RECENTLY PATENTED INVENTIONS.

Pertaining to Apparel.

CUFF AND SLEEVE PROTECTOR.—C. H. OVERMAN, Marion, Ind. This device is formed of wire suitably covered, and is designed to be slipped over the wrist of the person using it, and is provided with means for engaging the cuff or sleeve and holding it in an elevated position while the hands are being used in any manner that would tend to soil or wet the sleeves.

ANIMAL HEAD.—B. COHEN, New York, N. Y. This patentee provides an improved head, over which the skin is drawn in fur articles. It is made of soft rubber and is arranged to properly display the head and still render the same flexible, to allow of conveniently placing the head-filling in position in the skin, and to draw the skin into place to give the proper shape to the head, and to provide a fastening jaw for clamping the head to a part of the garment of which the head is a part.

PNEUMATIC HEEL CUSHION.—W. L. GORDON, Deal, N. J. This attachment, which is to be worn in the interior of the shoe, at the heel, is constructed with a novel arrangement for affording a pneumatic cushion; and is provided with a resilient frame tending to support the cushion above the heel so that the action of walking serves to force out the air and afford ventilation to the interior of the shoe.

SKIRT MARKER.—A. WATERMAN, New York, N. Y. The purpose of the invention is to provide a skirt marker which can be attached to any garment form having a standard and with which it is possible to mark a skirt placed on the form as to length and evenness of length, with the same ease and accuracy as if the skirt were hung upon a person.

SHOE.—T. SKERRETT, Spokane, Wash. For the use of pole-climbers, shinglers, miners and others, Mr. Skerrett has provided a shoe which has a triple strength for the instep portion from the rear to the toe, and a double quarter and a half double vamp, and a double toe section. The shoe is thus strengthened at the parts which are most liable to wear in climbing.

COAT LAPEL AND COLLAR REGULATOR.—W. H. CLING, Charleston, S. C. The invention provides a device for holding the front breadths of coats and vests distended or stretched in such a manner as to prevent wrinkling or sagging. For this purpose a thin strip of steel is used which may be detachably applied, and whereby the lapels are prevented from rolling back at the lower end.

Of Interest to Farmers.

RIDING CULTIVATOR.—J. A. BURT, Gunnison, Miss. This patentee contemplates improving cultivators in several particulars, including the means for elevating the shovels to clear obstructions; the adjustment of the shovels for acting at the desired depth, and for varying the distance between the shovels. Provision is made also for the more easy manipulation of the cultivator in turning, and for more equally distributing the pull.

PLOW.—T. B. HANSFORD, Stephens, Ga. This improvement relates to the means for adjusting the plow blades to run deep or shallow without the plowman leaving his position at the handles. The plow beam drops at the rear end, and a brace extends from the higher portion of the beam to the handles. The raising device includes a standard fulcrumed to the beam and provided with an adjusting lever extending in convenient reach of the plowman.

CORN HARVESTER AND HUSKER.—T. A. and J. G. OVERBY, Mellette, South Dakota. One of the main objects of the machine designed by these patentees is to so construct the same that the corn will be reached and brought into the mechanism of the machine, and the other operations performed, without the necessity of exercising great care on the part of the operator. The snapping devices have improved means for mounting the same in the frame in a manner to enable them to yield to a desired extent when working, and similarly the husking rolls are supported in separate parts of the frame, providing a space into which any uprooted stalks may pass, in a way to prevent clogging. In various other respects the applicants design to make the mechanism more practical and durable.

INCUBATOR.—C. S. NEWSOM, Athens, Ohio. This patentee has devised an incubator rather out of the conventional form. An important feature is a rotatable egg-holding tray comprising a series of wire cylinders, combined water-holders and heaters being arranged on opposite sides, and these with various other details being designed to have increased practical importance in hatching, protecting, and caring for the chicks.

GRAIN-FEED.—C. G. HAEGERT, Hawley, Oklahoma. The mechanism forming the subject of this patent is designed to take grain either headed or otherwise, from a stack and feed it into the threshing machine. The construction is light and strong; is portable, and is designed to be drawn between two stacks, to operate simultaneously on both. Means are provided for independently adjusting the rakes employed at the sides of the machine, to accommodate them to the height of the stacks. Provision is made for automatically imparting the necessary movements to the rakes to effect the alternate gathering and discharge.

