RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

GRASS CLIPPING DEVICE.—John Mc Callum, Chippewa Falls, Wis. This grass cutting device comprises cutting and operating mechanisms, a guiding handle formed in two parts screw-threaded on each other, each part having one of the mechanisms attached thereto, and an arm mounted upon one part having a locking pin thereon. The adjacent end of the other part is provided with a series of holes arranged on a spiral corresponding to the thread of the connection and adapted to receive the locking pin. The device can be worked by one or both hands of the operator and can be easily moved in any direction, so as to clip grass around trees or shrubbery.

COMBINED COTTON SEED PLANTER AND FERTILIZER DISTRIBUTER.—Walter G. Gray, Marrowbone, Tenn. The inventor has in this patent devised a machine which is designed to make a ridge, trench and top it, plant the cotton seed and supply the fertilizer, and which will then close the trench in the ridge, covering the seed, all of which operations take place almost at the same time or in quick succession. The machine is, furthermore, provided with plows enabling it to make a large or a small ridge, with either two or four furrows to the ridge. A novel seed-distributing device permits but a few seeds at a time being taken from the hopper and delivered to the drill or chute.

CORN HEADER.—William A. Wilson, Centropolis, Kan. This machine comprises a frame, a platform mounted to swing thereon, a lever fulcrumed on the axis of the platform and having its upper portion extended forwardly beyond the axis, a standard fixed to the platform and having a sliding connection with the upper end of the lever, a link pivoted to the lower end of the lever and extending forwardly, a hand-lever mounted on the frame and connected with the link, and a bell-crank lever also mounted on the frame and connected with the link, the bell-crank being within reach of the driver's foot.

Bicycle Improvements.

BICYCLE CANOPY.—Jacob J. Metzger, Cleveland, O. In this canopy a base section capable of being attached to the stem of a bicycle, supports a tubular standard in which a rod is adjustably held. A block is located at the upper end of the rod and is adjustably held thereto by a thumb screw. Two pivotally-connected members are mounted on the block and form a fork, the arms of which extend upward and outward in opposite directions. To the upper ends of the members the canopy is attached, which is, consequently, adjustably held in place. The canopy can also be used as a sail both in running with and reaching on the wind.

HANDLE BAR.—Thomas Vantuyl, Nichols, Ia. This handle-bar comprises a handle-bar stem formed with a head having internal notches, a fitting mounted to turn in the head and formed at its ends with bearings, handle arms engaging the bearings with their inner longitudinal ends, and a key held in the fitting and engaging notches in the handle arm ends and notches in the head. The arms are designed to permit independent adjustment either longitudinally or transversely.

Engineering.

GAS OR OIL ENGINE.—Frank S. Mead, Montreal, Canada. This engine consists of a power cylinder, a channel for the supply of compressed air, a channel for the supply of liquid fuel, a passage leading from both channels to the cylinder, and a piston actuated by the engine and so arranged as to control the admission of air and fuel to the cylinder. A spraying device is located adjacent to the working chamber, and to the spraying device the valved delivery port of an air compression pump is connected. The delivery tube is directly controlled by the movement of the pump-piston for injecting a spray of liquid fuel into the working chamber after the exhaust is closed.

DIFFERENTIAL PISTON VALVE.—Nicholas Power, New York City. The valve-body of this valve is provided with an inlet and outlet and a valve seat. A cylinder is secured to the valve body above the valve seat and has its lower open end in communication with the inlet of the body. A piston located in the cylinder is provided with a loosely sliding stem by which it is operated and with a stem projecting from its lower end. A valve is loosely mounted on the stem projecting from the lower end of the piston and is adapted to rest upon the valve seat. The area of the top of the valve being greater than that of the piston, the valve is held to its seat. When raised from its seat, the pressure of the fluid on the lower end of the piston will cause it to slide upward to open the valve entirely and hold it open.

Electrical Appliances.

