

## ENGINEERING INVENTION.

A steam separator has been patented by Mr. Alexander Davidson, of Chicago, Ill. It consists of a steam pipe or section with spiral ribs on its inner side to give a whirling motion to the steam passed through, thus casting down heavy impurities where they will pass into a collector chamber, from which a pipe leads to the boiler, discharging under the water line.

## MISCELLANEOUS INVENTIONS.

An ear battery for the deaf has been patented by Mary E. Moore, of New York City. It has a copper wire coiled around a zinc tube, and connected thereto by a wire shaped to enter the ear, in combination with a diaphragm held at the outer end of the device.

A hay rack has been patented by Mr. Calvin E. Hagerman, of Alenworth, Neb. It is of light weight, adapted to be carried on a wagon, whereby hay or straw may be carried from the field to the stack or market, or loaded and unloaded in windy weather with comparatively little waste.

A sash fastener has been patented by Mr. Harry I. Williams, of Decatur, Texas. It consists in the combination of a ratchet bar attached to the sash, a grooved or hollow bar attached to the window frame and bearing a spring pawl engaging with the ratchet bar, and a wedge-shaped stop with supporting chain.

An electric vapor bath has been patented by Messrs. Robert F. Jackson and William R. Pope, of Baltimore, Md. This invention provides simple means by which the electric current from either a Faradic coil or from a galvanic battery, or both, can be applied to the human system for the treatment of disease, the current being easily regulated.

A land roller and clod crusher has been patented by Mr. Friedrich Twick, of Sheboygan, Wis. This invention covers a novel construction and combination of parts in a machine adapted for rolling, crushing, and pulverizing land, to prepare it for receiving crops, being an improvement on a former patented invention of the same inventor.

A lamp extinguishing apparatus has been patented by Messrs. Joseph Miller and Frank R. Page, of Olean, N. Y. It is a simple device capable of attachment to any lamp, and especially adapted for railroad car lamps, for automatically extinguishing the lamp in case of a collision or accident upsetting the car.

A fire extinguisher for car heaters has been patented by Mr. George F. Seaver, of Dover, N. H. A perforated plate is held in the top of the heater to which lead-inclined pipes having balls containing a fire-extinguishing compound, an accident to the car causing these balls to be broken on the perforated plate, thus extinguishing the fire.

A car heater has been patented by Mr. James Wardle, of Hope, British Columbia, Canada. It consists of a stove made of an inner and outer cylinder of steel or iron, strengthened by outer attached metal bands, with a space between the cylinders for the circulation of air, and so constructed that its overturning will not allow the escape of the fuel.

A removable corset fastening has been patented by Selma A. Schoefer, of Brooklyn, N. Y. It has pockets at the meeting edges, arranged to receive the steels or clasps, there being lacing cords by which the edges of the flaps forming the pockets are united, so that the steels can be easily removed when the garment is to be washed.

A buckle has been patented by Mr. Tobias A. Lee, of Sidney, Ohio. It has a tongue support and tongue, combined with a pivoted loop movable down over the tongue and a spring for actuating the loop, avoiding the use of a pin tongue and the inconvenience experienced in inserting it through perforations in the strap to be secured.

A harness back pad has been patented by Mr. Limbrick W. Vandenberg, of Americus, Kansas. It has a metal frame entirely inclosed or covered upon the outer surface with leather, with pads upon the under surface, the metal frame being composed of three sections, a central curved section and two side sections hinged to the end of the central curved section.

A method of binding books forms the subject of a patent issued to Messrs. John J. Meston and Nate S. Dygert, of Portland, Oregon. It is especially applicable to shipping receipt books as used by draymen, expressmen, etc., strips bent to form longitudinal sockets being used in connection with a handle, whereby the books may be more conveniently handled and carried without mutilation.

A clasp has been patented by Annie Lewis, of Galveston, Texas. It has front and rear plates hinged together on a spindle on which is coiled a spring for pressing the plates from each other, the plates having toothed jaws, and a strap being secured to one of them for suspending the clasp, which is simple and durable in construction and effectively retains the clasped parts.

