RECENTLY PATENTED INVENTIONS.

Engineering Improvements.

DRAFT DEVICE FOR LOCOMOTIVES.—MICHAEL KELLY, Bloomington, Ill. In order to improve the draft in locomotives, this inventor provides a closed fire-box and an air-supplying apparatus. This air-supplying apparatus comprises a pipe leading from the ash-pan forward to the end of the locomotive and terminating in the open funnel, and a pipe leading from the rear end of the ash-pan and branching to each side. Each branch terminates in forwardly-extending funnels located outside of the engine parts. A common connection of these pipes with the ash-pan is provided whereby the air is discharged beneath the grate to produce a more perfect draught than has hitherto been attained.

SMOKE-CONSUMING FURNACE.—JOHN IMHOF and SAMUEL SPRING, Alleghany, Pa. This furnace has two bridge-walls, located one just back of the grate and the other near the rear of the boiler, and forming between them a combustion chamber. The bridge-walls are composed of fire-brick loosely piled, so as to leave passages between successive bricks in a row and extending upward almost into contact with the boiler. The openings in the forward bridge-wall are uniform in size and the passages through the rear bridge-wall are of a larger area than those through the front bridge-wall. The lower course of bricks in the rear bridge-wall is on edge and extends with its length longitudinally of the boiler. The next course is laid flat and extends with its ends upon the bricks beneath, thus forming a series of enlarged openings at the opening of the chamber, whereby the cooler gases at the bottom of the chamber are discharged most rapidly.

Mechanical Devices.

BALL-COCK VALVE.—JAMES H. MCPARTLAND, Houlton, Me. The purpose of this invention is to provide a simple and durable ball-cock valve which permits the height of the water in the tank to be regulated and permits the closing of the supply pipe whenever necessary. The valve comprises a conveying pipe formed at its end with a valve seat, a tubular valve-casing fitted to slide on the exterior surface of the pipe and having an outlet in its side, and a valve-plug screwing in the casing and adapted to be seated on the valve-seat. By screwing the plug outwardly or downwardly, the level of the water in the tank is respectively raised or lowered.

PNEUMATIC PROPELLER FOR VESSELS.—ANDREW J. CULBERTSON, San Andreas, Cal. In this invention a hull is provided of such construction that the water will have the least possible frictional engagement with the vessel. By forming a series of channels open at the bottom and at the stern, it is possible to interpose currents of air at various points between the hull and the water for the purpose of forcing the vessel ahead and assisting the driving mechanism employed and preventing the water from retarding the progress of the vessel. By providing the vessel with a number of connected auxiliary rudders, it is possible to steer the vessel with great rapidity merely by moving these rudders simultaneously to port or starboard.

Railway Appliances.

REFRIGERATOR-DOOR.—ANDREW J. MCARTHUR, Gainesville, Fla. This invention provides a door for refrigerator-cars and cold-storage rooms. By a simple arrangement, the packing devices carried by the door are prevented from being expanded when the door is opened. The door cannot be forced open while the packing devices are expanded. The door has a number of packing-bars around its edge. Each bar has a vertical and a horizontal portion. Expanding blocks engage with the beveled ends of the packing-bars. Between the blocks and packing-bars are link connections. Links also extend from a disk to the packing-bars. A lever imparts rotary motion to the disk and an automatic stop prevents the disk from rotating and expanding the packing-bars when the door is open.

TRACK-SANDING APPARATUS.—ALVA A. LINDLEY, Oskaloosa, Ia. The apparatus provided for by this inventor consists of improvements formed as a part of an ordinary valve by which an air-blast may be used for discharging the sand when desired, without interfering with the ordinary manner of operating the valve. The device has its valve pivoted upon the bottom and within the sand-box, and adapted to cover the discharge-opening. A hollow journal on the valve extends through the bottom of the sand-box and has air-connections thereto. The valve has a passage connecting the discharge-opening with the sand-box interior and connections from the hollow journal into the passage.

RAILWAY-TIE DISTRIBUTER.—CALEB C. GATES, Forsyth, Mont. In this apparatus a suitable supporting frame is provided which is adapted to be mounted on the tie distributing devices. In this frame, transverse supporting rollers are journaled at predetermined intervals, upon the frame, discharge rollers are journaled extending longitudinally. Near the longitudinal rollers a number of tripping devices are arranged to divert the ties at these points and cause them to be discharged from the supporting frame.

