

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**STEAM BOILER.**—Elios Hook, No. 106 East Fifty-fifth Street, New York City. This boiler has an outer and an inner shell, with water tubes depending from the crown sheet of the latter, and receiving heat from a fire chamber in the inner shell, there being also sets of longitudinal water tubes at opposite sides of the inner shell, between the depending water tubes and the inner shell. The longitudinal tubes end in header boxes in the inner shell and in open communication with the water space of the boiler. Covered hand holes opposite the longitudinal water tubes at each end enable them to be readily cleaned by a brush or scraper. The products of combustion return from the rear, through flues passing through the water space to the point of discharge, it being designed by this construction to afford greater heat-receiving area within the boiler than is usually attainable in boilers of this class.

## Electrical.

**AUTOMATIC CIRCUIT REGULATOR.**—Joseph D. C. Chateau, Paris, France. This invention relates to a regulator for keeping the intensity of the current practically constant, and is particularly applicable to an apparatus for lighting and extinguishing gas burners at a distance. It comprises a magnet or coil, an armature, a resistance, two contact pieces between which the armature is arranged, and connections whereby the coil, the armature, the resistance and one of the contact pieces are in the main circuit, while the other contact piece is in a shunt circuit.

**ELECTRIC RAILWAY.**—Louise Scherpe, St. Louis, Mo., administratrix of John F. Scherpe, deceased. In underground trolley roads, where the main conductor is closed and protected against outside influences, to insure safe and constant transmission of the current to the car motors without charging the track and rails, this invention provides sealed switch boxes, at suitable distances apart, supporting the insulated main conductor, there being within each box a fixed contact on the conductor, while a plunger fitted to slide in the box is adapted to make contact with the fixed contact. Contact bars connect the plungers in pairs, and a current-conveying trolley is adapted to engage the bars to lift the plungers to make contact with the main conductor, which is thus connected with the car motor.

**ELECTRICALLY OPERATED BRUSH.**—Alfred Sherwood, Topeka, Kan. This invention provides an improvement in hollow cylindrical rotary brushes, inside of which is an electric motor, such brushes being more particularly adapted for barbers' use, to be connected with any convenient source of electrical power, the brush being of convenient form and readily managed. The invention covers a novel arrangement and combination of parts, including the brush and the motor and their bearings, and the yoke or bifurcated hanger by which the other parts are suspended.

## Bicycles, Etc.

**ELEVATED ROAD AND BICYCLE THEREFOR.**—William J. May, Tillamook, Ore. A single rail is, according to this invention, carried by posts at a slight elevation from the ground, the posts also carrying on each side upper and lower guide rails. The wheels of the bicycle are designed to travel on the top of the rail, and on the front fork of the bicycle is firmly secured a frame from which depend rods carrying at each side a lower and two upper rollers or wheels adapted to bear against and travel along the upper and lower side rails, thus supporting the bicycle steadily in a vertical position, and enabling the most inexperienced rider to readily acquire facility in actuating the pedals and propelling the wheel.

## Mechanical.

**AUTOMATIC FRICTION GOVERNOR.**—Cyrus Moore and Perry S. West, Perry, Mich. This is a governor designed for use on windmills, engines and other machines, being of simple construction and automatic in operation. It comprises a friction rim with the inside of which one or more brake blocks are adapted to move in engagement, in connection with levers pivoted on a wheel turning with the shaft or other movable part of the machine on which the device is used, there being a loose spring-pressed device connected with the levers to cause them to swing simultaneously inward or outward.

**ADJUSTABLE STOP TEMPLET.**—Jacob W. Tripp, New York City. This is a device used in cutting miters and fitting mitered joints in mouldings, and more particularly for fitting the joints in moulded bars when a portion of the bar is beaded, and this portion should be beveled in order to make a proper joint. The device may be advantageously used for mitering the ends of mouldings to form the corner joints of picture frames, the central bars of window sash, etc. The templet has flanges at right angles forming side and top bearing surfaces, and having beveled or miter gaging surfaces at each end, while an adjustable clamp jaw is supported from the top flange and adapted to engage the other side surface of the material.

**SHAFT PROTECTOR.**—Henry F. M. Pody, Brooklyn, N. Y. This is a device more especially designed for use on shafts at or near the floors or ground, and arranged to form a hood or cover over collars, flanges, couplings, set screws, or other parts projecting from the revolving shaft, to prevent the garments of workmen and others being caught thereon, and thus obviate danger of accident. The protector consists of a casing made in longitudinal sections adapted to be secured together, springs being arranged in pairs with their middle portions secured to the casing and their free ends resting on the shaft to support the casing from the shaft.

