

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**BALANCED SLIDE VALVE.**—George S. Vaughn, Oil City, Pa. To thoroughly balance the slide valve and reduce the friction incident to back pressure and other causes to a minimum this inventor has devised an improvement consisting of an apertured plate having a hub sliding in the steam chest cover, and on which slides the top face of the slide valve, having an inlet bore which is at all times in register with the aperture in the plate. The improved plant is of simple and durable construction.

**PRESSURE REDUCING VALVE.**—Thomas P. Ford, Brooklyn, N. Y. This is an automatically working valve which may be conveniently set to the desired reduction of the initial pressure, a reducing valve chamber being connected with the steam inlet, a main valve controlling the passage from the inlet to the outlet, and there being a permanent connection between the reducing chamber and the outlet to permit the steam passing to the outlet to press on the main valve. The valve may be readily examined and repaired on simply unscrewing a bushing.

**SMOKE CONSUMER.**—William C. Welsh, Allegheny, Pa. According to this invention funnels are arranged in the smoke box at about the level of the bottom of the boiler, pipes on opposite sides of the boiler communicating with the funnels and passing through the fire space, while other pipes embedded in the walls of the fire box discharge into the side pipes, there being also an inlet and steam pipes arranged to create a blast through the side pipes. The improvement is designed to not only perfectly consume the smoke, but also to effect a substantial saving in fuel and better steaming efficiency.

**BILGE WATER DISCHARGE.**—Nicholas Power, New York City. This invention provides a siphon apparatus designed to be automatic in its action, so constructed that the valves will be opened to their full extent almost instantly when the water has reached a predetermined level in the bilge well, a steam supply pipe being connected with one end of a differential valve of the apparatus and an ejector connected with its opposite end. When the water reaches a fixed lowest mark, the valves of the device are instantly closed.

## Mechanical.

**SCREW CUTTING MACHINE.**—Hio P. Eilers, Cleveland, Ohio. This is a triple machine, especially designed for manufacturing purposes, in which a single operator can readily handle the work for the three carriages, while the machine can be run at a speed which will insure a long life to the parts and dies and also produce perfect work in large quantities. The clutch ring heretofore employed in machines of this kind is dispensed with, and the connection between the yoke, toggle and diehead is very simple, reducing the wear of the machine at this point to a minimum.

**NUT LOCK.**—Jefferson D. Tynes, Fort Smith, Ark. This device consists of an open washer, one of the ends having a spur at its end and hugging the bolt, while the other end is formed with a straight portion and an arm extending upward past the first end. The device is more particularly designed for use on rail joints, but is applicable also for other purposes.

**TEASELING MACHINE.**—Ernst Gessner, Aue, Saxony, Germany. In machines for raising the nap on cloth, this inventor provides teasing rollers of different diameters on one drum, united with one another to run at the same axial speed, giving different surface speeds, while the teeth of the smaller rollers point in opposite directions to the teeth of the larger rollers. The greater the difference in diameter between the large and the small rollers, the greater is the teasing effect on the cloth, and for raising light goods it is preferred to revolve the teasing rollers not only by the action of the cloth, but also by belts, cords or gears.

**SOLDERING IRON.**—Rudolph C. Becker, Springfield, Ohio. This iron has a central hollow space with a small valve-closed passage extending to the top or point of the iron. The handle of the iron is tubular and the stem of the valve extends up it to the wooden hand piece, a spring being coiled on the stem to hold the valve to its seat, from which it may be raised by a thumb piece. The soldering liquid is held in the chamber or cavity of the head, the valve being raised to permit it to flow out, as it is liquefied by the heating of the iron in use.

## Agricultural.

**STAWBERRY PLANTER.**—Louis B. Schell, San Antonio, Fla. The frame of this planter is supported by a forward planting wheel on which are three trip pins and two rear covering wheels, a plow being centrally located. A centrally pivoted arm has spring-controlled jaws to receive the plant, an extension of the arm engaging the trip device, by which the plant is taken from a holder on the rear of the frame and automatically deposited in the furrow made to receive it, immediately in advance of the covering wheels. The distance between the plants may be regulated by setting the trip pins as desired, and the planter may be used for planting seedlings or slips of any description.