LOADING APPARATUS.—ALCEE LANDRY, Mark, La. This patentee has produced an apparatus particularly adapted for loading sugar cane from the field onto wagons, so that the cane may be handled very expeditiously and with little manual exertion. There is a mast with a swinging boom on the vehicle, and a grapple operated by a special arrangement of drums with their ropes and pulleys for effecting the different operations quickly and with precision. At the side of the vehicle opposite the grapple, a counterbalancing device is mounted, consisting of a pole with a weight at the top which may be raised and lowered to counterbalance the load and prevent the tilting of the vehicle.

INCUBATOR.—G. H. LEE, Omaha, Neb. The latest invention of this patentee is intended as a further improvement on the incubators already patented by him, the particular improvements in the present case relating mainly to the egg-trays and their supports, and the heating features of the structure, the egg-tray devices being designed to facilitate the breaking of the shell by the weight of the chick, and for facilitating the separation of the chicks from the unhatched eggs, the floor being so arranged that the chicks fall into a space below the tray constituting a nursery with a reduced heat.

HARROW.—G. METCALFE, Wilczinski, Miss. The purpose of the invention is to provide a harrow primarily intended for the preparation of soil in cotton culture, in such flat and damp sections of the country as the Yazoo and Mississippi delta, and which will combine with a harrow the qualities of a cultivator whereby to remove from bedded lands all grass, weeds, and clods, and leave a smooth surface for planting. This is a result which cannot be accomplished with the ordinary harrow or cultivator.

INDICATOR.—C. VERSTEEG, Ashton, S. Dak. The indicator comprises an open electric circuit including a signal to be operated by the contact of the terminals of the circuit, the latter being arranged within the bin in a position to be moved into contact by the grain when it reaches a predetermined depth. Means are also provided for preventing the grain from entering between the contact points and preventing their engagement.

Of General Interest.

DEVICE FOR USE IN TRANSFERRING ICE CREAM CANS.—JACOB RENNER, Rockwell City, Iowa. In order to provide a practical and convenient means for removing the ice cream cans from their freezing tubs without disturbing the ice, and transferring the cans as desired in making and handling ice-cream on a large scale, the patentee arranges a cylindrical lifter comprising two pivotally connected handled sections adapted to be passed downward on the outside of the can, and to engage the can so as to lift the latter.

COOKING STOVE.—E. C. COLE, Chicago, Ill. The oven of the stove illustrated in this patent is surrounded by flues or air spaces at sides, top and bottom, and there is an arrangement of deflector plates, which are designed to be given certain bends by the manufacturer of the stove, such as will produce the necessary circulation through the flues, the bends of the plates being varied according to the fuel usually employed in the district in which the stove is intended to be used.

FLEXIBLE TUBING.—G. M. ANDERSON, Hyde Park, Mass. This invention relates to flexible metal tubing and couplings for the same. The tube is made up of longer and shorter sections, the opposing ends of the sections being respectively concaved and convexed so as to rock in any direction, and a spiral spring is arranged either on the interior or exterior of the tubing, coupling the sections together, the coils of wire interlocking with certain of the sections to give the necessary stability.

SPOON HOLDER.—LOUIS J. R. RIVET, New Orleans, La. A unique, practical spoon holder forms the subject of a patent granted to the mentioned inventor, and comprises a piece of metal bent to form a clamp into which the spoon handle may be slipped, and a spur on the under side of the holder which may be inserted into the cork of a medicine bottle, so that the spoon is held horizontally across the top of the bottle.

GLASS WASHER AND SCOURER.—A. W. BEERBOWER, Bryan, Ohio. This invention is mainly intended for use in hotels and restaurants. It is provided with a series of horizontal rotary brushes mounted to be operated by a handle and arranged to act on both the interior and exterior of the glasses. A compartment above the brushes contains a supply of scouring powder, with a cylindrical feeder for delivering the proper amount as required.

POCKET-LIGHTER.—W. C. and C. F. MACDONALD, Rock Island, Ill. It is the object of this invention to provide an improved pocket lighter having a magazine containing fulminating pellets adapted to be successively and safely ejected from a magazine into a socket at the outside of the casing and to be ignited therein for lighting purposes.