ELECTRICAL STEERING APPARATUS.—Harry O. F. Bindemann, Madrid, Spain. Connected with a rudder, oppositely rotating motors and clutches for operatively connecting the rudder with either of the motors, are an axle or pivot controlled by the operator, a switch arm capable of a limited rotary movement relatively to the pivot and having an inclined surface, a pin projecting from the pivot and engaging the inclined surface, a spring for keeping the pin against the inclined surface, contact devices arranged to be engaged by the switch-arm and electrically connected to the clutches, and means for holding the rudder stationary after it has reached the desired position.

ALARM.—Ira B. Frazee, Blairstown, Ia. This invention relates to an improvement adapted particularly for detecting the fraudulent entrance of persons into buildings. The device consists of a casing containing the alarm apparatus and its battery, which apparatus is in connection with the terminals of an electric circuit. By the delicate adjustment of a weight an arm upon which the armature of an electro-magnet is carried is so arranged that it shall drop upon a contact post, causing the alarm bell to ring, should the electric circuit which runs through the places to be protected, be broken. By an ingenious device, the bell is made to ring incessantly until, by manual force, a crank shaft is turned, which, acting upon various devices, causes the alarm bell circuit to be broken, thus stopping the alarm.

Mechanical Devices.

CENTERING MACHINE.—Jacob H. Brewer, New Straitsville, O. This centering machine comprises a series of revoluble spindles adapted to carry a squaring tool, a drill and a reamer arranged in the same plane, a carriage mounted to slide toward and from the tools, a cross-slide movable on the carriages at right angles to the movement thereof, a holding device on the cross-slide, for holding the work in the same plane as the tools, means for moving the carriage forward and backward to carry the work to and from the tools, and means for adjusting the cross-slide, to carry the work successively in alignment with the tools, and for locking the slide to the carriage after it has been adjusted. The machine is especially designed for conveniently and accurately centering the stock to be turned in a lathe or like machine.

DIE STOCK.—William H. Sweitzer, Danville, Ill. Connected to a die-stock having radial handle bars and radial recesses for dies in opposite faces of the stock are a number of thread-cutting diesengaging the recesses of the stock, a central die occupying the recesses on one side and the other dies being disposed about the center and in the recesses on the other side of the stock, each die comprising a fixed section and a movable section, and a set screw bolt for adjusting each movable die section, the bolts each having a threaded engagement with the die stock.

RAILWAY SWITCH. — William Harris, Belleridge, Pa., and Wilbur J. Harris, Mount Pleasant, O. This invention makes use of a deflecting rail and fixed switch points in connection with mechanism mounted upon the car and under manual control; the switch points may be made to engage the deflecting rail to shift the car sideways. The mechanism upon the car comprises an eccentric sleeve journaled on the axle, a deflecting wheel journaled on the eccentric sleeve, a gear on the sleeve concentric with the axle, a rock bar held in engagement with the gear, a pinion fixed to the axle, a frame having top and bottom racks engagable with the pinion and connected with the rack bar, and suitable levers and springs by which the frame may be depressed or raised to engage either rack with the pinion, and thus to cause its horizontal movement in either direction, and by reason of the connection with the rack bar to turn the eccentric sleeve in either direction. The frame is also constructed with locking recesses receiving the pinion to limit the horizontal movement of the frame and to hold it in either extreme position.

BENDING MACHINE. — Charles Seymour, Defiance, O. In this bending apparatus a form is supported on a frame and two bending arms are mounted below the form. A master strap extends from one arm to the other, means being also provided for swinging the arms. A rope is run beneath the arms and rolls over pulleys carried by the frame. Springs serve to draw the rope taut beneath the arms, the rope forming a yielding support for the inner ends of the arms, and serving to thrust the arm toward the form, thus causing the timber to be bent which is contained between the arms.

AUTOMATIC VEHICLE BRAKE.—Joseph Samuel Elliott, Eddy, Tex. Connected with brake-beam rods and levers arranged in the rear of the brake-beam and in the same plane therewith, are a yoke having a central hook to which a spring is attached, a threaded pull-rod passing through a threaded bore in the yoke, and a hand mechanism comprising a lever arranged parallel to the brake levers, the rod and the hand lever. The brake apparatus is connected with a link suspended from the front axle. Through a device consisting of an elongated link having an upward curve at its middle the pull rod passes and has a cross-pin arranged in the rear of the curved portion of the device. To the front end of this device the lift lever and rod are attached. The brakes are applied by the team when holding back, such result being obtained through the flexible connection between the neck yoke and levers operating the brake beam.

