

## NEW BOOKS AND PUBLICATIONS.

**A GUIDE TO THE MICROSCOPICAL EXAMINATION OF DRINKING WATER.** By J. D. Macdonald, M.D., F.R.S., Assistant Professor of Naval Hygiene, etc. With Twenty-four Lithographic Plates. Price \$3. Philadelphia, Pa.: Lindsay & Blakiston. New York city: William Wood & Co.

Nearly all the impurities in water may be detected by the microscope. Mineral bodies of course are visible; and when not corrosive, or otherwise intrinsically hurtful to the system, they do harm by mechanical action on the intestines. All the ova of entozoa and minute worms are readily seen through the same instrument; and the vegetable bodies (*algæ*, etc.), many of which are perceptible to the unaided vision, may emit sulphuretted hydrogen when acted on by the sulphates in the food. But a still more important revelation is the presence of living creatures which subsist on organic impurities which defy detection by the most powerful instruments, and which are the agents by which many of our severest and most loathsome diseases are propagated and spread abroad. Dr. Macdonald has here given us a volume of twenty-four admirably executed plates, in which nearly all the organic impurities are displayed; so that a careful observer can readily detect any unsanitary condition of his water supply. The book is valuable as a contribution to an interesting branch of natural history; but its chief function will be to aid our health inspectors and other sanitary authorities in the investigation of the causes of disease, and for this purpose it deserves our highest recommendation.

**DYEING AND CALICO PRINTING, including An Account of the Most Recent Improvements in the Manufacture and Use of Aniline Colors.** Illustrated with Wood Engravings and Specimens of Dyed Fabrics. By the late Dr. Craze Calvert, F.R.S., etc., etc. Edited by John Stenhouse, F.R.S., and Charles E. Groves, F.C.S. Price \$8.00. Manchester, England: Palmer & Howe, Bond street. New York city: John Wiley & Son, Astor Place.

This is one of the most elaborate and handsome technical works which we have ever read. Dealing with a complicated subject involving many processes of the most elaborate chemical science, it is a treatise which will be useful to the accomplished chemist in his laboratory, and at the same time one which we should unhesitatingly place in the hands of any intelligent workman. The illustrations are nothing short of perfection. The book possesses additional interest as a legacy to the industrial world from one who spent his life in gaining victories over the occult forces of Nature, giving the fruits thereof to mankind. With perhaps the exception of Liebig, no chemist has done more for practical science and for the furtherance of the processes employed in the higher manufactures than Dr. Craze Calvert. A catalogue of his labors would occupy much of our available space; but it would be an enduring monument to his untiring zeal and his inexhaustible inventive power in experiment. His literary executors have done full justice to the labor which Craze Calvert left almost finished when he was called away.

**PROSERPINA. Studies of Wayside Flowers. Parts I & II.—ARIADNE FLORENTINA. Six Lectures on Wood and Metal Engraving. Nos. IV, V, & VI.—DEUCALION. Collected Studies of the Lapse of Waves and Life of Stones. Parts I & II.** By John Ruskin, LL.D., Professor of Fine Art, Oxford, England. Price \$1 each. New York city: John Wiley & Son, 15 Astor Place.

These three little volumes faithfully portray their eminent writer, whose style has lost nothing in force or vivacity since the time when the first volume of "The Stones of Venice" astonished the world by the power of its genius. The occasional eccentricity of the author is a matter of little moment either to the critic or the reader; suffice it to say, that all the force of his logic and his intense sympathy are used in these volumes on behalf of genuineness, thoroughness, and sincerity in art and in labor. The lectures on engraving are masterpieces of instruction in its best and widest sense.

**MARTINDALE'S UNITED STATES LAW DIRECTORY FOR 1875-6,** containing the Names of Law Firms, Banks, and Real Estate Agents in Each of the Principal Cities of the United States and Canada, together with a Digest of the Commercial Law of each of the States and Territories, and the Bankrupt Law in Full. By James B. Martindale, Attorney and Counsellor at Law.

