RECENTLY PATENTED INVENTIONS.

Electrical Devices.

ELECTRICAL TEMPERATURE-ALARM.—J. P. Bolton, Fresno, Cal. Frosts cause incalculable damage to orchards and vineyards and as an adjunct ,to various methods of frost-fighting Mr. Bolton has devised a novel alarm in the nature of an attachment to the ordinary dial-thermometer which is designed to be set up in an orchard or vineyard and wired into a sleeping-apartment or any desired point and then connected to a bell to be rung whenever the temperature falls to the danger point.

ELECTRIC MUSICAL INSTRUMENT.—E. A. Petching, Lymansville, R. I. In using this invention, the operator grasps a sprinkler and apparently waters the various flower-pots. but really brings contact member into engagement with various contacts. thereby completing circuit through the bell and circuit through electric lights on approaching a flower-pot. Though having the appearance of a gardener watering flowers he causes each of the pot-bells to sound at will, and simultaneously three electric lights glow, illuminating flowers and attracting attention of the audience to the pot the sound proceeds from. Any tune desired can thus be played by the operator.

Of Interest to Farmers.

THRESHING-MACHINE.—M. Davis, Ames, Oklahoma Ter. This machine is simple in construction and has great capacity. The concave and cylinder usually employed are entirely dispensed with. Through the medium of the drums and a separator a quick and thorough separation of the chaff and straw from the grain is obtained and the grain conveyed from the machine expeditiously and without waste and the straw and chaff are automatically delivered from the machine through the stacker-tube, which has such movement that a stack of waste can be readily made.

PLOW.—C. F. Bates, Wellington, Kan. The invention is an improvement in listers or double-moldboard plows, which are particularly adapted for cultivating between standing rows of plants. The share has its sides at an angle to each other and at the front it is vertically slotted to adjustably receive a separate point, and the latter has an adjustable cutter at its under side which projects forwardly. The side edges of the share have reversible and extensible cutters.

BINDER ATTACHMENT.—H. J. Schwarze, Verona, Mo. In this patent the invention relates to an improved manner of mounting the check-springs of grain-binders, which are commonly arranged to bear on the binder-deck to retard the grain during the formation and binding of the gavel. The springs may be readily adjusted by the operator without leaving the harvester's seat. This enables the production of a properly-bound bundle irrespective of the condition of the grain, and it is well known that as the condition of the grain varies the check-springs must be adjusted accordingly.

SICKLE AND CUTTER-BAR FOR HARVESTERS.—J. D. Teeters, W. J. Teeters, and Willis J. Teeters, Newton, Neb. One purpose of the invention is to so mount the chain of sickle-knives upon the cutter-bar as not to interfere with raising and lowering the bar as desired, and so that the forward and rear stretches of the chain of sickle-knives are maintained in approximately straight lines and in approximate parallelism, so that the forward stretch of the chain cannot move backward or upward or downward, insuring the knives during the cutting operation being positively held up to their work.

HARVESTER.—G. D. Luce, New Orleans, La. In this instance the invention relates to improvements in sugar-cane harvesters, an object being to provide a motor-operated machine of novel construction that may be employed for cutting cane for planting or windrowing purposes and that may be arranged for topping, stripping, and loading the cane when the cane is to be sent to the mill.

HAY-LOADING MACHINE.—S. Smith, Weede, Mont. The objects of this invention are to provide a machine thoroughly effective and reliable in operation, easily controlled in the field, possessing the capacity for long and repeated service, to overcome numerous disadvantages encountered in the use of like machines and for the ready propulsion of the apparatus over the field or surface from which the hay is to be gathered. The machine comprises elevator devices of special construction and operation, and is preferably propelled by means of a wagon or similar vehicle into which the hay is to he loaded.

Of General Interest.

SNAP-HOOK.—S. Smith. Weede, Mont. This hook comprises an ordinary shank and bill, and co-operating with the end of the hill is a movable yoke which is normally maintained in closed relation with the bill, thus preventing disengagement of the hook from any device to which it may be attached for fastening. A thumb-plate or lever is employed for operating the yoke to enable the application and release of the hook, the lever securely holding a part of the yoke in contact with the end of the bill. It is not liable to become clogged up in use.

