NEW BOOKS AND PUBLICATIONS.

FLOW OF WATER IN RIVERS AND CANALS. By D. Farrand Henry, Chief Engineer of the Detroit Water Works. Detroit: W. Graham, 52 Bates Street.

This is an able treatise on a very difficult and interesting subject; and, written as it is by a competent authority, must be considered as an important contribution to our knowledge of hydrostatics. It was originally published in the *Journal of the Franklin Institute.*

THE AMERICAN NEWSPAPER DIRECTORY: containing accurate Lists of all the Newspapers and Periodicals published in the United States and Territories, and the Dominion of Canada and British Colonies of North America. New York; George P. Rowell & Co., 41 Park Row.

This valuable compilation is here issued in a new edition, and the information is carried down to the latest date, with the elaboration and accuracy for which the work is justly renowned.

THE COAL REGIONS OF AMERICA; their Topography, Geology, and Development. With Maps and Illustrations. By James Macfarlane, A.M. New York: D. Appleton & Co., 549 and 551 Broadway.

The coal supply of the world is now a most vital question, and the enormous deposits known to exist in our country have long drawn the attention of practical scientists to the best means of raising and making available for public use this indispensable commodity. Mr. Macfarlane's book is a collection of all the ascertained facts as to the geographical, topographical, geological, and other characteristics of the coal regions of the United States, and the commercial and economical relations of this immense wealth, classified for study and reference. We believe this work will be eminently useful to all interested in the question, and we recommend it as a trustworthy authority.

UNDERGROUND; OR LIFE BELOW THE SURFACE. By Thomas W. Knox, Author of "Camp Fire and Cotton Field," etc., etc. Hartford: J. B. Burr and Hyde. Chicago: J. B. Burr, Hyde, & Co.

Under this attractive title, the author has collated much curious information concerning mines, caverns, borings, shafts, tunnels, diving and divers, volcanoes, prisons and dungeons, cellars, sewers, underground railroads, rapid transit and many kindred topics. It forms a book of light and entertaining reading, containing many remarkable and little known facts.

BURNS' PHONIC SHORTHAND, for Schools, Business and Reporting. By Eliza Boardman Burns. Published and for sale by Burns & Co., Phonographic Publishers, 33 Park Row, New York. Price $1.

Mrs. Burns, in the neatly printed volume above named, aims to supply to the public a work which shall be in every respect a self instructor. To this end, she has brought her long experience as a teacher of the art of phonography to bear in its preparation, and, by an excellent arrangement of printed keys to every page, careful and lucid explanation of the fundamental rules and a judicious selection of examples, has produced a book which will doubtless prove of great service. We may add here that the recent introduction of the postal card renders phonography a science which may be called even into greater practical utility than at present. On the back of one of the ordinary cards, a letter of considerable extent may be inscribed in phonographic symbols, thus not only saving postage, but preventing the perusal of its contents by the general public. For business and other large correspondence, phonography is a most valuable auxiliary, and any means which, like the volume under notice, has for its object the popularization of the science will be generally welcomed.

A CATALOGUE OF EIGHTY-ONE DOUBLE STARS. By S. W. Burnham, Chicago, Ill.

Mr. Burnham here gives the result of investigations by which he has succeeded in discovering 81 double stars, which are not noted as double in any former publications. The list, valuable as indicating the progress of astronomy in America, was published in the March issue of the *Monthly Notices* of the Royal Astronomical Society of England. Eighty of these double stars were discovered with a six inch Alvan Clark refractor.

REPORT ON A TOPOGRAPHICAL SURVEY OF THE ADIRONDACK WILDERNESS OF NEW YORK. By Verplanck Colvin. Albany: The Argus Company.

This report describes the work done under authority of the Legislature of the State of New York; and it contains much new, valuable and interesting information. Among many discoveries, we especially notice the fact that Whiteface Mountain, hitherto considered to rise to only 2,500 feet above the sea level, and consequently to be inferior to the highest of the Catskill peaks, is really 1,000 feet above those elevations. Mount Marcy, the center of the Adirondack range and the highest mountain in the State, is here correctly located, for the first time.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From May 31 to June 5, 1873, inclusive.