**COTTON GIN.**—Thomas B. Lee, Barnwell, S. C. This machine is of a class in which a series of toothed cylinders are arranged to coat in such a manner as to separate the fiber from the seed, bolls and any foreign substances carried by the cotton, and comprises a main shaft provided with gear wheels while a

series of vertical saw cylinders have their shafts provided with gear wheels and are mounted in adjustable bearings, gear wheels being interposed between those on the main shaft and those on the cylinder shaft, the interposed gear wheels being mounted in adjustable bearings. The same construction may be advantageously employed in machines for delinting cotton seed, burring wool, etc.

**GATE VALVE.**—Alfred N. Heine and William K. H. Woerner, Evansville, Ind. This is a valve for controlling the inlets and outlets of a valve having a plurality of ways, such as a four-way valve, the apparatus having one or more gates and means by which they may be adjusted about the several ways. Within the valve casing, which has four necks connected with a like number of conduits, is a threaded revoluble shaft on which a valve gate is mounted to move vertically by the revolution of the shaft, while gearing connected with the valve gate is capable of turning it around the shaft to adjust the gate, and also to hold it from turning during the action of the shaft.

**BALING PRESS.**—Skiles W. Bricker, Ore. Mo. This is a machine mounted on wheels, to be readily transported from place to place, and is especially adapted for quickly and smoothly baling hay, straw, etc., with comparatively little power. The invention comprises a pressing chamber communicating with a hopper and in which a plunger operates, while a feeding plunger is made in two sections, one section having a spring yielding connection with the other section, and there being connections whereby the feeding plunger is operated by the pressing plunger.

## Miscellaneous.

**CONVEYING APPARATUS.**—George F. Newell, Richmond, Va. For use in handling material to be weighed at one point and packed at another, this inventor has devised an apparatus by which the weighed, proportioned, inspected, or other material may be conveyed to the packing point and the emptied vessels returned to the starting place, the apparatus being especially designed for handling manufactured tobacco, such as granulated tobacco, cut plug, etc. It comprises a main table having slots or openings in which operates a carrier belt having its upper run approximately in the plane of the table, a return carrier being located above the carrier belt and having its belt geared therewith, while switches are adjusted to discharge at either side of the carrier.

**TREATMENT OF METALLIFEROUS ORES,** etc.—Edgar A. Ashcroft, Melbourne, Victoria. This is an improvement on a formerly patented invention of the same inventor for working, in conjunction with zinc-bearing ores and products, other ores and products, especially those containing copper and iron. The process consists in circulating a zinc-bearing solution first around the metallic cathodes of an electrolytic apparatus, then around the anodes of the electrolytic apparatus, the anodes consisting of the matte of the products resulting from the preliminary furnace treatment of products or ores containing copper and iron, whereby a solution containing copper and iron is obtained electrolytically, a part or the whole of the zinc being deposited as metallic zinc.

**DUMPING WAGON.**—Thomas Wright, Jersey City, N. J. In wagons such as are usually employed to haul and dump coal, gravel, etc., this inventor provides a novel means of supporting the body of the wagon on springs that are supported at their ends on the frame bars of the running gears, and also on the rear axle. The body of the vehicle is so connected with the supporting devices that the body will be adapted for easy reciprocation on the running gear frame to dump the load rearwardly and return the body to normal position with the exercise of but slight manual power.

**FIREPROOF BUILDING.**—John O. Whitenack, New York City. In a framing for bolting fireproof blocks composing the walls or partitions of structures designed to be fireproof, this inventor provides some novel features. The wall is made of separable blocks, a facing plate extending along one edge, while a channel iron is secured to the facing plate, inclosing it and also inclosing the contiguous portion of the wall, I-beams, Z-beams and L-beams being employed.

**FENCE POST.**—Columbus C. Nearn, Fowlkes, Tenn. This post is made of glass, in the form of a tube closed at each end, to prevent the entry of water and other foreign matter, and on its outer surface is a series of pairs of annular ribs, each pair forming a groove in which the wire of the fencing may be turned around the post to fasten the wire thereto. The post cannot decay, and may have such ornamentation and modification of form as desired.