**HAY PRESS.**—Charles A. Anderson, Cale, Indian Ter. This invention provides a rapidly working press, of strong and simple mechanism, in which the bale being formed may be tied by passing needles and wires through recesses in the plunger, forming wire hands which are twisted around the bale. A light draught horse power is also provided for the press, and a quick return of the plunger is obtained. A pivoted tucking plate above the mouth of the receiving chamber materially assists the feeding of the press.

## Miscellaneous.

**RADIANT HEAT BATH.**—John H. Kellogg, Battle Creek, Mich. This invention provides an apparatus for use as a substitute for Turkish and Russian baths, being designed to induce perspiration at a much lower temperature and more powerfully promote the ac-

tion of the skin and the elimination of carbonic acid. It consists of a cabinet whose walls are provided with mirrors reflecting light toward the center, there being incandescent electric lamps on the walls, while a sliding table carries the person into and out of the chamber. A good circulation of fresh air is maintained while the treatment is in progress.

**PREPARING FLAKED CEREALS.**—The same inventor has patented a process for making an improved food product, and the product itself, which is made of wheat, barley or oats, the outer husks being removed, and corn or other grains. The grain is first soaked at a temperature which prevents fermentation, then heated to cook the starch, dried, rolled between cold rollers, and the flakes baked until thoroughly dry and crisp, forming perfectly cooked food, ready to be eaten without further preparation. It will keep indefinitely, being perfectly sterilized, and is especially well adapted for sick and convalescent people.

**STAGE APPARATUS.**—Carl E. Nilsson, New York City. To produce an aerial ballet this inventor has devised a simple apparatus to be arranged above the stage to support the dancers and give to them the appearance of floating in the air, moving up and down and laterally. It comprises movable guide pulleys on opposite sides of a main pulley and simultaneously movable toward and from it, there being also a supporting frame with slides connected by cable, a cable mechanism for turning the pulley and suspending wires connected with the pulley and extending over the slides. The apparatus is strong and simple and not likely to get out of order.

**DESULPHURIZING BLAST FURNACE SLAG.**—Alexander D. Ebers, Hoboken, N. J. Slag or cinder of iron ore smelting or blast furnaces, while in ladles, is desulphurized, according to this process, in such manner that it retains sufficient fluidity to be cast into moulds, or to be granulated in water after its treatment is finished. The slag is treated with easily fusible substances that will unite with the principal impurities to form a scum, calcined sodium sulphate and fused sodium sulphate being preferably employed. The desulphurized slag may be cast into ornamental building materials or used in its granulated state for mortars, cements, etc.

**HOT WATER HEATER.**—John E. Wallace, Altoona, Pa. This heater has upper and lower reservoirs connected by a series of spiral pipes which surround the main combustion chamber, in which the gases and products of combustion are held for a maximum of time, and in the lower reservoir is a central space which constitutes the fire pot. The body of the heater consists of two casings, between which is an air space in which air is heated before it enters the fire, and an improved grate is provided by which the bed of fire may be shaken in a rotary direction and reciprocally.

**WATER TANK VALVE.**—Thomas V. Coony, Albuquerque, New Mexico. This is a valve of strong and simple construction, controlled by a float, arranged to prevent leakage and be perfectly noiseless when opening and closing. The chamber in the upper part of the valve casing is enlarged, and in operation the pressure on the upper surface of the valve exceeds that on its lower surface, quickly forcing the valve to its seat, where it is not affected by any fluttering of the water causing the float to bob.

**FENCE POST.**—Calvin Kutzner, Cairo, Ohio. This is a metal post made of two connected uprights of angle iron, set in a central recess of a base of burnt clay, surrounded by a fling of cement and blocks, there being a metal cap on top of the base. Notches and hooks are arranged in the uprights, with movable keys by means of which fence wires may be conveniently attached to the posts.

**PLASTERING COMPOUND.**—James E. Summers, Richmond, Va. Two patents have been granted this inventor for improvements in plastering compounds, one of the compounds producing a gray finish and a rough but attractive surface particularly desirable for churches and offices. It is made of crushed slag, plaster of Paris, lime, and other ingredients, in certain proportions, and is prepared in a specified manner. In the other compound hydraulic cement and vegetable fiber are also employed, the material being mixed in the room being plastered, and the compound being adapted for use on wood, wire, or metal laths, or on brick or stone, hardening in about two hours.