Miscellaneous Contrivances.

COFFEE ROASTER.—William R. Ramsey, Keno, Ore. This coffee roaster comprises a rectangular receptacle, one end of which is provided with a bearing and the opposite end of which is provided with a downwardly, horizontally and thence upwardly extending slot, the upwardly extending portion of which forms a bearing aligned with the bearing in the first named end of the receptacle. A cylinder is located within the receptacle, one head of the cylinder having an opening therein, and a hingedly mounted plate is capable of swinging over the opening to close it. A shaft is passed through the cylinder, is mounted in the previously mentioned bearings, and is connected and disconnected with the receptacle by means of a slot in one head thereof A handle is attached to the shaft, whereby the shaft may be revolved.

DRY VACUUM COOKER.—Herrmann A. Wolff, New Haven, Conn. The object of this invention is to provide an improved cooking apparatus in which the materials will be cooked dry, i. e., in their own juices, without water. The apparatus comprises a casing provided with a surrounding water space, having a packing at its bottom and a cover casing open at one end and closed at the other, the closed end being provided with a valve and with packing, the packing at the closed end of the casing being arranged for engagement with the upper portion of the inner wall of the water space, the sides of the cover casing being arranged to extend within the water space to form a double water jacket and its open end to engage with the packing in the space. The cover casing is provided with a locking device, and vessels adapted to receive the articles to be cooked are located within the body casing beneath the closed portion of the cover casing. Locking devices are provided for the covers of the vessels.

JAR.—Julian P. Lyon, Detroit, Mich. This invention is an improvement in that class of jars in which the cap is securely held by atmospheric pressure and without the use of a fastening device, the invention being of such construction that the cap may be readily displaced without injuring the gasket and without chipping the material of the jar. The gases, moreover, may be automatically and effectively exhausted during the process of preserving the contents of the jar.

COMBINED CHAIR AND BEDSTEAD.—Joseph Dixon, London, England. This combined folding chair and bedstead comprises a legged seat frame, a leg rest slidable thereon, and provided with separate legs, a back frame pivoted on the seat frame and adapted to form a bed extension therefor in an opposite direction to the slidable leg rest, a brace pivoted on the back frame, extension legs pivoted on the brace and adapted to engage the back frame and means for locking the brace in place on the back frame. The chair can be conveniently folded for storage and is designed for use as a reclining chair, sitting chair or bedstead.

END GATE FASTENING. — John S. Court, Memphis, Tenn. This invention provides a fastening for end gates, which fastening has an eyebolt or eyebolts run through the sides of the wagon body just rearward of the end gate and held by a vertically extending rod which passes through eyes in the bolts and which also engages sockets formed one on each wear plate for the eyebolts, by which sockets the rod is held steadily.

ASH SIFTER.—James H. and Edmund W. Countiss, Camden, N. J. A casing having an opening in its bottom and an opening in its side, and a screen diagonally placed in the casing, extending from its closed to its open side, is provided with a dumping platform located beneath the screening surface, a pivoted chute located above the screening surface, a door connected with the chute and a rod connecting the platform with the chute. The chute is of such length as to extend from side to side of the casing and the connection between the chute and platform such that when the chute is closed the platform will be opened to discharge its load.

SCREW.—Philip W. Cassil, Garner, Ia. —This invention relates to screws having their plain or unthreaded portions bent or curved to adapt them to serve as hooks, and it has for its object the provision of a screw which can be conveniently screwed straight into an object by an ordinary screw driver. The invention consists in providing the head of the screw with a slot, the bottom of which is at an angle to the face of the head and perpendicular to the longitudinal axis of the body of the screw.