APPARATUS FOR PURIFYING NATURAL WATER.—F. JULIAN, St. Paul, Minn. The apparatus provides for purifying, by means of suitable chemicals, water that contains compounds of calcium, magnesium, aluminium, iron, and other impurities. In the case of water containing free acid, or alkali, a neutralizing chemical is used. Mechanically-suspended matter and certain dissolved objects are to some extent carried down with the precipitated impurities.

UMBRELLA-RIB AND STRETCHER CONNECTION THEREFOR.—P. V. BRADY, New York, N. Y. The invention is particularly adapted for paragon umbrella ribs, and its purpose is to provide a lap which can be stamped from a single piece of metal, and clamped to the rib. The lap is partly concealed by the rib and is provided with a knuckle within the groove of the rib to which the stretcher is pivotally attached.

SAFETY DEVICE FOR ELEVATORS.—W. C. TENCH, Lynn, Pa. The invention has reference more especially to safety devices for elevators and provides means for preventing over-hoisting of the elevator cage or elevator within the elevator shaft either from overwinding of the hoisting cable for the cage, or from other causes.

ARTIFICIAL DENTURE.—P. B. LESEMANN, Nashville, and S. J. LESEMANN, Altamont, Ill. The object of the invention is to provide novel means for securing an artificial tooth to a mouth-plate. It enables the ready substitution of a new for a broken tooth on a vulcanized plate without revulcanizing the plate.

RESCUE BUOY.—JERUSHA C. QUARTERMAN, Titusville, Fla. This buoy is especially adapted for use in marine life saving service, and is so constructed that a maximum of hand-holes are provided, permitting a person grasping the buoy at any point of its area to quickly and instinctively secure a firm grip thereon.

DUMPING AND ELEVATING APPARATUS.—P. J. MAUGER, Minier, Ill. Mr. Mauger's invention is an improvement in apparatus for discharging or dumping grain or other articles from a wagon or cart into a conveyor by which it is delivered into a permanent storage receptacle or into a car or boat for transportation. The present invention covers various additions to the original invention which was recently patented by Mr. Mauger.

ROTARY PUMP.—H. R. COMLY, San Diego, Cal. The pump belongs to that class which comprise a cylinder, a cylindrical piston arranged eccentrically therein, and a slidable abutment or cut-off which reciprocates corresponding to the rotation of the piston, whereby fluid is taken in and ejected from the cylinder at each rotation of the piston.

PRIMING DEVICE.—J. W. GRAEME and R. W. MCNEELY, Navy Department, Washington, D. C. The invention has for its object to provide recording mechanism in connection with an improved primer, whereby a record is made of when the primer has been fired. The invention also comprises means for increasing the efficiency of the primer.

CLAMP.—E. R. ERICKSON, New York, N. Y. The clamp forming the subject of this patent is intended for use by wood-workers and other artisans. The improvements comprise clutches arranged in connection with one of the jaws of the clamp, to function as the jaw is brought into engagement with the work, the clutches acting automatically to prevent backward movement of the jaw.

MATCH BOX.—W. P. LOCKE, Canton, Ohio, has obtained a patent on a novelty in the shape of a match box of the general class in which a single match is delivered at a time. The present inventor utilizes the tray of the ordinary match box, and provides on a base a plate-like member to form a cover for the box tray and engage the same by spring arms, the plate having an opening of such a form as to permit a match to be grasped and allow the removal of one at a time. When not in use, the plate may be folded downward against the base.

Hardware.

RULE.—H. D. HAGERMAN, Houlton, Me. The invention consists of an ordinary two-foot rule having the outer hinged members grooved on their opposite edges with a metal scabbard secured therein to one of the members. The scabbard is adapted to receive a scriber which is held from accidental displacement.

CLAMP.—E. R. ERICKSON, New York, N. Y. This clamp is of simple construction and is so designed that the distance between the clamping faces may be quickly and readily adjusted to receive objects of different thicknesses. The invention is specially useful for the purposes of a joiner or cabinet-maker to hold members which are being glued together.

Heating and Lighting.

