

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.

Marine Iron Works. Chicago. Catalogue free. For hoisting engines. J. S. Mundy, Newark, N. J. "C. S." metal polish, Indianapolis. Samples free. Mariner & Hoskins, Assayers, 81 Clark St., Chicago. W. Hoskins & Co., Assay Furnaces, 81 Clark St., Chicago. Presses & Dies. Ferracuta Mach. Co., Bridgeton, N. J. Handle & Spoke Mch'y. Ober Lathe Co., Chagrin Falls, O. Evolution of Mechanics. Open Court Pub. Co., Chicago. Well Drill Prospecting Mach'y, Loomis Co., Tiffin, O. Plaster Retarder. Special price for 30 days, Blue Rapids Plaster Co., Blue Rapids, Kans. Wanted—Promoter to exploit a recently patented elevator safety device. Address C. B. L., Box 773, N. Y. Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Tenth and Canal Sts., New York. Wanted—Competent foreman for manufacturing sheet and wire specialties. Address "Enterprise," Box 773, N. Y. Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.

Now Ready—Practical Handbook on the Care and Management of Gas Engines, by G. Lieckfeld. Cloth, \$1. Spon & Chamberlain, 12 Cortlandt St., New York.

For Sale—European patents. Article paying immense profit. Will duplicate machinery for foreign manufacturing. E. F. Knight, 701 Pontiac Building, Chicago.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4, Munn & Co., publishers, 361 Broadway, N. Y.

Young Men seeking a profitable business should invest in vestigate Ransome's Concrete Construction. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 622 Boylston Bldg., Chicago.

Wanted.—Copies of complete files of the following Revolutionary magazines: Massachusetts Magazine, New York Magazine, Royal American Magazine, Columbia Magazine. State price, and whether perfect or not. Address M. A. C., Box 773, New York.

Cripple Creek—Its History to Date, Illustrated.—Just out, with correct map and costly full page views of mines natural as life. This great book will be sent free prepaid with our big 56-col. family paper 3 months on trial for 25c. (stamps or silver); club of 5, \$1. Latest mining news. Mention the SCIENTIFIC AMERICAN and address Illustrated Weekly, Denver, Colo.

Send for new and complete catalogue of Scientific and other books for sale by Munn & Co., 361 Broadway, New York. Free on application.

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR FENDER.—Sylvanus D. Wright, New York City. This fender has a forwardly-extending U-shaped frame supported in position by chains connecting its side bars with the dashboard, the frame being adapted to spring backward slightly on striking a person in the path of a moving car. The platform held in the frame is made of wire netting, and at its rear has a slightly curved back to form a head rest and protect the body of any one picked up by the fender, the body being safely held until the car is stopped. The improved device may be readily disconnected from one end of the car and placed at the other end.

SWITCH.—John Kesselring, Girardville, Pa. This invention affords an improvement in switches which automatically return to a certain normal position, there being adjacent to the switch tongue a mating rail with transversely movable portion, and a guard rail alongside the mating rail, while extending through the mating rail and guard rail is a rod on which are springs to press the mating rail of the switch tongue toward the guard rail. All the parts return to their normal positions as soon as the train leaves the portion of the track adjacent to the switch.

CAR AXLE LUBRICATOR.—James S. Patten, Baltimore, Md. This inventor has patented, in one integral device, a brass or journal bearing proper, a journal cap or hood-like cover and protector, and means for deflecting and confining the oil within required limits, the pendant front and sides of the cap or hood diverging from a point in contact with the journal and having near their rear ends transverse ribs extending downward from a point where they are in frictional contact with the journal. There is also provided a spring-supported oil box in which are oil take-up rollers.

Electrical.

