

RECENTLY PATENTED INVENTIONS  
Engineering.

## HYDRAULIC AIR BLAST APPARATUS.—

Henry A. and Isaac Rogers, Bingham Canon, Utah. For furnishing air at a comparatively low cost to buildings, forges, mines, etc., and removing foul air therefrom, these inventors have devised an apparatus comprising a straight hollow cylinder open at one end and contracted at the opposite end, an air pipe being connected to the contracted end, and a water nozzle projecting into the cylinder, in the bottom of which, near the contracted portion, is a trapped outlet pipe. The water nozzle has an outwardly leading branch, the outward discharge of water with-drawing air.

**GRAVITY ENGINE.**—Thomas G. Blatch, Hazleton, Pa. Upon a shaft is held to turn a hub or sleeve having opposite radial cylinders, there being stuffing boxes in the ends of the sleeve and the outer ends of the cylinders, whose inner ends are connected by ports with inlet and exhaust openings in the shaft. Plungers sliding in the cylinders are rigidly connected at their outer ends with a heavy wheel, and the motive agent, entering through a port in the shaft, pushes the piston in one cylinder to lift the wheel, the other port being then connected with the exhaust opening, and the wheel being rotated by its own gravity, as the different ports are thus alternately opened and closed.

## Railway Appliances.

**CABLE GRIP.**—Zebulon S. Taylor, Long Branch, N. J. This improvement enables the gripman to readily open and close the gripping jaws to release or engage the cable, and is so arranged that a part of it automatically releases the cable at a crossing and swings clear of the crossing cable, while the remaining part of the grip retains its hold on the cable grip until the first part has again closed on the cable, to be then moved up and clear of the crossing cable. The device comprises hinged casings in which are hinged gripping jaws adapted to be opened and closed in the closed casings, the jaws having arms with which are connected crossheads carried on piston rods moving in cylinders connected with a compressed air supply. A further patent has been allowed the same inventor for improvements enabling the gripman to stop or start the car on curves in the road without danger of losing the cable or permanently displacing it from its supporting pulleys in the duct.

## Electrical.

**CLOSED CONDUIT RAILWAY.**—Michael F. Flynn, Stamford, Conn. In this conduit are supply and return wires and a contact rail with which a trolley mounted on the car is arranged to run, while switch devices at intervals along the conduit are adapted to connect with the supply and return wires, the car carrying mechanism for operating the switch devices, and also a shifting device to shift the switch devices to a neutral position. The switches are worked automatically and positively, although adapted to yield without breaking under excessive strain, and the conduit may be easily and inexpensively laid and its contained wires perfectly insulated.

## Mining, Etc.

**DUMPING APPARATUS.**—John D. Kelly, John Watson and William J. Brown, Coal City, Ill. This is an improvement especially adapted for mine cages, etc., and provides for a dumping platform in connection with a cage, on which a loaded car may be locked so that it will not move as the car is drawn upward or lowered. When the cage has reached a specified point in the shaft, the platform with its car may be automatically dumped to the right or left, or it may be dumped in either direction by hand without the operator entering the shaft.

**SEPARATOR.**—William O. Lentz, Mauch Chunk, Pa. This invention relates to jigs for separating coal from slate, ore, and other material, and the separator comprises a pan having an overflow at one end, where there is a well with inclined bottom and a gate at its lower end, while a shield at the lower edge of the side of the pan extends inwardly and downwardly into the well. The coal passes over the overflow and the slate passes down the well and into a separate compartment.

## Mechanical.

**CHUCK.**—Thomas E. Cherry, Bath, Me. This chuck comprises a body having a central sleeve with external guide grooves, there being sliding jaws on the chuck body, levers on the back of the chuck to operate the jaws, wedges in the guide grooves to engage the levers, and a screw collar to actuate the wedges. The chuck may be applied to an ordinary lathe spindle, and the jaws may be very quickly adjusted and firmly fastened, the jaws and mechanism being so arranged that face plate work, such as sheaves, bushings, gears, etc., may be very advantageously held.