A washing machine has been patented by Mr. William L. G. Appleby, of Germantown, Md. The invention relates to machines having two presser boards, one supported on brackets on the inside of the box and the other suspended by links and oscillated with a sweeping motion by a crank shaft, one board adjusting itself by a spring connection to avoid tearing or injuring the clothes.

A combined step ladder and ironing board has been patented by W. J. Allen, of Arkansas City, and Belle West, of Winfield, Kansas. The ironing board has a clamp at one end and a step ladder hinged to its opposite end, a bosom board being hinged to the ironing board above the ladder to be folded over

upon either, the bosom and sleeve board being folded over upon the ironing board when the device is to be used as a step ladder.

An embroidering machine attachment has been patented by Messrs. Edward Aldom and Henry E. Schmitz, of Brooklyn, N. Y. It is an improvement on a former patented invention of the same inventors for simultaneously working duplicate strips of chenille, etc., by throwing each strip alternately to opposite sides of the line of stitch, the two embroidering stripes crossing each other and forming a series of more or less open loops.

A machine for cutting, sanding, and rolling roofing felt has been patented by Mr. Benjamin C. Waite, of Brooklyn, N. Y. It has a mechanism with a suspended sand hopper, by which the amount of sand discharged can be regulated, and provides for the knife being operated with a quick downward movement and a slow upward movement, while a peculiarly constructed mandrel is arranged so that the felt will be wound automatically, and the felt roll can be readily removed from the machine.

A galvanic battery forms the subject of two patents issued to Mr. Horatio J. Brewer, of New York City. A new and useful improvement in porous cup batteries is provided by these inventions, the construction being such that the electrodes are securely seated in place and the gases forming in the porous cup can readily escape, so as to prevent the adhesion of insulating bubbles on the negative electrode, and its polarization, thereby rendering the battery very effective at all times.

## SCIENTIFIC AMERICAN BUILDING EDITION.

APRIL NUMBER.—(No. 30.)

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1. Elegant plate, in colors, showing perspective elevation of a residence of moderate cost, with floor plans, sheet of details, etc.
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3. Perspective view and floor plans of a house costing four thousand five hundred dollars.
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14. View of Country residence of Mr. Kurtz—F. Gebhardt, architect, Ellwangen.
15. Page of engravings showing temporary trestle for supporting the cracked ceiling of the Assembly Chamber, Capitol Building, Albany, N. Y.
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17. Full page perspective view of the Caldwell Hotel, at Birmingham, Ala., Edouard Sidel, architect.
18. Page of drawings representing some of the exhibits of the late display of the Architectural League, of New York. A Spanish Grille. A French Farm House. A row of New Houses, New York. J. H. Duncan, architect.
19. Miscellaneous contents: Trees for Marsh and Mountains.—Rats and Matches.—Wood, Plaster, and Concrete.—Bulbous Plants for Apartments, three engravings.—Color in Greek Temples.—Fever from Sewer Gas.—New Use for Dynamite.—Wall Plates.—The Underpinning of the Great Yarmouth Town Hall.—A Relic of Old London.—Use of Sawdust and Shavings.—Dry and Damp Rot.—The Rose Acacia for Walls.—Moss for Plants.—Wood's Patent Extension Plumb and Level, illustrated.—The Painting of Iron Roofs.—The Reed, Rocking Gate, illustrated.—The Dunning Hot Water Boiler, illustrated.

The Scientific American Architects and Builders Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages; equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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361 Broadway, New York.

## 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 next issue.

For the specific purpose for which they are designed, the batteries manufactured by the Partz Electric Battery Co., 1723 Chestnut Street, Philadelphia, Pa., are the best in the world. Catalogue now ready.

Steel name stamps, 15 cts. per letter. Steel figures, \$1 per set. F. A. Sackmann, 1099 First Ave., Cleveland, Ohio.

Wanted Manufactured—My trap, see illus., p. 223; or will sell entire right. J. T. Moxley, Owosso, Mich.

Wanted—Draughtsman on printing machinery. Permanent employment if satisfactory. Address Golding & Co., Boston, stating age, experience, and pay required.

Big money in making rubber stamps. Apparatus and instructions furnished. Ottawa Rubber Stamp Works, Ottawa, Ill.

