

## NEW BOOKS AND PUBLICATIONS.

**THE NEW METHOD OF GRAPHICAL STATICS.** By A. J. Du Bois, C.E., Ph. D. With Sixty Illustrations. New York city: D. Van Nostrand, 26 Murray and 27 Warren streets.

In this book, Dr. Dubois calls the attention of the profession of engineering to the value of the graphic method of solving problems in statics, the study of which will enable the reader to investigate many practical questions. The method is of general application in resolving the direction of forces, and in determining the center of gravity and moment of inertia of areas and solids. The first chapter elucidates Professor Clerk-Maxwell's method of diagrams, found on the parallelogram of forces; and elsewhere in the work, Culmann's method of the equilibrium polygon receives much attention. The subject, however, is a very large one; and although the author states that he does not attempt even to outline its complete development, he has succeeded in giving an interesting presentation of this valuable system of calculation.

**THE USE OF STEEL FOR CONSTRUCTIVE PURPOSES: Method of Working, Applying, and Testing Plates and Bars.** By J. Barba, Chief Naval Constructor at L'Orient, France. Translated from the French, with a Preface by Alexander L. Holley, C. E. Price \$1.50. New York city: D. Van Nostrand, 23 Murray and 27 Warren streets.

Steel is rapidly superseding iron for all purposes where durability is the chief essential; and the Bessemer and Siemens-Martin processes are giving us steel at an advance on the price of wrought iron which becomes nominal when the superiority of the former metal is taken into consideration. The most important English railroad has for some time built its locomotives of Bessemer steel, the wheels being the only important parts that are made of iron. M. Barba's work contains some very interesting descriptions of war vessels built of steel, especially three large vessels built in 1873 by M. de Bussy, an eminent French naval engineer. The French government, being entirely satisfied with the work, has ordered three more to be forthwith constructed, in which steel will be used for all parts not in direct contact with sea water. The book is an exhaustive treatise on its branch of industrial science, and will deservedly meet with an extensive sale.

**THE MAINTENANCE OF HEALTH, a Medical Work for Lay Readers.** By J. Milner Fothergill, M.D., M.R.C.P. New York city: G. P. Putnam's Sons, Fourth avenue and 23d street.

This work is one of the most sensible treatises on the subject that we have ever read, and it is almost the only one in which some pet nostrum or wild theory of the author does not find a place. Dr. Fothergill does not deal in panaceas or fanatical ideas as to diet and regimen; but he has succeeded in giving a clear and complete history of all that bears on man's physical well being, and he has done this in a forcible and accurate style. The book deserves to become a standard authority with those who rely on the teachings of Science, while its moderation and good sense will commend it to the many who are nauseated with the flood of quack literature which is annually issued on this subject.

**SEWERAGE AND SEWAGE UTILIZATION.** By Professor W. H. Corfield, M.A., of the University of London, Author of "Water and Water Supply." Price 50 cents. New York city: D. Van Nostrand, 23 Murray and 27 Warren streets.

This excellent and well written treatise is No. 18 of the publisher's "Science Series."

**THE ORIGIN OF LIFE AND SPECIES. A New Theory.** Pittsfield, Mass.: W. H. Phillips.

## Recent American and Foreign Patents.

## NEW AGRICULTURAL INVENTIONS.

## IMPROVED COTTON PRESS.

Daniel S. McBryde, Good Hope, Miss.—The object here is to afford simple mechanism and considerable power in direct line. The press consists of longitudinal supporting sills and guide pieces for the rods of the follower blocks, which are moved forward by the gearing of pivoted sector pieces, with eccentric segments of a centrally pivoted lever.

## IMPROVED FEED CUTTER.

Robert J. Wylie, Marissa, Ill.—This inventor combines eccentric gearing with the shaft that carries the knife, and with other portions of the machine, so that the construction is simplified and at the same time greater power exerted in operating the knife.

## IMPROVED PORTABLE COTTON GINNING, ETC., MACHINE.

Julius L. Toole, Williston, S. C.—This is a portable power apparatus for driving a gin and condenser (also applicable for other purposes). With it the inventor, in an ingenious manner, has combined a gin, also a condenser and a press, which is attached to the machine, so as to receive the cotton from the condenser ready for pressing.

## IMPROVED CORN MARKER.

Thomas B. Kirkwood, Bentonville, Ind.—This inventor offers a new and useful agricultural implement, in which a cutter board swinging from the axle carries cutters on its under side. The shovels are centrally slotted and seated over the cutter, and the latter presents the points of the shovels for catching on stones, etc. The guide-marking pole may be swung to either side of the main board without necessitating the detaching of the pole when the guide-marking board is to be used at the opposite side.

