the can, punch holes on opposite sides near the rim, put in a wire bail; and you have a little bucket, which may serve for a paint pot, to keep nails in, or other handy purposes. Take off the top, cut to the proper shape, and fasten on a handle by means of a screw through a hole in the bottom, and a useful scoop may be made. A saucepan for small messes may be made by cutting down a can, leaving a strip to be bent at right angles, and turned around a stick, to serve as a handle. A coarse grater for crackers, etc., is easily formed from a piece of tin fastened to a board. The holes in the grater should be made with an old three cornered file.

If the globes on a gas fixture are much stained on the outside by smoke, soak them in tolerably hot water in which a little washing soda has been dissolved. Then put a teaspoonful of powdered ammonia in a pan of lukewarm water and with a hard brush scrub the globes until the smoke stains disappear. Rinse in clean cold water. They will as white as if new.

Tasteful ornaments may be made of natural leaves and sprays artificially frosted. This is done by means of powdered glass, which can easily be obtained by pounding some bits of glass with a heavy hammer, care being taken to protect the eyes against flying splinters. Dip the object in thin gum water and shake the powdered glass over them. When dry, handsome bouquets can be arranged.

Chloride of calcium is such a deliquescent salt that it attracts enough moisture to prevent glue from cracking. Glue thus prepared will adhere to glass, metal, etc., and can be used for putting on labels with danger of their dropping off.

A correspondent of the *English Mechanic* gives the following directions for fixing pencil drawings: "Lay the drawing on a sloping board, and pour boiling water gently over it; this will remove all superfluous particles of lead, and will bring some of the size in the paper to the surface; boil some isinglass or gum arabic in water to make a very thin size; pour it out on a flat dish to cool; run the drawing through the size, taking care that every part is well wetted; then lay it on a board to dry. The size should be so thin as to feel just a little sticky between the finger and thumb when cool. If too thick, it will be seen on the drawing after it is dry. I have tried many ways of fixing drawings, but have never found any to equal this." Another writer says: "The best solution to fix drawings is that made with gum tragacanth. It sizes the paper; it fixes the pencil drawings; it does not chip when wetted; it enables you to continue the drawing afterwards if desired; and it is possible to color over it."

Salicylic acid, until recently not found outside of chemical laboratories, is now coming largely into use as an antiseptic and as an agreeable substitute for carbolic acid. We give a variety of new recipes for its employment, taken from vari-

ous sources: A very simple and most useful ointment, which answers admirably in some affections of the skin, is formed of ½ drachm to a drachm of the acid to 7 drachms of simple ointment. A liniment of salicylic acid and olive oil (2 drachms of the acid to 8 ozs. of oil) will be found of much efficacy in burns. Soak lint in the liniment and apply to the suppurating surface. Professor Will, of Aberdeen, who has tested this in some severe cases of burns, commends it strongly in the *Lancet*. For cancerous sores, Thiersch recommends dusting with pure acid, or with equal parts of the powder and starch; or powder formed of charcoal and the acid might be employed for the same purpose, or for dusting over poultices applied to sloughing surfaces. Another ointment is made of: Sperm oil, 1½ drachms; oil of theobroma, 2½ drachms; salicylic acid, from ½ to 1 drachm. This forms a thick paste, which should be thickly spread on lint. The heat of the surface acting on the oil of theobroma, a diffusible ointment is formed, which is a suitable application when it is desired to have the discharge thoroughly saturated with the antiseptic. An ointment less easily acted on by the body heat consists of sperm oil and paraffin, of each 1½ drachms; oil of theobroma, 2 drachms; oil of almonds, 1 drachm; salicylic acid, from ½ to 1 drachm.

**DECISIONS OF THE COURTS.****United States Circuit Court—Eastern District of Missouri.**

PATENT SAFE FILLING.—UNITED STATES AND FOREIGN SALAMANDER FELTING COMPANY VS. NATHANIEL A. HAVEN.

[In Equity.—Before Treat, J.—Decided October 27, 1875.] A composition having been described in a prior patent, one who applies it to a new use cannot claim the composition as his invention. The court cannot take notice of what was not set up in answer against plaintiff's patent.

The legal rule is that, *prima facie*, a reissue is for the same invention as that originally patented. Section 4,916 of the Revised Statutes of the United States prohibits, in a reissue, not only the introduction of new matter, but also the enlargement of the original claim growing out of the subsequent advancement of the art. This rule controls both the Patent Office and the courts.