Wanted—A trained man of wide, practical experience as a machinist who has ambition, ability, and strength sufficient for the instruction of apprentices three evenings each week. Address "Instructor," P. O. box 773, New York.

For Sale—Patents on safety pocket attachment and hydrocarbon motor. Miller, 76 Nassau St., New York.

Paint mills. Chas. Kaestner & Co., Chicago, Ill. Duplex Steam Pumps. Volker & Felthousen Co., Buffalo, N. Y.

\$35,000 to \$40,000 will buy controlling interest in manufacturing business paying 25 per cent. Cause of selling, poor health. Address J. F. Hammond, Omaha, Neb.

Brass, iron, and steel work of all kinds. Send sample or description of what you want, and we will name price. T. F. Welch & Co., 8 and 10 Medford St., Boston, Mass.

To Nut Manufacturers—For Sale: One Burdick hot pressed nut machine, of capacity 2 in. New, and offered at a remarkably low price. S. C. Forsaith Machine Co., Manchester, N. H.

For the latest improved diamond prospecting drills, address the M. C. Bullock Mfg. Co., 138 Jackson St., Chicago, Ill.

Burnham's turbine wheel is sold at net price to mill owners. Catalogue free. Address York, Pa.

The Diamond Prospecting Co., 22 W. Lake St., Chicago, Ill., general agents for the Sullivan diamond prospecting drills.

Foree Bain, 76 Market St., Chicago, designer and constructor. Electrical apparatus, fine and special machinery, etc.

Nickel Plating. Manufacturers of pure nickel anodes, pure nickel salts, polishing compositions, etc. \$100 "Little Wonder." A perfect Electro Plating Machine. Agents of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Perforated metals of all kinds for all purposes. The Robert Atchison Perforated Metal Co., Chicago, Ill.

Feed grinders. Chas. Kaestner & Co., Chicago, Ill.

The Railroad Gazette, handsomely illustrated, published weekly, at 73 Broadway, New York. Specimen copies free. Send for catalogue of railroad books.

"I want to thank you," writes a young man to B. F. Johnson & Co., Richmond, Va., "for placing me in a position by which I am enabled to make money faster than I ever did before." This is but a sample extract of the many hundreds of similar letters received by the above firm. See their advertisement in another column.

Machinery selected and purchased at no extra cost to buyer. Benjamin's Scientific Expert Office, 35 Wall St., New York.

The Knowles Steam Pump Works, 113 Federal St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

Link Belting and Wheels. Link Belt M. Co., Chicago.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works machinery, and containing reports of tests, on application.

Iron, Steel, and Copper Drop Forgings of every description. Billings & Spencer Co., Hartford, Conn.

Curtis Pressure Regulator and Steam Trap. See p. 77.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Drills, 1, 2, 3, and 4 spindle, driven by endless belt. Something new. Dwight Slate Machine Co., Hartford, Conn.

60,000 Emerson's 1887 Book of superior saws, with Supplement, sent free to all Sawyers and Lumbermen. Address Emerson, Smith & Co., Limited, Beaver Falls, Pa., U. S. A.

Friction Clutch Pulleys. D. Frisbie & Co., N. Y. city.

"How to Keep Boilers Clean." Send your address for free 88 page book. Jas. C. Hotchkiss, 120 Liberty St., N. Y.

Portable grinding mills. Chas. Kaestner & Co., Chicago, Ill.

Practical working drawings of machinery made by A. K. Mansfield & Co., 280 Broadway, N. Y. Correspondence invited.

The sole builders of "The Improved Greene Engine" are the Providence, R. I., Steam Engine Co.

No. 11 planer and matcher. All kinds of woodworking machinery. C. B. Rogers & Co., Norwich, Conn.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocum & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Engines and boilers. Chas. Kaestner & Co., Chicago, Ill.

Send for new and complete catalogue of Scientific Books for sale by Munn & Co., 361 Broadway, N. Y. Free on application.

## NEW BOOKS AND PUBLICATIONS.

A MANUAL OF STEAM BOILERS: THEIR DESIGN, CONSTRUCTION, AND OPERATION. By Professor R. H. Thurston. New York: John Wiley & Sons. Pp. 671. Price \$6.

