RECENTLY PATENTED INVENTIONS.

Mechanical.

NAIL PULLING HAMMER ATTACHMENT.—William A. and Frank S. Norton, Port Richmond, N. Y. A simple device for pulling long nails without bending them is provided by these inventors, as a readily applicable attachment to ordinary hammers, the device being easily removed from the hammer when it would interfere with other uses. It has an archshaped body, whose ends engage the outer side of the claw and heel portion of the hammer head, and is secured upon the hammer by arms at each side, the attachment giving greatly increased leverage for the purpose designed, as compared with the ordinary hammer.

GLASS REFLECTOR BLOWING MACHINE.—Lawrence H. Dolan, Alexandria, Ind. For blowing the glass reflectors used on oil and electric lamps and with gas jets, this inventor has devised a machine having a two-part mould adapted to shape accurately the reflector as it is blown, there being convenient means of continually moving the mould to prevent the glass from blurring, and also for raising and lowering the plunger which forms the lower part of the mould. The construction is designed to facilitate the much more rapid making of reflectors than has heretofore been possible.

EMBROIDERING MACHINE.-Alois Boehi, Newark, N. J. For elaborately embroidering the corners of handkerchiefs at low cost, this inventor provides a tambour frame having a series of individual holders in connection with a reciprocating needle carriage with a set of two needles arranged to move in the space between each two holders, the sets of needles being at distances apart corresponding to the distance between individual workholders. Double the number of stitches are thus produced than in the pattern, and a unitary design more elaborate than the pattern.

Agricultural.

FERTILIZER DISTRIBUTER.—Robert E. Carlton, Bethany, Ky. This is a hand-operated distributer in which two sections, each having a powder receptacle, are pivoted to each other, one receptacle containing the fertilizer and the other a white insoluble powder to mark the place where the fertilizer is deposited, the latter being deposited in the ground and the marking powder on the surface.

Miscellaneous.

BICYCLE HABIT.—Emma Dryfoos, New York City. This habit has a skirt-like body, divided at the back, while leg-forming portions have their front and rear lengths secured at their outer edges to the skirt body, the latter forming part of the leg portions. The habit is designed to have the exact appearance of a skirt and yet afford the wearer all the freedom of movement obtained with bloomers. It is also designed that a skirt of the ordinary type may be readily changed to the improved style, and a skirt-raising device is provided by which the skirt may be held at different heights when the habit is used as a riding habit or a walking habit.

BICYCLE SKIRT.—Thomas H. Royce, Brooklyn, N. Y. This is a garment designed to have all the advantages of a completely divided skirt or bloomers, while yet presenting the appearance of an ordinary or whole skirt. It is formed of two pieces of cloth, one of which is a duplicate of the other, and each division has at its inner rear side buttons and a strap, whereby the skirt may be held in more contracted form when the wearer is on a wheel, but will be returned to normal position when the wearer dismounts.

CONDENSER.—Arthur H. Squier, Scranton, Pa. This is an apparatus for removing moisture from gas, and comprises two sinuous pipes, one within the other, a vessel having a chamber in each of its ends, independent tubes connecting the chambers, and one of the sinuous pipes communicating with one of the chambers while the other pipe communicates with the interior of the vessel between the end chambers. The inner pipe is connected with a gas supply and the other with a vessel for supplying it with a cooling medium.

FLOOD GATE.—Augustus C. Willis, Herald, Ill. This is a gate designed to be hung at its center, and with paddles having sharpened projections to assist driftwood in passing the gate. The gate has a sliding and pivotal movement in its supporting frame, and is adapted to be acted upon by the current, automatically regulating itself to the rise and fall of the water, means being also provided for holding the gate closed against the passage of stock at low water.

STRAP HOLDER FOR VEHICLES.—James M. Diffendafer, Churubusco, Ind. This invention relates to holdback straps to prevent vehicles running on the horses when stopping, the straps being usually secured to the tongues of the vehicle. On the under side of the tongue is a plate guide with serrated edges on which slides a strap holder of wire or metal with central looped portion adapted to receive the holdback strap, the strap holder being adjustable on the guide according to the size of the horse.

BALLOON.—Estanislao Caballero de los Olivos, New York City. This invention provides improved means for directing the course of balloons, a rudder being mounted to turn about an axis which intersects the vertical axis passing through the center of gravity of the balloon. The rudder is secured to a ring held to run on rollers journaled on hangers forming a circular runway, the hangers depending from a stationary ring concentric with the axis of the balloon.

SASH HOLDER.—Joseph J. Kelley, Great Falls, Montana. This device comprises a spring plate adapted for attachment at one of its ends, the other end having an adjusting arm by which the plate may be locked in a given position, while a roller journaled in the plate engages with the runway of the sash. The device is simple and inexpensive, and readily attached to a window sash, when it may be adjusted to engage the runway with the force requisite to hold the sash in desired position.