PROCESS AND APPARATUS FOR GENERATING A COMBUSTIBLE GAS FROM CARBONACEOUS LIQUIDS. — F. COTTON, Hornsby, N. S. W., Australia. The apparatus is adapted for utilizing the residuum of petroleum and other liquids of like nature to produce a highly combustible gas. It consists in simultaneously introducing oil and steam in a receiving chamber of the apparatus and mixing the fluids after which the resultant mixture is introduced into a forward chamber or retort and burned.

APPARATUS FOR GENERATING ACETYLENE GAS.—A. ROSENBERG, 259 High Holborn, London, England. The invention relates to an apparatus employed in the production of gases by the reaction occurring progressively between a liquid and solid reagent which are permitted to gradually come into contact with one another. The vessel in which the solid reagent is transported or stored is designed to serve as a generator for the gas when it is immersed in the liquid reagent.

OIL-BURNER.—S. M. MORRISON, Bakersfield, Cal. This improved burner is adapted for use in a small stove or in a large furnace in both of which cases the combustion is complete and a smokeless fire produced. A low grade of distillate or crude oil is used for the fuel and means are provided for removing the waste product. Where crude oil is used the asphalt drawn off, if preserved, is of more value than oil in its crude state.

REGULATOR FOR GAS BURNERS.—A. A. PRATT, New York, N. Y. This invention relates mainly to incandescent burners, the object of the improvement being to so construct the burner that it forms a regulator which serves to control the amount of gas passing from the supply pipe into the mixing chamber of the burner, so as to form an inflammable mixture of the proper proportions of gas and air according to the quality and pressure of the gas supply. We note the devices for carrying out the purpose are quite simple in form and arrangement.

PIPE FITTING FOR HOT WATER HEATING SYSTEMS.—JOHN O'NEILL, New York, N. Y. The fitting forming the subject matter of this patent is intended mainly for use in a type of hot water heating system designed by the same inventor, the fitting being intended more particularly for embodiment in a three-pipe heating system. It results in forming the necessary connections by a reduced number of fittings, while insuring a proper circulation of the heating medium through the pipes and radiators.

Household Utilities.

WEATHER-STRIP.—T. J. JOHNSON, Norman, Okla. Ty. The weather-strip is hinged to the door in such a manner that when the door is closed the weather-strip is thrown down by a contact pin on the door jamb. Means are also provided for moving the weather-strip endwise, thereby permitting the use of a slightly longer weather-strip than would otherwise be practicable, and forming a closer fit or joint.

Machines and Mechanical Devices.

PASTEURIZING APPARATUS. — H. E. WEBER, Canton, Ohio. The milk is first brought to a comparatively high temperature and then by one or several successive stages quickly reduced to a considerably lower temperature. In order that the greatest efficiency be obtained the change in temperature is accomplished as nearly instantaneously as possible, and every particle of the liquid is individually subjected to the heating and cooling treatment.

GARMENT-PRESSING MACHINE.—J. B. REPLOGLE, Chicago, Ill. The machine is so designed as to enable the material of a garment to be subjected to a pressure by a pressing iron, the position of which is readily controlled. The construction is such that the machine may be driven by power as well as manual force in applying the pressure.

GEARING.—J. K. KOONS, Montgomery, Pa. A peculiar construction of transmission mechanism has been provided by Mr. Koons whereby a sharper graduation of the ratio between the differential gears is permitted. At the same time the construction provides a certain amount of flexibility in the connection between a countershaft and the driving shaft.

BRICK OR BLOCK MACHINE.—D. F. MCDONALD, Lake Butler, Fla. The patent granted to this inventor discloses a new form of mold for molding bricks or building blocks out of cement composition. The mold is of very simple form and is intended to have special usefulness in isolated places or localities where large and costly machines are not available. In general form the apparatus includes two handled bars or levers arranged on a rectangular frame, the levers carrying each a section forming one side and one end of the mold, so that the mold is completed by the two sections when the levers are brought together.

SLUG COUNTER.—W. N. BOWMAN, Pierre, So. Dak. The subject of this patent relates to linotype machines. The inventor has in view to enable an operator, in setting up matter in which a plurality of slugs are used to form a single line, to determine readily at what point in the line a slug is being cast, and thus avoid a difficulty commonly experienced with operators in keeping in mind the precise order of the slug on which they may be working.