The Director of Sibley College, Cornell University, has in this volume fitly supplemented his other works on the materials of engineering and construction, and on steam engines, with a plain and practical treatise on the steam boiler, which, although primarily designed for technical schools and colleges, covers a much wider field than is likely to be included in any course of technical study, and is well worth a place among the text books of all who have troublesome problems to solve in any department of steam engineering. The rules and formulae given for the determination of the efficiency of fuels, and measuring the realized values of combustion, under various conditions of steam making, superheating, condensation, pressure, and temperature, are generally such as can be applied by one having but a moderate proficiency in mathematics; and the mechanical details furnished, touching a wide variety of boilers, are so plainly set forth that one not an expert in the business can derive from this volume ample data upon which to decide as to the kind of boiler best adapted for any special service. The book is fully illustrated and has an excellent index.

ELECTRICAL INSTRUMENT MAKING FOR AMATEURS. By S. R. Bottone. London: Whittaker & Co. 1888. Pp. viii, 175. Price \$1.20.

In this work appears the substance of the well known series of articles from the *English Mechanic*. The matter of the book is extremely practical—his treatment of the subject, seems at times almost crude. Yet in this apparent crudeness will be found its greatest merit. The use of tools and application of processes is the first subject treated. Then the leading pieces of electrical apparatus are taken up *seriatim*. The gold leaf electrophorus, gold leaf electroscope, frictional electrical machine, induction or dielectric machines, condensers, volt and am meters, and much other matter, are described in detail. It is perfectly true that a difference of opinion may exist as to the author's treatment of some portions of his subject, but the spirit of the book is good, and it is a work that may be of much use to the amateur, student, and teacher. Had science taken its proper place in the schools of this country, this work would be of even greater use than it now will be.

STIMULANTS: USES, AND HOW BEST CONSERVED. By J. M. Emerson. New York: Dick & Fitzgerald. 1888. Pp. 61. Price 50 cents.

In this work the author is an advocate for temperance, in the sense that alcohol may be used temperately, and that its use may not degenerate into abuse. It is as much opposed to total abstinence as to intemperance. The work is well printed and attractive in appearance.

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## Notes &amp; 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.

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.

(1) G. F. C. asks: 1. How can I make a speed regulator for the electric motor described in SCIENTIFIC AMERICAN of March 17, 1888? A. Make a small governor like any steam engine governor, and in lieu of the steam valve use an electric contact and arrange the governor so as to break the circuit when the speed is too high. 2. How can I make a battery for same? A. Use a battery of 6 or 8 elements, each formed of one plate of zinc 6x8 inches, and two plates of carbon of the same size. Plunge these plates in the ordinary bichromate solution.

(2) S. F. desires (1) a polish for starch for laundry purposes. A. See answer to query 19 in SCIENTIFIC AMERICAN for February 25, 1888. 2. Can either wax or spermaceti be mixed with water so as not to separate when cold? A. No.

(3) F. J. F. asks how to make a cell containing six or eight divisions for plunge battery, with bichromate and sulphuric acid solution, and would a wooden cell covered with asphaltum or any other matter prove serviceable? A. Make the cell of wood with glass or wooden divisions let into the sides. For waterproofing, coat the wood with a mixture of resin 4 parts, gutta percha 1 part, and a little boiled oil, put on hot. Apply the composition thoroughly, using a hot iron to melt it into the corners.

(4) E. P. asks: Is there any way to stop the roaring of a mechanical telephone, and not interfere with the speaking? A. Use stranded steel wire for line.

(5) F. R. F. writes: In regard to the electric motor described in your issue of the March 17, will the motor run if connected with an Edison dynamo? How many ordinary "crowfoot" batteries would

the motor require? A. It will run if connected with an Edison dynamo. It is not adapted to gravity batteries.

(6) J. C. R. asks: How would a hoop of iron, secured by brass clamps at ends and angles...

(7) H. S. D. writes: I want to make a dynamo after the pattern of the eight light described in the SCIENTIFIC AMERICAN and SUPPLEMENT...

(8) C. T. T. asks (1) for a process for making acid to eat metal, to make rough cuts for printing. A. See articles on Zincography, in SUPPLEMENT...