RAILWAY-CROSSING GATE.—CHARLES R. WOODWARD, Campbell, N. Y. The purpose of the present invention is to provide a safety-gate for railroad crossings which, by simple mechanical means, automatically opens and closes the gate, thus dispensing with the services of a gateman. As a train approaches a crossing, a tappet-roller on the locomotive engages with a projection on a shifting-bar, placed at a distance from the crossing. During this movement a locking-bar, forming part of a connection between the shifting-bar and swinging-gate of the crossing, is moved to its locking position with a boxing in which the locking-bar is movable, by means of a weight attached to a cable running over a wheel mounted on a shaft rearward of the shifting-bar. This operation causes the cable to unwind, so that the gate may move downward to its closing position. As the engine reaches the crossing, a roller engages with a tripping block and, by rocking it upon its fulcrum, causes the boxing of the locking-bar to move out of engagement with the bar. The parts will then be moved in the opposite direction, causing the gate to open.

Miscellaneous Inventions.

ACETYLENE GAS GENERATOR.—CHARLES KELLY, Passaic, N. J. In this invention improvements have been devised whereby the lime hydrate is automatically removed from the generator to keep the flow of water unobstructed. Should the pressure become excessive, the gas is allowed to escape to the open air before the water-seal in the tank is broken. The generator containing the calcium carbid has an inclined bottom discharging into a settling-chamber for the calcium hydrate. A removable cover is provided for the generator and is so arranged as to open the outlet-valve of the settling chamber automatically when the cover is opened. By this arrangement the water is allowed to drain from the generator, leaving behind the calcium hydrate, which discharges into the settling-chamber. In the water-tank, a water pipe extends into the lower of two compartments formed by a diaphragm. A vent-pipe also extends into this lower compartment, the lower end of which pipe is above the lower end of the diaphragm-pipe. A water relief-pipe leads from the vent-pipe into the upper compartment for discharging the water contained in the vent-pipe back into the tank to free the vent-pipe for the passage of air or gas.

INKING-PAD.—JONATHAN H. MELVEN, St. Louis, Mo. To provide a pad which may be supplied with fresh ink so that the ink shall be drawn from the bottom of the pad upward, this inventor employs a box having an upwardly-extended threaded collar attached to its bottom. A block surrounds this collar within the box and has ink-reservoirs in its upper-surface. Another collar fixed in the block surrounds the threaded collar and extends to the top of the ink-reservoirs. A screen covers the block and above it is placed an absorbent pad. For the threaded collar a closure is provided. In filling the reservoirs, the pad is turned bottom upward. The ink poured in, spreads between the pad, filling the orifices in the screen and the space between the screen and block. The second-mentioned collar prevents the ink from flowing into the opening surrounding the threaded collar.

BAG-HOLDER.—WILLIAM D. GRAVES, St. Ansgar, Iowa. This holder is provided with a tightening device which draws the mouth of a bag firmly in place on the bag-support. A hopper or spout forming a support for the bag has an open lower end around which the mouth of the bag may extend. Bearings are attached to the hopper or spout and a vertically-extending pin is mounted to turn in the bearings and has its lower end extended into proximity with the mouth of the hopper. The lower end of the pin is provided with a slot capable of receiving the edge of the bag's mouth, so that upon turning the pin the bag is twisted around the pin and contracted over the lower end of the hopper.

REVERBERATORY SMELTING-FURNACE.—HENRY L. CHARLES, Butte, Mont. With this furnace, molten floating slag may be quickly and conveniently removed without chilling the molten metal. The furnace has an elongated hearth, one of the side walls of which has a centrally-located slag-discharge orifice. The other side wall has a number of twyer-openings. A series of twyers are projected through the twyer-openings, the twyers being angularly disposed to one another and each radially from the slag-discharge orifice. By this means, the blast from the twyers is directed to and concentrated at the slag-discharge orifice.