**LIFE SAVING APPARATUS.**—William G. Burton, Kingston, Jamaica. This is an apparatus more especially designed for saving the lives of sailors and others who may fall overboard from the decks of vessels, and consists of a transverse net supported at its upper end on the deck of the vessel, and arranged to be readily thrown over the stern of the vessel, when it will extend with its lower edge into the water below the keel and with its sides beyond the side of the vessel. The device is quickly lowered by a mechanism under the control of the officer in charge of the bridge, or the man driving the wheel, and a rope ladder extends from the lower end of the net to the deck of the vessel, so that a person caught by the net may readily climb back to the deck.

**KNOB ATTACHMENT.**—Frederick Jones and James S. Brownson, Brooklyn, N. Y. This invention provides such construction of the spindle for a door lock and the sleeve of the removable knob that the two parts may be adjustably connected in a quick and convenient manner without using a screw in the sleeve of the knob or making holes in the knob spindle, the parts being also quickly separable if desired by the employment of a flat piece of metal or a screw driver. The construction is simple and inexpensive.

**FOLDING STOOL.**—Fred E. Upham, Leominster, Mass. A stool for use in stores behind the ordinary counters is provided by this invention, the stool being adapted to be compactly folded so as not to ob-

struct passageways, while it may be readily adjusted for counters of different heights and quickly folded and unfolded for use without stooping. It can be lightly and yet strongly constructed, and when in position of use affords a firm and steady seat for the user.

**ASH RECEIVER.**—Joseph Sedlmayer, Brooklyn, N. Y. This is an improvement for application to stoves and ranges, providing therefor devices for receiving and conveying the ashes to a suitable chute or receptacle. In the ash box is a chute connected by a discharge pipe with a flue connecting with the cellar, a discharge valve in the chute consisting of two hinged leaves and a sliding operating bolt, and there being at the top of the chute a sliding sifter. To discharge ashes from the stove or range it is only necessary to tip the sifter and open the valve.

**CUSPIDOR.**—John and Thomas Buckley, New York City. This is a device intended more particularly for use in hospitals and by invalids, and comprises an outer casing having a hinged top and bottom and provided with handles, while within is a cheap, destructible inner casing, preferably of paper or similar material, to be discharged and destroyed when the cuspidor is cleaned.

## Designs.

**TACK.**—Henry F. Reuter, Nashville, Ill. In the double pointed tack provided by this design the inner opposite faces of the prongs are flat and parallel to each other, while the outer surface of the head is flat on top.

**METAL WORKER'S STOCK.**—Charles D. Graff, New York City. This design presents a waved border decorated with foliate scrolls, and a representation of a group of pine cones and pine foliage, the group following the curvature of the border.

**MANDOLIN.**—Eugene B. Baehr, New York City. The head of the neck of the mandolin, according to this design, is so arranged with respect to the neck itself that the opposite side edges are approximately parallel and at an angle trending laterally, all the keys being projected from one side of the head.

**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, ETC.

**PAPERS AND REPORTS RELATING TO MINERALS AND MINING.** Comprising statement by the Minister of Mines, report on the gold fields, wardens' reports, report on coal mines, water conservation for mining and irrigation purposes, Otago and Westland districts, report on geology of Cape Colville Peninsula, chemistry of the cyanide process. Wellington, New Zealand, 1897.

**THE LANGUAGE OF LIGHT; OR, THE MIRROR OF TRUTH.** By Terence Duffy. Pp. 260. Price \$2.

**THE SALMON FISHERY OF THE PENOBSCOT BAY AND RIVER IN 1895 AND 1896.** By Hugh M. Smith, Chief of Division of Scientific Inquiry, United States Fish Commission. Extracted from United States Fish Commission Bulletin for 1897. Article 4. Pp. 113 to 124. Plates 4 and 5. Washington, 1898.

**NOTES ON THE HALIBUT FISHERY OF THE NORTHWEST COAST IN 1896.** By A. B. Alexander. Extracted from United States Fish Commission Bulletin for 1897. Article 7. Pp. 141 to 144. Washington, 1898.

**BIBLIOGRAPHY OF THE METALS OF THE PLATINUM GROUP.** Platinum, palladium, iridium, rhodium, osmium, ruthenium, 1748-1896. By James Lewis Howe. Washington: Smithsonian Miscellaneous Collection 1084. 1897. Pp. 318.