**PHOTOGRAPHIC DARK ROOM.**—John P. Brockway, Denver, Col. This invention consists of a chamber having removable sides provided with sleeves for the arms of the operator, so that he can pass his hands and arms into the chamber to manipulate the plates, films, etc., while the rest of his body is on the outside. A simple portable dark room is thus formed to facilitate the development of plates or the filling of plate and film holders.

**BED SPRING.**—James M. Crutcher, Atlanta, Ga. According to this invention, elastic rings are arranged in rows, and cross rods extending between adjacent rows of rings, and connected at their ends with the frame, are connected with the rings by oppositely-extending V-shaped portions. A very strong but elastic network is thus obtained, the rings assuming different shapes according to the weight or strength of the pull upon them, and assuming their original form when the tension is removed.

**CUFF BUTTON.**—Anton Brunka, New York City. This invention relates to link buttons, and provides a construction of the link which permits of more readily connecting and placing the buttons, rendering them also more easy of removal. One of the buttons is made with a novel socket or tube receiving a bar projecting from the other button, and in the use of the button the bar is put through one hole of a cuff and the socket through the other, the parts being then guided into engagement with each other and so held by a spring catch.

**SHIRT WAIST.**—Alfred Wolf, New York City. This invention provides a device for attachment to ladies' shirt waists and similar garments for supporting the waistband of the skirt at the rear, reinforcing also the gathers and preventing the waist from working up beyond the waistband. Secured to the shirt waist over the gathers is a tab or flap in which are eyelets

adapted to receive hooks on opposite sides of a placket of a shirt, tapes at the ends of the tab passing around the waist of the wearer to be tied in front.

**GARMENT SUPPORTER.**—Richard M. Skinner, Flemingsburg, Ky. This device consists of a safety pin adapted to engage the waistband of a pair of drawers, while extending up from the shank of the pin is a hook adapted to engage the waistband of the trousers, a loop on the front portion of the hook straddling a button on the trousers.

**BOTTLE STOPPER.**—Henry Leidel, New York City. A "safety" stopper, to prevent the refilling of bottles once emptied, has been devised by this inventor, the invention consisting of a valve chamber at the neck of the bottle, with valve seat and inclosed valve arranged to open outward, to permit the contents of the bottle to be removed, while the valve engages its seat when the bottle is in vertical position, thus preventing liquid from being forced into the bottle from the outside. The device is simple and inexpensive, and when applied is difficult of removal without breakage.

**POISON DISTRIBUTER.**—George A. Brown, Hardman, Oregon. This is a device more especially designed for dropping poisoned grain for killing squirrels, and comprises a hollow, canelike rod, on which is a box containing the poisoned grain, a valve sliding in the rod on downward pressure by the operator to discharge the poisoned grain upon the ground, at the desired locations.

**DISPLAY BOX.**—Leopold Sonn, New York City. This is a box especially adapted for the packing and display of neckwear, the construction being such that each necktie may be mounted on an independent support removably secured in the box, thus not only displaying the neckwear to the best advantage, but preventing the soiling of the ties by handling, as in removing a tie from the box its support is to be drawn out with it. A purchased tie and its support may also be wrapped up together, preventing the rumpling of the tie in the hands or pocket of a purchaser.

**HYGIENIC CHAMBER.**—Amador T. Blanco, Havana, Cuba. This inventor provides a chamber for the isolation of a sick person, the air to be constantly renewed and brought to any desired temperature and humidity, and moistened or mixed with antiseptic or aromatic substances. On the top of the chamber is a series of devices through which the air is passed, including a blower, a purifier, a heater, a saturator, and a condenser, and there are gasometers for supplying oxygen to the air if desired, the invention also covering various other novel features.

**ADJUSTABLE REST FOR BICYCLES.**—Franz Kampf, New York City. At each side of the rear wheel an attaching plate is secured to the frame and carries a pivoted and braced rest arm, which may be swung to contact with the ground or raised therefrom and folded at each side of the wheel, by actuating shifting levers near the handle bar. The device is designed to steady the bicycle to facilitate the learning of the beginner, enables women to mount readily, may be used as a brake, and also to hold the wheel in upright position when at rest.