CHEESE-GAGE.—W. H. Frank, Burkesville, Ky. This improved apparatus is adapted for use in slicing and selling cheese in different quantities and at different values and will greatly economize the time and labor of the grocer. It is not a necessity that cheese should be made up in elongated blocks rectangular in form, since the ordinary circular cheese may be cut up into sections or blocks of such form and proportions as will adapt them to be sliced by aid of this gage.

CLOTHES-LINE PIN.—J. W. Finch, Anguilla, Miss. In this patent the invention has reference to clothes-line pins; and it consists in a specially-constructed clothes-pin of novel form whereby the clothes may be secured to the line more effectively than possible with similar fastenings as they have heretofore been constructed. One advantage is the provision of a handle adapted to be grasped, so that the rolling action imparted to the pin is facilitated.

HAIR-PIN.—G. H. Bigelow, Honolulu, Hawaii Ter. Mr. Bigelow's invention consists of a hair-pin comprising side members, the upper end of the pin being curved or bent to form a finger-hold whereby ready removal of the hair-pin may he effected. It consists of a pin comprising side members united at the top, one side member being provided with an inward crimp and the other with an inward bend above or overlapping the crimp in the opposite member.

UPRIGHT BOILER.—N. L. Warren, Macon, Ga. In this patent the object of the invention is the provision of a new and improved upright boiler arranged to permit convenient entrance of the operator for cleaning the interior of the boiler and to give ready access to the smoke-tubes to clean the same.

MIXTURE FOR TREATING TUBERCULOSIS.—R. Schneider, Berlin, Germany. The object in this case is to provide an improved mixture for the successful treatment of tuberculous and catarrhal complaints in human beings and animals. The mixture consists, essentially, of a powder containing ingredients of eucalyptus, sulfur, and carbon. A few weeks at least is necessary for treatment of tuberculous complaints.

LACING-EYELET.—A. Fonts, New York, N. Y. The inventor particularly contemplates in this instance the provision of an eyelet which may be applied to a shoe in substitution of the lacing-hook commonly in use, his eyelet being so constructed that the lace may be readily and easily tightened and loosened, while at the same time it will not be cut, marred, or worn, as is the case with laces secured by the lacing-hooks referred to.

COMB.—A. Fonts, New York, N. Y. One of the disadvantages incident particularly to ladies' hair-combs now in use is that owing to their peculiar formation when in position in the hair the comb is liable to become loosened. The inventor therefore has in view as an object in this invention the provision of a device designed to be secured to the comb. whereby the comb will be clasped or held firmly in the hair, obviating the possibility of the comb becoming loose and falling from the hair.

CURTAIN-POLE.—J. Kroder, New York, N. Y. In this patent the invention relates to curtain-rods, curtain-poles, and similar fixtures; and its object is to provide a new and improved means for removably fastening the balls, knobs, or like devices to the ends of the pole, at the same time reinforcing or strengthening the balls, knobs, or like devices.

COKE-OVEN.—J. S. Maxwell. Cumberland, Md. In this case the invention relates to improvements in coke-ovens; and the purpose of the inventor is to provide an oven having more grate capacity than the usual round or "beehive" ovens occupying practically the same space. A further purpose is to so construct the oven that repairs may be made at small expense, and the most important improvement in the oven is the straight arch, as by such arch repairs on the arch are saved.

PROCESS OF MAKING ACHROO-DEXTRIN.—G. Reynaud, 5 Rue Salneuve, Paris, France. In this invention the process for treating acid peats for the industrial manufacture of achroo-dextrin, consists in mixing the peat to be treated in three to five times its weight of water and heating this mass under a low pressure in a digester, to a temperature of 110 deg. to 150 deg. Centigrade during half an hour to an hour, according to the degree of acidity of the peat, for the purpose of converting the amylaceous matters of peat into achroo-dextrin. A process for treatment of peat was allowed Mr. Reynaud in a former patent.