STORAGE BATTERY.—Alexander F. Vetter, New York City. This is a battery of simple and inexpensive construction in which the active material is positively held in the plates, positive connections with the plates being effected by arms connected integrally with the metal thereof. Ordinary lead pipe is used, the sides pressed together to close the tube at its lower end, the tube being cut away at its upper end, forming a half tube extension, the active material being then placed in the tube section and the top of this portion being closed by pressure. Outside or end plates constituting the negative elements have downwardly inclined openings on their inner faces, the outer surface being left intact, and the positive plate is similarly perforated in both sides.

ELECTRIC LIGHT SHADE.—Willis E. Robinson, Faribault, Minn. According to this invention, a shield is provided consisting of a clamp having at one end an open loop, while at its opposite end is pivoted a holder carrying a spring maintaining the holder in adjusted position relative to the clamp, the holder also carrying a shading leaf. The improvement is more especially adapted for incandescent lamps, being adjustable vertically and laterally or at any angle to the light.

ELECTRIC SWITCH.—Abraham K. Drescher, Worcester, Pa. In this switch the space between the stationary and movable contact surfaces is great when the switch is open and small when the switch is to be closed, that the switch may make a long break and a short make, an automatically adjustable contact spring being provided and a novel binding post to hold it and receive the conducting wire. The mechanism for causing a long break and a short make is formed of long and short spring and wedge cams, and by making the movement necessary to complete the circuit small it is made possible to make the movement for breaking the circuit larger, thus avoiding arcs.

Mechanical.

BOOKBINDER'S RASPING MACHINE.—Edward J. Campbell and Patrick J. Haggerty, Brooklyn, N. Y. This machine comprises a frame in which reciprocates a slide carrying a graduated series of rasping devices adapted to act successively on the work, while means are provided for moving the work transversely to the slide. The machine mechanically produces the ragged or jagged edges heretofore made by hand on the front and bottom edges of a book to imitate the natural rough edge of hand-made paper.

BOX MAKING MACHINE.—Hiram Goo and Stuart B. Hopkins, Delevan, N. Y. This invention consists principally of a head-clamping device having an intermittent rotary motion and a nailing device in conjunction with the clamping device, to drive the nail into the hoop and head when the rotary motion of the clamp ceases. It is more especially designed for making cheese boxes, etc., and bends a strip or band of wood into a hoop, at the same time nailing one side on the head or side of the box and tacking the overlapping ends of the hoop, cutting off the surplus material of the hoop to finish the box.

Agricultural.

STEAM PLOWING APPARATUS.—Edward Ingleton, Pottstown, Pa. This is an improvement on a formerly patented invention of the same inventor, and comprises a wheel-supported frame carrying tracks moved by endless chains and chain wheels, carriages in which are adjustable plow shanks, and trip devices which raise and lower the plow shanks on the carriages. The cost of manufacture is lessened and the construction simplified, the chain of plows being made to travel at the side of the frame instead of at the top and bottom. Improved means are also provided for raising and lowering the plows, and effecting the connection between the plowing apparatus and the traction engine or other motor moving the apparatus.

Miscellaneous.

STARTING RACE HORSES.—James J. Sullivan, New York City. To insure fair and prompt starts in racing this inventor has devised a screen to be stretched across the track in front of the horses to prevent the passage of any of the horses before the proper time. The screen frame is connected by link hinges with supports at the sides of the track, and on the given signal the screen is swung forward and upward out of the way by men working in concert and pulling on the ropes attached to the upper ends of the side bars of the screen frame.

SNOW MELTING MACHINE.—Burton S. Craig, Clinton, Iowa. In this machine an elevator and conveyor receives the snow scraped up by a shovel, there being a tank beneath the conveyor, and boiler and pipes to melt the snow so arranged as to confine the heat and utilize it to the utmost extent, the melted snow being conducted to the tank, and then to a gutter or ditch at the side of the road. The machine may be drawn by horses or driven by a motor, and a brush at the rear of the machine sweeps the loose snow into the gutter.

