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 Ainsworth, 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 of 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 e, the current being easily regulated. disea

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

A lamp extinguishing apparatus has been patented by Messre, 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 npsetting the CSI.

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 extinguishingthe 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. Vandenburg, of Americas, 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 sec tions, 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 espe cially 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.

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 strips 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 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 YorkCity. A new and useful improvement in porous cup batteries is provided by these inventions, the con-struction 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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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. 212 ; or will sell entire right. J. T. Moxley, Owosso, Mich.

Wanted-Draughtsman on printing machinery. Peranent 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 even ings 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., Buf

falo, 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 same ple or description of what you want, and we will name price. T.F. Welch & Co., 8 and 10 Medford St., Boston, M888.

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

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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.

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Perforated metals of all kinds for all purposes. The Bobert Aitchison Perforated Metal Co., Chicago, Ill.

Feed grinders. Chas. Kaestner & Co., Chicago, Ill. The Railroad Gazette, handsomely illustrated, pubiished 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 hundred of similar letters received by the above firm. See their advertisement in another columr

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 nailed free of charge on application

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

Iron Planer, Lathe, Drill, and other machine tools of nodern 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 de cription. Billings & Spencer Co., Hartford, Conn

Curtis Pressure Regu ator and Steam Trap. See p. 77. Steam Hammers, Improved Hydraulic Jacks, and Tube zpanders. R. Dudgeon, 24 Columbia St., New York.

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

60,000 Emerson's 1887 ES Book of superior saws, with

NEW BOOKS AND . PUBLICATIONS.

A MANUAL OF STEAM BOILERS: THEIR DESIGN, CONSTRUCTION, AND OPERA-TION. 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 formulæ 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 boller 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. Lon-don : 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 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 elec: trical 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 CON-SERVED. By J. M. Emerson. New York: Dick & Fitzgerald. 1888. Pp. 61. Price 50 cents.

In this work the author is an advocate for tempernce, 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 ap-Dearance.

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- HINTS TO CORRESPONDENTS.
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 Beferences to former articles or answers should give date of paper and page or number of question.
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 Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
 Becientific American Supplements referred to may be had at the office. Frice 10 cents each.
 Books referred to promptly supplied on receipt of pree.

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 sneed 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 6×8 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 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.

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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 presse 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 ad justing 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

The Underpinning 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 Pateut Extension Plumb and Level, illustrated .- The Painting of Iron Roofs .- The Reed, Rocking Grate. illustrated .- The Dunning Hot Water Boiler, illustrated.

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

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(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 (6) J. C. R. asks: How would a hoose iron, secured by brass clamps at ends and angles make needed width, work for constructing field magnet of simple motor, instead of sheet iron? A. Hoop iron will answer.

(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, but of larger capacity. If I make it 1/2 larger, will it increas the amount of wire more than 1/6, and how many 16 candle power incandescent lamps will it run? How many lights will it run if it (the eight light machine) was doubled in all its dimensions? A. If you double the width of the field magnet, and also the length of the core of the armature, and wind the armature with No. 19 wire, and the field magnet with No. 12, you will be able to run from 16 to 20 16 candle power lamps. We shall probably at an early day describe a larger machine, of about the size you require.

(8) C. T. T. asks (1) for a process for maing acid to eat metal, to make rough cuts for print-ting. A. See articles on Zincography, in SUPPLEMENT, Non 584 and 587. 2. Information telling how to read toecope. A. For good idea of the mysticism and illusion of astrology, subjects in which we do not assume to be conversant, read Walter Scott's "Guy Mannering.'

(9) A. B. O. desires a formula for mak ing a cheap, white soap from tallow. A. Dissolve 2 pounds sal soda in 1 gallon boiling soft water, mix into it? pounds freshly slaked lime, stirring occasionally for a few hours, then let it settle, ponr off the clear liquid, and boil 2 pounds tallow in it until all the tallow is dissolved. Add salt to precipitate the soap, and wash and dissolve in a little hot water. Cool it in a flat hox. and cut it into bars or cakes. It can be scented by stirring in the desired perfume when cool. 2. One for same, by using cotton seed oil in place of tallow? A. See Carpenter on Soaps, Candles, Lubricants, and GIVcerine, which we mail for \$4.