(9) A. B. O. desires a formula for making a cheap, white soap from tallow. A. Dissolve 2 pounds sal soda in 1 gallon boiling soft water...

(10) J. W. C. asks how to make old fashioned molasses candy not turn soft or sticky in warm or damp weather. A. Take 1 quart molasses, 1 1/2 pounds brown sugar...

(11) A. B. U. desires a receipt for an enamel or glaze for wood, to be impervious to water. A. Coat the article several times with hot linseed oil varnish.

(12) E. B. asks for something to make the teeth white. A. Take of dry hypochlorite of lime 1/2 drachm, red coral 2 drachms, triturate well...

(13) J. P. K. asks for an article for cleaning carpets without lifting them from the floor, one about as thick as muckage, and in using which a quantity is taken on a brush and rubbed over the carpet...

(14) J. H. S. desires (1) a receipt for tanning buckskin, such as used in making gloves, and one for tanning with hair on. A. The manufacturers' processes are very elaborate...

(15) C. F. B. asks how to wash a chamois skin. If washed in an ordinary way, they are very stiff afterward. A. Use a weak solution of soda and warm water...

(16) W. S. asks: What is "putz" pomade composed of, and how made? A. Take of oxalic acid 1 part, iron peroxide 15 parts, powdered rotten stone 20 parts...

(17) S. C. D. asks: Is there any way to color a meerscham pipe that has been used and colored to bottom of bowl in good shape?

(18) C. E. H. asks the proper way to prevent an ingrowing toe nail, and to prevent it getting worse. A. Begin the cure by simple application to the tender part of a small quantity of perchloride of iron...

When this hardened flesh has remained on two or three weeks, it can be easily removed by soaking in warm water. Further trouble can only be prevented by cutting the nail to proper shape and wearing shoes of reasonable size.

(19) L. D. W. asks: Is there any way to clean a marble bust which has become soiled by dust and finger marks? A. Mix quicklime with strong lye, so as to form a mixture having the consistency of cream...

(20) J. T. M. asks why it is that the secondary coil of an induction coil is always composed of very fine wire, and will not coarser wire do equally well? A. By using fine wire in the secondary of an induction coil, more convolutions are obtained for the same volume...

(21) C. N.—Your greatest trouble probably arises from the burning of the corners of the chisels in forging. The corners should be no hotter at any time than the center. A slow fire or low blast is always necessary to the successful forging of steel-cutting tools.

(22) T. W. M. Co.—If you wish to make a chilled surface against a cold iron mould, use No. 2 American pig, with 1/4 good scrap. If you wish simply to make hard castings in sand moulds, use No. 3 or 4 pig or No. 2 with 1/4 scrap.

(23) V. S. M. asks for the best lubricant for central fire rifle cartridges. I have used tallow and wax, and mutton tallow alone, and in cold weather they scale off badly. A. Try paraffine or vaseline.

(24) J. A. R. writes: I have in my house brass door knobs. When they were purchased, we were told that they would not tarnish, but they do. I now want to turn them black without waiting the slow process of time. How can I do it? A. Thoroughly clean the varnish from the knobs with alcohol, and scrub with a brush and solution of soda.

(25) E. D. D. asks: Does the mariner's compass in the neighborhood of the equator point north and south with the same certainty that it does in other latitudes? A. The magnetic needle does not point with certainty to the north except in a few places. It is better, on general principles, the nearer it is to the equator.

(26) C. M. R. asks if it is possible to take a 15 horse power engine and make it do 30 horse powers of work. The engine in question is high speed, and the boiler of 18 horse power. A. You can generally make a nominal 15 horse power engine do an indicated 30 H. P. of work.

(27) M. R. asks: 1. Why should a wagon with solid iron axle run harder than with wooden axle? A. The coefficient of friction between iron and iron is probably higher than that between the hard wood of an axle and the iron of the box.

(28) G. W. S.—It will not pay you to undertake to make emery strips for your own use. For their manufacture you will require strong iron moulds with followers driven by a powerful press, capable of a pressure of a ton for each square inch.