EYEGLASS-GUARD.—W. H. Wilson, New York, N. Y. By means of this improvement the inventor provides a soft and durable guard and one which is much easier on the wearer than the cork and tortoise-shell guards now commonly employed, for the chamois-skin has the peculiar tendency to stick or adhere to the skin of the wearer, and owing to this the eyeglass equipped with the invention will be securely held in place by less pressure than ordinarily employed.

DEVICE FOR FASTENING, ADJUSTING, AND LOCKING WINDOW-SASHES.—A. H. W. Wedler, 141 Rundle Street, Adelaide, South Australia, Australia. Means are afforded in this case for fastening and locking sashes of windows when closed and also when adjusted with an opening at top or bottom or both top and bottom. An essential feature is the construction of the piston-head and combination therewith of the spring and cam whereby an automatic fastening action is attained. The main portion of the appliance is cast in brass or other approved metal. The piston head is constituted of hardened steel.

MATCH-BOX.—E. C. Carris, Washington, Iowa. The intention in this case is to provide novel details of construction for a device which adapt the box to mechanically elevate a single match from a number in the receptacle and retain it at a selected point in the box for removal, the mechanism being arrested by the elevated match and operating for the lifting of another match only when the one held is removed.

MAGAZINE FILM-HOLDER.—W. F. Folmer, New York, N. Y. The purpose in this improvement is to provide a holder for cameras constructed to hold cut films in predetermined quantities and a shutter for the holder which when opened exposes the front film and which when closed forces the exposed film and its carrier into a bag connected with the body of the holder, wherein a film and its carrier can be readily manipulated for location at the back of the mass of unexposed or previously-exposed films in the holder.

RETORT.—H. Hirsh, Eastman, Ga. Mr. Hirsh's invention relates to retorts, and more particularly to a form of retort suitable for the destructive distillation of coniferous wood—such, for instance, as southern pine, or so-called fat-pine. A feature of great importance is the turpentine vapor pipe. By its use turpentine is produced comparatively pure. Less volatile products—such as tar, resin, and acids—are not driven off during the time the pipe is in use and are therefore condensed by a general vapor-pipe only.

MOLD FOR CONCRETE WALLS.—P. H. Clingan, Florence, Col. In carrying out the present invention the inventor provides an improved mold which renders it possible to form the wyeths or partitions of alternate courses directly over each other, thereby forming continuous air flues or chambers. He provides an inner casing forming a portion of his molding apparatus. said casing being removable from one portion of a course of the wall to another, said casing being provided with mechanism for expanding and contracting the wall or body of the same. In conjunction with the inner casing he uses an outer, which molds the wall either plain or in imitation of other masonry.

FEED-BAG.—W. Cook, New York, N. Y. The invention refers to improvements in feed-bags for attachment to horses' heads while feeding. and the object is to provide a bag the contents of which are prevented from spilling while the horse is feeding and which has sanitary advantages that prevent disease and afford ventilation.

Hardware.

NUT-LOCK.—E. C. Blackburn, Aspen, Col. In this instance the improvement is particularly in nut-locks having pawl-plates and movably connected with the nut so they will rock into engagement with the abutment and lock the nut when the latter is turned home, the invention being especially designed, by reason of its cheapness and simplicity, for use on automobile-frames, locomotive-frames, structural iron-work, farming machinery, etc.

Heating and Lighting.

STEAM RANGE.—H. J. Bishop, Jersey City Heights, N. J. Mr. Bishop's invention relates to improvements in steam ranges especially designed for cooking and domestic purposes; and his object is to produce a simple and inexpensive structure wherein provision is made for heating by steam an oven-chamber and a plurality of cooking vessels, the supply to the several parts being controlled at will. A further object is to provide means for confining a removable vessel in steam-tight relation to a steam jacket which constitutes a permanent fixture of the structure, the vessel being so disposed as to permit access to be obtained easily to the contents without disturbing the relation of the vessel to the jacket.