DOUGH-ROLLING MACHINE.—WILLIAM FRANK, Guttenberg, N. J., discloses in a recent patent a dough-rolling machine especially intended for forming the dough into substantially spherical shape, the special merits claimed for the machine being its simplicity, the resulting quickness of the operations, and the feasibility of separating the sections of the machine for cleaning. In general, there is a concave wheel co-acting with a grooved casing, so that a circular space is provided into which the dough is fed by a funnel, and from which it is ejected at the opposite side by the rotation of the wheel.

MACHINE FOR REFINING FLOUR.—C. L. GERRARD, Columbus, Neb. The apparatus de-

signed by this inventor relates to the forcing of nitric oxid or other gas mixed with air through wheat flour and other products in bleaching and refining the flour, an important object being to effect a uniformity in the generation of the gas. An examination of the specification and drawing of the patent is necessary to an appreciation of the mechanism and its operation.

WASHERS.—JOHN R. HUGHES, Chama, New Mex., has patented an improvement in the washers employed in connection with cotter-pins of various machines. The washer is slitted and has pressed upward at opposite sides of its opening or eye, integral portions of a shape to constitute offsets and receive the cotter-pin.

GAGE.—GEORGE ARNOLD, Chicago, Ill. A unique gage forms the subject of a patent granted to this inventor, the device being applicable to augers and like boring tools, and so formed that it may be quickly secured in place on the bit at the desired distance from the point of the auger so as to define the depth to which the hole will be bored.

CRUSHING ROLLS.—JOSÉ PELAEZ RODRIGUEZ, Caibarien, Cuba. This patentee primarily intends his improvement to be embodied in the rolls for crushing sugar cane. The improvement is characterized by a special form and disposition of teeth on the surface of one of the rolls, the merits claimed being that a more complete laceration of the cane is effected, so as to enable a thorough extraction of the juice to be obtained.

IMPROVED ROD PACKING.—G. STEWART and G. F. STEWART, New York, N. Y. These inventors have devised a modification of the metallic packing of piston rods. The packing is of the type employing split rings, and the arrangement of retaining and adjusting devices is such as to cause frictional contact between the rod and the packing rings when the piston is on the outward stroke, so as to force the packing rings tightly together and in close contact with an encircling sleeve, the frictional contact releasing on the return stroke.

Prime Movers and Their Accessories.

TRANSMISSION-GEAR.—J. CHALMERS, Bath, Maine. The improvement refers to a means for transmitting rotary motion reversely and at various speeds. It is useful, particularly in connection with internal-combustion engines employed for driving boats and vehicles. Novel features reside in the construction and organization of the devices for connecting the loose gear at will with the transmitting element coacting therewith, in the arrangement of the reverse transmission, on the general organization of the mechanism within its case, and various others of importance.

LUBRICATOR.—J. J. SLAGEL, Fairbury, Ill.—The invention relates to a lubricator of that type used in connection with engines, particularly steam engines, and embodying a pump for forcing the lubricant through a sight-feed device and thence into the steam pipe or other part of the engine, so that the oil passing into the engine with the steam lubricates the valves and cylinder.

COMBINED VALVE-STEM CLAMP AND LUBRICATOR.—J. C. WILLIAMSON and W. D. BARKER, Tallahassee, Fla. The purpose of the invention is to provide a combined valve-stem clamp and lubricator arranged to lubricate the valve-stem outside and immediately adjacent to the stuffing box, and to permit the engineer to quickly and securely lock the valve-stem, and hence the valve, against movement in case of a breakdown of the corresponding engine so as to allow running of the locomotive by the use of the other engine alone.

Railways and Their Accessories.

CAR-COUPLING.—H. V. ROGERS, Tiosa, Ind. The object of this inventor is to provide a novel form of coupling that will not only automatically couple when two cars are brought together, but will uncouple should an accident occur—such, for instance, as the derailing of a car, tipping over of a car, or a car breaking down at the center.

RAILWAY-SWITCH.—C. E. MCDONALD, Butte, Mont. In the present patent the invention has reference to railway switches; and the object of the improvement is the production of a switch which is so constructed that it will enable a car on the main track to pass from the main track in either direction.