(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, 11/2 pounds brown sugar, the juice of a large lemon, and 12 drops of oil of lemon; mix the molasses and sugar together, butter the inside of a kettle and put it in. Let it boll over a moderate fire for 2 hours, then add the lemon inice, and hoil 16 hour: stir it often to prevent it from burning, then butter a pan and put it in to cool; if sufficiently done, it will be crisp and j brittle, if not, it will be tough and ropy.

(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 16 drachm, red coral 2 drachms, triturate well and mix thoroughly. 2. What kind of flute is used for general orchestra work, and if an ordinary 12 keyed flute will do? A. Any flute will do.

(13) J. P. K. asks for an article for cleaningcarpets without lifting them from the floor, one about as thick as mucilage, and in using which a quantity is taken on a brush and rubbed over the carpet, which is then washed up with clear water, leaving the carpet like new. A. Ox gall is the article to which you refer, and it is used in the proportion of three gills of ox gall in a pail of water.

(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, but an amateur can always preserve and taw such skins by treating them with salt and alum, after the skins have been well cleaned and softened through with water and working. The time necessary is from one to two weeks. 2. A receipt for making black ink, one that becomes very brilliant after writing, and free from sediment, and will not corrode the pen. A. Take 11 parts gall nuts, 2 of iron sulphate, 16 part of sulphate of indigo, and 33 parts of water, and add a small quantity of sugar. See also SCIENTIFIC AMERICAN SUPPLEMENT, No. 157, for numerous receipts on making inks.

(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, rub plenty of soft soap into the leather, and allow it to remain in, soak for two hours, then rub it sufficiently, and rinse in a weak solution of warm water, soda, and yellow soap. If rinsed in water only, it becomes hard when dry and unfittor use.

the motor require? A. It will run if connected with an 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 proper shape and wearing shoes of reasonable part.

> (9) L. D. W. asks: Is there any way clean a marble bust which has become soiled by dust and finger marke? A. Mix quicklime with strong lye. so as to form a mixture having the consistency of cream, and apply it immediately with a brush. If this composition be allowed to remain for a day or two, and be then washed off with soap and water, the marble will appear as though it were new.

(20) J.T. M. asks why it is that the condary 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, with consequent increased tension. Large wire would make the coil too bulky; small wire is used as a matter of convenience, and also to keep the secondary well within the influence of the primary.

(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. For various instructions in tempering, see SCIENTIFIC AMERICAN SUPPLEMENT, NOS. 95, 103, 105. (22) T. W. M. Co.-If you wish to make a chilled surface against a cold iron mould, nse No. 2 American pig, with $\frac{1}{4}$ good scrap. If you wish simply to make hard castings in sand moulds, use No.

3 or 4 pig or No. 2 with 3⁄4 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 dow 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. Then dip for a few seconds in sulphuric acid, rinse clean, and dip in a mixture of hydrochloric acid 12 parts, sulphate of iron 1 part, white arsenic 1 part, until the articles turn black. Rinse in clean hot water and dry in sawdust. Brush with black lead and varnish.

(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. The point to gain is to double the steam pressure, which depends upon the strength of the boiler.

(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. 2. Would it not be better to have the feed water enter a steam boiler through the top of a good sized mud drum instead of entering through the top of the boiler? A. Modern experience and practice favor a surface feed. The mud drum should catch and hold the sediment ready to be blown out, and not be stirred up by feeding in that direction.

(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. The cementing material may be glue and tannic acid, gutta percha or silicate of soda. The quantity must be so small that it does not adhere to the mould. See SCIENTIFIC AMERI-CAN SUPPLEMENT, No. 125, on Emery and Corundum Wheels

(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. The difference in effect does not warrant the difference in cost for any ordinary purpose. The copper must be black for best effect.

(30) F. L. G.-A composition of 75 parts lead, 167-10 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.

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 be tween 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. 3. If a permanent magnet becomes rusty will it spoil the magnetic properties, and to what extent or percentage ? A. Not materially. 4. Is there any flexible tubing that is fire proof, so that it can be coupled in same manner as Westinghouse air brake hose? A. None to our know ledge. 5. Is hot water, hot air, or steam the healthiest for heating purposes, provided the hot air is perfectly pure and entirely free from gas? A. They are all equally healthy under the specified conditions of purity of the air itself. 6. In using hypochlorite of lime and chalk for a dentifrice, is there any powder that would not destroy the cleaning properties, that could be mixed with it to disguise the compound? A. Use ground arrowroot and scent with oil of rose or other sential oils or myrrh.