OIL-BURNER.—O. Hauck, Newport News, Va. It is the object of this invention to provide an oil burner and heater for the use of brazers in soldering the surface of copper and other metal and also for burning off paint and other allied uses. The invention includes improvements in the construction of the body of the heater or burner and attachments thereof and also in the construction of the air and oil feed devices constituting the burner proper.

Hydraulics.

HYDRAULIC PRESS.—E. Crowe, Birchholm, Bushey Wood, Totley Rise, Sheffield, England. The object in Mr. Crowe's invention is to effect economy of time and power, and so increase the speed of working and the efficiency of the press. This is attained mainly by means whereby the idle descent of the press-head onto its work may be effected quickly and by gravity alone and whereby the power of the pumps is caused to come into action automatically immediately the tool carried by the press-head encounters the work.

Machines and Mechanical Devices.

ENVELOP-SEALING MACHINE.—C. J. Fancher, West Granby, Conn. The machine embodies a stack or hopper, across the bottom of which operates a slide which engages under the sealing-flap of envelop and draws the envelop out of the stack. The slide carries a moistening-brush operated upon the movement of slide to wipe over the previously-gummed flap, and said brush operating on the flap moves it against a spring-pressed backing plate, insuring proper engagement between flap and brush. Then continued movement of slide projects the envelop between one or more pairs of rolls, which press the flap into position on the envelop and finish the sealing.

VARIABLE-SPEED TRANSMISSION AND REGULATOR OR BRAKE.—C. Hibbard, W. Hibbard, and S. Hibbard, Sandyhill, New York. The object of the inventors is to provide a brake for use on automobiles and other machinery, and arranged to insure an easy transmission of the power of the motor to the shaft to be driven without shock or jar, to permit the operator to quickly reverse and use the device as a brake, and to enable him to vary the speed of the driven shaft independent of the speed of the motor, and to allow stopping the driven shaft without stopping the motor.

BALL-WINDING MACHINE.—P. Ryan, New York, N. Y. In this patent the invention has reference to a ball-winding machine; and the object that Mr. Ryan has in view is the provision of means by which a winding of yarn or equivalent material may be applied uniformly to a core to produce a spherical article, the latter being adapted for use as a base-ball.

PUPPET-VALVE AND SUPPORT THEREFOR.—B. Morgan, Rhinebeck, N. Y. The aim of this invention is to provide details of construction for a puppet-valve and also for the supporting-cage that carries the valve-seat which adapt the improved valve for very reliable service, reduce wear and necessary repair to a minimum, and afford a simple, practical device that is adapted for service either as a relief-valve or a feed-valve for steam, water, or gas used as a motive agent for stationary or automobile motors.

BULL-WHEEL FOR REVOLVING DERRICKS.—A. Lambert, Newark, N. J. One object of this invention is the provision of a construction of a wheel wherein a number of channeled-iron members are assembled and united in a manner to secure maximum strength and rigidity. Another is to provide an arrangement of braces for solidly holding the several members in proper relation, and, furthermore, to provide means for rigidly fastening to the wheel the foot-piece required for stepping the mast and for the pivotal support of the boom.

BAND SAWING-MACHINE.—C. Seymour, Defiance, Ohio. The machine gives the proper tension to the saw-band to allow the latter to yield in case the cutting edge strikes a knot or the like in the work, thus preventing injury to the saw-band and other parts, the arrangement also permitting of placing the saw-band quickly in position on the wheels or removing it therefrom for sharpening the band or replacing it by another.

CLAMPING DEVICE.—C. Seymour. Defiance, Ohio. The object in this case is to provide a device for a rack-and-pinion movement arranged to allow the operator to conveniently turn the pinion to move the rack-bar to a desired position and to permit of locking the pinion, and consequently the rack-bar, against movement whenever the rack-bar has been removed to the desired position. This improvement is a division of the application for Letters Patent of the United States for a band-saw, formerly filed by Mr. Seymour.

