

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**SMOKE CONSUMING FURNACE.**—Joseph W. Hogan, Atlanta, Ga. This improvement is designed especially for application to locomotive boilers, there being in the smoke box a receiver or superheater connected with the exhaust pipe, while an offtake, provided with an automatic governor valve, discharges a blast upwardly into the stack, and a second offtake leads from the receiver to the head of the boiler, where it has a check valve and a branch pipe discharging into the fire box. A live steam pipe leads from the top of the boiler to the branch pipe, an automatic regulating valve opening when back pressure in the branch pipe decreases sufficiently.

**GAS GENERATOR.**—Jesse E. Hathaway, Santa Fe Springs, Cal. For the generating of gas from crude oil, kerosene, gasolene, etc., for use as a motive agent in gas engines, this generator has been especially designed, being of strong and simple construction and very effective in operation. It comprises a vertical exhaust pipe through which pass the hot products of combustion from a gas engine, while a coil of pipe in the exhaust is connected at one end with the oil supply and discharges the generated gas at the other end into a gas reservoir surrounding the exhaust pipe, there being a safety valve at the upper end of the coil, and a removable cap at the lower end of the vertical portion of the exhaust pipe, to introduce fuel to heat the coil when the engine is started.

**CARBURETER.**—Edward I. P. Staede, Mankato, Minn. This invention affords a simple device to carburet air by forcing it through gasolene or other volatile fluids, using the heavier portions of the fluid first, and leaving the lighter portions till the last, thus producing a uniform quality of gas. The carbureter tank has an air supply pipe and a gas offtake pipe, and near the bottom of the tank is an air chamber connected with the air supply pipe, coils within the chamber having their ends carried, one upwardly and the other downwardly, and each coil having an inlet opening within the chamber at the junction of its downwardly extending member with the body. The air will be forced a considerable distance through the gasolene with but little pressure.

## Railway Appliances.

**FLUID PRESSURE BRAKE.**—Alexander Dallas and Oscar P. Amick, Herington, Kansas. This improvement is designed to facilitate the equal charging of the auxiliary reservoir and a prompt releasing of the brakes at the same time, and consists of a feed valve connected with a train pipe, an auxiliary reservoir, and a triple valve for recharging the auxiliary reservoir while the brakes are releasing. The invention covers some novel parts and details, in which there are no springs to get out of order, and but a single valve is employed.

## Electrical.

**LAMP.**—Louis A. Jackson, New York City. This is a lamp more especially adapted for use on bicycles and wheeled vehicles, and is of such simple construction that it may be manufactured at small cost. It comprises a lamp and battery arranged in compact form, the lamp not liable to be extinguished by jar. The lamp is supported on a suitable metal casing in which is a series of cells, the shell of each forming a battery element, a rheostat being supported by the cover and having electrical connection through the casing with the lamp filament, there being a contact between the lamp filament and one of the cell shells, and means for closing the circuit between the rheostat and battery.

## Mining, Etc.

**MINERS' AND BLASTERS' TOOL.**—Martin Kilhan, Central City, Col. This tool combines in one article knives for splitting the fuse or cutting it into lengths, a device for fastening the caps on the fuse, a cutter for any kind of wire and a knife and punch, the tool being as compact as an ordinary pair of pliers and one which may be readily carried in the pocket. The knives are held in place by set screws, and may be readily removed when dull, broken, or injured, to be replaced by others.

**WELL POINT.**—Henry K. Brearley, West Duluth, Minn. This is a tool designed to pass through ore, clay and rock much easier than the point ordinarily used, and comprises a tapering tubular body with closed lower end and spiral exterior flanges forming opposite cutting edges, the body having openings at intervals in spiral order from top to bottom. The point is designed to receive water and particles of earth and rock, the latter following the pipe on the outside of the surface, and indicating the nature of the strata through which the point is passing.

## Mechanical.

**HORSE SHOE MACHINE.**—John W. Crow, New York City. To bend the metal bar or blank from which a shoe is formed into the proper curved shape at one operation, this inventor has devised a machine which comprises a blank supporting table over which reciprocates a plunger carrying a die adapted to engage the bar, pivoted levers being engaged and moved by the plunger, and the levers engaging the end portions of the bar and bending them around the die on the plunger. The machine is of strong and inexpensive construction.