The extensive scope of this work is fully shown in the above title; and an examination proves that the labor of the author has been thoroughly and faithfully done. The book is especially valuable to merchants, who are frequently subject to serious losses through ignorance of the laws of the various States to which they ship goods.

**REVISED STATUTES OF THE UNITED STATES, relating to Mineral Lands and Mining Resources.** By Walter A. Skidmore. Second Issue. San Francisco, Cal.: Sumner, Whitney & Co.

This is a valuable compendium of all the mining laws of the United States, fully annotated. Reference is made to the decisions of the Attorney General and of the Interior Department, in cases involving mining questions. The circular instructions of the General Land Office are added, and there is an appendix of special statutes bearing on the general subject. The book will prove useful to lawyers, as it places before them the law in complete form, and so copiously indexed and digested as to admit of the ready applications of its provisions to any case.

## Inventions Patented in England by Americans.

(Compiled from the Commissioners of Patents' Journal.)  
From December 17 to December 30, 1875. Inclusive

**BOILER TUBE STOPPER.**—P. Walker, Jersey City, N. J.  
**BOTTLE STOPPER, ETC.**—C. De Quillfeldt et al., New York city.  
**CALORIC ENGINE.**—F. Brown, New York city.  
**CARVING FORK.**—C. S. Landers, New Britain, Conn.  
**COPYING TELEGRAPH.**—W. E. Sawyer, New York city.  
**CORD FASTENERS.**—G. P. Reeves et al., Helena, Mon. Ter.  
**COTTON BEATER.**—R. Kitson et al., Lowell, Mass.  
**COTTON OPENER.**—W. E. Whitehead (of Lowell, Mass.), Stalybridge, Eng.  
**ENGRAVING PANTOGRAPH.**—J. Hope, Providence, R. I.  
**GEAR TACKLE.**—G. Stacy, Nannet, N. Y.  
**JOURNAL BEARINGS, ETC.**—W. A. Hathaway et al.  
**LOOKING SWITCH.**—D. Rousseau, New York city.  
**MAKING SPIRES.**—W. Haddock, Pittsburg, Pa.  
**PRINTING MACHINERY.**—R. M. Hoe, New York city.  
**PRINTING PRESS FEED.**—J. T. Ashley et al., Brooklyn, N. Y.  
**ROTARY PUDDLER.**—W. Sellers et al., Philadelphia, Pa.  
**HUBBER ARTICLES.**—H. P. Dunbar et al., Boston, Mass.  
**SAFETY MINE CAGE.**—H. Carille et al., Steubenville, Ohio.  
**SEWER TRAP.**—J. A. White, Concord, N. H.  
**SLATE DESK.**—W. Rose, New York city.  
**TELEGRAPH.**—J. Olmsted, Providence, B. I.  
**TREATING ALLOYS.**—B. Sillman et al., New Haven, Conn.  
**VALVE, ETC.**—J. Wolf et al., Philadelphia, Pa.  
**VEGETABLE PARCHMENT.**—A. G. Feil, New York city.

## Recent American and Foreign Patents.

## NEW MECHANICAL AND ENGINEERING INVENTIONS.

**IMPROVED FIRE EXTINGUISHING AND ESCAPE APPARATUS.**  
William E. Wood and Edward Leonard, Baltimore, Md.—The object of this invention is to provide a means for the immediate suppression and extinguishment of fires, and a safe and expeditious means of escape from factories and other large buildings containing many operatives. The invention consists in a stand pipe upon the outside of the building, with hose pipes and connections at the windows of each story, in combination with balconies upon the outside of said windows, connected with the earth by means of outside ladders. By means of this arrangement, a ready means of escape is afforded, and the firemen or watchmen can play upon the fire in the upper stories in such a position as to be free from the smoke.