CLEARER FOR RING-SPINNING FRAMES.—W. H. Gordon, Fall River, Mass. The present invention resides in peculiar hinging means adapting the clearing-board to be lifted for inspection and cleaning, which means shall not only support the clearer-board at turned-up position, but be adapted for attachment to any type of drawing-roll support now commonly used on ring-spinning frames. The invention relates to that class of devices which are designed to keep the top rolls on ring-spinning frames free from "fly" and dirt. The object is to provide means obviating removal or detachment of the board from the roll-stand or other means of support.

BUMPING-SCREEN.—H. L. King, Denver, Col. The present invention is in the nature of certain improvements upon the bumping-screens for assorting ores which was formerly patented by Mr. King. It consists in the construction and arrangement of the tappet mechanism for vibrating the screen-frame and in the combination of the same with the screen and its accessory parts. The mechanism for vibrating the screen in the former patent consisted of a wiper-cam.

CROSS-TIE HEWER AND VENEER-MILL.—B. H. Seymour, Ocala, Fla. In this patent the invention is an improvement in wood-working machines, and especially in machines of the nature of cross-tie hewers and veneer-mills, whereby the ties may be readily brought to the desired shape or veneers can be cut as may be desired. A great advantage is in the independent feed mechanism, which rapidly retracts as well as secures a rapid advance movement of the carriage when desired.

Pertaining to Vehicles.

HUB OR WHEEL MOUNT.—J. J. McNulty, Carmel, N. Y. The invention lies in

the provision of a tubular axle for the hub and in the peculiar combination with this axle of a tie rod or bolt which is passed through the tubular axle and through the fork or other part of the vehicle-frame on which the wheel is mounted. By this arrangement upon taking out the tie-rod the wheel may be readily removed from the fork without danger of displacing any of the bearing-balls or other parts of the structure, excepting of course, the tie-rod.

Railways and Their Accessories.

CAR-FENDER.—O. THIBAULT, Fall River, Mass. The intention in this instance is to provide a new and improved car-fender arranged to readily follow the curvature of the track to insure picking up of persons or other obstacles in the path of the car at all times without danger or unduly injuring the person or other obstacles.

COMBINED STOCK, COAL, AND COKE CAR.—G. E. SIMONTON, Vanwert, Ohio. The object of this invention is to provide a metallic structure which may be used to transport live stock in one direction over a railroad and thereafter converted into a car adapted to carry coal, coke, ballast, or other material when reshipping the car, thus making the car useful in transporting freight any direction and increasing the earning capacity of the car by obviating the return of the same in an empty condition.

RAIL-CLEANER.—P. C. HUNTER and W. C. BAMBER, New York, N. Y. In this patent the invention relates to improvements in devices for cleaning snow, ice, and the like from the "third" rails or other electricity-conducting rails in electric-railway systems, the object being to provide a device that shall be simple in construction and that may be readily applied to cars of existing types.

DEVICE FOR PLACING RAILWAY-TORPEDOES.—E. M. JONES, Enid, Oklahoma Ter. By means of this invention a person on a train may place one or a number of torpedoes successively on the rails without stopping the movement of the train. The device is hand-operated entirely, and being light and simple, it may be handled with facility by the trainmen.

NUT-LOCK.—A. M. WILSON, Cherokee, Iowa. Briefly stated, this invention relates to a nut-lock especially adapted for use at rail-joints and in analogous structures where two nuts are adjacent to each other and to devices of that class in which a connecting piece or shank extends between the two nuts, each end of the shank carrying a lock proper working with the respective nuts.

SAND-CLEANING APPARATUS.—W. S. VANZANT, Eldredge, N. J. In carrying out the present invention Mr. Vanzant contemplates the provision of an apparatus which will produce filter-sand of the proper grade, such sand being thoroughly tested and washed in its passage through the apparatus, and he has particularly in view so constructing the apparatus that sand may be taken from the sand-bank and passed to a car or bin without delay.

Prime Movers and Their Accessories.