**WRENCH.**—Clarkson B. Collins, Miller's Ferry, Ala. This is a tool which may be quickly and very finely adjusted, and in which the movable jaw may be locked in whatever position it may be placed with reference to the fixed jaw. A sleeve has free movement on the body of a toothed shank, spring-controlled dogs carried by the sleeve engaging the teeth, while a slide operates on the dogs. The tool is of very simple and durable construction.

**SCREW CUTTING LATHE.**—Wendell P. Norton, Torrington, Conn. This is an improvement upon former patented inventions of the same inventor, providing improvements whereby the movement of the carriage is automatically arrested. The reversing rod is under the control of the operator, and an auxiliary slideable rod having adjustable stop collars is adapted to be alternately engaged by the carriage, a lever being connected with the reversing rod and the auxiliary rod, while a clutch mechanism actuated by the lever is adapted to be alternately connected by oppositely driven reversing gears with the driving shaft.

**GRINDING MACHINE ATTACHMENT.**—Amos Hartley, Vassar, Kan. According to this improve-

ment a U-shaped frame is adapted to be supported on the work-holding mandrel of the grinding machine, the frame having in the ends of its arms means for securing in axial alignment a form or pattern and an irregular piece of work to be ground, the pattern being in position to be engaged by a finger or projection on the tool post while the work is engaged by the grinding wheel on the spindle of the tool rest.

## Miscellaneous.

**EVAPORATOR.**—Peter Cooper Hewitt, New York City. This apparatus has heating tubes and one or more return tubes, and a separating chamber with a series of stationary tangential nozzles communicating with the heating tubes, to effect the separation of the vapor and the concentrated liquid by the motion of the liquid. The separating chamber has a vapor outlet, and one or more liquor outlets at its bottom while a liquor overflow is arranged between lines passing through the vapor outlet and return liquor outlet, to maintain the inner or free surface of the body of liquor between the vapor outlet and the return liquor outlet. The method and apparatus may also be used for separating a mixed liquid or solution by the removal of one portion in the form of vapor, leaving another portion which is not vaporized.

**CARBONATOR.**—George Nell, Minden, Germany. According to this improvement an upright cylinder is filled with small pieces of glass, porcelain, etc., not soluble in water or carbonic acid, and carbonic acid gas is delivered through a pipe to the bottom of the vessel, the upward flow of the gas meeting a downward flow of finely divided water supplied at the top, the gas coming in contact with all the particles of water, forming a perfectly uniform product free from air, and the charged product passing through perforated partitions into an accumulator at the bottom.

**BICYCLE DRIVING GEAR.**—Carl Nordell, Stamford, Conn. This gear dispenses with the chain and sprocket wheel, substituting therefor vertically swinging pedal levers which drive directly the rear wheel, there being a shifting fulcrum for the levers, whereby they revolve the wheels with which they are connected by a comparatively small foot movement. On the bicycle frame, on opposite sides of the rear wheel, are journaled gear wheels having inwardly projecting rims, pedal levers having a crank connection with the gear wheels, while hangers adjustably pivoted on the frame are slidably connected with the pedal levers, pinions connected with the rear wheel being geared to the inner sides of the gear wheel rims.

**PHOTOGRAPHIC RETOUCHER.**—John N. Choate, Carlisle, Pa. Two patents have been granted this inventor for two forms of an apparatus in which the retouching pencil or stylus is held rigid or immovable while in use, and every movement of the body of the instrument is due to vibration of the armature, which has an elastic or yielding contact with the body or frame of the instrument to vary the power of the stroke. The adjustment of the pencil or stylus at different angles to the body of the instrument is also provided for, and for holding it fixed in different adjustments. The retouching pencil may also be secured to the frame of the hand-piece or motor to form an immovable part of the instrument while in use, a tremulous movement being imparted to the motor and the hand in which it is held, whereby the pencil point is caused to make rapid but slight impacts on the negative, producing the most delicate retouching effect.

