

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 5½ 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  $\frac{1}{4}$  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.
- SCREW 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 on 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 the market as described in the patent of said Louis, 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 defendant's right in the invention, as it then stood, to the defendant 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 reed instrument, as it then stood, under the letters patent of November 18, 1856, (on which this bill is brought,) and 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 said defendants, for the grant to them of a patent 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 parts as well as the new combination;

If the defendants succeed 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.

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.

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 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, we are informed, 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.