GOVERNOR FOR MARINE ENGINES.—J. MATTHIESEN, 56 Wendelstadtstrasse, Darmstadt, Germany. The object in this invention is to provide a device for preventing racing when the propeller leaves the water or upon the breaking of the shaft or the like. It consists in the closing of the throttle-valve as soon as the engines, from one or other of the causes mentioned, exceed a predetermined maximum velocity. The valve is re-opened as soon as the engines have resumed their normal speed. The displacement of the valve is effected by means of a rod connected with the ship's engines.

SAFETY SPARK-SHIFTING DEVICE FOR EXPLOSIVE-ENGINES.—R. B. HAIN, Los Angeles, Cal. The invention comprises the combination, with the shaft of an explosive-engine and a shiftable electrical circuit-breaker and a sparking device connected with the latter, of a cover for the end of the shaft, a rocking journal for the cover having a radial arm, and a link pivotally connecting such journal-arm with the circuit-breaker, whereby upon raising the cover, the circuit-breaker is shifted correspondingly.

Designs.

DESIGN FOR A HANDLE FOR MIRRORS, BRUSHES, OR LIKE TOILET ARTICLES.—S. A. KELLER, New York, N. Y. This highly ornamental design for a handle, comprises a woman's head posed at the upper part of the handle, a handle narrowing then swelling then coming to a point at the lower end in graceful lines, the handle beautifully scrolled and flowered.

DESIGN FOR A BADGE.—J. S. MALLERY, Grants Pass, Ore. This ornamental design for a badge is neat and simple, and consists of a bird's web-foot and a well curved shield covering the heel or upper part of the foot, with a claw projecting slightly from one side of the shield.

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.

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

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Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

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

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If it is a paper tube we can supply it. Textile Tube Company, Fall River, Mass.

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In buying or selling patents money may be saved and time gained by writing Chas. A. Scott, 340 Cutler Building, Rochester, New York.

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The largest manufacturer in the world of merry-go-rounds, shooting galleries and hand organs. For prices and terms write to C. W. Parker, Abilene, Kan.

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

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We manufacture anything in metal. Patented articles, metal stamping, dies, screw mach. work, etc., Metal Novelty Works, 43 Canal Street, Chicago.

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Inquiry No. 5692.—For manufacturers of the Haunted Swing.

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Inquiry No. 5694.—Wanted, refined kerosene in cases and barrels of 62 gallons, for export.

Inquiry No. 5695.—For manufacturers of mechanical toys.

Inquiry No. 5696.—For firms desiring pattern work, in quantities, at cost. Derby's Pattern and Model Works, Perth Amboy, New Jersey.

Inquiry No. 5697.—For parties to manufacture several dental devices, including forceps.

Inquiry No. 5698.—For manufacturers of lawn clippers or mowers other than rotary or Beal mowers.

Inquiry No. 5699.—For the manufacturers of the "Crown Corking Machines."

Inquiry No. 5700.—For the manufacturers of the Lyman Boat, which is a round tub shape, made of rubber, with heavy rubber legs and feet, designed for sportsmen's use, and so constructed that one can sit in it and paddle around by means of his feet.

Inquiry No. 5701.—For manufacturers of wool-scouring machinery.

Inquiry No. 5702.—For manufacturers of a stamp and envelope moistener, made of sheet iron or tin.

Inquiry No. 5703.—For manufacturers of patented fodder forks on contract, made of cast steel.

Inquiry No. 5704.—For a machine that will rivet both ends of a bar at once, one inch apart.

Inquiry No. 5705.—For makers of furnaces for smelting lead, tin and Babbitt dross.

Inquiry No. 5706.—For a small canning outfit.

Inquiry No. 5707.—For machinery to manufacture handkerchiefs by weaving.

Inquiry No. 5708.—For Machinery to cut, hem, etc., cotton or linen cloth into handkerchiefs.

Inquiry No. 5709.—For apparatus to weave, cut and hem handkerchiefs when made from piece.

Inquiry No. 5710.—For the manufacturers of the International typewriter.

Inquiry No. 5711.—For makers of the vacuum disc or suction shoe for walking upside down on the ceiling.