PROCESS OF PHOTOGRAPHING IN COLORS.—VALENTIN VAUCAMPS, Paris, France. The inventor applies to a backing a series of sensitized layers of different colors in their proper order. He then exposes the layers to light under a negative to render portions of the layers insoluble, washing the picture with an appropriate solvent to produce a relief on its front or exposed face. The picture thus obtained must be viewed by reflected light. In order that the effect of the natural colors may also be produced by transmitted light, the inventor presses the exposed face of the picture against a glass plate, thus destroying the relief and bringing it out on the back. The projections on the back are then removed, and the resulting picture may be viewed by transmitted as well as reflected light.

ASSAYER'S FURNACE.—JOHN J. LONERGAN and ALBERT C. CALKINS, Los Angeles, Cal. It is well known that when highly volatile hydrocarbons, such as gasoline, are employed as fuel in muffles, the oxidation of the charges is defective, so that cupellation is practically impossible in a large portion of the muffle and is effected slowly even in the remaining portion. In order to effect a more rapid cupellation, these inventors have devised a furnace having a rear horizontal passage, the muffle having a rear opening registering with this passage. A main flue and oxidizing attachment are provided, consisting of an exterior pipe connecting the passage and main flue. By this arrangement, more oxygen is admitted, thus causing the cupel charges to be rapidly and effectively oxidized.

FINGER-RING EXHIBITOR.—MARCELLUS ADAMS, West Plains, Mo. This device is designed to take the place of the ordinary ring trays used by jewelers for the display of finger-rings. The device is to be made in sections and screwed down into the bottom of the trays, thus serving to hold each ring in a position in which it is fully exposed for examination and yet clamping and securely holding it in place.

FOLDING-UMBRELLA.—MILTON R. STUDAMS, Bridgeton, N. J. The umbrella patented by this inventor is of larger size than ordinary umbrellas. The stick and ribs may be so adjusted as to enable one to fold the umbrella to half the length of the stick and length of the ribs. A large umbrella may be reduced to such size as to be conveniently used as a walking stick. The stick is formed of telescopic sections adapted to be locked together when extended. The upper section is provided with a runner spring retaining-catch. The lower section of the stick is longitudinally slotted to receive this runner-retaining spring-catch of the upper section.

VEHICLE-WHEEL.—MATHEW M. RENN, Louisville, Ky. The purpose of this invention is to provide a wheel of comparatively simple construction which shall have all the springing or yielding qualities of a pneumatic-tired wheel, but which shall be free from the disadvantages of a pneumatic tire. The wheel has a casing and two series of yielding supports in the casing, the supports of one series alternating with the supports of the other series and extending in the opposite direction. A longitudinally sinuate spring-plate extends through each series of supports and a tie band extends through all the supports of each series. By reason of this construction it is evident that under pressure the spring-plates and the band will yield together and distribute the pressure evenly.

Designs.

PUZZLE-BOARD.—HENRY C. FINCKE, New York city. This puzzle-board represents the harbor of Santiago with its channels overtopped by mountain ranges. Five indentations inside of the harbor represent the anchorages of the Spanish fleet; another indentation in the channel represents the place where the "Merrimac" was sunk. Outside of the harbor five more indentations represent the position of the American fleet. The ships of both fleets are represented by differently colored balls. The eleven balls are started on the ocean side. The board is then tilted in such a manner that the balls representing the Spanish fleet, the "Merrimac," and the American fleet shall each in turn fall into their respective depressions.

CHARM.—JAMES F. PRICE, Boston, Mass. The leading feature of this design is a horseshoe, within which is a transparent panel decorated with a spray of shamrock.

LEGGING.—ARTHUR S. HUNTINGTON, Omaha, Neb. In this legging stiffening bands, circular in shape, are arranged opposite each other on the inner and outer faces of the heel of the legging. These bands are at their bases embraced by a binding strip. The resulting legging is hence better protected on its wearing portions than heretofore.

TRIMMING-BRAID.—HUGO MAUL, Rahway, N. J. This design consists of a body, across the face of which extend obliquely raised and spaced ribs interlocked at their ends in borders corrugated transversely, the corrugations being at angles to the ribs.

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

NEW BOOKS, ETC.

DIE FABRIKATION KÜNSTLICHER PLASTISCHER MASSEN sowie der künstlichen Steine, Kunststeine, Stein- und Cementgüsse. Von Johannes Höfer. Vienna, Budapest, Leipsic: Verlag von A. Hartleben. With 54 illustrations. Pp. 368. Price $1.15.