Every patent, as to novelty or utility, depends on the state of the art at the time of the claim made or patent issued. By new matter is not meant merely the introduction of a new ingredient in a patented composition, but any change in the original specification and claim, whereby a new and substantially different composition and results are secured.

Treat, J.: This is a case in equity for an alleged infringement of several patents, of which the Salamander Company is assignee.

The reissued patent, No. 4,134, dated September 27, 1870, is in reissue of October 5, 1869, for a composition of cement composed of lime putty, as described, with paper pulp or other suitable fibrous non-conducting material, and with the other ingredients named, or their equivalents, etc.; and claims the employment of lime putty, when combined with paper pulp or any other suitable fibrous non-conducting substance, as a material for preventing radiation from heated surfaces, or as an ingredient in any composition used for such purposes.

It is alleged that this patent was anticipated by French's patents, September 14, 1869, which were for the same purposes as the foregoing. Patent A (94,882) was for a composition of crushed asbestos mixed with an alkaline silicate, and B (94,883) an improvement on A, by adding to the mixture a vegetable substance, as sawdust and other woody matter, to make a lighter and cheaper coating.

Which reissue to Johns, No. 5,951, dated June 30, 1874, of original patent dated April 14, 1868, is for crushed asbestos and lime mixed with water to be applied.

The defence is mainly for want of novelty—that the inventions claimed by plaintiffs were anticipated, etc. Whatever there is in plaintiff's patents for which defendant is to be held as an infringer consists of lime putty mixed with non-conducting fibrous material. The subsequent patents on which they rest are for lime putty and crushed asbestos.

It seems, from the evidence, that plaintiffs are assignees of the French patent also, but it is not set up in the bill, though mentioned in the amended answer as anticipating the Blissett and Riley and also the Riley patents. While some of the Johns patents are set out, the reissue above is not mentioned in the answer.

It seems, from a cursory examination of the case, that, if the Johns reissue (not mentioned in the answer), No. 5,951, of June 30, 1874, relates back to April 14, 1868, the plaintiffs' patents as to asbestos and lime putty were anticipated. So, if plaintiffs claim all non-conducting fibrous substances mixed with lime putty, the claim is too broad.

If each reissue relates to the date of the original patents, then the Johns patents anticipated those held by plaintiffs; and, although Johns did not specifically state the use for non-radiation, etc., the plaintiffs cannot, because of the new use to which they apply the composition, claim that they were the first and original inventors of the composition.

The court, however, cannot take notice of what was not set up against plaintiffs' patent.

When this case was before the court previously, it was suggested, that if the Johns patent was valid, plaintiffs' patent was anticipated, and the attention of counsel was also called to the fact that the reissue to Johns had not been set up.

By agreement of counsel, those reissues are now before the court, as if made before this suit was brought, and as if fully set up in defence. The only additional point, therefore, is as to the validity of the Johns reissue in question, which is for precisely the same compound as that claimed and used by plaintiffs. The legal rule is that, *prima facie*, a reissue is for the same invention as that originally patented.

Section 4,916, of U. S. Revised Statutes, copied from the act of 1870, prescribed for what, and under what, circumstances a reissue may be had.

The repeated decisions by the courts, and especially by the United States Supreme Court, in the last, third and fifth Wallace, indicate, with sufficient distinctness, that not only new matter shall be introduced, but that an enlargement of the original claim growing out of the subsequent advancement of the art is not to be tolerated. The reason of the rule is obvious. Every patent as to novelty or utility depends on the state of the art at the time of claim made or patent issued; and therefore, if a party, after learning from a subsequent advancement of the art, the worthlessness of his original invention, to be permitted to claim a reissue incorporating what was not originally in his mind, would be to give him a new patent, and thus to give him a monopoly.

It had been afterward suggested to him only by advances in the art made by others, then he could, it may be, even without any new invention, override all the elements which would serve to test the validity of the new application. In other words, having procured a worthless patent, and having subsequently learned from the advancing art how, by changing the terms of his patent, it could be made of value, he would, if a reissue in- cluding the new matter were permitted, have the reissue not only relate back to the date of the original patent, but absorb within its privileges all subsequent matters wholly unknown to and unthought of by him originally.