## IMPROVED SEWING MACHINE THREAD GUARD.

Lillian Roosevelt, Hempstead, Texas.—This is a clamp having oppositely extended arms, arranged as a guard attachment to the Wheeler & Wilson sewing machine, for preventing the thread from being thrown off the tension by the work, and for preventing the thread from running off the spool on the spindle.

## IMPROVED TURBINE WATER WHEEL.

John B. McCormick, Armagh, Pa., and James L. Brown, Brookville, Pa.—The object of this invention is to increase the effective power of a turbine water wheel, whereby a wheel of a given depth may utilize a larger proportion of the water than wheels of the same depth heretofore used. It consists in a wheel having a double series of buckets, one of which is arranged to receive its water laterally and interiorly, and the other arranged to receive its water laterally and exteriorly from a common flume, the said two series being also arranged together so as to discharge their water with a confluence which reacts upon the wheel in the direction of its circumference, and utilizes a larger percentage of motive power. The invention also consists in the combination of the said wheel with other cooperating parts.

## IMPROVED STREET RAILWAY TRACK.

John Quigley, St. Joseph, Mo.—This is a cast iron tie, with an elevated and broadened seat for the rail at each end, contrived to fasten the rail in the seat by a key. The broadened elevations for the chair are grooved in the sides, so that the earth of the road will pack in and hold the tie down securely. The object is to enable iron to be used, instead of the less durable wood, and to save the cost of fastening the chairs to the ties, and also to secure more permanent seats for the chairs.

## IMPROVED COMBINATION LOCK.

George F. Knight, Carroll, Ohio.—This invention relates to certain improvements in combination locks applicable to storehouses, dwellings, safes, vaults, etc., and designed to increase the security of the same against the efforts of burglars and thieves. It consists principally in a number or series of bolts, so arranged with small gear wheels and connecting rods, or their equivalents, that the withdrawal of one bolt shoots into place and locks another until a certain number of turns are made which constitutes the combination at which all of the bolts are withdrawn and the door unlocked. It also consists in the particular construction of a bell-ringing device, which, operating in connection with the bolts, keeps up an incessant ringing during any attempt to unlock the same. The invention also consists in other details of construction.

## IMPROVED TURBINE WATER WHEEL.

John B. McCormick, Armagh, Pa., and James L. Brown, Brookville, Pa.—This invention relates to certain improvements in that class of turbine wheels which receive their water from a vertical flume through lateral chutes, and discharge the same centrally through the bottom of the wheel. The invention consists in the peculiar construction and arrangement of a tapering wheel, which is made smaller at the top than at the bottom, to compensate for the different velocities of the water at the top and bottom of the wheel by reducing the radius of leverage of the wheel in proportion to the said decreased velocity.

## IMPROVEMENT IN BALANCING MILLSTONES.

William Gosshorn, Waterloo, Pa.—This inventor proposes a bail, which is adjusted centrally in the eye by means of the screws which adjust balancing sections. By turning either of the screws, the section attached thereto will be raised or lowered, as may be required, and, by moving the weights up or down, the stone is balanced on the point of the spindle in the center of the bail. By raising or lowering a section of the balancing ring, the change affects the running of the stone, as the latter is suspended and revolves freely on a center.

## IMPROVED TRAP FOR STEAM PIPES

Charles A. Reid, Bridgeport, Conn.—This is an improved steam trap for thoroughly draining the water of condensation from steam pipes for heating buildings without allowing the escape of steam. An adjustably seated globe has an interior valve and top perforation for guiding a hollow plug screwed at the end of a drip pipe that connects with the steam pipes to be drained. The valve closes or opens the plug as the pipe is expanded or contracted by heating or cooling.