CAR COUPLING.—James M. Brown and Leo D. Peak, Exeter, Ill. This car coupling comprises a chambered draw-head, an elongated coupling link having a laterally hooked outer end, and a twist at the side rearward of the hook, the link being pivoted near its rear end at the rear of the draw-head chamber, a limb pivoted at the side of the coupling link and spring-pressed thereon opposite from the hook, and means to rock the link laterally against the pressure of the limb.

STEELYARD. — Charles H. Bartlett, Bristol, England. With the short arm of this steelyard are connected two sets of knife-edge centers at different distances from the center of suspension, and a single hanger provided with two sets of bearings adapted to rest on either set of centers indifferently, and having a shifting connection with the load suspension device whereby the load may be caused to bear through the hanger entirely upon the one or other set of centers. An adjustable weight carriage is adapted to engage with the notched lower edge of the steelyard, and is provided with notched indices referring to two scales on the same face of the steelyard. The steelyard is self-adjustable for light and heavy loads alike, and the weight is prevented from running down the tail of the steelyard when the latter assumes an inclined position. The denominations of standard weights may be read off from scales on the same side of the tail.

TRUSS PAD.—Smith Tucker, Medina, N. Y. The truss pad for which this patent was granted is formed of rigid material and constructed so that the pad will more effectively control the rupture, the pad being provided with ribs engaging the skin and serving to draw together the loose folds thereof.

APPARATUS FOR EXTRACTING PRECIOUS METALS.—Joseph R. Hebaus, Butte, Mont. This contrivance comprises an amalgamated copper lining forming a cathode and a number of agitators each rotating on its own axis and at the same time traveling around the tank, the agitators forming an anode. Means are provided for connecting the agitators and cathode to a source of electricity. The object of the invention is the extraction of the nobler metals from their sulfid ores and of baser metals from their oxids.

WINDMILL.—Seth K. Humphrey, Boston, Mass. The inventor of this windmill mounts his vanes upon a rotating frame and connects them by means of crank arms attached to the vane shafts with an eccentric which is rotated about the main shaft in such a manner that the vanes will be rotated upon their shafts at one-half the speed of the rotation about the main shaft. There are also means whereby the angular position of the eccentric may be changed so as to throw the vanes out of operation, thus stopping the mill.

PIPE HANGER. — Theodor B. Sauer, Oberreifenberg, Germany. This invention comprises a clamp or shackle for holding tubes, and the invention is in general characterized by two clamping sections adapted to embrace the tube and having means for holding them together and a spike or shank rigidly attached to one section and designed to be driven into a support by which the shackle or clamp is held.

LOCK.—Robert H. Hearn, Dyer, Tenn. This lock has a locking bolt composed of a straight middle portion with a pivot hole at each end and offsetting curved locking ends at opposite ends and on opposite sides of its straight portion, each being described about the pivot hole of the opposite end and having bevel faces upon opposite sides, a lifting bar pivoted at one end to the case and having its other end resting beneath the upper end of the main bolt, a knob shaft and sleeve with tappets arranged beneath and acting upon the lift bar, and a supplemental key-bolt with tumbler arranged to be projected against the inner side of the end of the main bolt to lock it. The bolt can be operated by the knob shaft or be locked by a key so that it cannot be operated by the knob shaft.

MEDICINE DROPPER.—James B. Schermerhorn, Malden, N. Y. To the glass tube of this medicine dropper a rubber nipple is secured. A protective casing fits on the tube and has a recess on its upper face receiving the lower edge of the nipple and the adjacent edge of the tube, the side wall of the recess being undercut whereby to receive an adhesive substance. A stopper is fitted on the tube below the protective casing, to which it is secured, the stopper being of a diameter less than the casing, whereby the latter will project over the upper edge of the bottle in whose neck the stopper is inserted. By this means the dropper is protected against breakage and loss.

