

forms an orifice a little larger than its body. Its lower edge is serrated, so as to cut a ring groove into the strata, the core of the bore passing up through the cavity in the drill. The upper end of the latter is rabbeted, and, by means of a screw thread cut thereon, is attached to a perforated tube, A, Figs. 1 and 2. The object of the holes in the tube is to allow the water to escape, and thus lessen the weight of the drill as it is moved up and down. To the upper end of the drill is hinged a valve, B, represented in section, Fig. 2, which opens upwards into tube A, so as, when the tool is raised, to carry the contents of the pipe up with it. Sections of tubing—part of one of which is shown at G Fig. 1—are screwed to the part B, and increase in number with the depth of bore.

Another advantage claimed is that, should the portions of the device become detached, a screw rod may be readily inserted and the separated parts drawn out.

Patented through the Scientific American Patent Agency, November 11, 1873, by Messrs. Timothy Phillips and Joseph Golletz. Further particulars may be obtained by addressing the inventors at Leavenworth, Leavenworth county, Kansas.

An old subscriber, P. H. W., writes to say that he owns a propeller steamer of the following dimensions: Length 42 feet, beam 7 feet; boiler 4 feet 8 inches high, with 78 one inch tubes 2 feet long, and 31 two inch drop tubes 18 inches long; the engine has a cylinder 5 1/2 inches diameter x 7 inches stroke; the screw is 38 inches in diameter with 5 feet pitch. She has run 7 miles in 40 minutes, carrying 65 lbs. steam, the screw making 165 revolutions per minute. The boiler is of 3/4 inch iron, and will carry 130 lbs. on the inch if required.

MR. R. F. MUSHET has lately written a letter to the editor of the London Engineer, in relation to the age of a Bessemer steel rail which, he says, was the first cast steel rail ever laid down. The rail was laid down on the Midland railway, in the early part of 1857, and was taken up in 1873. It thus appears that it was in use for 16 years, sustaining daily, Sundays excepted, the passage of 250 trains, and at least 250 detached engines and tenders, or, during the 16 years, about 1,252,000 trains, and the same number of detached engines and tenders.

THE HOOSAC TUNNEL ALIGNMENT.—Mr. H. W. N. Cole claims the credit of this for Mr. C. O. Wederkinch, who has had entire charge of the work, has run all the lines, and invented his own instruments for doing it.

HOW SHALL I INTRODUCE MY INVENTION?

This inquiry comes to us from all over the land. Our answer is: Adopt such means as every good business man uses in selling his merchandise or in establishing any business. Make your invention known, and if it possesses any merit, somebody will want it. Advertise what you have for sale in such papers as circulate among the largest class of persons likely to be interested in the article. Send illustrated circulars describing the merits of the machine or implement to manufacturers and dealers in the special article, all over the country. The names and addresses of persons in different trades may be obtained from State directories or commercial registers. If the invention is meritorious, and if with its utility it possesses novelty and is attractive to the eye, so much the more likely it is to find a purchaser. Inventors, patentees, and constructors of new and useful machines, implements, and contrivances of novelty can have their inventions illustrated and described in the columns of the SCIENTIFIC AMERICAN. Civil and mechanical engineering enterprises, such as bridges, docks, foundries, rolling mills, architecture, and new industrial enterprises of all kinds possessing interest can find a place in these columns. The publishers are prepared to execute illustrations, in the best style of the engraving art, for this paper only. They may be copied from good photographs or well executed drawings, and artists will be sent to any part of the country to make the necessary sketches. The furnishing of photographs, drawings, or models is the least expensive, and we recommend that course as preferable. The examination of either enables us to determine if it is a subject we would like to publish, and to state the cost of engraving in advance of its execution, so that parties may decline the conditions without incurring much expense. The advantage to manufacturers, patentees, and contractors of having their machines, inventions, or engineering works illustrated in a paper of such large circulation as the SCIENTIFIC AMERICAN is obvious. Every issue now exceeds 42,000 and will soon reach 50,000, and the extent of its circulation is limited by no boundary. There is not a country or a large city on the face of the globe where the paper does not circulate. We have the best authority for stating that some of the largest orders for machinery and patented articles from abroad have come to our manufacturers through the medium of the SCIENTIFIC AMERICAN, the parties ordering having seen the article illustrated or advertised in these columns. Address

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Inventions Patented in England by Americans.

- (Compiled from the Commissioners of Patents' Journal.) From January 6 to January 12, 1874, inclusive. ADJUSTABLE PULLEY.—E. F. Allen, Providence, R. I. COMBUSTION OF FUEL, ETC.—D. T. Casement, Painesville, O. DENTAL FILLING.—C. E. Blake, San Francisco, Cal. ELECTRIC BRAKE.—S. W. Wilson (of Philadelphia, Pa.), London, England. ELECTRIC MOTOR.—J. B. Stone, Boonton, N. J. FLUID PRESSURE REGULATOR.—D. T. Casement, Painesville, O. HYDRATE OF MAGNESIA.—C. H. Phillips, New York city. HYDROCARBON FURNACE.—G. W. Morris et al., Baltimore, Md. PUMP VALVE.—W. Painter, Baltimore, Md. RAISING SUNKEN VESSELS.—H. F. Knapp, New York city. RENDERING TALLOW, ETC.—J. A. Miller, Providence, R. I. SPORE MAKING MACHINE.—W. H. Post, Hartford, Conn. SNAP CONNECTOR.—S. Reynolds, Pittsburgh, Pa. TESTING WOOD, IRON, ETC.—R. H. Thurston, Hoboken, N. J. VENTILATING WINDOW.—Bradley Window Company, New York city.