AIR-BRAKE ATTACHMENT.—J. B. O'DONNELL, Freeland, Pa. The object in this case is to provide means by which the engineer on a train equipped with the automatic air-brake system may be given full control of the triple exhausts independently of and notwithstanding the usual retaining-valves. This is attained by fitting to the triple exhaust a valve closing by the brake-cylinder pressure and commanding a vent to the atmosphere, which valve is under the control of the engineer through the medium of a fluid pressure device actuated by the train-line pressure.

DEVICE FOR MOVING CARS.—J. D. TUSAR, Forest City, Pa. Mr. Tusar has invented a device which may be attached to heavy cars to move them a short distance. The invention is particularly applicable to mining cars to move them up a steep grade. The device may be operated by one man without any danger to the operator.

RAILWAY-SWITCH.—J. HERRINGTON, Houston, Texas. The invention is an improvement in switches of the type adapted to be operated automatically by the wheels of the cars or engines, thereby dispensing to a considerable extent with the work of a switchman, and at the same time lessening the likelihood of an accident caused by negligence in leaving the switch open.

SANDER.—G. E. CUMMINS and H. S. FERGUSON, Cherokee, Kans. The invention relates particularly to a sander for locomotives. In sanding devices operated by compressed air the sand tends to clog the air passages and interfere with the proper operation of the device. It is the object of the present invention to overcome this disadvantage.

RAIL-JOINT.—T. CRANE, East Branch, and J. M. WHEELER, Fishs Eddy, N. Y. The object of the present invention is to produce a rail-joint of simple construction which may be quickly applied and which will operate to hold the abutting ends of the rails securely without necessitating the employment of bolts and nuts.

Pertaining to Recreation.

PLACE AND POSITION INDICATOR.—F. H. SCHAUFFLER, New York, N. Y. One purpose here is to provide a device whereby to indicate place and position by lot or design for various persons at tables or at other places where games of cards and other games are played, whether independently or as partners, in which latter event partners have their places and positions decided by lot or design, and, further, to provide a device applicable to any occasion where place and position are not to be selected by participants.

Pertaining to Vehicles.

LUBRICATOR.—S. J. WELTER and G. C. WELTER, Roswell, New Mex. The invention pertains to a device for lubricating wagon-axles successfully and doing away with the necessity of taking the wheel from the axle when the oil is applied. On account of the inconvenience of taking wheels from axles it is well known that they are frequently left on so long as to become dry and to burn out the bearings. This device can be filled with oil while a wheel is on the axle.

DUMPING-CART.—J. GUIRY, New York, N. Y. A cart is employed having a body, together with a cover and means for raising the same to enable the cart to be dumped when desired. Means are also used for sustaining the cover of the cart in its raised position and for preventing the cover from being carried or thrown beyond a determinate position forwardly of the structure.

STREET-CLEANER'S TRUCK.—J. REHM and T. VON GERICHTEN, New York, N. Y. The object of the inventors is to produce a truck which will afford means for carrying a receptacle, such as a can, conveniently, which will facilitate the raising and dumping of the refuse from the street into the receptacle, and which will facilitate the removal and replacing of the receptacle upon the truck.

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

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. **In every case it is necessary to give the number of the inquiry.**

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 8412.—Wanted, a light-running pump, which will pump about a half-inch stream of water; force pump preferred.

J. C. Sparks, B.Sc., F.C.S., Chemical Expert. See adv't.

Inquiry No. 8413.—Wanted, machinery for use in the manufacture of carbonic acid gas.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 8414.—Wanted, granulated iron oxide and aluminium, suitable for the Thermit process of welding.

Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Inquiry No. 8415.—Wanted, makers of elastic rope or cord similar to that used on the Whitly exercising machines.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 8416.—Wanted, an automatic machine or electric pencil or needle for writing on glassware and engraving on pearl or glass novelties.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 8417.—Wanted, addresses and catalogues of manufacturers of machinery for making rubber horse-shoes.

The celebrated "Hornsby-Akroyd" safety oil engine. Koerting gas engine and producer. Ice machines. Built by De La Vergne Mch. Co., Ft. E. 138th St., N. Y. C.