**HOISTING APPARATUS.**—Lincoln Fred-eric, Shamokin, Pa. This improvement relates especially to improved construction of guides upon the car and frame, whereby the dumping operation is accomplished in an easy manner, and the return of the car to and its stoppage in normal hoisting position are assured. The improvement may be applied to a bucket car for hoisting water from drowned wells.

**APPARATUS FOR LIFTING FISHING NETS OR LINES.**—Ralph and Walter M. Connable, Petoskey, Mich. According to this improvement an endless carrier has devices for gripping and carrying forward a net, and releasing it at the delivery end of the carrier, there being a number of the gripping jaws opened by the weight or strain of the nets sufficiently to receive the net or a portion of it, but not enough to admit the leads, floats, or fish. The machine stands preferably near the pilot house, so that the wheelman regulates the speed of the net-lifting device, and the nets are drawn from the water with a continuous and uniform inward movement.

**FIRE EXTINGUISHER.**—Mariner J. Kent, New York City. In portable apparatus where two chemicals are employed, this invention provides an improved holder for the acid, preventing its accidental escape and the entrance of the surrounding liquid without the use of a valve or stopper for the acid holder, but having novel conveniences for its proper gradual escape, so that the acid will fully combine with the second liquid, and the escape of uncombined acid from the apparatus will be prevented.

**GOODS EXHIBITOR.**—Gustav L. Heyman, Carlisle, Ky. For supporting and exhibiting bolts of oil cloth, each rolled on a central wooden stick, this invention provides a suitable stand mounted on casters, on which is a goods holder or carrier revolvable about a central post. The oil cloth bolt retains its rigid condition, and yet is rotatable on the supporting devices, the goods being kept neatly rolled, and so that the patterns may be readily displayed.

**WINDOW.**—Lorenzo A. Murphy and Alexander H. Milne, Wellington, Canada. This invention provides an improved sash-balancing device in connection with a novel draft-closing board, affording means to seal the window at its sill and permit the upper sash to be lowered slightly for ventilation. The invention is adapted for use on any window having two sashes slidably vertically in a casement, simple means being provided for utilizing the weight of one sash to counterbalance the other sash.

**SASH BALANCE.**—Joseph H. Bane, Barre, Mass. This is an improvement on a formerly patented invention of the same inventor, the operative portion of the balance being contained in a casing set in

the window frame and the window sash having on each side a rack. The spindle on which the pinion revolves is capable of lateral movement, and is controlled by a spring brake and adjusting device, and before introducing the sash into the frame the pinions to engage the sash may be carried within their casing, leaving the sash groove free and uninterrupted.

**SCAFFOLD BRACKET.**—Aaron L. Wade, Bradford, Ohio. This is a bracket which may be applied to or supported by a ladder either from the front or from the back, and may be adjusted from rung to rung of the ladder, as required, and given any desired inclination. It may also be attached at one of its ends to a roof or equivalent support when necessary, and may be folded when not in use to occupy a small space.

**BRACKET.**—Charles A. Baker, Waukesha, Wis. This is a bracket more especially designed for use on vestibule doors, windows, etc. It consists of a tubular base with integral flanges for fastening the base in position on a door, window, or other support, while a telescoping bracket member has a head for supporting a rod or pole and a split tubular shank fitted to slide in the base is adapted to be secured thereto.

**VEHICLE SPRING.**—Willie N. Snow, Eaton, N. H. Combined with the bolsters and side bars are coiled springs having their ends extended outward and the axes of their coiled portions parallel with the side bars, one end of each spring being attached to a bolster and the other ends having pivotal connection with the side bars, while an equalizing frame journaled on the bolsters has outwardly extended arms pivotally connected to the side bars, the yokes or stirrups on the bolster embracing one arm of the equalizing frame and the adjacent end of the spring.