## IMPROVED WELL DRILLING APPARATUS.

Daniel Henry Muir, Racine, Wis.—In this device there is a tube which extends down the bore and along a groove in the drill to within an inch or so of the bottom. The effect of the action of the drill is to drive the mud up the tube when the drill falls. The tube has a check valve to prevent the mud from going back when the drill rises, and it is mounted in a support which turns in unison with the drill. This arrangement keeps the surface of soil under the drill constantly free from dirt and sand. There is also a lever contrivance in connection with the tube, to lower it from time to time, and to hold it above the bottom of the bore. By this contrivance, the taking of the drill out of the bore and removing the mud with the sand pump are avoided.

## NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

## IMPROVED WAGON SPRING.

Alexander W. McKown, Honesdale, Pa.—This inventor proposes a novel combination of torsion springs of a vehicle with auxiliary or re-enforcing torsion springs, arranged under the wagon body, and acted upon by a lever connection with the axle, bolster, or other supports, to be thrown in or out of action, according to the weight of the load to be carried. The lever of the auxiliary springs is swung up, and secured, by any suitable fastening device, to the wagon body when not in use. The effect is to utilize more fully the power of the springs, and to render them more durable by rendering the strains upon them uniform.

## IMPROVED BRACE ROD FOR VEHICLE SPRINGS.

Alfred Cliff, Lapeer, Mich.—This is a rod for connecting the front and hind springs of a carriage to stay them against forward and backward motion. It has an attaching plate connected by a pivot joint at one end for connecting to the front spring, and a joint near the other end, which allows of longitudinal extension and contraction to compensate for the lengthening and shortening of the distances between the connections on account of the independent vertical movements of the springs.

## IMPROVED PUMP.

Henry M. Wyeth, Newark, Ohio.—This invention relates to certain improvements in pumps, and it consists in the peculiar construction of a double-acting submerged pump, in which two valves are connected by a slide so as to move together on opposite sides of the piston, and operate both the induction and discharge ports.

## IMPROVED HORSE POWER.

Frederick Trulender, Harpersville, N. J.—This is an ingenious arrangement of mechanism, driven by an endless chain and platform, so placed that the horse walks upon a level, while through the inclination of the track his weight produces the same driving power as it would in a machine in which both platform and track were inclined.

## IMPROVED CHILDREN'S CARRIAGE.

Thomas Galt and James Blaisdell, Rock Island, Ill.—The body of this carriage is suspended on cross bars between coiled springs, and balanced over the rear axle, so that a slight pressure will tip it either forward or backward, and thus enable the vehicle to be easily operated by a child. The reach is so arranged as to connect the body with the front axle.

## IMPROVED THILL COUPLING.

Daniel D. Whitney, Beverly, N. J.—This inventor proposes the combination of a hand screw with the forward end of the rigid arm and the forward end of a hinged arm of the coupling, for securing the pin of the thill iron in the notches of the said arms. This forms a means of quickly attaching and detaching of the thills, allows of wear being readily taken up, and prevents rattling of the parts.

## IMPROVED CHAIR.

George Grems and Leonard I. Fowle, Fredericksburg, Iowa.—These inventors have devised a simple and easily adjustable chair back. A back piece independent of the ordinary back, and located above it, is connected by bars to the front of the ordinary arms, so as to swing up and down. Ratchet braces extend from the back down through an eyepiece attached to the bottom of the chair by means of a lever pawl to hold the back at any height. The device may be used with or without the ordinary back, as desired.

## IMPROVED FOLDING OR PORTABLE DESK.

James Miller, Atlanta, Ga., assignor to himself and Luther S. Ames, of same place.—This is an improved portable desk for offices, that may be folded into small space for transportation or storage, and set up readily into open or closed position for use. It is specially adapted in cases in which a frequent moving is rendered necessary. The novel features is a top section with drawers and pigeon holes, to which the lower section, made of folding front, side, and rear walls, is hinged, to be locked by suitable fastening devices into open or folded position.