Inquiry No. 5712.—For a toy balloon for experimenting.

Inquiry No. 5713.—For makers of board suitable for playing cards.

Inquiry No. 5714.—For machinery for making paper and straw board from straw.

Inquiry No. 5715.—For makers of machinery for making towels.

Inquiry No. 5716.—For machines for cutting tobacco leaves, green or dry.

Inquiry No. 5717.—For makers of a machine for breaking cocoanuts and removing the kernel.

Inquiry No. 5718.—For manufacturers of ice-making machinery for family use.

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.

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Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(9414) T. L. asks: Does the output of a dynamo armature depend upon the number of turns of wire about the core or upon the amount of wire traversing space between the core and pole-piece? Is the purpose of the iron in armature merely to attract across it the lines of force through which the wire moves? Is it true that in ring armatures the wire on the inside is of no use except to conduct the current generated upon the outside? If so, why? Could the wire be arranged between armature core and the pole-piece in coils so that all the wire will generate current and so that the current induced in one turn of wire would counteract that of the next? A. The output of a dynamo depends upon all the elements of its design, and not simply upon the two which you name. The number of lines of force cut per second determines the volts; the size of the wire determines the amperes. The iron of the armature core is to furnish a path of low magnetic resistance for the lines of force from one pole piece to the other. The wire in the inside of a ring armature is of no use except as a conductor. The turns cut the lines of force in the opposite directions to those on the outside and cannot assist these in producing an electromotive force. A drum armature has all its wire active and of service in generating electricity.

(9415) M. P. C. says: Please answer the following questions: 1. In regard to the gas blowpipe described in "Experimental Science," what should be the diameter and length of the outside tube? What is the size of the hole in the end of the large tube? What is the inside diameter of the small or inside tube? Is it necessary to have the end of this tube contracted 0.05 of an inch? A. The length and diameter of the outside tube in the gas blowpipe is of little consequence. A half inch will be ample to admit the necessary gas. The hole in the end of the larger tube is a quarter inch, as is stated in the description in the book. The small tube may be ⅛ inch, with a tip whose opening is 0.05, as given. You should have a tip, since you cannot get a tube fine enough without a tip, and if you could it would soon clog with dust. 2. Can all the flames required for amateur glass blowing be produced with this blowpipe? A. The flame of this blowpipe is adapted to small jobs of glass blowing, as is stated in the book. We are not able to add anything to Mr. Hopkins's work. 3. Can acetylene gas be used in this blowpipe, and will the generator described in "Experimental Science" produce the gas fast enough? A. Acetylene can be used in place of street gas if you wish, and the generator described in "Experimental Science" will furnish gas enough for the purpose.

(9416) E. P. W. writes: I wish to ascertain the proper place to put an air-chamber in connection with an elevator, to prevent a ram which is caused by a sudden close of the elevator valve. How large should the chamber be according to the supply? Elevator men say the horizontal check valve is the cause of the ram. Is it? I make this inquiry as I am a water-meter man and we have a great deal of trouble with our meters on elevators on account of the ram. A. We apprehend that your troubles from water ram arise from a deficient supply of air in the air chamber. It is well known that water under great pressure absorbs the air in an air chamber, and besides a chamber full of air with no pressure will be compressed to less than 1-9 of the capacity of the chamber, so that your 8-inch pipe under 130 pounds pressure will have less than 7 inches of its length filled with air, which is not enough to take up the water ram. We advise to tap a small pipe into the air chamber at the bottom and connect a high-pressure air pump to fill the chamber with air at the water pressure. This will give enough elasticity to prevent water ram. The location is correct and no other change is needed.

(9417) J. W. L. says: In looking over a copy of "First Lessons in Physical Science" I found the following (on heat): "The difference in the sensation of warmth and vision produced by the ether waves does not depend upon any difference in the waves, but upon the difference of the bodies upon which the waves fall." Is this the correct theory of the relation of heat to light? A. A small portion only of the waves which come to the earth from the sun are able to affect the optic nerve and produce light. A much larger portion of the waves are too long to produce light in man and many of these will be felt as heat, if they strike a portion of our bodies which is provided with nerves for perceiving the sensation which we call warmth. There is no difference between these waves other than that of wave length. The term radiation is employed to denote the sending out of waves through the ether of space in this manner. The statement you quote is in agreement with the best modern statements on this point.