**BODY SHIELD.**—Edward Hunt, Denver, Col. To protect from the wind the throat, breast, face and ears of a bicyclist or boatman, this inventor has devised a V-shaped shield comprised of two parts of stiff material, held to slide one upon the other, and foldable, to be used in connection with a V-shaped face shield, provided with windows and ear muffs. The shields are attached to the person by straps, and may be readily buckled to a bicycle.

**AIR GUN.**—John C. Raymond, New York City. This is a toy gun more especially designed to throw snow or other loose material by means of compressed air, at the same time making a noise by exploding a fulminate. The stock of the gun has an air reservoir in which is a spring pressed piston, the barrel of the gun communicating with the reservoir by a valved port, while a port also leads to the barrel through the stock, there being likewise a plunger in the barrel and a spring between the plunger and the inner end of the barrel.

**OYSTER DREDGER.**—Norbert Boudreaux, Houma, La. This is a device adapted for attachment to the gunwale of an oyster boat, the dredger support extending outward and permitting the operator to stand on it and move it readily either toward the bow or the stern of the boat. The dredger may be operated by one man, the tongs being quickly raised and lowered and carried inboard and dumped.

**PORTABLE ELEVATOR.**—Michael McCarthy and John H. Wehmhoff, Dalton City, Ill. This is an improvement in elevators, having transporting wheels and a platform on which loaded wagons may be driven and then hoisted at one end to dump their load into a box that slides vertically, and may be tilted to discharge its contents, as into a granary or other receptacle. The elevator has a wheeled axle pivoted at each end and may be readily hauled from place to place.

## Designs.

**COVERED DISH.**—Robert L. Johnson, Hanley, England. The handle of the cover of this dish is of scroll pattern and twisted design, and is practically surrounded by scroll figures, while the body of the dish at its sides is divided into panels by scroll figures approaching the shape of a cornucopia, the base of the body being of scalloped decorative contour.

**JUG.**—Arthur S. Higgins, New York City. This jug is decorated on its surface to represent the capped and cloaked figure of George Washington, the cloak being thrown open to represent a portion of the person, the figure also holding a sword in one hand.

**FAN.**—Lina Barkley, Monroe, La. This is a circular fan, the outer edge of which is made up of a series of overlapped circular members, giving a scalloped edge effect, the central portion having radial divisions, outside of which are represented leaves, buds, and blossoms.

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(6843) H. P. asks: 1. What are the comparative values of (a) soft gray cast iron, (b) malleable cast iron, (c) common wrought iron, (d) Norway iron annealed, for use in field magnets and in armatures? A. Soft gray iron is probably best for field magnets of dynamos. The softest wrought iron is best for field magnets of motors. The cores of armatures should be made of the softest iron. 2. Can you give the approximate ratio of resistance which should be maintained between the windings on the field and armature of small motors for battery currents, series winding? A. For series winding give the field magnet windings two-thirds the resistance of the armature windings. 3. How would it be for shunt winding? A. For shunt winding the product of armature and field resistance should equal the square of the external resistance. 4. Has either system of winding any marked advantages over the other? If so, please state them. A. Shunt winding is advantageous for cases where the external current varies, but neither is perfect, and no absolute preference can be expressed. 5. Is not the drum armature more universally used than the ring, and what are the chief merits of each? A. The merit of the drum armature is that it is easily wound; the passing of the wire through the central opening of the ring armature makes the winding operation slow and awkward. 6. Has a motor, when running, more or less resistance than is represented by the size and length of wire used? If so, can you say, roughly, in what proportion? A. The ohmic resistance is nearly the same when running or at rest. Counter electromotive force is developed when running, which operates exactly like an ohmic resistance, and which rapidly increases with the speed. This prevents a motor from running too fast, and enables it to absorb more energy when going slow. The armature of a motor is far more liable to burn out when going slow than when going at high speed. 7. Mr. G. M. Hopkins, in describing the winding of the induction coil in his invaluable book, "Experimental Science," says wind in a lathe "set as for cutting a very fine thread," and wind "as close as possible without touching." Can you state the number of convolutions actually used in the coil referred to? No. 36 B. & S. wire is 0.0005 of an inch in diameter. Theoretically, 196 convolutions to the inch would not touch. My lathe will cut 154 to the inch. Would this be fine enough? A. The diame-