## NEW HOUSEHOLD ARTICLES.

## IMPROVED SOFA BEDSTEAD.

William E. Buser, Chillicothe, Ohio.—The invention relates to an arrangement of cords or pulleys beneath the adjustable false bottom of the two-part folding sofa, for the purpose of elevating the same to a level with the other part of the bed when opened; and also to pins or lugs attached to the side of said bottom to support it in such elevated position. The pins or lugs work in inclined grooves in the vertical sides of the lounge.

## IMPROVED FLY TRAP.

Thomas C. Dunn, Promise City, Iowa.—This trap is designed for catching flies at dusk on the ceiling and walls. It consists of a box which is hung to a supporting pivot frame, and provided at the open front half of its top with a swinging spring-actuated lid, that is fringed with brushes, and thrown open by a lever when applied to the ceiling, and closed instantly when removed from the same. A corner recess of the flanged front edge allows the emptying of the flies from the box after they are killed.

## IMPROVED HEATING STOVE.

William M. Morse and Morris G. Knox, Harmar, Ohio.—In order to utilize the heat of the fire to a great extent, and also to ensure a rapid circulation of air through the air chamber of a cylinder stove, these inventors construct said upper portion in one or more sections, formed with large radial inlet air pipes and a central vertical pipe, which connects with a discharge passage in the top plate for the air.

## IMPROVED WASHING MACHINE.

Jesse Bartoo, Plainfield, Ill.—When the clothes have been put in the box, the handles are worked up and down so as to force pounders forward alternately. Each pounder as it moves forward carries down its supply of air, and presses the clothes against the forward side of the suds box, and holds them while they are rubbed by the movements of the other pounder, the clothes constantly changing their position, so as to be operated upon each time in a different place.

## NEW TEXTILE MACHINERY.

## IMPROVED LOOM TEMPLE.

John C. Thickins, Washington Mills, N. Y.—This is a drum and ratchet contrivance for the weighted cord, so arranged that when the cord is unhooked to shift it along the cloth, the ratchet supports the weight, and thus relieves the operator from the labor of holding it. After hooking on the cord again, the ratchet lever is raised by the operator to let the weight strain the cloth.

## NEW AGRICULTURAL INVENTIONS.

## IMPROVED HARVESTER REEL RAKE.

Thomas H. Bacon, Hannibal, Mo.—The invention relates to certain improvements in harvester reel rakes; and it consists in the particular construction and arrangement of the revolving reel shaft and oscillating rake arms, with cams for controlling the motion of the rake; and also in the construction of the devices for adjusting the rake for high or low grain.

## IMPROVED STUMP EXTRACTOR.

John A. Hart and William A. Grove, Tionesta, Pa.—This device consists of a truss beam, which is supported on side standards and braces, and carries centrally a longitudinally fulcrumed main lever. The rear end of the main lever is connected by adjustable chains, according to the power required to lift the stump, while the front end is connected by pulleys and rope with a tackle block, coupling pivoted V brace pieces, stiffened by chains, to the bed piece. By detaching the tackle block, the V pieces may be swung out of the way of stumps in setting the extractor. The general arrangement is strong, and such as to admit of the application of power to much advantage.

## IMPROVED HARROW.

Joseph R. Van Orthwick, Hillsdale, Mich.—This is a harrow provided with runners, which are applied by raising the outer end of each section of the machine by means of its handle, while the teeth are inserted. A bar is then slid through notches, to prevent the sections turning on the pivot rod. Thus the harrow is adapted for employment in the transportation of grain to the field, the same being placed or loaded upon the top thereof, thus saving extra or additional means for effecting such transportation.

## NEW CHEMICAL AND MISCELLANEOUS INVENTIONS.

## IMPROVED POCKETBOOK FASTENING.

Daniel M. Read, New York city.—This inventor has patented two new pocket book attachments. The first relates to the ratchet and hook for engaging the same adjustably, so combined as to form a simple securing device for the flap of the book. The second is a small mirror arranged in combination with a fastener, and so constructed that persons holding it in their hands can be enabled to see a reflection of their entire faces.