PHOTOGRAPHIC PLATE HOLDER.—Jacob Schaub, Salt Lake City, Utah. The object of this invention is to provide an improved photographic plate holder which will allow insertion and removal of plates with greater ease and celerity than heretofore, and by which the plates shall be more securely held in place, so that they shall be in no danger of being dislodged by jolting in traveling or otherwise. For this purpose the inventor provides the frame of the plate-holder with a hinged section which is arranged at the end opposite the slide entrance. When the slide is fully inserted it engages and locks the movable section, which, slightly overlapping the sensitive plate, holds it securely in place.

Designs.

BOX LID COVER.—Joseph L. Conway, Sioux City, Iowa. The leading feature of this design comprises a body portion, members projecting from the body at one end about right angles to one side face, and additional members at the opposite end ranging in a direction diagonal to a side edge of the body.

BOTTLE.—Constantine Wagner, New York City. In this design, the chief feature is a two-bored single neck rising from the apex of the tapering top of the bottle body, a portion of the neck appearing as depending from the top within the body, the exterior surface of the neck presenting an unbroken continuity in a transverse direction.

BRAKE SHOE. — Oliver B. Whitney, Marlborough, N. Y. The essential portion of this design consists in an approximately wedge-shaped shoe block having a straight base and a segmental base terminating in a wedge-shaped point, and formed with a depression having a narrow strip or tongue at one side of the shoe block, the strip terminating at or near the beginning of the wedge-shaped point.

SUSPENDER BUCKLE. — Aaron Coleman, New York City. This design consists of a front plate having the configuration of a miniature horseshoe with a conventionalized frog extending from the toe to the heels, a loop plate appearing with a serrated upper edge at the rear of the horseshoe-shaped front plate.

TIP FOR UMBRELLA OR PARASOL RIBS. —Charles H. Peddrick, Jr., New York City. The leading feature of this design consists of a bead arranged on a tip between the base and apex ends thereof.

PUZZLE BOX.—Hiram C. Clarke, West Winfield, N. Y. This design relates to puzzle boxes in which a labyrinth is provided, through the mazes of which marbles may be caused to travel, and the design consists in the novel configuration of the base and walls forming the labyrinth.

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

NEW BOOKS, ETC.

LUBRICANTS, OILS AND GREASES. Treated Theoretically and Giving Practical Information Regarding their Composition, Uses and Manufacture. A Practical Guide for Manufacturers, Engineers and Users in General of Lubricants. By Lloyd I. Redwood. New York: Spon & Chamberlain. 1898. Pp. 54. Price $1.50.

The subject of lubrication is of constant interest, and while we already have some literature upon the subject, there is nothing which occupies exactly the same ground as the present work. The author has attempted to give engineers an insight into the properties of the various lubricants that are likely to be offered them and thus enable them to guard against the choice of one that would be likely to prove unsatisfactory for the purpose for which it is intended.

ANNALS OF THE ASTRONOMICAL OBSERVATORY OF HARVARD COLLEGE. Edward C. Pickering, Director. Vol. XLII., Part I. Observations Made at the Blue Hill Meteorological Observatory, Massachusetts, 1896, under the direction of A. Lawrence Rotch, A.M. Cambridge: John Wilson & Son. 1897.

This large pamphlet treats of the scientific aspect of kite flying for obtaining meteorological observations It is illustrated by diagrams and is accompanied with a series of tables.

ALTERNATE CURRENTS IN PRACTICE. Translated from the French of Loppé and Bouquet by Francis J. Moffett. New York: The Macmillan Company. Pp. 376. Price $5.

The especial value of this work lies in the fact that its authors have endeavored to derive their information impartially from English, French, German and American sources. In this way they have endeavored to systematically traverse the entire field and treat in a practical manner the whole range of alternating currents of electricity.

MODERN AMERICAN DWELLINGS. With Constructive Details. By Numerous Architects. Practical Designs for Builders and Those Intending to Build. Illustrated by means of 33 half-tone engravings and 127 full-page plates of details. New York: David Williams Company. 1897. Price $2.