(29) E. J. T. asks: What would be the superior quality of copper pipe over iron pipe of same dimensions for hot water heating? A. Copper pipe is but slightly better than iron for radiating heat, although it is a much better conductor of heat.

(30) F. L. G.—A composition of 75 parts lead, 16 7-10 parts antimony, and 8 3-10 parts bismuth expands in becoming solid from a fluid state.

(31) W. K. asks the best solution for pickling iron and steel. A. Hydrochloric acid 1 part, water 3 to 4 parts, for quick or slow pickle.

(32) C. W. asks what the best journal and journal box are made from. And how would a cast iron journal running in a cast iron box compare with the best? A. Cast iron journals and boxes run well together with heavy lubricating oil mixed with graphite.

(33) R. W. asks if there is any acid in which brass may be dipped, to clean it, which will clean it without hurting the article in any way? A. Oxalic acid solution in water is excellent for cleaning brass that can be brushed or rubbed.

(34) E. K. H. asks: 1. What metal, mineral, or other material can I use to keep heat in an iron vessel that is heated by hot air? I want it to radiate the heat if possible, several hours after the supply of heat is cut off, and iron alone will not answer the purpose.

also a solution of acetate of soda so strong that it will crystallize on cooling, thus giving off its "latent heat." 2. Would a double iron vessel with a dead air space between to store hot air be a good device? A. The storage of hot air for use is of no value. Its specific heat is very low, a great deal less than that of water.

(35) J. A. P.—You can melt 8 or 10 lb. of old brass boxes readily in a blacksmith's forge by building a brick cylinder or square box around the tuyere large enough to have a clearance of 3 or 4 inches all around the crucible.

(36) R. H.—Moulding for and casting of iron is a difficult matter for a novice. We recommend you to study the subject by visiting an iron foundry and observing their methods.

(37) A. M. Co. asks: How can we keep jelly from moulding? A. First cover the jelly with a piece of paper that has been dipped in brandy, and fits quite close to the jar at the edges.

(38) C. P. M. asks the best method of driving boiler rivets. A. Hand and machine riveting are equally good, if both be honestly and faithfully done. Canted rivets, from their being too small or from the drifting of ill-matched holes, make most of the trouble.

(39) J. M. A. writes: 1. In the SCIENTIFIC AMERICAN of two weeks ago you gave instructions for making small electric motor. What battery is best to use, where can it be had, about what cost, or could it be made cheaper by procuring materials? A. A plunging bichromate battery is probably the best for the motor.

(40) H. H. writes: I found some difficulty in making the iron wire core of the armature for the simple electric motor recently described in the SCIENTIFIC AMERICAN. For the benefit of others who may undertake to make the motor, I describe my method: Take two pieces of wood about 1 1/2 inches thick, with a piece of cigar box wood between them, and secure them together where the flanges will come, then turn the spool as described and cut in two at the center at right angles to its axis.

(41) J. W. L. asks (1) if a solid cast iron field magnet will answer as well as Russia sheet iron, for the simple electric motor described by George M. Hopkins, in No. 11, current volume of SCIENTIFIC AMERICAN. A. Cast iron will answer nearly as well as Russia iron. 2. If not, will solid wrought iron do? A. Wrought iron will answer the purpose.

(42) Mrs. H. asks (1) how to make koumiss out of buttermilk. A. See the article on "The Preparation of Koumiss," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 130. 2. If I have a stream running on my farm, and my neighbor has none, does the law compel me to allow the stream to run to accommodate him? A. If the stream on your land runs to or borders on your neighbor's land, you cannot alter the course of the stream to deprive him of it.

(43) W. S. P. writes: Suppose a bar of iron surrounded by an armature excited by current from some electric source be withdrawn from said armature nearly its full length, will it return entirely within said armature, and with what force? What per cent of the power excited in the armature? A. Send a sketch of the experiment you propose, together with more explicit description.

TO INVENTORS.

An experience of forty 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 unequalled facilities for procuring patents everywhere.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

March 27, 1888,

AND EACH BEARING THAT DATE.

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

Table listing various inventions and their patent numbers, including items like Air compressor, Alarm lock, Aluminum and alloying it with other metals, Annunciator, electric, Young & Painter, and many others.