COLLAR AND CLASP.—A. Flatley, J. Marson, Brooklyn, N. Y.
CUTTING STONE.—G. Stacy, Nannet, N. Y.
ELECTRO-MAGNETIC ENGINE.—J. D. Wallace, New York city.
MAKING BOOT SOLES.—D. Mills, Brooklyn, N. Y,
MAKING WRITING INK.—J. W. Carter, Boston, Mass.
SAFETY VALVE BALANCE.—V. F. Lassoe, G. F. Meyer, Brooklyn, N. Y.
SEWING MACHINE TUCKER.—E. Bouillon, New Orleans, La.
SHEEP SHEARS.—A. S. McWilliams, Colusa, Cal.
STEAM ENGINE GOVERNOR.—J. M. Bottum, New York city.

Recent American and Foreign Patents.

Improved Cartridge Box.

Samuel McKeever, U. S. Army, Mobile, Ala.—This invention relates to the construction of that class of cartridge boxes which are made in two parts hinged together. The invention consists in making one part higher than the other so as to fold over at top and allow it to be latched; in a flexible connection and pivot rod across the middle to enable it to unfold easily and smoothly; and in putting the flap and button at the bottom of the box.

Improved Sewing Machine.

Friedrich Koch and Robert Brass, Brooklyn, assignors to John Boyle, New York city.—This invention consists in the improvement of sewing machines for heavy fabrics. An elbow lever is pivoted to a slotted block confined in a recess of the head piece. The presser shank passes through this block, and a gib is placed between the shank of the presser and the short arm of the elbow piece that also projects into the block. When the awl is about to penetrate the material its cam strikes a roller, turns the elbow, and through the gib and block the presser is held firmly in position, so that it cannot rise under the action of the awl. A combination of motions causes the awl to ascend through the throat plate, pierce the fabric held there by pressure foot, feed the same to the descending needle, which follows the receding awl and enters the hole from above, carrying the burr toward the interior of the fabric, producing an even surface.

Improved Cartridge Box.

Samuel McKeever, U. S. Army, Mobile, Ala.—This invention relates to the construction and arrangement of the parts which constitute a soldier's cartridge box. It consists in making the box in two parts that are pivoted together at the bottom so as to turn down and allow an important addition to the number of cartridges usually carried. It also consists in providing the movable part with a rigid cover and in making slots where this turns on the pivots of the other, so that it may be raised and lowered to bring the cover in place and admit of dispensing with the ordinary flap cover. It also consists in a novel mode of securing the pockets to the inside of box so that the cartridges can be placed in a convenient position for rapid removal by the soldier.

Improved Sewing Machine.

Eugene W. Beebe, Evansville, Wis.—This invention consists in the improvement of sewing machine feed mechanism. The feed plate is secured to one end of a crooked bar hinged to the plate, by which the forward and back motion is imparted to the feed plate through a lever, one end of which works between a stationary lug on said plate and a movable one. A vertical bar is pivoted at its lower end to a stand under the bar, and has a roller in its upper end on which the bar rests. It is connected by a rod with the lever, so that, at the time that said lever works the plate, it will work the bar. The bar swings with the lever the full measure of its movement and raises the feed plate, while the plate only moves a short distance. The bar is curved downward so that it will raise the feed plate up to the cloth just before the lever comes to the lug, so that when the plate is moved forward, after the lever strikes this lug, the plate will move the cloth; then, during the back movement of the lever and before it comes up to the lug to move the feed plate back, it will pull the bar and roller back along the curve, so as to let the feed plate fall away from the cloth. The length of the stitch is regulated by moving the adjusting lug along the plate with an adjustable screw.

Improved Wagon Brake Shoe.

Henry Seitz, Palmyra, Mo.—This invention has for its object to furnish an improved brake shoe, which shall be so constructed that it may be readily moved up as it is worn away by the friction of the wheel, and which may also be moved laterally to bring it into line with the rim of the wheel.

Improved Chandelier.