The selection of designs of residences in this volume is intended for the practical builder, who is frequently called upon to act as his own architect in the erection of dwelling houses. The designs range in cost from $2,000 to $5,000, and there is also a large number of details of the interior and exterior construction, a feature which the practical builder will recognize at once as of inestimable value in the building of houses. The designs represent work already executed and illustrate the efforts of architects scattered over a territory which includes practically the entire country. The half-tone engravings are well reproduced, but the elevations, while useful, are not particularly handsome. The floor plans are on a rather small scale. The details are specially to be commended.

MODERN SWITCHBOARDS. By Alfred B. Herrick. Philadelphia: The Cutter Electrical and Manufacturing Company. Pp. 200. Price $3.

While this handsome quarto volume, full of illustrations, is published primarily to set forth the business and describe the appliances manufactured by the Cutter Company, it is a book which cannot fail to be extremely valuable to the electrical engineer or to any one engaged in electrical work, as the abundant engravings represent a multitude of minute details not often found in a single volume. The book also has an interesting historical resume of early practices and expedients, indicating the advances recently made in electrical apparatus, and valuable data on approved methods of construction.

GREENHOUSE MANAGEMENT. By Prof. L. R. Taft, of the Michigan Agricultural College. New York: Orange Judd Company. Pp. 382. Price $1.50.

A manual brimful of valuable condensed and well arranged information on the forcing of flowers, fruits and vegetables in greenhouses is here presented to the public, the book also covering the propagation and care of house plants. To the florist especially, who pursues the business as a commercial enterprise, and to the growers of early vegetables and choice fruits, the work should be of great value, as not only are new and improved methods continually being brought into use, but the plants grown change from year to year, and this work of Prof. Taft is up to date in elucidating the most recent methods. The same author has also published a standard work on greenhouse construction.

HYDRAULIC AND PLACER MINING. By Eugene B. Wilson. New York: John Wiley & Sons. Pp. 234. Price $2.

The times are especially propitious, since the development of interest in the Klondike region, for publications on placer mining, which so many thousands of inexperienced men are now entering into in our Alaskan territory. The book before us is well adapted to set before the miner in a very practical way the leading features of the work, including methods of panning, cradling, booming, sluicing and the construction of riffles, flumes, ditches, valves, gates, weirs, etc.

THE CENTURY ATLAS OF THE WORLD. Prepared under the superintendence of Benjamin E. Smith, A.M., managing editor of the Century Dictionary, editor of the Century Cyclopedia of Names, etc. With 117 double page mapsin color, 138 inset maps, 45 historical and astronomical maps, and indexes (382-x pp.) of places, rivers, mountains, etc. Published by subscription. New York: The Century Company. Cloth. Price $12.50.

The Century Atlas contains some of the finest specimens of map making we have ever seen. It is an entirely new atlas of the world, uniform in size with the Century Dictionary, which is known everywhere the English language is spoken or written. It is without doubt the most comprehensive and up-to-date atlas of the whole world, as it contains the latest details as to political changes, such as the new boundary of Greece resulting from the late war and the limits of Greater New York. The atlas has 117 double page maps, 138 inset maps and 45 historical and astronomical maps. They are printed in from five to ten different colors. The most recent government surveys of all parts of the world, the latest lake, sea and harbor soundings, the most recent explorations and the latest measurements of mountain peaks are given. The various railway, steamship and cable lines are all shown, and they are, of course, brought down to date. Important battlefields are plainly marked and the dates affixed. The historical maps illustrate the most important epochs of sacred as well as ancient and modern history. Standard time divisions are shown throughout in the United States and Europe; the special tourist map of Europe shows the chief routes of travel. As an example of what the older atlases lack and which the present atlas contains are the routes of celebrated explorers, including those followed by Nansen in his recent expedition to the Arctic regions and by Glave and Donaldson Smith in their recent African explorations. The index shows about 200,000 entries, and the foreign words used in connection with place names are translated, adding greatly to the utility of the atlas. The present time is particularly suited for the production of an entirely new series of maps, and the Century Company have done wisely in beginning at the bottom and making each map afresh from the newest and best material. The latest geographical surveys of civilized countries have been incorporated, and in those regions of the world for which no official surveys have been made, the most authoritative sources of information have been used. Space forbids us to enumerate all of the distinctive features which tend to make this atlas so valuable. The maps are clear and handsomely executed and bristle with details, to some of which we have referred.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works. Chicago. Catalogue free.