This rule controls both the Patent Office and the courts. New matter must not be introduced. By new matter is not meant merely the introduction of a new ingredient in a patented composition, but any change in the original specification and claim, whereby a new and substantially different composition and results are secured.

Such is the reissue in question. It is not only for a composition essentially different, but for one not within the purpose for which the original invention was designed.

The plaintiffs are entitled to a decree.

Subsequently the following decree was entered on record:

This cause coming on to be heard upon the pleadings, exhibits, and proofs herein, was argued by counsel, and thereupon, upon consideration thereof, the court doth order, adjudge, and decree that the said several letters patent mentioned and described in the bill of complaint be and they are to be held valid in law; that the plaintiffs are entitled to the exclusive use and rights of the patented improvement described in said letters patent, has infringed upon the exclusive rights of the plaintiffs under the same.

It is further ordered, adjudged, and decreed that the said defendant, his agents, clerks, servants, and workmen, and all and every of them, be and they are hereby, enjoined and restrained from making, selling, using, or in any manner whatsoever disposing of any composition for covering steam boilers, and for other purposes, embracing the patents or improvements of plaintiffs, in their said bill of complaint set forth. It is further ordered, adjudged, and decreed that defendant pay the costs herein to be taxed, and that execution issue therefor.

[Samuel S. Boyd for complainants. Kellogg and Penton for respondent.]

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

COPYRIGHT CASE.—SAMUEL E. LAWRENCE VS. JOSEPH E. CUPPLES et al.

[In equity.—Before SHEPLEY, J.—Decided October, 1875.]

SHEPLEY, J.: The plaintiff is the publisher of a book called "The Advertiser and Collector's Chart," which he has duly copyrighted in accordance with the provisions of the act of Congress, and which he has the exclusive right of publishing.

The publication is a monthly chart, published each month for the purpose of advertising generally, and also contains, in a tabular form, a list of debtors whose bills cannot be paid after due effort, applied to, and arranged, giving the names and address of the debtor and creditor, the amount of the claim, and in some instances the discount at which the claim will be sold for cash.

The bill of complaint alleges that the defendants have published a book entitled "The New England Mercantile Guide," which is a copy of and from the tabular list above described and prepared by Samuel E. Lawrence, the complainant, and that it adopts the plan of Lawrence's work in

arranging the names and residences of debtors and creditors, and in stating the amounts, and in the objects and purposes of said arrangement.

The answer denies that the book published by the defendants is a copy, in whole or in part, of "The Advertiser and Collector's Chart," and denies that the complainant can have any valid copyright for any arrangement of the names of debtors and creditors, or any other classes of persons, or for stating amounts, or any other purposes of arrangement.

The publication of the complainant is clearly one of that class embracing dictionaries, directories, catalogues, maps, and similar publications where the same sources of information being open to all, the author, by his copyright only, protects himself from a piracy of his own labors by a copy from his publication, but cannot exclude others from publishing similar maps or charts from their own surveys, or similar directories or catalogues, the result of their own labors and compilations, without copying the copyrighted publication or availing themselves of the labors of the author or compiler.

Although the plan or arrangement of a book may be secured to the author, if it be the product of his own genius, there does not seem in this case to be anything in a mere list of debtors and creditors, with their residences, and amounts and value of debts, which possesses any such novelty of plan or arrangement as would preclude any other person from making and publishing from his own independent sources of information similar lists.

The question is correctly stated by the learned counsel for the complainant to be whether the defendants have used the plan, arrangements, and illustrations of the complainant as the model of their own book, with colorable alterations and variations only to disguise the use thereof, or whether the work is the result of their own labor, skill, and use of common materials and common sources of knowledge, and the resemblance is either accidental or arising from the nature of the subject. (Curtis on Copyrights, 258, 260.)

Although many of the same names, residences, and amounts appear in the defendants' as in the complainant's tables, the answer positively denies that they were copied, and the uncontradicted proof is that they were derived from independent sources of information. One of the defendants testifies that the names of debtors are bills placed in defendants' hands for collection, and that a great many of the subscribers (creditors) are persons they were doing business with previously to complainant's publication, and that they were obtained through their canvassing clerk. The list of names marked as identical in the two publications are testified to have been in possession of defendants previous to the publication of complainant's "guide," or of defendants' "chart."

There is no evidence, therefore, of any infringement of any rights secured by his copyright to the complainant.