## NEW MECHANICAL AND ENGINEERING INVENTIONS.

## IMPROVEMENT IN MAKING PATTERNS FOR CASTINGS.

William E. Craig, Indianapolis, Ind.—This is a new and doubtless useful idea for making elaborate patterns for ornamental iron work, etc., and one that is calculated to ensure considerable economy in time. The workman first models the form of the article in potter's clay. From this he takes a plaster mold, on which he casts a back mold also in plaster. In the last he casts a pattern made of a composition of beeswax, red lead, and resin. This is put back on the back mold, using it as a follow board, and on it is made another mold from which the sand mold is produced.

## IMPROVED CAR COUPLING.

James B. Smith, Hepworth, Canada.—This coupling is so constructed that, when the drawbars approach each other, their front hooks pass alongside of each other, pressing the drawbars sidewise until the hooks strike the side spurs (acting as buffers) back of the same. Guard springs are then called into action, bearing on the drawhead of the opposite coupling, so as to produce the secure interlocking of the hooks, and prevent the uncoupling in connection with the side spurs.

## IMPROVED GAS APPARATUS.

Charles Lord and Bernard J. McCabe, Shelbyville, Ind.—These inventors propose a new means for converting crude or refined coal and natural oils into more permanently fixed gas than they can be in the ordinary retorts. The essential novelty is a contrivance by which a clay retort can be used for this purpose without injury by the oils, which, when coming in contact with the clay, saturate and disintegrate it, so as to destroy it in a short time. This is accomplished by first vaporizing the oil in the feed pipe, and then discharging it into the iron retort, where the vaporizing process is continued, so as to destroy the penetrating power, and then discharging it into the clay retort, where it is subjected to greater heat than the metal retorts are capable of sustaining, and is thereby

converted into fixed gas. The iron retort is so constructed that any oil that may flow into it cannot escape until it is vaporized.

## IMPROVED WATER WHEEL.

Adam W. Haag, Fleetwood, Pa.—In this invention the novel features consist in a spring which throws the points of the gates into notches in guides when they close, to shut said gates tightly; also in cams, contrived to hold the rings and buckets shut; a V-shaped rib, which presses into the flow of the penstock, to pack tight and prevent leakage; and a shaft bearing in two parts, secured together by a ring.

## IMPROVED HORSE POWER.

William I. Grant, Magnolia, Ark.—This is a method for attaching the sweeps to the shaft or king post of the ground wheel by a frame attached to arms radiating from the shaft. The sweeps are thus supported on the opposite sides of the shaft at considerable distance therefrom. An increased leverage is obtained, and the king post is made very firm.

## IMPROVED PUMP.

William Young, Easton, Pa.—The pump barrel is attached to a vulcanized or galvanized gas pipe, which passes into a base plate and also into the handle bracket, in both of which it is adjustable. A waste valve attached to the pipe is arranged to close by the pressure of water when the pump is working, and is provided with a spring which opens it when the pump stops, thus allowing the water to run out, and so preventing freezing.

## IMPROVED TURBINE WHEEL.

Thomas H. Clark, Helena, Montana Ter.—This wheel receives the water horizontally upon the upper part of the buckets, through stationary chutes surrounding the same, and discharges it vertically and rearwardly. The novel features are a vertically adjustable gate with the apparatus for operating it.

## IMPROVED LATHE FOR TURNING OVALS.

Louis K. Scottford, Burlingame, Kan.—In this machine, revolving cone pulleys turn on a stationary center, and have a face plate fitted on the face of said center so as to slide freely forward and backward. This slide, which is to carry the work, has a slot which works on a stud, projecting from the stationary center, so that it can be shifted toward and from the axis. This causes the plate to slide, more or less, according to the distance the stud is located from the center. The arrangement is a very simple one for oval turning.

## IMPROVED VENTILATING APPARATUS.

John C. Bates, Cold Spring, N. Y.—This inventor proposes an apparatus for ventilating rooms by introducing any desired amount of fresh air in such a way as not to produce a draft, and by which the foul air may be expelled from the room, thus causing a circulation and keeping the room thoroughly ventilated. A horizontal pipe communicating with the outward air has a drum pierced with flues interposed between the register and the hot air flue. The said inlet pipe is combined and communicates with a vertical pipe, which delivers the air into the room in a vertical column far enough above the heads of the occupants to relieve them from the bad effects of a draft.