DECISIONS OF THE COURTS.

United States Circuit Court—District of Massachusetts.

MELODEON PATENT.—ANDREW H. HAMMOND et al. vs. THE MASON & HAMLIN ORGAN CO. (Decided December 2, 1873.)

SHEPLEY, J.: This is a bill in equity by the complainants as assignees and owners of the letters patent reissued to El Dora Louis, as administrator of Lafayette Louis, on the 25th of July, 1871, for an improvement in melodeons or reed instruments, consisting of the application of mechanism to produce a "tremolo" in the musical notes of said instruments. The original patent to Lafayette Louis was issued November 18, 1856.

Defendants by their plea admit that they manufacture and sell in connection with their own organs tremolo attachments made precisely in accordance with the specification, drawings, and model of an application for letters patent, dated September 25, 1868, made by Lafayette Louis, the assignor of the complainants. The plea admits for the purpose of this hearing that this mechanism entered into the tremolo attachments made by the defendants on which this bill in equity is brought.

The plea sets up a justification in using these mechanisms under a license under the original patent granted by Louis to Mason & Hamlin, the assignors of these defendants, and also under a series of contracts between Louis and the defendants themselves relating to the specific device used by them. It is not necessary to consider the questions discussed at the bar in relation to the license set up in the plea or the original patent, as we are satisfied that the defendants are protected under their agreements with Louis, dated September 25, 1868.

It appears that Louis, prior to the 25th of September, 1868, made an invention of a combination of the fan tremolo with a rotary wind wheel, and applied for a patent for this combination. On the same day he entered into three contracts with these defendants. The first was an absolute conveyance of the defendants of all his right, title, and interest in and to the invention and letters patent which may issue therefor, and authorized the Commissioner of Patents to issue said patent to the Mason & Hamlin Organ Company, as the assignees of all his right, title, and interest in and to said invention and letters patent.

The second agreement grants to the defendants the right to make, use, and sell the invention above named, and assigned to them, as above stated, in connection with the organs they manufacture, and to issue a patent for the invention of November 16, 1856, (on which this bill is brought,) and by a patent of June 10, 1862, "as is contained in the said mechanism." The defendants agree to pay a royalty for each and every tremolo mechanism substantially the same as that described and shown in the said application and accompanying specifications, drawings, and model, until the expiration of the term for which the said letters patent shall be granted, referring to the letters patent for which application was on that day made.

The third agreement provided for another contingency—namely, the failure of the defendants to obtain a patent for the invention of 1868, which is the case as it now exists. This agreement provided that—

Whereas the said Louis has invented an improvement in keyed reed musical instruments, and has this day executed his application for the grant of letters patent of the United States to secure the same, and has also made a contract with the defendants for the grant of a patent to him and to the Mason & Hamlin Organ Company, and a license to make, use, and sell the mechanism described in the specification, drawings, and model accompanying the said application, under letters patent originally issued as number 16,094, and dated November 18, 1856, and subsequently reissued as number 2,498, dated February 26, 1867, and again reissued as number 2,944, dated May 26, 1868, and also under letters patent numbered 35,328, and dated June 10, 1862, therefore, in consideration of one dollar to him paid and for other good and valuable consideration, the said Louis hereby covenants and agrees with the said company, that if the said company fail to procure said letters patent for which application has been executed as aforesaid, then he, the said Louis, will and does hereby grant unto the said Mason & Hamlin Organ Company the exclusive right under the said letters patent already granted, and under any and all reissues thereof, to make, use, and sell the specific mechanism described and set forth in the said application and the specification, drawings, and model accompanying the same.

Taking into consideration the three contracts, it is plain that Louis had invented a new combination of the old parts patented by him. He applied for letters patent for this new combination. He conveyed to defendants for a valuable consideration, and unconditionally, the invention and the right to make, use, and sell the specific mechanism described in the application including the old parts as well as the new combination.

If the defendants succeeded in obtaining a patent for the new combination, they were to pay a royalty in addition to the consideration they had already paid for the invention; but if no letters patent could be obtained the defendants were none the less the owners of the right to make, use, and sell the "invention" and the mechanism it contains, and "the specific mechanism" described in the application. If the defendants, or any of them, or extension of any letters patent, without limitation of time, they had purchased and taken a conveyance of the right to make, use, and sell those specific devices in that specific combination. This is what they do use and this only, and this they have a right to use. Their right is not limited to the term of the original patents embracing the parts of the combination. It is true that the third contract, in case of failure to obtain a patent for the new combination, grants to defendants the exclusive right under the patents already granted for the parts to make, use, and sell the specific mechanism described in the application for letters patent for the new combination; but they had the right to use this specific mechanism. The license under the old patents was only intended to make this right exclusive. Their exclusive right under them might end with the expiration of the term of the old patents; but their right was independent of their existence or duration. Bill dismissed.

United States Circuit Court—District of Massachusetts.