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

Gasoline Brazing Forge, Turner Brass Works, Chicago

Yankee Notions. Waterbury Button Co., Waterb'y, Ct.

Bicycle Electric Light Co., Cleveland, O., want agents.

Handle & Spoke Mchy. Ober Lathe Co., Chagrin Falls, O.

Schwaab Stamp & Seal Co., Milwaukee. Send for cat'g.

FERRACUTE Machine Co., Bridgeton, N. J. Full line of Presses, Dies and other Sheet Metal Machinery.

Improved Bicycle Machinery of every description. The Garvin Machine Co., Spring and Varick Sts., N. Y.

Gasoline Engines and Launches. Free catalogue. Monitor Vapor Engine and P. Co. Grand Rapids, Mich.

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

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

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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(7436) C. L. P. writes: I have a square dining extension table which has become somewhat marred by use, that is it has lost its polish. Can you tell me what I can do to give it the fine polish a new table has? A. Formulas for furniture polishes are given in our SUPPLEMENT, Nos. 1067, 1099 and 1145, price 10 cents each by mail.

(7437) H. B. D. writes: I have had great difficulty with X ray tubes becoming punctured by the passage of the current through the glass. What is the cause of this? A. To be punctured is the natural death of an X ray tube. When it will occur no man can tell, whether in infancy or in old age. The static machine seems to use up tubes faster than the induction coil. The spark jumps through the glass because under existing conditions that is the path of least resistance. Sometimes punctures seem to be preceded by a creeping out of an electric discharge upon the tube; at others there is a flash, a stroke and a hole. It is difficult to account for them. Two valuable works may be mentioned. "The Induction Coil in Practical Work," Lewis Wright, price $1.25 by mail, and "The Roentgen Rays in Medical Work," David Walsh, price $2.25 by mail.

(7438) P. L. G. asks: Will you kindly inform me, through the Notes and Queries of the SCIENTIFIC AMERICAN, the way to ascertain the distance from a receiver to the place that a submarine cable is severed? A. The general method of localizing a fault is to measure the resistance of the cable. This will be the resistance from the end on shore to the break, since the earth has no resistance. The resistance of the whole divided by the resistance per mile gives the number of miles to the place where the break occurred.

(7439) J. E. W. asks: How are electric lights tested for candle power? What apparatus is required, etc.? A. The best way to rate electric lights is by the power they use in watts. The National Electric Light Association has defined a 2,000 candle power lamp as one consuming 450 watts. This is 10 amperes at 45 volts. Incandescent 15 candle power lamps use from 50 to 55 watts. If the candle power is to be measured, the light of the lamp is compared directly with that of a standard. The legal candle is one consuming 120 grains an hour, made to have 6 to the pound. The method of comparison is to adjust the two lights till they illuminate a surface equally. Then the light of each is represented by the square of its distance from the surface. Thus, if the standard candle were 1 foot and the light to be tested 4 feet from this surface, the lights are as 1^2 to 4^2, or as 1 to 16. The light to be tested is giving 16 candles. This is explained in Hopkins' "Experimental Science." Price $4.

(7440) R says: Please give a receipt for making cider, the cost to be about 16 cents per gallon. A. Mix well 10 gallons cold water, 7½ pounds brown sugar, ¼ pound tartaric acid, add the juice expressed from 2 or 3 pounds dried sour apples, boiled.

(7441) G. says: Kindly let me know how much a knot is. I would like to know whether it is a mile or a little over. A. A "knot" is a nautical mile and is equal to $\left(\frac{6080.27}{5280}\right)$ 1.15156 statute miles.

TO INVENTORS.

An experience of fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

MAY 17, 1898,

AND EACH BEARING THAT DATE.

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

Acid, making pyrocatechin sulphonic, P. P. Monnet	604,066
Air brake controller, J. C. Wands	604,244
Annunciator and spring jack, combined, G. W. Sutton	604,340
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