Bill dismissed with costs.

[C. D. Moore, for complainant.

O. S. Knapp and C. J. Brooks, for defendant.]

## Recent American and Foreign Patents.

### NEW MECHANICAL AND ENGINEERING INVENTIONS.

#### COMBINED LIFE BOAT AND TRUNK.

Wilson E. Facer, Toronto, Ont., Can.—The object of this invention is to provide a combined trunk and lifeboat for the use of travelers upon sea-going vessels, which, as a trunk, occupies no more room than the ordinary traveling trunk, and yet, in the event of a disaster, is capable of being unfolded and extended, so as to form, with a suitable covering of rubber canvas, a convenient and effective lifeboat. The invention consists in a rectangular frame and lattice work about the size of a trunk, made lightly of steel and provided with hinged doors, which constitute the trunk or the middle portion of the boat. The stem and stern is constructed alike of a hinged folding frame at each end of the trunk portion, which, together with the said trunk portion, is provided with pivoted folding ribs, which, when the frames are extended and braced, and the ribs opened, form the skeleton of a lifeboat, which is to be covered with heavy duck or canvas, coated with rubber.

#### IMPROVED CAR AXLE.

Simon Hall and Samuel L. Hall, Ahnapee, Wis.—The object of this invention is to enable the wheels to be adjusted on the axle to conform to different widths of gage which exist on some of our railroads without change of truck. When the wheel is to be adjusted to a narrower width of gage, a sleeve is screwed back, and a sectional washer, made of two semi-sections suitably connected by dovetails, placed between the outer end of hub and collar. The sleeve is then screwed up, so as to force the loose wheel and washer firmly in position, the joints of the hub, washer, and collar being closed by the elastic packing rings to retain the oil.

#### IMPROVED BALE TIE.

Virgil F. P. Alexander, Greenville, Miss.—This is an improved bale tie for packing cotton and other articles capable of baling; and it consists of a buckle with suitable slots attached to one end of the band, in connection with suitable fastening buttons for attaching the slotted end of the band by passing over the same and through the slot of the buckle.

#### IMPROVED CROSSCUT SAW HANDLES.

Lewis Shepard, Mace, Ind., assignor to himself and David W. Kennedy, same place.—The object of this invention is to improve the construction of the crosscut saw handles for which letters patent were granted to the same inventor October 5, 1875, so as to enable the handles to be readily detached, to allow the saw to be drawn out of the kerf lengthwise, and to enable the handles to be adjusted in or out upon the saw. The invention consists in the curved and straight handles, secured to each other at their upper ends, and provided with bolts at their lower slotted ends, in combination with the saw blade.

#### DOOR FRAME AND JAMB PLATE FOR FURNACES.

James C. Longland, Rome, N. Y.—Hitherto door frames and jamb plates for furnaces have been made of cast iron, the door frames having a small pipe cast into them, for the passage of water; but the intense heat of the furnaces acting on the inside of the door frame, and the outer side being kept much cooler by the action of the water, causes an irregular expansion of the cast iron, and, consequently, breakage, after which the water must be stopped, and the door frame soon burns out and must be replaced with a new one. Jamb plates are usually made of cast iron and cooled by the action of blast supplied by a blower. Plates thus constructed and cooled are of short duration. In the present invention the bottom plate is of wrought iron, being forged into one solid piece, having a chamber for a water passage. The cover to said water passage is tongued and grooved to make watertight joints. The side posts are also made of a solid piece of wrought iron, connected with the plate by a screw thread, to make watertight joints. In the top plate, also of solid wrought iron, is cut a water reservoir, which is connected with one of the posts by a passage, thereby causing a constant circulation of water. The jamb plate is also made of solid wrought iron, and is cut out from the bottom up to make a water chamber. The ends of the jamb plate are beveled to fit, the one to the side of the furnace and door frame, and the other to the water bridge bosh, thereby forming a complete water circulation all around the furnace.

#### IMPROVED MOISTENING DEVICE FOR GRINDING WHEELS.

Andrew A. Hazeltine, New Bedford, Mass.—This consists of a spring-clamped sponge, which is applied to a movable standard, and supplied with moisture from an adjustable fountain arranged above the sponge, said fountain having a spout and elastic cover to discharge, by slight pressure, a quantity of liquid on the sponge. The device forms thus a convenient and readily operated moisture for grinding wheels of all kinds, being easily cleaned and applied to the point where it is required.