Joseph Kintz, West Meriden, assignor to Joseph Kintz, of Meriden, and P. J. Clark, of West Meriden, Conn.—The essential object of this invention is so to make a chandelier that the center and suspending rod can be trimmed permanently without putting the arms in place, to facilitate the packing for shipment, and so that when received by the purchaser the arms can be readily put in without disturbing the ornaments to any material extent. The invention consists of a hollow center piece, to which the arms are attached, made of a ring and a bottom and top of a cup-shaped form, which are screwed against the ring by nuts on the rod, and have flanges overlapping the edges to hold it in place. The arms are hooked to the top of the ring and confined by the flanges of the top and bottom parts. The top part is swiveled to a female nut, which is a part of the ornamental piece above the center, by which it is readily raised up from the ring to admit the hooks of the arms for attaching them, and then screwed down again to secure them. The ring is connected to the suspending rod by bars projecting from the rod radially, to prevent turning.

Improved Case for Law Blanks.

C. Irvine Walker, Charleston, S. C.—The object of this invention is to furnish to lawyers, clerks of courts, notaries public, and others a law blank case, which contains a number of leaves for the adjustment of different law blanks, to be available for ready use, and provided with an index for easy reference. The blanks or forms are thus preserved in good order, free from injury, and by their convenient arrangement a great deal of time is saved. The invention consists of a book composed of leaves of binders' boards, or wood, metal, or other suitable material. On each side, or on one side only, of the leaves, at the corners, are strips for confining the blanks and for holding them flat against the leaf. The strips are placed diagonally across the corners and so prevent any slipping of the blanks. They are stamped in such a manner that the parts which pass over the blanks are bent up suitably so as to form an elevation for slipping the blanks under them; and they hold the blanks firmly in their place, keep them flat, smooth and clean, and make them easy of access. The lettering (or numbering) of the pages, with an index sheet in front, makes it an easy matter to find any blank which may be wanted. It is a most convenient arrangement for lawyers, court officers, and others keeping blank forms, and is far preferable to shelves, as it is more compact, and can be laid on the desk or table immediately at hand.

Improved Reversible Street Car.

William T. Jenks, Toledo, Ohio.—This invention has for its object to improve the construction of the improved street car, for which letters patent No. 135,277 were issued to the same inventor January 28, 1873, so as to make it more convenient in use and more effective in operation. The invention consists in the circle, constructed as described, the flanged segments, the rollers, and the guard, in combination with the car body, the truck frame, and the king bolt. By means of the king bolt the car body is pivoted to the truck frame, and the former is long, so as to allow the body to rise above the frame without drawing the bolt out of place. A guard brace is attached to the truck frame to hold the said bolt steady and in a vertical position while the body is being raised, turned, and lowered. A circle, the parts of which toward the sides of the car body are horizontal, is attached to the said car body. The parts of the circle toward the ends of the car body are also horizontal, and are at a lower level, so as, when the car body is parallel with the truck frame, to rest upon the central bar of said frame. Segments of circles are formed with side flanges upon their outer and inner edges, and are bolted through their outer flanges to the bars of the truck frame. In slots in the end parts of the segments are pivoted rollers, upon the faces of which the inclined parts of the circle rest. By this construction, as the car body is turned, the circle moves up upon the rollers, raising the car body above the wheels so that the said body can be conveniently turned; and as it comes into line in the reversed position, it again descends to its former level.

Improved Cotton Worm Destroyer.

Jack. Helm, Hochheim, Texas, assignor to himself and Charles Tim, of same place.—This invention relates to a new machine for removing the destructive cotton worms from the cotton plants without injury to the plants and for destroying the worms. The invention consists in the arrangement of a movable frame, which is by animals drawn over the fields to straddle the rows of cotton, and which is provided with brushes for sweeping the worms from the plants, and with jointed bottom pieces or slides, which crush them on the ground.

Improved Dental Drill.

Jonathan W. Baxter, Vevay, Ind.—This invention has for its object to furnish dentists with a rotary drill adapted to be operated by the hand through the medium of a worm, a toothed driving wheel, and pawl mechanism. The wheel is turned by a pawl crank and a push pawl, the latter extending down through the bottom of the case, and having a finger piece on the lower end to be acted on by the middle finger of the same hand by which the machine is held, which pushes it up and turns the wheel, and a spring pushes it down again.

Improved Milk Boiler Alarm.