**SCREW DRIVER.**—Hiram F. Henry, Cleveland, Ohio. This is a tool with which one may work the handle rapidly forward and backward, to drive or withdraw the screw, without disengaging the shank from the screw slot and without adjusting the parts. On the lower end of the handle is a tooth-faced portion adapted to engage a similar portion on the upper end of the bit shank, the teeth of the two portions being held out of mesh by a coil spring around the parts, which are all surrounded by a cap. The handle is pressed inward in screwing or unscrewing, the removal of pressure on the handle disengaging the teeth of the handle part from those of the bit part.

## MACHINE TO FORM ORGAN PIPES.—

Herbert Richardson, London, England. In a suitable frame are mounted two rollers, one end of each roller being extended beyond the adjacent end of the other roller and there being a hand wheel fixed to each extended end, whereby the rollers may be manually turned in opposite directions, a deflecting roller being movable toward and from the space between the first rollers. The machine affords a simple construction by which sheet metal may be readily rolled to form different sized pipes of uniform diameter. The two sides of the pipe, when removed from the machine, springing together to form a complete pipe.

## Agricultural.

**POTATO DIGGER.**—Edmund B. Frink, Oxford, Mich. This is a machine of light draught, designed to work as well on hilly as on stony ground, and having a wheel supported frame by which is carried a shovel adapted to enter the ground and loosen the potatoes, drawing them up to the surface, the work of which is completed by a rake whose teeth raise and free the potatoes from dirt, at the same time removing the tops and depositing the potatoes at one side in windrows. The bowed or arched axle of the machine is raised or lowered as desired, by means of a lever, to carry the frame to or from the ground.

**CULTIVATOR OR PLOW.**—Ferdinand Reimers, Davenport, Iowa. This invention provides means by which the horizontal or lateral adjustment of the plow may be readily accomplished while riding on the machine. The plow beams are pivoted to swing horizontally, there being a shifting lever on each side of the cultivator pivoted to swing vertically, and there being connections between the levers whereby their movements will alternate, there being also bevel gears on the levers and on the plow beams. With this improvement the shovels of a riding plow or cultivator may be quickly and easily operated by the feet of the user.

**CULTIVATOR BEAM COUPLING.**—Gideon D. Mitchell, Newton, Kansas. This invention provides a coupling capable of receiving round axles of various diameters and which will have a free rolling bearing on the axle of the cultivator, enabling the operator, upon moving the plows to or from the vegetation, to carry the coupling proportionately and in the same direction along the axle, thus bringing the plows at all times square to the work and obviating the prolonged and tiresome holding of one or the other, or both of the plows, up to their work against a tendency to draw away. The coupling has friction rollers between which the axle is received, and some of the rollers are adjustable and provided with locking devices.

**IRRIGATING PLANT.**—Allan W. Towne, Pomona, Cal. For irrigating lands, and especially orchards, this invention provides for the employment of an inclined trunk pipe in which are gates and a number of hydrants arising from the trunk pipe between each gate, the discharge orifices of the hydrants being in the same plane. The trunk pipes are run from head to foot of an orchard transversely of the furrows, and water is first supplied by the hydrants of the upper sections, and then the following lower sections in order.

## Miscellaneous.

**STOVE PIPE SHELF.**—Abram H. Smith, Vancouver, Canada. This invention provides an adjustable shelf for attachment to the draught pipe of a stove pipe or range, for drying or warming dishes or keeping food warm. It consists of a sheet metal band having a novel clamping device by which the band may be readily secured on stove pipes of different diameters, the band having a row of spaced perforations in which may be secured the wires of a shelf produced from a single wire strand, the shelf comprising a series of radiating braced arms held projected from the band.

**GAME APPARATUS.**—Heien M. Van Kuran, Chicago, Ill. This invention relates to a game for children and young people, designed to teach the colors of the solar spectrum and their tints and familiarize the players with the names and forms of bodies of the solar system, geographical forms and representations of animal and plant life. The game board is divided by a central line, at each side of which are corresponding belts bearing standard colors of the spectrum, each belt having objects thereon duplicated at each side of the center line, while there are also checkers bearing the corresponding objects and colored with the tints of the belts to which they belong. The players cover the objects with the checkers, to compete in covering all the figures, and first build a central column of a cube, a cylinder and a sphere.

**MAKING NITRITES.**—Lewis G. Paul, Huddersfield, England. This invention is for a process of making nitrites of soda and potash from their nitrates by the use of sulphur and caustic soda or potash, the method consisting in heating the nitrates with the caustic alkali and adding sulphur gradually to the melted mass. The temperature is kept at such a degree that the sulphur does not deflagrate when added to the melt, and when all the sulphur has been added the temperature is raised until the melt becomes thinner and eventually almost clear.