(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. Make it high enough to have 6 in. of fire under the crucible, and also to cover the top with coal. Charcoal is the best for fuel. Coke may also be used. Soft coal may be used, but requires good management. We can send you the Brass Founder's Manual, by Graham, for \$1.

(36) R. H.-Moulding for and casting of iron is a difficult matter for a novice. We recom mend you to study the subject by visiting an iron foundry and observing their methods. We can send you a book on iron founding, by Claude Wylie, for \$1. Your engine should weigh not less than 150 lb. A horse boiler may be made with 8-16 plates for shell, 14

in, heads. (M) A. M. Co. asks : How can we keep by from moulding? A. First cover the jelly with a ce of paper that has been dipped in brandy, and fits quite close to the jar at the edges, then cover tight with another piece of paper, so as to prevent as far as possible any entrance of air.

(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, and lead to fault finding with the system, instead of the dishonest practices in the boiler shop.

(39) J. M. A. writes: 1. In the SCIEN-TIFIC 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. 2. Would the field magnet work as well if made of solid iron as if of strips of stove pipe iron? A. You can make the field magnet of solid iron if you prefer it. 3. Could a cheap electric light be made that motor would drive to give light sufficient for an ordinary dwelling house? A. It would be better to, pro-duce your electric light directly from batteries if you are unable to use a dynamo and steam power.

(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 Sci-ENTIFIC AMERICAN. For the benefit of others who may undertake to make the motor, I describe my method : Take two pieces of wood about 11% 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 rightangles to its axis. The spool will then be in six pieces, and will be easily separated after driving out the cigar box wood.

(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. 3. Will a solid wrought iron ring answer for the armature, instead of a No. 18 soft iron wire coil? A. Wrought iron will do ,but the iron wire is preferable. 4. How are carbon plates made? A. By mixing pulverized coke with pulverized bituminous coal, and baking the mixtare in a mould in an ovensat red heat while covered with powdered coke to exclude theair. The mould should be inclosed in an iron box.

(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

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

March 27, 1888,

AND RACH BRARING THAT DATE. Ree note at end of list about copies of these patente.

[See note at end of list about copies of these pat	ents.]
Air compressor, C. S. Dean Alarm lock, W. C. Manyett Aluminum and alloying it with other metals,	380.043
bath for extracting, W. A. Baldwin Annunciator, electric, Young & Painter Anvil and vise, combined, W. E. Canedy	380.010
Atomizer, G. Kneuper	380,041
Awning ventilator, J. P. Knobeloch Bag. See Mail bag. Paper bag.	380,207
Bag, J. S. Boyd Bar. See Cutter supporting bar. Bath. See Vapor bath.	380,016
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Carbon, manufacture of refractory, C. H. Land	379,960
Car coupling, G. W. Edwards Car coupling, B. F. Laird	
Car coupling, L. A. Neff Car coupling, F. B. Winfland	
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Car heater, P. F. McGee Car heater, J. Wardle	380,066
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	380,190
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After rinsing, wring out in a rough towel, and dr quickly, then pull it about and brush it well.

(16) W. S. asks: What is "putz" po made composed of, and how made? A. Take of oxalic acid 1 part, iron peroxide 15 parts, powdered rotten stone 20 parts, palm oil 60 parts, petrolatum 4 parts Pulverize the oxalic acid, and add rouge and rotten stone, mixing thoroughly, and sift to remove all grit, then add gradually the palm oil and petrolatum, incor porating thoroughly.

(17) S. C. D. asks: Is there any way to color a meerschaum pipe that has been used and color to bottom of bowl in good shape ? Bowl will not coln A. Bowl colors better when stem portion is of m schaum up as high as the top of bowl, otherwise/ e ia difficult to color all of bowl.

(18) C. E. H. asks the proper way to pare 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, which can be readily procured either in fluid form or powder at a drug store. The tender flesh is dried and

(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 well together with heavy lubricating oil mixed with graphite. The best is a steel journal running in a hard y made of copper 1 lb. to tin 3 oz.

(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. If you only wish to dip quickly, use strong nitric acid, dip_for 1, 2, or 3 seconds and rinse in hot water.

(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 tanned by this application, and ceases to be painful. purpose. A. Water is a suitable material to store heat;

onyour neighbor's land, you cannot alter the 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.

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Coloring matter from the sulpho acids of ethyl or	
diphenylamine combined with tetrazodiphenyl	
or tetrazoditolyl, T. Diehl 380,099	
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