#### ELECTRIC RAILROAD SIGNAL APPARATUS.

Dr. George Whyte, Northview, Scotland.—This invention relates to the establishment of a block system of railroad signals. It consists in apparatus placed upon the train operating in connection with apparatus placed upon the roadway or track, through the instrumentality of line wires, batteries and semaphoric masts, whereby a moving train cannot enter upon the block or section of track before the preceding train has left it without being notified of the fact, both by a stationary signal upon the road and the ringing of a bell on the train, which bell always rings when the signal indicates the presence of a train upon the section in advance,

and does not ring when the signal is down and the preceding train has left the section in advance. It also consists in the arrangement of the devices and circuits whereby each train is made to automatically remove its danger signal before going on to the next section, whereby the following train is notified of the fact that the intermediate section is clear.

#### IMPROVED NUT LOCK.

Samuel A. Brumbaugh, Harrisburg, Pa.—This invention consists of screw bolts with nuts which are set into recesses of washer plates provided at the under side with ratchet teeth. The washers of two adjoining nuts are connected by a key that enters the ratchets by a point and tooth at diagonally opposite ends, and locks thereby the nuts.

#### IMPROVED MACHINE FOR FORMING PERFORATED LETTERS.

William C. Robertson and Frederick Pearce, New York city.—By forcing down the free end of a lever, the guide and holding plates will be drawn down, forcing pins down through guide and bed plates, and through the strip interposed between said plates. As the lever is released from the pressure, the plates are raised by spiral springs, and by their upward movement draw the pins out so that they may not interfere with the putting in and taking out of the strip to be perforated. By this construction, by removing a detachable plate, the pins may be adjusted to form any desired letter or other device.

#### IMPROVED ROTARY PUMP.

William T. Doremus, New York city.—In this rotary pump, the fluid is forced through a flexible tube coiled around the face of a cylinder, through the hollow journals of which it enters. The tube is compressed between the faces of the cylinder to which it is attached and of another cylinder. The effect is to force the fluid in front of the point of contact out through the discharge end of the tube and form a vacuum in the rear into which the fluid is forced by atmospheric pressure, so that there will be a continuous discharge.

#### IMPROVED METHOD FOR TREATING RAILROAD RAILS.

Andrew J. Gustin, St. Albans, Vt.—For the purpose of imparting the proper camber to a heated railroad rail to compensate for unequal shrinkage of the metal while becoming cold, this inventor proposes a combination of three pairs of plain rolls, the middle one being adjustable and placed slightly out of line with the others.

#### IMPROVED CASK TILTER.

Joseph Barton, Hartford, Conn.—This consists of a cask or barrel supporting stand that is provided at the rear part with a spring bearer that works in a socket hung to the stand, and tilts the barrel when released from the socket by a lever device from the front. When the barrel is emptied to such an extent that the power of the spring equals and gradually overcomes the pressure of the liquor still remaining therein, the rear part of the barrel is slowly and imperceptibly raised, and thus the barrel tilted without causing the least disturbance in the liquor.

#### IMPROVED GRAPPLING HOOKS.

Gain Beeman and George A. Phifer, Ironton, O.—In this invention the hooks are pivoted to the end of a tube, in which the operating rod is arranged to slide. A spring pawl is fixed on the tube, in connection with notches in the lifting rod, by which to limit the opening of the hooks by the sliding movement of the rod in the tube. The tube may be continuous or sectional, and any form of grappling hooks or scoops may be used.

#### IMPROVED CAR COUPLING.

Edward A. Goodell, Tecumseh, Kan.—A drawhead is provided at the bottom with a central hook that is curved to guide the entering link and then drop it into a concave rear part. A vertically sliding stirrup is guided in top holes of the drawhead back of the hook, and seated, when dropped, in a bottom recess. When the cars are coupled the stirrup is seated in the bottom recess, so that the link assumes its position above the same. For uncoupling, the stirrup is raised, which carries the link to such height that it may readily pass out of the drawhead over the central coupling hook. The raised position of the stirrup may be secured by seating the ball in a groove, at the top of the drawhead in front of the stirrup, so that the ball, by its inclined position, supports the stirrups.