**MUSICAL INSTRUMENT.**—Bruno E. Wollenhaupt, New York City. This invention is for an improvement on a formerly patented invention of the same inventor, for a sympathetic vibrating device for violins, guitars, mandolins, etc., greatly increasing the volume and duration of tone without rendering it more difficult to play the instrument. Within the body is arranged a sounding support or bar on which are secured one or more combs, each having a number of teeth or prongs corresponding with the different tones that can be produced on the exterior strings. The sounding support is arranged above the bottom of the body, which resonates fully, so that the quality of the instrument is not diminished by the vibrating device, but is increased by the soft and sweet tones emanating from the combs, sounding in sympathy with the tones played on the strings.

**MUSICAL INSTRUMENT VALVE.**—Hiram F. Henry, Cleveland, O. A distension valve for cornets

and similar instruments is provided by this inventor, the construction being simple and designed to prevent side-wise motion of the valve by the buckling of the compression springs now used. The valve is fitted in a casing, with a coil spring encircling its stem and connected at its lower end with the valve, while at its upper end is a circular bearing concentric with the valve. As the valve is depressed, the spring is distended and overcomes the crowding over of the valve against one side of the casing.

**RIB TIP HOLDER FOR UMBRELLAS,** etc.—Heyward Scudder, Boston, Mass. To hold umbrella ribs against the stick or handle, preventing their needless play about the stick and giving the umbrella a neat appearance, this inventor provides a simple and inexpensive device, comprising split pins driven into opposite sides of the stick, the parts of the pin constituting spring sections, and the heads of the pins engaging eye portions of wire clamping sections adapted to engage and hold the ribs securely against the stick or allow them to be readily removed therefrom in opening an umbrella or parasol provided with the improvement.

**STOP BOX.**—Isaac Sorssoleil, Owatonna, Minn. This is an improvement relating to municipal water and gas supply, and readily adjustable according to the depth of the water or gas supply pipe. It comprises a pipe adapted to surround the valve stem and having at its upper end a head formed with a cam having an elongated tangential aperture, the cover of the head fitting loosely and having also an aperture, while a bolt extends through the apertures of the cam and of the cover, and has an arm extending at an angle to its shank. The head and pipe are turned, to screw the latter up or down in the casing, by means of a forked tool.

**SHEET METAL CAN.**—Frank H. Palmer, Brooklyn, N. Y. A can having a tight cover joint, but of which the cover may be readily removed by prying with a screw driver or similar tool, is provided by this inventor. In the top of the can is a large central opening, around which is a depressed ring to receive a packing which is formed on the under side of and near the edge of the cover, while inside of this ring the cover has a central depressed portion adapted to fit into and impinge upon the edges of the central opening in the top of the can body. The cover is simply pressed down into position to close the can, the packing ring being simultaneously forced to place to make a tight joint.

**BREAD BOX AND SLICER.**—Charles Person, St. Joseph, Mo. For hotels, boarding houses and other places where large quantities of bread are used, this inventor has devised a box for holding the loaves and provided with means for slicing them. The invention comprises a loaf feeding device, a rotary cutter, a frame on which the parts are mounted, and a compartment box within which they may be removably placed. When the slicer is operated in the box the severed slices fall into a lower compartment, but the slicer may be operated separately from the box.

**NOTE.**—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

## NEW BOOKS AND PUBLICATIONS.

**EVERYBODY'S MEDICAL GUIDE.** A handbook of reliable medical information and advice. By M. D. (Lond.) London: Saxon & Company. Price 50 cents.

This little book, by an author whose name is not stated, from its size and make up and treatment appears to be a good work, and its shape makes it particularly adapted for traveler's use. It seems not at all in the order of a work designed to supply the care of a physician, for it does not pretend to do so, which adds to one's opinion of it. It is written from an English standpoint.

**WESTINGHOUSE ELECTRIC STREET CAR EQUIPMENTS.** By Frederick L. Hutchinson and Leo A. Phillips. East Pittsburgh, Pa. 1896. Pp. 91, xvii. Price \$1.

**THE NATIONAL ELECTRICAL CODE.** An analysis and explanation of the underwriters' electrical code, intelligible to non-experts. By Pierce and Richardson, electrical engineers, Chicago. Chicago, Ill.: Charles A. Hewitt. Pp. 222. Price \$2.

The title page explains the scope of this work. It is designed to present the fire insurance underwriters' views of the electric light question to avoid interference of wiring and connections with the insurance policy.