BUTTON PATENT.—CHARLES L. POTTER vs. OSCAR S. THAYER et al. (In Equity.—Before Shepley, Judge.—Decided December 2, 1873.)

A patent for attaching a helical shaft to a button by soldering it to a circular disk which is sunk into a corresponding recess in the button, and is prevented from turning by a cross bar also sunk into the button, is not infringed by a button similar in other respects, but in which the shank is prevented from turning by serrations on the edges of the disk and of the recess into which the disk is jammed. Bill dismissed.

NEW BOOKS AND PUBLICATIONS.

JOHNSON'S DENTAL MISCELLANY, a Monthly Journal of American and Foreign Dental, Surgical, Chemical, and Mechanical Literature. Per annum, \$2.50. Volume I, No. 1. New York: Johnston Brothers, 812 Broadway.

This is an ably edited and readable periodical, which has, we believe, an excellent prospect of success.

QUANTITATIVE CHEMICAL ANALYSIS. By T. E. Thorpe, Ph.D., F.R.S.E., Professor of Chemistry in the Andersonian Institution, Glasgow. New York: John Wiley & Son, 15 Astor Place.

This very excellent and original work has long been waited for by scientific men. The rapid growth of chemical science soon makes our text books become antiquated, and the best works on analytical investigations hitherto published have not been able to embody many theories and results which are universally recognized as true. It is not probable that Fresenius will ever fall to be read by students in chemistry; but we must look to more modern writers for works dealing with contemporary science, of which Professor Thorpe's book is an admirable specimen.

MECHANICS' GEOMETRY, Plainly Teaching the Carpenter, Joiner, Mason, Metal Plate Worker, and Other Artisan, the Constructive Principles of his Calling. Illustrated by Accurate Explanatory Cardboard Models and Diagrams. By Robert Riddell, Author of "Hand Railing Simplified," "Practical Geometry," "The Carpenter and Joiner," etc. Philadelphia: Published by the Author, 1214 Hancock street.

This is one of the most valuable practical works which has come under our notice. The problems dealt with are judiciously selected, and contain directions for nearly every useful form. But its especial merit lies in the illustrations, of which the parts are movable from the cardboard on which they are printed, so that the desired pyramid, octagon, sloping roof, cone, or other form may be made by the reader, at once affording a practical idea of the construction intended to be illustrated. The text of the book is clear and concise, and any mechanic who wishes to ascertain the first principles of rules of construction in common use, as well as those in search of improved methods, will be able to acquire from it a good knowledge of practical geometry. It is altogether a volume of the highest value, and is likely to do much to promulgate scientific knowledge of the useful arts. In the interests of our skilled workmen and the cause of technical education, we wish it an extended circulation.

THE LARYNX THE SOURCE OF THE VOWEL SOUNDS. By Thomas Brian Gunning, New York. Baltimore: Journal of Dental Science Office, 86 West Fayette street.

An elaborate resume of the statements of Professors Tyndall, Helmholtz and others, in support of the author's own views and reasoning.

THE ANIMAL KINGDOM. Volume II, No. 1. Published by the American Society for the Prevention of Cruelty to Animals.

A pleasant and useful little publication, well suited for the perusal of young people, in whom it is likely to create a sympathy for the objects of the praiseworthy institution by which it is issued, and to teach all of us to respect and help those who cannot help themselves.

THE WORKSHOP for January contains a continuation of a valuable article on the Vienna Exposition in connection with art industry—more especially, in the present number, with reference to gold and silver work. The usual large proportion of admirably executed engravings of the finest products of European decorative artists are added, and comprise some exquisite designs in cabinet work, mural decoration, jewelry, etc. In order to render the advantages offered of practical utility, a large sheet of working drawings is supplied. Published by E. Steiger, Nos. 23 and 21 Frankfort street, New York city. Subscription, \$5.40 per year.

We have also received from the same publisher the first number of ART WORKMANSHIP, a superbly printed periodical which is designed to form a complete historical atlas of art work. Its object is to present, by finely executed engravings on separate and detached pages, together with the necessary letter press, full descriptions of the treasures of public and private collections, the admitted masterpieces of churches, monasteries, and town halls, and, in fact, of all known objects of art which will serve both to educate the taste and supply good models. The work is to cover a wide ground and embrace the subjects of wearing apparel, embroidery, and lace, vessels in clay, glass, and crystals, goldsmith's work, wrought and cast iron work, paneling and wood mosaic, wall decoration, bookbinding, and, in brief, every thing of value to followers of artistic pursuits. Each part contains a colored plate and some six or seven plain engravings on heavy paper. Issued in twelve monthly parts, at \$1 each, or at \$10 per year.

Recent American and Foreign Patents.

Improved Seed Sowing Machine.