Samuel Mangold, New York city.—The object of this invention is to prevent boiling milk from becoming scorched by boiling over; and the invention consists in forming a milk boiler alarm which, when the milk is about to boil over, will cause a bell to ring, so that the cook may be informed and remove the milk from the fire. This invention is carried into effect by the use of a float, connecting with an elevated bell in such manner that, when the boiling milk rises to the top of the float and enters or weights it, the bell will be released and ring the alarm.

Improved Harrow.

Thomas M. King, Murfreesborough, Tenn.—This invention consists of two harrows, the frame of each being formed of a straight bar and a semicircular bar, and attached to a beam by bolts, so as to be adjustable at various angles to each other.

Improved Mechanism for Operating Screw Propellers.

James Wixcoxen, Russellville, Ill.—This invention consists of twin screws and propellers, each mounted on a laterally vibrating frame, wherewith is a horizontal drive wheel on a vertical axis, coinciding with the axis whereon the frame swings, and gearing with the propeller shaft so that the propeller and the rudder can swing laterally to utilize both the propeller and the rudder for steering the boat, the said drive wheel being also geared with the crank shaft in the vessel for being operated. Twin screws and rudders are used, to have one counteract the other in respect to the tendency of the drive wheel to cause the propeller and rudder to swing around their axis in the application of the driving force. The two vibrating frames are connected together so as to act synchronously, and the chains of the steering wheel are connected to them to work them to steer the boat.

Improved Nut and Coffee Roaster.

D'Alembert T. Gale, Fort Wayne, Ind,—This invention consists in the arrangement, in connection with a nut-roasting cylinder, of an escapement wheel, clutch, pawls, and pendulum, in connection with a spring-driving mechanism, whereby an intermittent rotary motion is given to the roasting cylinder: the mechanism being so constructed and arranged in relation to the roasting cylinder that, in winding up the springs which constitute the motor, the roasting cylinder is revolved the reverse way, thereby giving the contents thereof a thorough mixing, avoiding burning.

Improved Combined Stop Cock and Check Valve.

Asa T. Waldron, Waterford, N. Y.—This invention consists of a combined stop cock and check valve, in which the water way of the hollow cock is divided by a partition with a hole through it, and a valve seat on the upper side, with a stem extending up into a hollow removable cap on the top of the cock, and having a coiled spring for closing it down on the seat, the partition being above the inlet port, so that the check valve prevents back flow. The construction is such that the check valve can be readily taken out at any time by removing the cap on the top of the cock to clean out sand and other matters collecting in the plug.

Improved Shaft Coupling for Earth Augers.

Thomas Urie, Corning, Iowa.—This invention has for its object to furnish an improved shaft coupling for well borers and other machinery. The shaft is made square, and in sections or lengths. Upon the lower end of the lower section is attached a boring tool. In each end of each section or length of the shaft is formed a tapering square hole or socket to receive the coupling pin, which is made square in its cross section, and tapering from its center toward each end, to correspond with and fit snugly into the holes or sockets in the ends of the sections of the shafts, where it is secured in place by set screws. This construction leaves the surface of the shaft smooth throughout its entire length.

Improved Filter for Water Cooler.

Charles Schneider, Newark, N. J.—The object of this invention is to provide an efficient filter for water coolers, by which not only the impurities contained in the ice may be excluded, but also impure and unhealthy pump or aqueduct water filtered in such a manner that the clear and limpid liquid is drawn off. The whole filter is constructed to be detachable for cleaning and refilling with charcoal or other absorbing material, as required. The invention consists of a cylindrical filter of wire gauze, having a detachable top and adjustable bottom. A conical spout, to be placed into the inside of the faucet of the cooler, closes the faucet and prevents thereby the escape of unfiltered water.

Improved Railroad Switch Signal.

John Cullen, Oxford, Miss.—The object of this invention is to improve the signals of railroad switches so as to insure greater safety in running the trains; and it consists in connecting, with the signal levers, reflectors by which the head light of an approaching locomotive will be reflected and the position of the signal indicated to the engineer. To warn the engineer of danger ahead, a reflector may be placed on the rear car of a train ahead, which it is believed would be an improvement upon the signal lantern now in use.

Improved Bed Bottom.