**FRICITION, LUBRICATION AND THE LUBRICANTS IN HOROLOGY.** By W. T. Lewis. Chicago: George K. Hazlitt & Company. 1896. Pp. 95. Price \$1.

This excellent monograph is one that should be in the hands of all jewelers and of those who deal in or handle the finer class of machinery. It seems to us that the author has almost done himself an injustice in confining his topics to watches and clocks, for people have now at last waked to the idea that a lubricating oil should be good. The superlative of lubricating oil as well as the methods of employing it are to be found in the watch-maker's practice.

**THE WATCH AND CLOCK MAKER'S HAND BOOK, DICTIONARY AND GUIDE.** By F. J. Britten. Ninth edition. London: E. & F. N. Spon. New York: Spon & Chamberlain. 1896. Pp. 459. Price \$2.

In this work we have another and quite elaborate contribution to the watch and clock maker's industry. The elaborately illustrated dictionary and cyclopedia is descriptive of the methods, applications and operations of the art. It is very thoroughly illustrated. It is alphabetically arranged, the only break in the alphabetical order being due to divisions of the subjects. There is no index, but cross references are supplied, which to a great extent will take the place of the index, and make it unnecessary.

## Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

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## Notes &amp; Queries

## HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(7054) R. L. asks how to run a cyanide copper bath so that the metal deposited will not peel off during deposition or during the final buffing process. A.

## 1. Cold Bath for Iron and Steel.

Acetate of copper..... 3 oz.  
Carbonate of soda..... 6 1/2 "  
Bisulphite of soda..... 1 1/2 "  
Cyanide of potassium..... 3 1/2 "  
Water..... 1 gal.  
Aqua ammonia..... 2 1/2 fl. oz.

## 2. Warm Bath.

Acetate of copper..... 3 1/2 oz.  
Carbonate of soda..... 3 1/2 "  
Bisulphite of soda..... 1 1/2 "  
Cyanide of potassium..... 4 1/2 "  
Water..... 1 gal.  
Aqua ammonia..... 1 1/2 fl. oz.

## 3. Hot or Cold Bath for Tin, Cast Iron, or Large Zinc Pieces.

Acetate of copper..... 12 1/2 oz.  
Bisulphite of soda..... 10 "  
Cyanide of potassium..... 18 "  
Water..... 5 1/2 gal.  
Aqua ammonia..... 7 fl. oz.

The metal must be chemically clean in either case.

(7055) A. P. S. asks: 1. What is the formula for making the household ammonia? Or an ammonia of equal commercial strength? A. SUPPLEMENT, No. 1080, gives formula for making household ammonia. 2. What will remove mildew from fine white goods? Is not chloride of lime sometimes used for bleaching muslins, and if so, kindly state in what manner? A. To remove mildew stains, mix together a spoonful of table salt, 2 of soft soap, 2 of powdered starch, and the juice of a lemon. Lay this mixture on both sides of the stain with a painter's brush, and then lay the article on the grass, day and night, until the stain disappears; or get a piece of flannel, dip it in whisky, and well rub the place marked; then iron on the wrong side, taking care to put a piece of damp cotton cloth between the iron and silk, and iron on the cotton cloth, which will prevent the silk assuming a shiny, glazed appearance; or wash clean and take every particle of soap off, then put the linen into a galvanized bath or tub full of clean cold water, procure a little chloride of lime, and tie it up in a muslin bag or piece of muslin, dissolve the time in lukewarm water by squeezing the bag, then pour the water over the clothes. Stir and leave them for twenty-four hours, but do not put too much lime in or you will rot the clothes; then well rinse in clean cold water; or hypochlorite of alumina is said to be one of the best remedies. Moisten with water, rub well into the cloth, moisten again with dilute sulphuric acid (1 to 20), and, after half an hour, rinse thoroughly in soft water and then in water containing about an ounce to the gallon of sulphite or hyposulphite of soda. A stiff brush may be advantageously employed in applying the hypochlorite. Chloride of lime will rot the muslin.

(7056) H. B. asks: 1. How can I compute the amperage of a primary battery? A. There is no satisfactory way of doing this; the amperage changes constantly, rapidly diminishing as the battery is in use. 2. Is it not well to have amperage of battery a little higher than necessary for a certain work and regulate the amount of current passing through the wire by number of cells? A. It is always well to have an excess of amperage available. Reduction by resistance or by cells is not economical, but the excess of amperage is pretty apt