We have recently been favored with a description of an improved seeder the patent of which is owned by Mr. Christian Monson, of Moscow, Iowa county, Wis., the inventor of the new auger illustrated elsewhere in this issue. The machine, it is stated, has been in successful use for some time, and has developed many important advantages. The essential features of the device consist in the seed-distributing mechanism, which includes two seed boxes, one in front of the other. The bottom of the larger box is formed of alternate plates and angular surfaced blocks, in the former of which are holes. Beneath these orifices and extending across the frame is a cylinder, around the circumference of which circular recesses are cut to correspond with the apertures in the bottom of the receptacle. The cylinder is so arranged as to slide in its bearings longitudinally, so that each hole in the seed box may be over one of three sets of circumferential recesses at will, and govern the quantity of seed to be delivered. These sets are of different sizes. There is a revolving shaft inside the cylinder having arms passed loosely through holes made therein. By this means the seed is agitated and caused to fall through the apertures in the bottom and fill the recesses in the cylinder as it rotates below. A brush suitably arranged cuts off the flow, and the cylinder, continuing its revolution, throws the grain into tubes, and thence into other conduits, the lower ends of which furrow up the ground in advance. The smaller seed box also has a beater shaft within, and supplies its seed to a cylinder below, in which, however, there is but a single radial recess, the size of which can be governed by suitable means. This may be used, the other mechanism being out of gear, to distribute the seed at intervals, the grain being delivered to the tubes of course but once at each rotation of the cylinder. There are three seed tubes or drills which enter the ground, and which make rows five inches apart. They are governed by suitable mechanism so as to be easily raised from the ground, and are also prevented from becoming easily clogged. Attached to the rear of the machine, which is mounted on wheels in a suitable frame by a draft bar and drawhead, is a roller above which the driver's seat is disposed. This attachment is provided with all machines, or, if the apparatus be first purchased separately, it can be supplied at a small cost. The use of brushes in cutting off the grain prevents any injury to the kernels, and the mechanism, it is stated, measures out the seed with exactness. The machine can be used for planting corn or other grain, either in drills, hills, or check rows. It is readily adjusted to suit the distance apart of the hills and the quantity of seed to be delivered. The owner of the patent adds that the invention has been quite thoroughly tested and extensively manufactured. He is desirous of increasing his facilities, however, and wishes to dispose of territorial rights. Patterns furnished at small cost. Further particulars may be obtained by addressing as above.

Improved Device for Cleaning Steam Generators.

David L. Latourette, New York city.—This invention proposes to provide steam boilers with independent and permanent pipe connections, the same having cocks or valves, whereby, as soon as they are blown off, a current of steam or other fluid may be forced through the boilers, said current being impelled by suitable means. The injection pipe is attached to the boiler at one end on the upper side, and the discharge pipe or connection at the diagonally opposite end. Thus the current of steam or other fluid acts on the sedimentary deposit immediately around the point of entrance, and thence extends its influence to all the remaining parts of the inner surface of the boiler, and, driving the same before it, carries it toward the lowest and most distant point, where it is forced out of the boiler through the pipe connection there applied.

Improved Compound Tool.

John Dillon, New York city.—The hammer head is provided with a short handle, which is made hollow and with a square socket in the outer end to adapt it to be used as a wrench for turning bolts, nuts, etc. Upon the outer surface of the end of the handle is formed a screw thread to fit into the hollow handle. The shanks of a small gimlet and of a bradawl are attached to the opposite sides of the button, which has a screw thread cut upon its edge to fit into the screw thread of the handle. By reversing the button, the bradawl or gimlet may be made to project as one or the other may be required for use. A small set screw, which screws in through a small hole in the handle, prevents the disk from turning when the tool is turned backward. The outer end of the handle is notched, and the inner surface of one or both the jaws thus formed is serrated to adapt them to serve as a wrench. One of the jaws is sharpened to serve as a fine screw driver, and the other is made to serve as a coarse screw driver. In the hammer head, near the claws, is formed a socket, into which fits the bradawl, where it is secured in place by a set screw. As thus arranged, the tool becomes a crank for turning a shank or other object.

Improved Shoe Fastening.

Samuel Babbitt, Brazil, Ind., assignor to himself and William E. Sibley, Boston, Mass.—The flap of one quarter covers the slit at the instep and overlaps the other quarter, so as to close the slit as tight as possible against water and dust. A strap is attached, near one end, to the flap near the bottom of the slit, passes through metal loops on both flap and body of the shoe, in a zigzag course to the top, and is doubled through a buckle, and attached at its upper end to the flap. The doubled portions passing through the loop allow of loosening the shoe sufficiently without drawing the strap out of the buckle, thus saving considerable inconvenience that would attend the pulling of it out.

Improved Grain Drill.

Samuel Hart, Fulton, N. Y.—A long grain hopper extends across the front portion of the machine with a chamber into which the grain escapes through the passage, which is regulated by a gate. The side of this chamber is made to fit nearly half around a small dropping roller containing pockets, opposite which there are slots, through which the grain passes into the pockets. The roller has as many pockets as there are to be drills in the machine, and each pocket discharges into a spout for sowing in drills. The drill stocks may be readily released for adjustment or removal. The dropping spouts terminate over the drill tubes, and have, when the machine is to be used for planting, a gate or valve closing against the lower end by a spring shank to retain the grain until it should fall into the hill.

Improved Printer's Side Stick and Quoin.

Francis Keelin, Milwaukee, Wis.—The object of this invention is one for the use of printers, consisting of an improved side stick and quoin, by which the forms may be easily set without injuring the imposing stone, and firmly retained during the printing process. The invention also consists in constructing the side stick with wedge-shaped sections, which are wider at the base, forming a projecting step, along which the wedge-shaped quoin, with a similarly projecting top step, are guided, so as to confine the type in the chase.