## IMPROVED PARALLEL PLIERS.

Henry R. Russell, Woodbury, N. J., assignor of one half his right to Isaac S. Russell, New Market, Md.—This relates to pliers, vises, etc., in which the jaws are constructed independently of the pivoted handles for working them, and are so pivoted to the handles and provided with guide pins that they always work parallel to each other, while the handles turn on a pivot. The device consists of open-ended grooves in the jaws for the guide pins, so contrived that the guide pins may be permanently fixed in the handles before the jaws are attached, and then be engaged with the jaws when they are applied by sliding into the open-ended grooves. This contrivance allows of fixing the pins in the jaws more permanently than they can well be when the pins have to be put into the handles through slots, and of dressing out the grooves to make them true and smooth by a milling tool.

## IMPROVED RAILROAD JOINT.

James G. Holliday, Pittsburgh, Pa., assignor to himself and Frank E. Hutchinson, same place.—This inventor has devised a plate for binding the rails on the ties, arranged under a shoulder of the fish plate, and contrived to form a lock for the nuts.

## IMPROVED METAL SHEARS.

Thomas C. Livesay and Henry H. Black, Montana City, Kan.—In this device we have a novel mode of applying the movable and stationary cutters to the bed of a lever-shearing machine. An edge-curved cutter is made fast to and raised diagonally above the bed, and the lever-cutter is pivoted to the bed at one end of the stationary cutter.

## IMPROVED BULL WHEEL FOR OIL WELLS.

John Schellkopf, Tidoulet, Pa.—This invention relates to the construction of the wheel commonly termed the "bull wheel," used in derricks for oil wells, and around which passes the rope or chain by which the implement used in the well is hoisted out of the same. It is proposed to make the wheel of sections attachable and detachable from each other and the hub or shaft by means of fastening bolts.

## IMPROVED CAR VENTILATOR.

Archibald Hance, New York city.—In this device a series of pivoted ventilators or valves are connected at one side by means of a strap, so that they may be operated simultaneously by means of a curved pivoted rack bar. Another (and the main) function of the valve-connecting bar is to act as a stop for the valves when opened.

## IMPROVED PUMP BUCKET.

Eugene J. Dunbar, Romulus, Mich.—This is a bucket for suction pumps, so constructed as to fill the cavity of the pump cylinder at each upward stroke, and to open at each downward stroke. The device is made of india-rubber, in cylindrical form, with a bell-shaped cavity in its lower end, and with longitudinal holes through it. There is a conical iron valve, and a rod for limiting the action of the same.

## IMPROVED PISTON PACKINGS.

Christopher R. James, Jersey City, N. J.—This inventor proposes a series of packing rings tapered on the inside to correspond with a spring, and so placed that the spring presses them out against the cylinder, and also against the piston and follower, thus tightly packing the joint.

## NEW WOODWORK AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

## IMPROVED METHOD OF CONSTRUCTING JAILS.

John A. Seeber and James C. Croxton, Rockwall, Tex.—One of the most important subjects brought to the consideration of the Prison Congresses lately held in England, and to which the Prison Association and other philanthropic bodies are giving much attention in this country, is the proper construction of jails. The present inventors offer a new plan of construction, mainly directed to ensuring good ventilation. The intermediate space of the double floor is constructed with diagonal channels, running from the outer walls to

the center of the building, with grated openings in the walls, and similarly grated openings at suitable points of the upper part of the floor. The different compartments are thus supplied continually with fresh air entering from the outside and passing to the inside. The outer walls serve for the purpose of ventilation and security in the same manner as the floors, and are also provided with air flues, having grated entrance and exit openings at different points, for supplying air without the possibility of communication with the outside, so that no tools, etc., can be introduced. The different stories are ventilated in this manner, and the bad air carried out through the grated inside doors.

## IMPROVED EAVES TROUGH.

Otis W. Stearns, Johnson, Vt.—This eaves trough may be conveniently put up, and may be made of any desired length. It is formed of semi-cylindrical sections, made with half ring tenons upon their ends, and semi-cylindrical couplings, made with half ring sockets in their edges, and provided with spikes for securing them to the wall.

## IMPROVED DUMPING WAGON.

Albert A. Hoch, Reading, Pa.—This is a new form of that class of dumping wagons which are provided with chutes or troughs to facilitate discharge of their contents. The essential features are a hinged door and hinged side guards, arranged and connected with a hinged chute and the wagon body. The whole forms a very simple and doubtless effective device.

## IMPROVED WEATHER STRIP.

Francis A. Bradshaw, Lebanon, Mo.—In this we have a weather strip for doors by which no water is allowed between the door and the threshold strip, and the drip water is carried off in effective manner. An adjustable elastic weather strip fits on the threshold strip, that is provided with a groove and outwardly inclined mortises for the drip water. The groove is covered by a perforated metallic plate.