#### IMPROVED PUMP.

John Woodville, Washington, Ind.—With the stirrup of the presser, which produces a suction and force action, is combined a forked detachable lever handle, attached by a forked sliding lock-piece, to retain the handle firmly for pumping, and a fulcrum and stirrup connecting pivot link to give rigidity and stability to the connection of stirrup and handle.

#### IMPROVED RAILROAD RAIL JOINT.

Henry D. Leishman, Yates City, Ill.—This rail-joint clasp consists of two separate plates fitted to the base and sides of the rail. One extends over the top and along an outer projection of the other, and is bolted thereto, while both plates are bolted through the webs of the rails.

#### IMPROVED ORE CRUSHER.

Wilson L. Waters, Watertown, Tenn.—This consists in the combination, with two interior movable jaws, of a wheel located between the same, and having diametrical cams, or their equivalents, whereby the strain upon the wheel shaft is neutralized by making the working strain simultaneous upon opposite sides of the wheel.

#### IMPROVED TREADLE.

George T. D. Barnjum, Boston, Mass., and Wilbur F. Dial, Montreal, Canada.—This invention consists of alternately swinging treadles, connected by belts with an intermediate reciprocating shaft, that operates alternately, by belts in opposite directions, loose sleeves with end eccentrics. The latter engage clutches for imparting, by their alternately reciprocating action, continuous rotary motion to a flanged fly wheel.

#### IMPROVED CAR STARTER.

Archibald H. Crozier, Carlyle, Ill.—This invention consists of an arrangement of apparatus of novel contrivance, whereby a spring is employed as the brake to stop the car, and as a means of starting it again by the power expended in stopping it, which is stored up in the spring.

#### IMPROVED FLOUR AND MEAL BOLT.

Edwin Slagle and John M. Graham, Albany, Mo.—This consists of a flat inclined shaking bolt, in which the cloth is arranged in wave-like form, which greatly facilitates the work. The invention also comprises details in the construction and arrangement of the sieve; also knockers for keeping the cloth clean, and also a contrivance of the bolt to cool the meal.

#### IMPROVED MACHINERY FOR SCREW-THREADING WIRE FOR UNITING THE SOLES AND UPPERS OF BOOTS AND SHOES

Edouard Fromentin, Paris, France, assignor to Joseph M. V. Durand and Joseph DUBORGET, same place.—This invention relates to certain improvements in that class of machines which cut a thread upon a continuous length of wire, insert the screw into the sole of the shoe, and cut it off, so as to form a secure fastening in one and the same operation. It consists in the means employed for tilting the upper pivoted portion of the machine, so as to bring the devices down upon the sole, in the means for applying the power to

effect and definitely control the intermittent rotary movement and in the construction of the feed for the wire.

#### IMPROVED PIPE WRENCH.

Edward G. Clinch, St. John, N. B., Canada.—The rear parts of the jaws are connected by two bars, the ends of which are pivoted to the said two jaws to keep them always parallel with each other. With this construction, as the wrench is turned, the jaws will grasp the object with greater force as more power is applied.

#### IMPROVED WINDMILL

Samuel Shannon, Shellsburg Iowa.—This invention consists of a shield on the sliding hub that shifts the vanes to prevent the lodgment of snow and ice on the shaft, which obstructs the working of the hub. There is also a detachable and adjustable contrivance of the eccentric which works the pump rod, to vary the length of the stroke; a wearing plate, to sustain and take up the wear of the wheel shaft at the end; and a contrivance of the coupling by which the vanes that regulate the opening and closing of the wheel vanes are mounted on the machine and connected with the sliding hub.

#### IMPROVED GRINDING MILL

James M. Collier, Gadsden, Ala.—This consists of a novel and ingenious contrivance for adjusting, holding, and regulating a concave bed stone to a revolving cylinder. It combines a largenumber of new contrivances, to explain which, clearly, drawings would be necessary.

#### IMPROVED CENTERING DEVICE FOR GAGE LATHES.

James E. F. Leland, Bowling Green, Ky.—This device enables blank handles and other pieces of wood to be quickly and accurately centered, so as to prevent imperfect work and loss of stock from inaccurate centering, and to increase the working capacity of the lathe. The invention consists in the combination of a disk, adjustable guides, and a spring with the mandrel of the lathe.