Improved Piano and Organ Attachment.

Leon J. Fromaux, New Orleans, La.—This invention consists of movable boards, having pins and bridges arranged on one side in the order of the music, like the projections of the barrel of a music box. This is caused to slide along the top of a box by a hand crank and suitable gearing. In the box are levers corresponding to all the keys of the piano and organs, connected by suitable contrivances with cushioned plungers or hammers which are made to strike the keys of the instrument when the projections on the moving board come in contact with the levers. The piano or organ is thus caused to play the piece represented on the board by the projections. Different boards will be used for different tunes. The box containing the apparatus is so contrived that it can be applied to any piano and organ by simply placing it on the front above the keys, and securing it by clamps and adjusting devices attached to the box, forming a simple and ingenious contrivance. It requires four or more boards for each tune, as the parts are always repeated alternately, and each board is used in the order in which its part of the tune is played, the others being removed.

Improved Adjustable Hanger for Mirrors, etc.

James Wright, New York city.—This invention has for its object to furnish an improved device enabling the mirror or picture to be hung without injuring the plastering or cutting the woodwork of the house, and without the use of step ladders or other contrivances for attaining the requisite height. The device consists of an upper strip of wood which is hung upon a nail in the wall. The lower part of this strip forms a tongue which is slotted, and which enters a dovetail groove made longitudinally in a second strip. A square bodied bolt and thumbscrew passes through the lower strip and tongue, so that the two may be clamped in any position. The upper end of the lower strip terminates in a band which encircles the upper strip, serving as a keeper for the latter, and also as a support for the hook which sustains the mirror.

Improved Sewing Machine.

Theodore A. Weber, Philadelphia, Pa., assignor to Albert Lathrop Runyon.—The first part of the invention consists of an arrangement of a rotating looper and a vibrating loop spreader for opening the loops wide enough for passing a commercial spool, so that the rotating looper shall first take the thread from the needle and open the loop to some extent before the vibrating spreader takes it, instead of the reverse arrangement, which has been before used. By this arrangement, it is claimed, a much shorter and stiffer needle can be used, and there is less liability of the needle springing away from the looper and missing stitches. The second part of the invention consists in the arrangement of an upper thread take-up, to operate in connection with the under bulged plate take-up, heretofore used. When the spool has passed through the loops, and the spreader begins to go back to release the loops, the bulged plate enters it, and draws the thread laterally over its swell, so as to keep the necessary tension on the slack given up by the spreader. At the same time the upper take-up begins to rise, the needle arm, having previously reached the upper limit of its movement and begun to descend again, acts, in conjunction with the bulged plate, to keep the loops taut. The bulged plate escapes through the loop as fast as it is taken up, and the latter passes off the horn as it vanishes, the horn preventing it from being caught by the needle and the spreader.

Improved Curtain Fixture.

Henry K. Warner and Charles E. Smith, Rochester, Minn.—Two wooden bars are connected together longitudinally, so as to be at right angles to each other, and are provided with suitable eye bolts, so as to be suspended from the upper part of the window casing. The curtain roller is pivoted in suitable brackets secured in the angle between the bars. One bracket is detachably secured to the bars by a pin, so that by drawing out said pin the bracket may be swung outward and the roller detached. The shade is wound upon the roller by means of a cord, one end of which is attached to a spool attached to one end of the roller, and which is wound upon said spool by drawing down or unwinding the shade. The cord passes through a guide notch formed in the lower edge of the vertical bar, where it is kept in place by a pin, so that by withdrawing the said pin the cord will be released, so as to be detached with the shade and roller. The cornice is hinged to the forward edge of the horizontal and upper bar, and is so formed as to pass around the forward side of the roller, so as to cover the said roller and protect the shade from the falling dust. The end parts of the cornice fit and rest upon the brackets. To the lower edge of the bar is attached a catch which is made with a tapering slot, so that by moving the cord into the narrow part of said slot it will be held securely, holding the shade in any desired position.

Improved Carpet Stretcher and Tacker.

Zadock A. Ward, Pittsfield, Mass.—This invention is an improvement in the class of implements for simultaneously stretching and nailing carpets, in which a hammer and tack or nail conducting channel and toothed pusher are main elements. To the lower end of the handle is rigidly connected, under suitable angle, an upright guide piece, which is provided at its broader lower part with forward curved teeth for the taking hold and stretching of the carpet. In a recess in this guide piece, and supported by a spiral spring above the same, is a sliding bolt, the upper end of which is struck by a hammer head. The latter is secured to a curved lever pivoted to the handle. The lever projects at some distance below its fulcrum, and is connected at its end with a curved rod which is operated by a shorter handle. The tack conducting and feeding arrangement is placed into a recess at the upper side of the lower part of the handle, adjoining and opening into the T shaped recess of the guide piece. A T shaped tack conductor slides in inverted position in the recess by the action of a coiled spring, on its upper part, projecting into the recessed part of the guide piece. The U shaped carpet tacks are placed one adjoining the other on the central part of the conductor, and held thereon by means of a covering plate. The tacks are fed into the recess of the guide piece and acted upon by the spring bolt, which drives them into the carpet at the required time.

Improved Steam Cooker.