PICTURE CABINET.—Otto Messerschmitt, Milwaukee, Wis. This device comprises a cylindrical case with central vertical shaft, and within the case is a series of picture holding blocks adapted to swing around a common center, there being a lever connected with the central shaft to separately move the blocks. The invention provides a neat and artistic picture holder, for the separate display of successive pictures to be seen through an opening closed by a door.

FOOT BRUSH.—John Mellor, Aspen, Col. This is a brush designed for use as an ordinary foot wiper, and comprises a recessed base in which is mounted a brush having flat steel bristles and a rubber scraper, forming an effective means of quickly cleaning boots or shoes of mud, snow, dust, etc. It does not become easily clogged and has the combined action of a wiper and scraper.

DOOR CHECK.—Thomas Barnes, Rawlins, Wyoming. This device comprises a body portion removably attachable to the free edge of a door, and carrying oppositely movable floor engaging devices, there being rubber facings on the parts to prevent injury to the door or floor, and to secure a good hold of the check on the door and floor when in use. The device may be readily removed from the door and hung up near by for use when desired.

LINK BUTTON.—Edward B. Aiguier, Newark, N. J. This device consists of two buttons and a pivotal connecting link, the pivots being arranged obliquely to one another to hold the buttons in a like position, or diagonally across the adjacent ends of the cuff.

FISH HOOKS.—Elliott H. Crane, Niles, Mich. Two patents have been granted this inventor for bait-holding hooks, in one of which a spring pin is formed integrally with the hook shank, preventing the bait from becoming detached, while the other patent provides for two integral hooks, a large impaling hook and a small bait-holding hook, the normal action of the small bait fish being but slightly obstructed, so that it will live a long time.

DRIP CUP FOR BOTTLES.—James M. Howard, Newberne, N. C. This is a shallow cup with upwardly curved spring fingers adapted to clasp the sides of the bottle at the bottom, and hold the cup thereon in position to receive any drip which may run down when pouring out the contents of the bottle.

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

NEW BOOKS AND PUBLICATIONS.

POOR'S DIRECTORY OF RAILWAY OFFICIALS. 1895. New York: H. V. & H. W. Poor. Pp. 700. Price $3.

This is the tenth annual issue of a volume which has become invaluable to all who have business to transact with the several railroads of the country, either in the way of selling supplies, negotiations as to traffic, the introduction of new and patented improvements, or the financing of new or old lines. It contains complete and catalogued lists of the officials of all steam, electric, cable and horse railways, and a comprehensive buyers' guide to the principal manufacturers and dealers in railway appliances and all other articles used by railway companies. It also has tables of dividends paid by traction and industrial corporations, and shows the times and places of annual meetings. Its information as to street railroads includes statistics of mileage, equipment, gage, weight and kind of rail, capitalization, etc., of all electric, cable, and horse roads, throwing important light on the many changes now going on in this class of enterprises. The total length of street railway lines is now, it appears, 13,176 miles, of which 409 miles are operated by steam dummies, 10,233 miles by electric power, 574 miles by cable, and 1,950 miles by animal traction. The equipment of these roads comprises 30,857 passenger cars, 12,568 motor cars, 2,607 dummies, and 45,353 horses.

ETIDORHPA; OR, THE END OF EARTH. By John Uri Lloyd. Cincinnati: Published by the author. Pp. xiii, 376. Price $4.

This is a richly printed, handsomely illustrated volume, quite unique in its character. It belongs neither to science nor romance, and yet has enough suggestions of both to show that its author has dreamed of rather than labored with many problems of large interest, and prefers to treat in decidedly eccentric rather than the usual conventional style. Perhaps the main idea of the book is a warning against intemperance and inebriety.

CATALOGUE OF THE METROPOLITAN ELECTRIC COMPANY. Illustrated catalogue No. 3 of electric light, telephone, telegraph, fire alarm and house goods supplies, September, 1895. Chicago, Ill.: Metropolitan Electric Company, 186, 188 Fifth Avenue. Quarto. Pp. 755. Profusely illustrated.

This catalogue contains many hundreds of illustrations of electrical equipments and supplies of all kinds, and is a fine example of the modern trade catalogue. It contains a number of interesting rules and tables.

ALUMINUM. Its History, Occurrence, Properties, Metallurgy and Applications, including its Alloys. By Joseph W. Richards. Third edition, revised and enlarged. Philadelphia: Henry Carey Baird. 1896. 8vo. Pp. 666. 46 engravings. Price $6.

Ten years ago, aluminum was an almost unknown metal. It then sold for $12 a pound, now it is bought for 50 cents. Then the yearly production was less than is the present daily output. At that time the literature on the subject was very limited. The classic works of Tissier, Uhlenhuth, and Deville had only appeared. There are now eight works devoted to the subject and two journals, the Aluminum World, New York, and L'Aluminium, published in Paris. The lowering of the price of aluminum and the increased production has brought to pass the dream of Deville, for it is now truly become a metal of everyday life. The work of Professor Richards, of Lehigh University, first appeared in 1887, and was the first treatise on the metal in the English language, and for that matter is still so to-day. Various improvements in metallurgical processes made it necessary to revise the work to date, and several chapters have been largely rewritten. The sections devoted to the occurrence of aluminum and the physical and chemical properties are of particular value. That part devoted to metallurgical processes is very complete. On the whole the work is monumental, and is worthy of the splendid industry which it represents.