**WAGON BRAKE.**—Benjamin F. Jackson and Marshal L. Hughes, Sutton, West Va. This improvement comprises a brake beam with heavy shoes to engage the wheels, a spring throwing the beam into braking position, while a lever with swinging fulcrum is connected to the brake beam, and a draught mechanism connected to the lever is arranged to hold the brake shoes out of engagement with the wheels when a pull is exerted on the draught mechanism. The brake acts automatically when a vehicle is traveling down grade, or when the horses are not exerting a pulling strain.

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SCIENTIFIC AMERICAN  
BUILDING EDITION.

NOVEMBER, 1895.—(No. 121.)

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3. A double house at Marietta, Ohio, recently erected at a cost of \$2,163. Three perspective elevations and floor plans. William Foreman, architect, Marietta, Ohio.
4. A residence at Germantown, Philadelphia, recently erected at a cost of \$25,000 complete, including stable. Perspective elevation and floor plans. Architects, Messrs. Hazlehurst & Huckel, Philadelphia, Pa. An ornate residence in the Spanish Renaissance style.
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## Notes &amp; Queries

## HINTS TO CORRESPONDENTS.

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(6657) F. E. T. asks how to transfer prints to wood. A. First varnish the wood once with white hard varnish, then cut off the margins of the print, which should be on unsized paper. Wet the back of it with a sponge and water, using enough water to saturate the paper, but not so as to be watery on the printed side. Then, with a flat camel's hair brush, give it a coat of transfer (alcohol) varnish on the printed side, and apply it immediately, varnished side downward, on the wood-work, placing a sheet of paper on it and pressing it down evenly with the hand till every part adheres. After standing a short time, gently rub away the back of the print with the fingers, till nothing but a thin pulp remains. It may require being wetted again, before all that will come (or rather ought to come) off is removed. Great care is required in this operation, that the design or printed side be not disturbed. When this is done and quite dry, give the work a coat of white hard varnish and it will appear as if printed on the wood.

(6658) C. A. M. asks how to clean cast iron, wrought iron, and steel preparatory to plating. A. Cleansing Cast Iron.—Cast iron is freed from grease, etc., by clipping in hot alkali solution used for a similar purpose with copper, and after rinsing thoroughly is pickled in water containing about 1 per cent of sulphuric acid for several hours; then rinsed in water and scoured with fine sharp sand or pumice and a fiber brush. It is then rinsed and returned to the acid pickle for a short time, rinsed again and put into the plating bath directly. If more than one per cent of acid is used in the pickle, the time of immersion must be shortened, otherwise the iron will be deeply corroded, and the carbon which the metal contains, and which is not affected by the acid, will not yield without a great deal of labor to the sand and brush. Cast iron does not gild or silver well by direct deposit. Copper or bronze deposits are better, though not perfect; but if the iron is tinned, the coat is adherent and will readily receive the other metals. Cleansing Wrought Iron.—The cleansing of wrought iron, if much oxidized, is effected in the same manner as cast iron; but it will bear a stronger pickle and a longer exposure. Whittened, filed or polished iron may be treated like steel. Cleansing steel.—Dip in the caustic lye used for copper, etc., rinse thoroughly, scour with pumice powder moistened, rinse and pass through the following dip:

Water.....1 gal.  
Hydrochloric acid.....4 lb.

Rinse quickly (but thoroughly) and plunge in the bath. Clean wrought iron and steel gild well without an intermediary coating in hot electro gilding baths. It is difficult to obtain an adherent coating of silver on these metals without interposing an intermediate coating of copper or brass, which renders the further operation of silver plating easy.

(6659) C. P. H., Portland, asks: What effective working pressure would be had at the end of a line of one inch pipe two miles long, with a compressor supplying either 500 or 1,000 cubic feet of free air per minute at a pressure of five atmospheres or 75 pounds per square inch? A. With a delivery of 5½ cubic feet of free air per minute you will have a pressure of 60 pounds per square inch and for 12 cubic feet of free air per minute the pressure will drop to 10 pounds pressure at the point of delivery. For the distance stated the total volume of 500 cubic feet per minute will require a 10 inch pipe for a 70 pound working pressure at the end of the line.