PHOTOGRAPHIC CAMERA.—Alejandro Gual y Sn Juan, Havana, Cuba. This inventor provides an objective which will be light-tight and free from projecting parts, avoiding all danger of fogging by light entering through the slit in which the diaphragm moves. By means of a series of apertures of different sizes the time of exposure may be varied in the same manner as the lens camera, the focusing being made with the aperture yielding the clearest image and the exposure being made with a different sized aperture.

SOLDIERS' INTRENCHING TOOL.—James H. Gageby, United States Army (Fort Niobrara, Neb.) The blade of this tool has two shanks, connected by a transverse handle, and a second handle extends down in front of the blade, the whole being made of one piece of metal, and forming a light, strong and efficient tool which may be used by a soldier lying down or kneeling, there being no long handle or awkward leverage.

THILL COUPLING.—William Horning, Johnstown, N. Y. This is a device of very simple and inexpensive construction designed to hold the thills securely without limiting their free swinging movement on the axle. It is also so constructed that it may be conveniently adjusted to take up looseness resulting from wear, and rattling is prevented.

VEHICLE SHAFTS.—Charles A. Floyd, London, England. According to this improvement the front end of each shaft is made with a terminal loop or eye to which the back band is attached, and the loop has also a cross stay to which the trace is attached. The ordinary projecting ends of the shafts are thus dispensed with, and there is less danger of injury to other animals in case of collision, or of injury to a horse falling in harness.

LOCK.—Wilson T. Bohannon, Brooklyn, N. Y. This inventor has devised a key guard for ordinary latches or locks, rendering them more secure. It consists of a guard adapted to be introduced into the key sleeve, and having adjustable wards, so that a number of combinations may be made, and the same style of lock be made to require different keys. The wards of the guard are also so made that the key can be turned only in one direction.

SASH BALANCE.—Joseph H. Bane, Barre, Mass. This is a frictional device, in which

weights are not employed, and which is also readily adjustable to counterbalance any window sash that may be placed in the frame. A pivotal housing carries an adjustable spring adapted to engage a fixed support, a friction wheel in the housing engaging the sash, while disks in the housing have ratchet wheels engaged by pawls carried by the friction wheel. The sash may be raised with but little effort, but more exertion is required to lower it, and it may be readily held and locked at different points.

GAS STOVE.—Robert Morton and Robert Pringle, London, England. This stove has an air heating chamber above the combustion chamber, up-cast gas flues being suspended from the top of the air heating chamber and opening into the combustion chamber, below which are the burners, while the gas supply connects with a gas heating chamber in one of the flues, with other novel features, the arrangement of the air tubes and other parts of the stove being so proportioned and the consumption of gas and air so adjusted that the flames burn with a pure white light and perfect steadiness, and do not impinge on any part of the stove.

HOOK AND EYE FASTENING DEVICE.—Joseph Matthews and Kennon Mott, Brunswick, Ga. The hook and eye, according to this invention, are each made of a single piece of bent wire, and each has two sharp points adapted to be attached to a garment by two motions, or removed therefrom by reverse movements. After the hook is in the garment its points or pins may be threaded in the under face of the garment, or covered by a sewed-on strip of material.

DRESS BELT.—Henry Bruning and Edward Ross, Brooklyn, N. Y. This is a sectional leather belt having front end sections united to a rear or back section by a ring at each side, the front end sections being closed by a buckle. The strap adjacent to the connecting rings has an embossed or offset recess, whereby a fine appearance and increased strength is given to the belt.

CLOTHES LINE CONVEYER.—Alexander G. Molteni, Hoboken, N. J. This is a simple and inexpensive device to be secured to the outer side of a window or door casing, over which a clothes line may be passed, the other end of the line being extended around a pulley on a distant post or other support. With this improvement the sheave carrying the pulley line may be secured in almost any position without rendering necessary any change of the parts.

ROTARY BRUSH.—William S. Beard, Pine Bluff, Ark. For dusting rooms, and brushing suits, dresses, etc., this inventor has devised a brush to be rotated by spring power, and which at the same time collects the dust removed. It comprises a spring motor in a casing driving a train of gear wheels which drive a brush shaft, end brushes being held on the extreme outer ends of the shaft, and a receptacle for the sweepings projecting forward under the brushes and being secured to the under side of the casing.