John Bentz, Parkersburg, West Va.—This invention is a steam cooking apparatus, which admits the steam to the victuals in each part or drawer thereof on closing the drawers, shutting off the steam on opening the drawers. No steam can thereby escape and burn the fingers, but the cooker works uniformly with the full heating power. The different parts of the cooker are arranged above each other, separated by partitions, and connected at their rear sides with a vertical extension of the boiler. The steam enters through short tubes, with valves applied therein, opening into larger tubes of the drawers, with horizontal guide pins, which push the valves open when the drawers are within the cooker, and shut off the steam when the drawers are opened for inspection.

Improved Hemmer for Sewing Machines.

Louis Sexauer, Brooklyn, N. Y., assignor to himself and John B. Christoffel, Brooklyn, E. D., N. Y.—The invention consists of an auxiliary presser which is employed in combination with an extension hemmer. It consists of a spring plate bolted on the plate of the hemmer, and a secondary plate provided with an adjusting screw. The spring plate is secured adjustably, and so arranged that the end will rest on the top of the machine presser, to be lifted up by it, while the plate itself tends to spring down on the cloth. The secondary plate is to be forced down upon the cloth at the outer end, to press and smooth the fold down flat, so as to run along the guide properly to guide the hem to the needle. The adjusting screw is to regulate the distance of the secondary plate from the spring plate, according to the thickness of the cloth. For example, if the cloth be light and thin, it should be adjusted lower than if the cloth be thick, because the sewing machine presser presses down into the thick cloth, and the latter will be higher relatively to the point of support of the secondary presser

Improved Bridge.

James Valleley, Canton, O.—For constructing metal arches for bridges this inventor proposes to make hollow trunks, either of four or six sides, formed of flat plates, or some of flat plates and some of lattice bars, united at the angles by angle bars. These trunks have a section of the form of a trapezoid when four sided, and of the form of two trapezoids, placed base to base, when constructed with six sides. The shoe for the end of the arch or chord is formed of two metal pieces, one of which receives the end of the chord on its face, and is supported by trunnions in bearings on the top of the other piece, which is bedded in the foundation, so that the piece supporting the end can turn readily, as required by the expansion and contraction of the arch.

Improved Draft Equalizer.

William McClelland, Sr., Fowler, Ill.—The object of this invention is to produce an equalizing attachment for three horses, to be applied to reapers and other vehicles, by which a greater effect is obtained, and the side draft regulated, as required. The weight of the tongue on the neck of the horses may also be adjusted. The invention consists of a curved bar which is attached to the tongue, and carries the rear extending bar, with regulating rod, which connects with and is adjustable on a cross bar of the hounds. Both bars together support the equalizing bar, and allow the adjustment of the same into any required position.

Improved Car Coupling.

Thomas Reas Land, Grass Valley, Cal.—The link has at each end a flat, spear-shaped head which, when the cars come together, enters a spiral opening in a circular block. As the link is pushed through this spiral opening, it turns a block one quarter around and lifts up a weighted lever attached. When the spear-shaped head of the link has passed entirely through, the weighted lever drops and returns the block to its original position, which position is such that the narrower width of the spiral opening will be crossed by the broader part of the spear head of the link, and therefore the link will be prevented from being withdrawn through the opening. The block is held in the drawhead by a circular flange or a second block, which enters a corresponding circumferential groove in said first block. The flanged block is secured to the plates by bolts. The link is sustained in a horizontal position, and guided to enter the spiral opening by the assistance of the socket piece, which has a square stem which plays back and forth in a square hole in the center of the blocks. The spiral springs connecting the stem to the blocks operate to relieve the cars from the effects of the shock of meeting when in the act of coupling. The end of the link closely fits in this socket piece, the other end of the link being held in a similar manner in the coupling iron of the car adjoining.

Improvement in the Propulsion of Vessels.

Charles P. Macowitzky, Corpus Christi, Texas.—This invention has for its object to improve the construction of the device for which letters patent No. 135,394 were granted February 18, 1873. The piston rod of a steam engine is secured to an arm which passes through a slot in the bottom or side of the vessel and a slot in a sliding frame, and is rigidly attached to a rack bar. The latter slides upon the frame and engages with a gear wheel, attached to the paddle, so that the said paddle may be projected and withdrawn by the movements of the said rack bar. The paddles are pivoted to the sliding frame, so that they may be carried back and forth by and with said frame or plate in its movements. By suitable construction the arm and rack bar will be first moved to adjust the paddles, and the rack bar, paddles, and arm will then be moved together to make the stroke. The mechanism of the parts may be so adjusted with respect to the piston rod, that the paddles will be projected upon the forward or back stroke, as may be desired.

Improved Valve.

George R. Crane, Painesville, O.—The disk of the valve is surmounted by a hollow cylindrical extension, which is enclosed in a cage formed of three vertical standards, suitably secured at their lower ends. These standards prevent the valve from tilting laterally, and have studs at their upper ends to keep the same in place. The valve is secured with a ring of leather, fitted into a recess in its face which is secured by a clamping disk, nut and bolt. The valve seat in the bottom plate is made in two parts, of which one is in a flat plane, and the other is convex or concave. With the flexible bushing of the valve constructed to correspond with these forms, all the advantages of both for securing a tight joint are claimed to be obtained, as the elastic substance will shape itself to both parts, and afford greater security. The valve can be removed readily for repairing the bushing by unscrewing the fastening of one of the standards, and the bushing can be easily taken out.