AGRICULTURAL CALENDAR FOR 1896. Reference book for farmers. By F. W. Woll, New York: John Wiley & Sons. 1896. 18mo. Pp. 305. Price $1.

DAIRY CALENDAR FOR 1896. A reference book for dairymen, butter and cheese makers. By F. W. Woll. New York: John Wiley & Sons. 1896. 18mo. Pp. 319. Price $1.

These volumes are now published for the second time. They consist of a calendar and diary for the year, pages for memoranda and cash accounts and a large amount of information of great value to the agriculturist and dairy man, including out-of-the-way information of the utmost importance to those engaged in these pursuits, such as a list of the agricultural experimental stations in the United States and Canada; lists of trade papers, etc. The works are of handy size and can be easily carried in the pocket.

DIE ELEKTRICITAT. Eine kurze und verständliche Darstellung der Grundgesetze sowie der Anwendungen der Elektricität zur Kraftübertragung, Beleuchtung, Elektrometallurgie, Galvanoplastik, Telegraphie telephonie und im Signalwesen. Fünfte Auflage. Vienna: A. Hartleben. 1896. 12mo. Pp. 160. 162 illustrations. Dr. Alfred Ritter von Urbanitzky. Price 50 cents.

DER SCHUSS. Erklärung aller den Schusserfolg beeinflussenden Umstände und Zufälligkeiten. Auf Grund eigener Erfahrungen und mit Berücksichtigung der neuesten Fortschritte und Erfindungen. By Friedrich Brandeis. Vienna: A. Hartleben. 1895. 12mo. Pp. 280. 44 illustrations. Price $1.

Business and Personal.

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

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
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.

(6691) H. R. S. writes: Will you please give a rule for calculating the diameter and height of brick stacks for boilers, that is, the diameter and height for so much grate surface or whichever the best way to put it? A. There is an old rule of thumb for chimneys, assigning one square foot of grate per horse power of the boiler, and from one-tenth to one-eighth the area of the grate for the area of the chimney, varying the height to make up for required draught. A more definite system of computing chimney power is in use by engineers, by which the quantity of coal to be consumed on the grate per hour and per square foot, with an allowance for the friction of the gases in the chimney, form the basis of the formulas for size and height of a chimney. A formula based on a consumption of 5 pounds of coal per square foot of grate per hour is much used, in which the horse power required and an assumed height of chimney are factors. Then

$$\frac{\text{Horse power}}{3{\cdot}33\times\sqrt{\text{height}}}=\text{effective area},$$

which must be increased by its square root ×·8 for the actual area to allow for friction. In this way valuable tables of sizes and heights of chimneys for any horse power and for both brick and iron chimneys of round and square form have been made. See Kent's "Mechanical Engineer's Pocket Book," for valuable information and tables relative to chimneys, $5 by mail.

(6692) C. H. L. asks: Can you give me any information as to what causes a chimney to creosote, or what is a sure preventive? I have a chimney 40 feet long, 20 inches by 20 inches, but about two years ago I ran a wood furnace, and it is so bad now that I have got to stop my furnace. They told me to put a hood on the top of the chimney, and I did so, but I think it made it worse, if possible. I have tried all ways that I have heard of, and my last hope is that you will be able to tell me what it is and what causes it and what to do. I need it very much to run my fire to heat my house. The chimney is in a good locality and has a good draught. It soaks through the roof and drops down in my attic. I have been told that a chimney lined with tile would not creosote. Will it? If not, why? A. Some chimneys condense the creosote and smoke from wood fires. If your chimney is so situated as to be safe when burned out, it can be fired by building a sharp fire at the bottom. Otherwise it should be swept with a splint brush lowered from the top. The tile chimney is probably heated to a degree sufficient to drive off the creosote.

(6693) W. S. P. writes: 1. A week or two ago you spoke of there being no practical way to store up wind energy, suggesting that water might be pumped into a storage tank and a motor run from that. Why couldn't a weight be lifted by the wind and this weight be used to run a light machine like a dental engine or small polishing lathe, same as a tower clock is run by weights? A. The storage of wind power by pumping water into reservoirs, by lifting a large weight or by compressing air is practicable only on a small scale. The storage of electrical power is also feasible and in practice in a few places by wind power operating a small generator to charge a storage battery from which motors may be driven. This is probably the more economical method. 2. Which is the better for a hot water heating system, to leave the water in during the summer or draw it off? A. The water should be left in a hot water heating apparatus during the entire season when not in use.

(6694) J. C. writes: I have a fine bell weighing about two thousand pounds, which is cracked. I have been told by filing or sawing out the crack, the bell will have its original tone or nearly so. A. The tone of the bell can be restored on a lower pitch by drill-