The metals of the platinum group are interesting both from a chemical and an economical point of view, and the present bibliography will give a key to the literature upon the subject. This is another example of the splendid work which the Smithsonian Institution does for the "increase and diffusion of knowledge among men." No publisher could afford to print an exhaustive bibliography of this kind, as of course the sale would be very small; but the Smithsonian Institution generously undertakes to print books of this kind which could never be made to pay the ordinary publisher. It is little wonder that foreign scientific men hold the Smithsonian Institution in such high estimation as they do.

**PLACER MINING.** A handbook for Klondike and other miners and prospectors. With introductory chapters regarding the recent gold discoveries in the Yukon Valley, the routes to the gold fields, outfit required, and mining regulations of Alaska and the Canadian Yukon. Also a map of the Yukon Valley, embracing all the information obtainable from reliable sources up to December 1, 1897. Scranton, Pa.: The Colliery Engineer Company. 1897. Pp. 146. Price \$1.

This book is filled with practical information which miners are desirous of obtaining, especially those who are desirous of going to the modern El Dorado—the Klondike.

**The Master Steam Fitter, of New York,** has changed its name and now appears under the title of **Engineering—Mechanical, Steam Heating, Electrical, Sanitary, Civil and Hydraulic.** It is published monthly at 108 Fulton Street, New York. The subscription price is \$2 per annum.

## Business and Personal.

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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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**Minerals** sent for examination should be distinctly marked or labeled.

(7382) W. H. G. asks: 1. Will you please tell me through your Notes and Queries in the SCIENTIFIC AMERICAN the proportions of sal ammoniac and water used in a Disque Leclanche battery? A. The solution of sal ammoniac in all Leclanche cells should be saturated. Dissolve about ¼ pound to the cell. 2. How many volts would one of these batteries give? A. These cells have about 1.4 volts when fresh. 3. How large a lamp would this battery run? A. They cannot be used for lighting lamps continuously. They run down in a short time on a continuous service. 4. Will you please give me an idea how to make a receiver and a transmitter for a small telephone? A. For a solid backed telephone and a Blake transmitter, see SCIENTIFIC AMERICAN, vol. 72, No. 7, price 10 cents. For a simpler telephone see SCIENTIFIC AMERICAN SUPPLEMENT, No. 965, price 10 cents.

(7383) C. W. R. writes: Will a bicycle having a 29 tooth sprocket on front and a 12 tooth sprocket on the rear run easier than one with a 17 tooth sprocket on front and a 7 tooth sprocket on the rear, both being a 68 gear, and the conditions in both cases being exactly the same, excepting the size of sprockets, and consequently, a little longer chain in the first case? If so, why so, and if not, why not? Which will have the most strain on the bearings, and how much more? A. The larger pair of sprocket wheels will run easier than the small pair. There is less strain on the axles and chain, and less friction on the bearing parts owing to the reduced strain on the larger sprockets. There is also less wear and liability to breakage, about in the ratio to the relative diameters of the two sizes of sprockets.

(7384) W. J. K. asks: 1. What is the voltage and amperes required in an electric furnace, the carbon points being ¼ inch apart? A. That depends on the work to be done. Anywhere to several thousand amperes at 5 to 10 volts. The electrical furnace has been very fully treated in the SCIENTIFIC AMERICAN SUPPLEMENT, ever since its invention. See Nos. 901, 904, 905, 976, 986, 1048, 1077, 1107, price 10 cents each. 2. What voltage and amperage is used in ordinary arc lamps? A. A 2,000 candle power lamp is one that consumes 450 watts or 10 amperes at 45 volts. 3. From what firm can I obtain soft iron wires? I have looked in quite a number of catalogues, but cannot find them listed. A. A good quality of iron wire heated red hot and cooled will be "soft." It will also be covered with a thin film of oxide of iron, which will improve it for use in magnet cores.

(7385) W. L. M. asks if the motor described in No. 759 could be run to any advantage by three bichromate potassium cells quart size. A. The motor requires the same number of cells to run it, no matter what their size may be. The larger cell will furnish a larger current. This may be controlled in the plunge battery, by immersing the plates to a less depth, but it makes no difference in the number of cells, whether they are of pint or quart size. The quart size will not need refilling so often.

(7386) V. M. asks how he can print the names of subjects on the sensitized paper of photographs. A. To print the name on the photograph several methods may be adopted. The simplest is to write the title of the subject on a slip of paper with aniline copying ink, or