Inquiry No. 8418.—Wanted, addresses of schools of automobile engineers in cities in the vicinity of Fort Wayne, Ind.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machine work and special size washers. Quadriga Manufacturing Company, 18 South Canal St., Chicago.

Inquiry No. 8419.—Wanted manufacturers of pyroline.

Inquiry No. 8420.—Wanted odorless excavator for handling night soils and sewage.

Inquiry No. 8421.—Wanted, a machine for printing metal signs with paint.

Inquiry No. 8422.—Wanted, cardboard disks, or disk-making machinery.

Inquiry No. 8423.—Wanted, machinery for making starch from potatoes; also for the production of alcohol from potatoes.

Notes and 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.

(10177) P. H. K. writes: Is ice formed from sea water salt or fresh? A claims that it is salt. B claims that it is impossible to have salted ice, as in the process of freezing the salt is eliminated. Who is right, A or B? A. When aqueous solutions freeze, the solids in solution tend to separate from the water, and the ice thus formed is pure or nearly so. It would not be easy to form a block of uniformly salted ice. This is sometimes expressed by saying that water freezes itself pure, which is not a very correct manner of stating what takes place. The water freezes molecule by molecule, and the solid in solution is separated from its solvent, the unfrozen portion of the solution becoming finally a saturated solution. B has the better of the argument.

(10178) H. L. S. says: Will you please inform me how to connect up an electric bath-tub? A. If the tub is of metal, connect one of the electrodes to the metal, while the other is held in the hand. If of porcelain, connect one electrode to a metal plate and place in the water.

(10179 M. M. asks: 1. If lightning strikes in a body of water where a man is swimming, will he feel it if it strikes within a hundred yards of him? A. We do not know any reason why a person should be affected by lightning striking the water in which he is swimming. The earth is at zero potential and is of infinite capacity, from which it follows that no amount of electricity can raise the electrification of the earth so that a man could be shocked by it when he is immersed in it. The case is the same as that of a man buried in the ground or in a cellar under the ground. No lightning stroke can harm him in either of these positions. Of course a man's head projecting above the water might be struck, but this is not the condition which you suppose. 2. Which will break first, a rope 5 feet long or a rope 100 feet long, if it has the same strength all over the rope and the same strength pulling it? A. If two ropes, one 5 feet long and the other 100 feet long, are pulled equally, the ropes being supported at the ends only, the longer rope will break first, since its weight is greater than that of the shorter rope, and is added to the pull upon it. If the ropes were lying on the ground or other support, we do not think the difference in length would make any difference in breaking strength, although we are aware that many hold the opposite opinion.

(10180) J. W. H. asks: Is there any difference in the strength of a magnet with a ¼-inch core and one with a ⅛-inch core if both are wound with the same amount of wire? Would it make any difference to the strength of a magnet having a ¼-inch core to have the core thinned down to ⅛ inch at the bending point? The reason for doing this is to make it easier to bend after the magnet is bound. A. The ease with which lines of magnetic force can pass through the core of an electromagnet is proportional to the sectional area of the core. For this reason a core ¼ inch in diameter will transmit four times as many lines as a core ⅛ inch in diameter, if all other conditions were the same. We should not advise the winding of an electromagnet and bending the core after the winding. It is much better to wind the coils on spools which will slide over the iron core and put them in place after the core has been bent into its final shape.

(10181) N. R. R. asks: Will you please let me know whether natural ice is colder than manufactured ice or not? The latter is made at a temperature of 20 degrees above zero, and natural ice undergoes a temperature sometimes many degrees colder. Does it retain this greater cold? A. All ice, natural or artificial, in any place below the freezing point will have the temperature of that place; in any place above the freezing point it will have the temperature of the freezing point. Ice does not retain its temperature below the freezing point. It cannot be heated above the freezing point, under ordinary circumstances. Like any other solid, ice is cooled in the winter to the temperature of the air, be it zero or below, and becomes warmer as the temperature rises till its melting point is reached. Then it cannot be made hotter. It changes its condition to the liquid form.

NEW BOOKS, ETC.

SYMMETRICAL MASONRY ARCHES. By Malverd A. Howe, M.Am.Soc.C.E. New York: John Wiley & Sons, 1906. 8vo.; pp. 170. Price, $2.50.