#### IMPROVED HYDRAULIC AIR COMPRESSOR.

Frank Laurence, Washington, Kan.—This improved air compressor is operated by the direct hydraulic pressure of a limited quantity of water, so that a uniform power may be stored up for various working purposes. There are two cylinders, to which water is alternately supplied from the supply pipe, so as to work the pistons, which are connected by a walking beam that operates the supply valve. A compressing cylinder is arranged above each of the lower cylinders, and operated by valves and pistons at the upper ends of the piston rods. The cylinders are connected, by pipes, with a receiver into which the air is compressed.

### NEW CHEMICAL AND MISCELLANEOUS INVENTIONS.

#### IMPROVED TOY CAP EXPLODER.

Charles Coester, Jr., Bridgeport, Conn.—This consists of two pieces of metal attached to a string, and so constructed and arranged that, on being projected from the hand, they may be caused to strike together by coming in contact with another object, or by having their motion suddenly arrested by the strings, and so explode a fulminating powder placed between them.

#### IMPROVED PAPER BOX.

Terence Devine, Jr., Newark, N. J.—This box may be readily and securely closed without requiring pasting. It is made from a blank of one continuous piece, with central closing tongues and folding side flaps symmetrically thereto. The top of the box is made of double sections to be locked by the tongues. The box may be printed in any suitable manner on the face and side parts, forming a neat and secure inclosure for letter paper, candies, and other articles.

#### IMPROVED SNOW SHOVEL.

Eugene Campbell, South Westerlo, N. Y.—The invention consists in the combination of runners with the blade of a shovel. The former prevent the edge of the blade from catching upon the seams of a metal roof, or upon inequalities in a cement roof, and thus protect the roof from being injured.

#### IMPROVED GLOVE FASTENING.

Frank G. Farnham, Hawley, Pa.—A plate having a rack is secured to one side of the wrist of the glove. A second plate, attached to the other side, is provided with vertical lugs that are connected by a pin. On this pin slides a lever, having a spur, and folded so as to form a loop to receive said pin. The operation is as follows: In order to fasten the glove, the lever is slid forward until the fold strikes the pin, and then raised into a vertical position, so as to be passed through the eye of the rack plate. The lever is then slid in horizontal direction over the pin, until the spur catches in a tooth of the rack.

#### IMPROVED INKSTAND.

Jerome Kidder, New York city.—This portable inkstand is composed of a tube or elongated ink reservoir, having a filling and delivery orifice in its upper side, at or near one end. It is adapted for carrying in the pocket.

#### IMPROVED ROWLOCK.

Frederic A. Gower, Providence, R. I.—The invention is intended to increase the speed and improve the convenience of racing boats with outriggers, by providing them with rowlocks that prevent wabbling, crabs, and other interruptions. It consists of a rowlock of novel shape, that is mounted by ball and socket joint on the supporting shaft, which connects and binds directly the four rods of the outrigger, in connection with one screw nut.

#### IMPROVED GAS REGULATOR AND PURIFIER.

Eli T. Booth and Daniel J. Esser, Mauch Chunk, Pa.—The invention consists in using gasoline and charcoal in the purification of gas by arranging it between perforated plates, one of which is over the space wherein the gas enters, and the other just under the space wherein the purified gas is collected before use.

#### IMPROVED SIGNAL HEAD LIGHT FOR LOCOMOTIVES.

John V. Slusser, Louisville, Ky.—This inventor proposes to combine the signal lights with the head lamp of the locomotive, so that they receive their light from the burner of the head lamp. The invention consists in the arrangement of one or more short tubes applied to the head light of a locomotive, said tubes to be fitted with movable caps with colored glass for signals. The engineer can thus at any time, on receiving orders on the road, change without delay the solid caps which cover the lamps to transparent glass ones, which give the signals without having the trouble to light the signal lamps now in use.

#### IMPROVED FUR-CUTTING KNIFE.

William F. Hoffman, Brooklyn, N. Y.—This consists of a gang of knife blades, fixed at suitable distance apart in a frame, to which they are pivoted at the end of the shank. Between pivots they are fixed adjustably on a clamp screw, so that the blades can be readily adjusted to set the points all in the same plane from time to time, as they wear away irregularly. The cutter is designed for cutting the fur into narrow strips for trimming and the like, which is now done with one blade only.

#### IMPROVED METHOD OF MANUFACTURING FLOATS.

Linn B. Benton, Milwaukee, Wis.—This is a float made of spun hemispheres forced on a beveled connecting band, and foldered at the joint with galvanic copper solution.