Improved Car Coupling.

Hamlin G. Russell, Lincoln, Ill.—Each drawbar is provided with a coupling hook which is pivoted, at the rear end of the same, to a strong vertical rod. A strong band spring is connected to a hook and placed in such a manner between it and the side of the drawbar that the force of the same presses the hook toward that side of the drawbar. The opposite side of the drawbar is made with a solid inclined part at the mouth for the easy entering of the coupling hook of the adjoining car, which part is supplied with a vertical groove along its rear edge, into which the hook locks. A catch plate is secured to the side of the drawbar in the rear, so that its front part has an elastic spring-like action. On the approaching of the cars, the hooks lock into the vertical grooves. For uncoupling, a suitably arranged lever is carried sidewise, so that the catch plates act on the ends of the hooks and disengage them from grooves. The play in vertical direction which is given to the hooks along the grooved parts allows the coupling of cars of different heights, while the side play of the hooks instantly disconnects the cars when any one should get off the track.

Improved Sash Holder.

Samuel Chace, Mianus, Conn.—This invention is intended to furnish means for holding window sashes in any desired position, and for fastening them when they are down. The sash is raised by pushing back the catch by means of a knob which releases a lip. The catch is held back until the sash is in the desired position, when the knob is let go. The pressure of the spring is designed to counteract the weight of the sash to some extent, but the catch, being free to turn on its knob pivot, acts as an eccentric and securely holds the sash.

Improved Mechanism for Towing Boats.

Giles S. Olin, Deer Lodge, Montana Terr.—The tug boat is provided with engines for furnishing motive power, and a propeller wheel is made to operate at the stern. A drum is supported on a horizontal shaft by stands which are attached to the sides of a frame. This drum is revolved by the motive power with the shaft when winding up the two ropes, and on the shaft when unwinding it. The drum is given a slight longitudinal motion by means of a lever, which couples it with the gear wheel on the drum shaft. The motive power is applied to the propeller by means of a central shaft. The propeller shaft and the two shafts are coupled together and uncoupled by means of a shifting lever, the propeller wheel being used only periodically, or to move the tug ahead and unwind the rope. The towing of the boat, or train of boats, is done while the tug is anchored and stationary. The towing rope may be of any length which can be conveniently wound on the drum. One end of the rope is attached to the drum, and the other end to the train of boats. The drum is thrown into gear with the shaft, and the train of boats is drawn near to the tug by revolving the drum and winding up the rope. When this is accomplished, the propeller wheel is slipped into gear and the tug is driven ahead, while the drum is uncoupled, so that it revolves freely on the shaft and unwinds the rope. When the rope is unwound, the propeller wheel is uncoupled, the tug is anchored, the drum is thrown into gear, and the rope is again wound up, and this process is repeated as desired.

Improved Glove Turning Machine.

Frederick Vanderpool, Mayfield, N. Y., assignor to himself and James E. Wood, of same place.—The object of this invention is to furnish a convenient glove-turning machine, by which all the fingers and the hand part, with the exception of the thumb, may be turned simultaneously in a rapid and easy manner. The invention consists of a stationary frame with finger tubes, over which the glove to be turned is placed. A spring frame with hand board and finger rod slides in the stationary frame, and serves, by being pressed down on the finger ends, to carry the glove and hand part over it by one upward motion of the same.

Improved Grinding Mill.

David A. Caldwell, Jacksonville, Ill.—A spur gear of ordinary construction is arranged loose on a shaft, with its toothed rim meshing with a pinion on the runner spindle. The supplementary driving wheel is placed under and supports the gear, being itself fast on the same shaft. It has radial slots or notches in the upwardly projecting flange formed around its periphery, to receive the arms of the gear; and sockets are formed in the opposite sides or walls of said slots, to receive springs, which bear against the opposite sides of arms of the wheel. The springs are so arranged, as to strength and length, that one only will come in contact with the wheel when driving one run of stone; but, when driving two, the longest one will contract enough for the shorter one to come into action, thus making the elastic and yielding capacity alike applicable in the use of part or all of the power. To secure the springs in place, and connect the two wheels together, plates are bolted at their ends to the wheel, and cover the sockets, containing the arms of the gear wheel in the slots of the wheel. The spindle step is mounted in a steel box, which is fixed on the end of the short arm of a lever, pivoted on a pedestal which is to be supported on an independent foundation. The long arm, which is forked or notched, extends to and embraces the lower part of a temper screw, under a follower working up and down on guide rods, and operated by the screw, which is stepped in a pedestal which supports the said rods by a bar, the upper ends being connected to and stayed by another bar, through which the temper screw passes, but not screwing in it. The temper screw rod extends up through the stone floor and a dial plate thereon, and has a pointer and hand crank or wheel, the one for turning it, and the other for indicating on the dial the extent of the movement of the screw. This screw is provided with a collar at its bearings in the stone floor, so that it cannot move endwise, by which, when turned, it works the follower up or down, according to which way it is turned, and thereby causes the vertical adjustment of the stone.

Improved Blade for Agricultural Implements.

Winfield Scott, Floyd Court House, Va.—The object of this invention is to render hoes and other agricultural implements more durable, and it consists in making the outer corners of the blade thick and rigid, and making the blade thin, or bringing it to an edge between the corners.