The author presents in simple form, with due consideration for the theoretical aspects of the question, the methods to be employed in the designing of masonry arches according to the *elastic theory*. As masonry arches are constructed of materials and under conditions which are more or less uncertain in character, it has been found that rigid and comprehensive formulas are hardly necessary, and consequently those presented in this book are approximate, but nevertheless of sufficient accuracy for the purpose. Many examples are given with each step of the solution in detail. Thus they are easily comprehended by the student or the engineer who has not the requisite time to review the theory of arches thoroughly.

DESIGNS FOR SMALL DYNAMOS AND MOTORS. By Cecil P. Poole. New York: McGraw Publishing Company, 1906. 8vo.; pp. 186. Price, $2.

The text of this book comprises a number of articles which have previously appeared in the American Electrician, and part of which is included in Electrical Designs, by the same author. While Mr. Poole has avoided theoretical calculations and reasonings, as far as possible, a certain amount of practical knowledge of the subject will be necessary for the reader to utilize the text to the best advantage; but the descriptions will be intelligible to any person who is somewhat familiar with the construction of such machines as the book covers. Each chapter comprises one design and gives the actual details of design in the form of working directions, avoiding the underlying principles and the reasons for the various steps. This is a rather unfortunate feature of the book, and greatly decreases its educational value. The working drawings are good, and will be clear to anyone familiar with ordinary shop practice.

COMPLETE EXAMINATION QUESTIONS AND ANSWERS FOR MARINE AND STATIONARY ENGINEERS. By Calvin F. Swingle, M.E. Chicago: Frederick J. Drake & Co., 1906. 32mo.; pp. 367. Price, $1.50.

The past few decades have witnessed such tremendous development in the science of steam engineering that our present day sees the creation of power plants of marvelous complexity and detail as compared with the steam machinery of less than half a century ago. In view of the remarkable improvements in steam machinery which have been made, it is of the utmost importance for the engineer to keep in constant touch with its advances. The author of the present book has endeavored to place before his readers information in a catechetical form to cover the various details appertaining to the operation of modern steam plants both stationary and marine. The questions are practical, and can be understood without extensive scientific knowledge. The answers have been so designed as thoroughly to cover the questions, and in many cases are supplemented with excellent illustrations.

HANDBOOK OF MATHEMATICS. By J. Claudel. Translated and Edited by Otis Allen Kenyon. New York: McGraw Publishing Company. 8vo.; pp. 708. Price, $3.50.

The reader will find this a useful compendium of the so-called "practical" subdivisions of mathematics, including the entire range of the subject between simple arithmetic and differential and integral calculus. The work is well written and well translated, and is an able and successful effort to provide a compendium of the various branches of the subject, each of which is usually treated in a special monograph rather than as a chapter of a larger volume. While individual users may find many omissions, it will be understood that the demands placed on such a work must necessarily be so varied that many of these omissions are hardly avoidable. It is unfortunate that no index is provided, as well as a list of tables.

FIVE-FIGURE LOGARITHMS OF NUMBERS AND ANGULAR FUNCTIONS FOR THE USE OF THE ENGINEER, CONSTRUCTOR, AND STUDENT. By Henry Harrison Suplee. Philadelphia: J. B. Lippincott Company, 1906. 32mo.; pp. 91. Price, $2.

MOTORI A GAZ. By Vittorio Galzavara. Milan: Ulrico Hoepli, 1906. 32mo.; pp. 423 + 64.

STAMPAGGIO A CALDO E BOLLONERIA. By Ing. Gino Scanferla. Milan: Ulrico Hoepli, 1906. 32mo.; pp. 165 + 64.

CARBONI FOSSILI INGLESI. COKE-AGGLOMERATI. By Dr. Guglielmo Gherardi. Milan: Ulrico Hoepli, 1906. 32mo.; pp. 586 + 64.

PLANTS AND THEIR WAYS IN SOUTH AFRICA. By Bertha Stoneman. New York: Longmans, Green & Co., 1906. 16mo.; pp. 283. Price, $1.10.

SUR L'UNITÉ DES FORCES ET DE LA MATIÈRE. By Doct. Prof. Pierre Palladino. Turin: J. U. Cassone, 1906. 16mo.; pp. 143.