CLEANING BEER PIPES, ETC.—Charles Peters, Brooklyn, N. Y. For forcing a cleaning liquid through pipes and cocks in apparatus for dispensing beer, according to this invention, a cleaning liquid receptacle is connected with a compressed air supply, and connection is also made with the pipes to be cleaned, in such manner that the column of cleaning liquid supplied, instead of being driven at a constant speed, is periodically arrested or checked in its motion, to produce a shaking action of the pipes.

SHOW CASE.—John Conlin and Robert Whitty, Ripon, Wis. This invention consists principally of a casing provided with a cover hinged to a frame mounted to swing, the improvement being more especially designed for exhibiting cigars and similar articles, and permitting the shopkeeper to open the case for a preferred customer to select and remove the desired goods, or to open it only so that only the shopkeeper can take out the goods.

DISPLAY HOOK AND PRICE CARD HOLDER.—Frederick W. Pelster, Johnstown, Neb. This is a simple and inexpensive device made of spring wire, and having clamping arms to clamp the goods, one of the arms having projecting side portions on opposite sides of and guided on the other arm, the projecting side portions being connected and braced by a clip adapted to hold a price card or ticket. The device affords a secure means of supporting goods for display, with attached price card or ticket.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

Notes & 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. Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. 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.

(6837) S. N. S. says: Please state approximately the total horse power in use in the United States and world. A. The following figures of the world's steam power are given by the Bureau of Statistics in Berlin. Of the steam engines now working in the world, four-fifths have been constructed during the last twenty-

five years. France has 79,590 stationary and locomotive boilers, 1,850 boat boilers, and 7,000 locomotives; Germany, 59,000 land boilers, 1,700 ship boilers, and 10,000 locomotives; Austria, 12,000 boilers and 2,800 locomotives. The working steam engines of the United States represent 7,500,000 horse power; of England, 7,000,000 horse power; Germany, 4,500,000 horse power; France, 3,000,000 horse power; Austria, 1,500,000 horse power. This estimate does not include the locomotives, whose number in the world is 105,000, representing a total of 3,000,000 horse power. The world's steam engines, therefore, aggregate more than 26,000,000 horse power, equivalent approximately to the work of 1,000,000,000 men.

(6838) R. P. B. writes: I wish to know if an induction coil, wound with No. 36 silk covered wire entirely across the spool, is just as effective as if it were wound in two sections, the same being insulated in the best possible manner. What is the idea of making the coil in two sections? Winding the coil clean across is much easier, and, if it is just as good for the purpose intended, I would prefer to do so. How many cells of battery do you think I would need to produce X rays with the coil 7 1/2 inches long recently illustrated in the SUPPLEMENT? A. The object of winding a coil in sections is to keep a good distance between leads in the secondary differing greatly in potential. It is advisable to use more than two sections. Six or eight cells should suffice for X ray work, but you must anticipate much difficulty and probable disappointment. Your coil seems far too small.

(6839) A. S. C. writes: I am about to use a small powerful battery. Which kind should I use? A. Storage batteries are incomparably the most powerful. They are described in our SUPPLEMENT, Nos. 159, 838, 845, and 997. Primary batteries are given in great variety in the SUPPLEMENT, especially Nos. 157, 158, 159, 792. For a large bichromate battery of high power, see No. 792.

(6840) M. N. asks if he can run a battery motor with a 110 or 220 volt circuit if he puts resistance boxes in. If this is possible, how may he determine how much resistance to put in to get a required current. A. If you have 110 volt lamps, each one will pass 1/2 ampere. Therefore, arrange in parallel twice as many lamps as your motor will take of amperes and let them act as resistance.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted April 14, 1896, AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

Table listing various inventions and their patent numbers, including items like Adjustable handle, Air brake hose coupling, Air compressing apparatus, etc.