(9418) J. S. F. asks: Will you please tell me if there is a cheap and practical way of testing electric lamps, to tell whether they are up to the standard claimed for them? A. The proper mode of testing electric lamps is by the use of a voltmeter and ammeter or by a wattmeter. You can then determine whether the proper amount of current is consumed by the lamp. There is no simple method of measuring candle power which you can use, since the lamps do not give the same candle power in different directions. The rated candle power is a mean or average of all the light sent out in all directions. If the bulb has become dark with age on the inside, it should be replaced by a new lamp.

(9419) W. R. writes: Would you kindly inform me through your paper how I may be able to obtain the gray color on a leveling instrument? A. The steel-gray finish on brass instruments is obtained by refinishing. First clean off the old lacquer with alcohol, repolish all the surfaces to an even luster or dead finish and make every part clean from grease or finger marks. Then immerse in a solution of one ounce of arsenic chloride to one pint of water or in proportion for larger quantities, until the desired color is obtained. Wash in clear warm water, dry in sawdust, warm and relacquer with a thin and pale solution of bleached shellac in methyl alcohol. Use a broad camel's-hair brush.

NEW BOOKS, ETC.

DIE VERWERTUNG DES SPIRITUS FUER TECHNISCHE ZWECKE. Von Prof. Dr. N. Wender. Mit 88 Abbildungen. Vienna and Leipsic: A. Hartleben. Large 8vo. Price, $1.50.

Low-grade alcohol is destined to become of great industrial value as an engine fuel. Up to the present time, there has been no work in German in which the technical utilization of alcohol has been discussed with anything like the thoroughness technologists demand. The present book seems well calculated to supply this want. After treating of the method of utilizing alcohol in various countries, the author describes methods of producing alcohol, alcohol illumination, alcohol cooking and heating apparatus, alcohol motors and automobiles. In a brief chapter the author reviews the utilization of alcohol in chemical industry.

A TREATISE ON THE PRINCIPLES AND PRACTICE OF DOCK ENGINEERING. By Bryson Cunningham, B.E. London: Charles Griffin & Co., Ltd. Philadelphia: J. B. Lippincott Company, 1904. 8vo.; pp. 559; 34 folding plates and 468 illustrations in the text. Price, $9.

From a practical point of view, this is a work that can hardly be too highly commended. It has also a certain historical value that should increase with years. No one can fail to appreciate the high importance of the subject in its relation to commerce, and hence in its relation to municipal and national prosperity. We have not space to review the volume in the manner it deserves, but, to give some idea of the contents, we may say that the practical side of dock engineering is dealt with under the following headings: Dock Design; Constructive Appliances; Materials; Dock and Quay Walls; Entrances, Passages, and Locks; Jetties, Wharfs, and Piers; Dock Gates and Caissons; Transit Sheds and Warehouses; Dock Bridges; Graving and Repairing Docks; and Working Equipment of Docks. The diagrams and illustrations are admirable; plans of many of the principal docks of the world are given, and a design for a model dock system is offered. The book should be in the working library of all who are interested in any phase of harbor improvement, or in the machinery and appliances used in such improvement.

A STUDENT'S MANUAL OF A SERIES OF QUANTITATIVE EXPERIMENTS. By Dayton Clarence Miller, D.Sc. Boston: Ginn & Co., 1903. 8vo.; pp. 404. Price, $2.

This textbook of physics is based upon the course given to the sophomore class in the Case School of Applied Science. The selection of the problems and their treatment is the result of twelve years' teaching experience, and the grade of work is that of the course in general physics which is taught in colleges and technical schools. The several important exercises are here printed for the first time in a laboratory manual; and among others that are given a more efficient treatment than is usual in such