Among the industries which have sprung up within the last few decades, the manufacture of plastic materials has assumed considerable importance. The work which now lies before us is entirely devoted to the technique of plastic materials. After a brief introduction, the author exhaustively treats the necessary preparations, the mixing and pulverizing apparatus, boilers, presses, moulds, and other appliances used in making plastic masses. He then passes to the production of materials made of lime, gum, resin, etc., and to the manufacture of papier maché and paper compounds in general, the latter being of particular importance nowadays. Materials composed of wood and cellulose occupy a considerable portion of the volume. After these are described compounds of zinc chlorid, magnesia, sulfur and soluble glass, substances made of various waste products and the making of plaster casts. Cements and artificial stones are also discussed, as well as insulating and refractory materials. The work has covered the entire field of plastic substances and deserves much praise for the painstaking method in which the subject has been treated.

ANLEITUNG ZUM ENTWERFEN UND ZUR STATISCHEN BERECHNUNG GEMAUERTER SCHORNSTEINE. Ein Anhang zu Heft III. des Buches "Der Schornstein Bau." Von Gustav Lang. Hanover: Helwingsche Verlags-Buchhandlung. 1898. Pp. 25. Price 50 cents.

THE MANUFACTURERS' EXPORT CODE. By Charles L. Seeger. New York: United States Industrial Publishing Company. 1898. Pp. 600. Price $10.

There is nothing which tends to decrease modern business expenses like a well arranged telegraph code. The present volume is most admirable and seems to include code words for almost every possible sentence which would be apt to occur in the ordinary transaction of business. The pages are large and well printed and the systems used are most excellent. It should be said that the Spanish translations of sentences, etc., render this book of the greatest possible value for use in business with Spanish-speaking countries. While not an alphabetical code, the arrangement and classification of the different subjects render it quite as convenient for quick and effective use. The excellence of the code is shown when it is stated that one word ("insanos") gives an order for five hundred reels of four-point thick-set galvanized barbed wire.

STANDARD FORM OF PROGRESSIVE QUESTIONS AND ANSWERS ON THE AIR BRAKE. As adopted by the Association of Railroad Air Brake Men at their third annual convention, held in Boston, Mass., April 14, 15, 16, 1896. Pp. 80. Price 25 cents.

SPANISH-AMERICAN CONFLICT MADE PLAIN. Shewey's complete, official, handy reference pocket atlas and cyclopedia containing authentic historical information and statistical tables of reference relating to the Spanish-American conflict, with official maps. Chicago: A. C. Shewey. 1898. Pp. 74.

INTRODUZIONE ALLO STUDIO DEI SILICATI. By Dr. Ettore Ricci. Milan: M. Hoepli. 1898. Pp. 106. 8vo.

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.

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.

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Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(7477) A. G. asks: Would you be so kind as inform me which is the best method of hardening plaster casts (in my case a medallion) in imitation of Parian marble? A. To Make Plaster Casts Hard.—To a thin milk of lime or lime water add 10 or 15 drops of liquid silicate of soda for every pint of fluid used; this is then thickened with plaster to a thick cream. Plaster thus prepared will set in five minutes or thereabout, according to the thickness of the cream. If too much silicate is used, the soda will effloresce on the surface, and spoil the sharpness of the impression. When the cast is already made, it may be soaked for a few hours in a hot, rather thin solution of gelatine, to which has been added a preservative, such as oil of cloves or carbolic acid, and then dried.

(7478) H. H. asks: Can a current of electricity flow past a current coming in the opposite direction on the same wire? A. Two currents of electricity can flow on the same wire, either in the same or in opposite directions. If two equal currents are flowing in oppositedirections, one will exactly balance the other and it will appear as if no electricity were flowing in the wire. This is just the same as if a man was carried north on an ice field as fast as he walks to the south. He would not apparently be moving at all. But if one of our currents of electricity is stronger than the other, there will be a current in the wire equal to the difference between the two and in the direction of the greater. Thus if 10 cells of battery are attached to a line, 6 faced one way and 4 faced the other, the line will seem to be carrying the current of 2 cells in the direction in which the cells are sending their current.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

AUGUST 16, 1898,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

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