Improved Transfer Apparatus for Railroads, etc.

Joseph Jones, Alfred Harley, and Charles H. Fisher, Albany, N. Y.—This invention consists in an apparatus for gradually overcoming the inertia of and attaching cars, carriages, or other vehicles to a cable or belt, while the latter is in continuous motion, and for increasing or diminishing the adhesion of the cable.

Improved Mill Pick and Hammer.

Allen H. Vanfossen, North Wales, Pa.—This invention consists in a mill pick hammer, which has a tap hole on one edge of the holder, and whose head is provided with a set screw, an oblong rectangular socket, and tap holes on side and edge.

Improved Breech Loading Fire Arm.

Joseph C. Dane, La Crosse, Wis.—This invention is an improvement in breech loading, of the class in which the firing pin or striker acts by momentum, the movement of the hammer being arrested just previous to the delivery of the blow on the cartridge. The improvement relates to the construction of the striker with an annular recess in its lower end, to adapt it to receive the spiral spring which encircles the firing pin proper, and to arrest its movement and impart the requisite weight.

Improved Farm Fence.

Jacob Halsh, De Kalb, Ill.—This invention relates to means whereby the rails of a wire fence panel may be not only made much stronger, but whereby it will be enabled to turn stock and allow for expansion and contraction by heat and cold. It consists in making the rail of several pieces of wire, each fastened at one end to the post or another piece of wire, and then carried out and hooked by a bent end with a corresponding one from the opposite direction, spikes being thrown out on each side of the fence at the point of junction. With two wires to each rail, spikes will thus be thrown out on each rail preferably at intervals of about a foot, more or less.

Improved Rotary Engine.

John B. Axt, Baltimore, Md.—This invention relates to means whereby rotary engines may be more conveniently packed, the piston kept always radial to the center of the shell, and the usual clapping noise avoided. The invention consists in a combination with the case and the eccentric shaft that carries the disk of the ring plates and carrying piston, and slotted to allow the said shaft to move.

Improved Self-Adjusting Track Cleaner.

James S. Hagerly, Baltimore, Md.—This invention relates to means whereby the dust, dirt, snow, or other obstacles which are found upon railway tracks, may be speedily and effectually removed in advance of the wheels, while all liability to fracture or displacement of the scraper may be avoided. This is done by means of a scraper, a scraper stock, a bar and a grooved lug, jointed and operating together in a novel and effective manner.

Improved Damper for Stoves.

Edward F. Cook, Omaha, Neb.—The object of this invention is provide means for retaining stove dampers in any desired position when they are in use; and it consists in a hoop or ring attached to the damper plate at right angles with the damper spindle, so that the hoop or ring will bear against the pipe in which the damper is placed and hold the latter in position by the friction thus produced.

Improved Lubricating Journal Box.

Jean Morin, New York city.—The object of this invention is to furnish a self-lubricating journal box for axles and shafts of all kinds, which secures an even and regular supply of oil to the bearings. Chambers extend vertically at the sides of the outer case of the journal box, and contain the lubricating oil, which is filled in by means of tube from the outside, which also indicates the quantity of oil in the chambers by the height of the oil therein, so that the requisite supply can easily and readily be regulated and kept up. The oil receptacles connect with each other by means of flat, lateral, and longitudinal channels, at some distance below the axle, which channels are connected by central and symmetrically arranged side channels with the bearing and axle. The side channels are wider at the base, narrowing toward the upper end, and contain the wicks, which touch with their upper ends the axle, and feed the oil evenly to the same. The semi-cylindrical axle bearing is cast of bronze and provided with top recesses and a downward projecting central guide tube, which fits into the central channel of the case. The wicks extend to the flat lateral channels, take up the lubricating oil and convey it by capillary attraction to the lower part and sides of the journal in proportion to the number of rotations of the same. The cap piece serves to keep the side wicks in contact with the axle.

Improved Dropper for Seed Planters.

Hermann H. Koeller, Camp Point, Ill.—The bottom of the seed box is formed with a circular recess in its center, in the sides of which are formed slots to receive the sliding bar, by the movements of which the dropper is operated. To the center of the bottom is attached a projection which passes up through the sliding bar and forms a pivot for a star wheel, which is made with seven rays, the outer ends of which are made more inclined upon one edge than the other, so that the point or extreme end of the arms may be at one side of the radius passing through the centers of the said arms. To the upper side of the sliding bar are attached two wedge-shaped projections, which fit into the space between the rays of the star wheel, and which alternately strike an arm of the wheel and turn it through half the space of one arm. The dropping plate is made in the form of a circle with its middle part cut away, and is carried around by and with the star wheel. In the dropping plate, near its outer edge, are formed fourteen holes arranged in a circle and at equal distances apart, which receive the seed from the hopper and carry it to the discharge hole through the bottom, through which it falls into the guide spout that conducts it to the ground. Upon the lower side of the sliding bar is formed a projection which works in a slot in the bottom, and to the end of which is pivoted the end of a bar, the other end of which is pivoted to a bar, which is in turn pivoted to the conductor spout so as to detain the corn in the conductor spout. This is operated at each movement of the sliding bar to allow the corn to drop to the ground.