Nelson O. Wilcox, Omaha, Neb.—The object of this invention is to simplify, cheapen, and, at the same time, improve spring bed bottoms. Cleats at the end of the bedstead support spring slats. Cross pieces rest on the spring slats and support the middle slats. The spring slat is made in three pieces, with a supporting slat beneath. The pieces are connected by means of elastic bands made of rubber or equivalent material. The cross pieces are notched to the spring slats, and the middle slats are notched on to the cross piece. The spring slats are placed next the sides of the bedstead, and with this arrangement of the parts the middle slats are made to partake of the elasticity of the spring slats, and the whole to form a highly elastic and durable bed bottom, without the use of metallic springs or metallic fastenings.

Improved Horse Power.

Washington P. Emerson, Pleasantville, Ky.—This invention consists of a series of vertical shafts arranged in a circle with pulleys at the lower end, all in the same horizontal plane, in which the driving belt works. The horse is hitched to a belt working on pulleys. The upper ends have transmitting pulleys in different trains, from which the belts work on a central vertical shaft, which is speeded up and transmits the motion by a belt from a large pulley.

Improved Cultivator.

William T. Walker, Fontenoy Mills, Ga.—This invention consists in the arrangement of springs with the pivoted and stationary beams of a cultivator. The springs are secured to the fixed central beam and connected at their free ends with the pivoted and handled side beams by means of staples or other equivalent guides. By this construction, by operating the handles the side plows may be moved inward or outward, as may be desired, and together or separately, as may be required.

Improvement in Preparing and Packing Water Colors.

Edward L. Molineux, Brooklyn, N. Y.—In preparing these improved colors, sheets of cardboard or other substance, properly prepared in any of the well known ways to prevent them from absorbing the colors, are painted with one or several coats of color in a damp state, prepared with sufficient sizing. As the coats of color dry, other coats are added until a mass of color of the desired thickness has been formed. The sheets thus prepared are carefully dried, and cut into pieces of any desired size and form. The sheets, pieces, or tablets of color are then made into portfolios, albums, pocketbooks, or other convenient forms. In using these tablets the amount of color required is rubbed off with a brush moistened with water, thus dispensing with the use of slabs or tiles for grinding or rubbing the cake colors.

Improved Hay and Cotton Press.

William H. McBurney, Sacramento City, Cal.—This invention consists in an improvement of the operative mechanism for hay and cotton presses. A pair of long levers are pivoted at one end to strong posts near their upper ends, the said posts rising up from the platform a suitable distance from the front of the case. At the other ends said levers project through slots in the front of the case, and are connected by short links with the under side of the follower. These levers have a bar pivoted to them, the said bars being pivoted to the free ends of other levers, which at their other ends are pivoted to the platform and also to the bars. These latter bars are pivoted to the axis of the upper wheel of a pair of eccentric segmental wheels, arranged between posts so that the said axis and a strong block above are caused to rise by the turning of the lower wheel to force up the follower. By the short movement of the upper wheel, due to the eccentricity of its face and that of the lower wheel whereon it rests, a long movement is imparted to the follower in consequence of the arrangement of the levers and the connections; and in the last part of the operation when the resistance has greatly increased, a considerable measure of the power is transmitted through toggle-jointed bars, by which the leverage is so increased that the greatest force is obtained at the time it is most needed.

Improvement in Rolling Wire.

William Walton and John T. Fallows, Haughton Dale Mills, Denton, near Manchester, England.—This invention consists, first, in rolling two wires, round or otherwise, in the same groove, or in recesses formed in the circumferences of rollers, in order to produce at one operation two wires of the required section, angle, or other form. The invention consists, also, in making grooves or recesses of an angular or curved form in the circumference of one or both of the compressing rollers, the section of the grooves or recesses corresponding to the shape of the two angle irons required, so that, when the wires are compressed in passing between the rollers, each assumes the shape of half of the groove or recess. These rolled wires are particularly adapted for making wire cards, but they may be used for other purposes.

Improved Row Lock.

George C. Wilen, Philadelphia, Pa.—This invention consists in a bracket or bail hinged to the rail, or, rather, to a plate through which the row lock passes, so that the row lock is supported by two bearings instead of one and is kept steady and in working order.