## IMPROVED LAMP CHIMNEY.

George M. Bull, New Baltimore, N. Y.—This inventor patented a lamp chimney on January 9, 1872, and now proposes to make it simpler in construction and less expensive. To this end, around the edge of a rectangular plate is formed a narrow upwardly projecting flange, which covers the outer side of the lower end edges of the transparent plates. Plates of thin sheet metal are bent longitudinally at right angles, the lower ends of which fit into the angles of the flanges at the corners of the plate, and are designed to receive the side edges of the transparent plates. The upper ends of the angular strips are inclined inward slightly, giving to the chimney the form of a truncated rectangular pyramid. Novel devices are added to enable the mica plates to be put in and taken out, as may be required.

## IMPROVED CRADLE

Fredrick Voit, New York city, assignor to Feust and Rice, of same place.—In this invention the connection of the bed posts with the connecting main frame is made in a strong and substantial manner without the use of fastenings or other hardware, and a rigid interlocking of the parts is obtained, together with an easy detaching of the same.

## NEW HOUSEHOLD ARTICLES.

## IMPROVED WASHING MACHINE.

John Henry Conaway, Nelsonville, Ohio.—The mechanism of this washing machine is so constructed as to wash the clothes by rubbing them in a manner analogous to hand-rubbing. More or less pressure may be applied to the clothes, as may be required, and any desired part of them may be rubbed.

## IMPROVED SASH HOLDER.

Hiram Torrey, Philadelphia, Pa., and Darius Lyman, Washington, D. C.—The invention relates to a device designed for application to a window sash for the purpose of arresting and supporting the same by frictional contact with the jamb. The chief elements of the device are a movable or adjustable elastic wedge, and an elastic roll mounted on a fixed pivot, the former being connected with a pivoted spring lever and so arranged as to adapt it for insertion, between the roll and jamb, to lock the sash.

## IMPROVED WASHING MACHINE.

Irvin A. Shaw, Grand Meadow, Minn., assignor to himself and John E. Joslyn, of same place.—This is an ingenious combination of mechanism in which rollers, springs, and an endless apron play the principal part, the effect being that the clothes are alternately drawn through the water, and then between rollers, and are thus washed clean very quickly and without being injured.

## IMPROVED KEY HOLE GUARD.

John La Blanc and Xavier St. Pierre, Ophir city, Utah Ter.—In this we have a little plate made to slide over the outside key hole of a lock by a knob on the inside. The knob works the plate by a crank and connecting rod, turning them down below the center of the crank on a stop pin, when the slide covers the hole, so as to effectually prevent the slide from being forced back except by the knob. The sliding cover is secured behind an outer case, so as not to be wrenched off.

## IMPROVED WRINGER ATTACHMENT TO WASH TUBS.

Andrew W. Caldwell, Gainesville, Ga.—Laundresses unprovided with mechanical wringers have no easy task in wringing out by hand large articles of clothing, etc. The present inventor suggests an ingenious way of assisting them, which consists in a strap passed through a loop of the tub and easily adapted as to length. By this, one end of the article is tightly held, while the other is twisted in the usual way.

## IMPROVED FIRE DOG.

Draton S. Hale, Estillville, Va.—In this invention the fire dogs are so constructed as to keep the fire held up against the back stick. They are made with a wide open hook at their upper ends, and their lower parts are bent downward at right angles, and formed either with or without an offset. Racks are combined with the dogs to hold them in place.

## NEW CHEMICAL AND MISCELLANEOUS INVENTIONS.

## IMPROVED TAILORS' DRAFTING APPARATUS.

Matthew C. Ten Eyck, St. Paul, Minn.—This is a conformator and transfer or scarf for drafting garments to fit the upper part of the human body, giving the true pitch or slope of the shoulders and the true balance of all other essential points with the same, thereby insuring an accurate fit.

## IMPROVED GUN SIGHT.

William M. Treadway, Port Henry, N. Y.—Mr. Treadway suggests that a better aim can be taken with a rifle, and that at the same time the piece may be more accurately kept at the same elevation for every shot, by placing an adjustable spirit level across the rifle and between the sights.

## APPARATUS FOR CLEANING LOCOMOTIVE ASH PANS.

Paul K. Dealy, St. John, Can.—The novel feature here is the combination of the steam boiler of the locomotive (by a steam and water pipe) with the ash pan, the pipe extending through the ash pan and branching out into a number of issuing pipes, that clean effectually the ash pan by means of water or steam, as required.