RECENTLY PATENTED INVENTIONS. Mechanical.

SPRING MOTOR - Ludwig Melchior and George Haas, Wilmington, Del. In a suitable framing is a gear train having a power shaft, spring arms being secured at one end to the framing and ex tended down on opposite sides of the gear train, while there are cords or connections between the free ends of the spring arms and the power shaft, and guides for the cords, the spring arms being multiplied as desired to increase the power.

Motor. — Evander B. Newcomb, Parsons, Kansas. In a suitably constructed frame is transverse shaft, to which is secured one end of a coiled spring fastened by its outer end to the inside of a barrel mounted to rotate loosely on the shaft, the device being simple and durable, and especially designed to operate light machinery, such as sewing machines, jewelers' lathes, churns, etc.

CIRCULAR KNITTING MACHINE. -Charles E. Bean, Scranton, Pa. This invention covers a machine for controlling a plurality of threads or yarns of different colors, and constructed to automatically supply the different yarns to the needles in a manner to form any desired pattern, in stripes or other styles, in the knitted web, the machine involving a novel construction, combination, and arrangement of parts.

PLUMBERS' SAW.—Robert and Charles McAlpine, Trenton, N. J. This is a saw in which a reciprocating saw blade is held to the stock by an adjustable stop for regulating the extent of movement of the blade beyond the stock, with other special features, whereby pipe connections may be severed quickly and accurately within the narrow space usually available for such work in a plumber's trade.

Electrical.

PUBLIC CLOCK.—Alfred Speer, Passaic, N.J. This is a clock with large dial and mechanism for driving the hands by power applied to their outer extremities, to overcome the resistance of wind, ice, snow, etc., the mechanism being electrically operated by a step by step movement through pawl and ratchet devices acting upon pinions meshing into stationary

Agricultural.

CORN OR SORGHUM HARVESTER. -Joseph J. Singley, El Dorado, Kansas. This is a ma- inner and outer chambers connected with each other at chine to be drawn along the ground when the stalks are guided by adjustable fingers to be cut by the knife and fall upon the bed of the machine, the knife being detachably held between the lower finger and bed, and the stalks being conveniently delivered to the ground at any time when the desired quantity has been cut.

Miscellaneous.

PIPE COUPLING.—William M. Brown, Jr., Sacramento, Cal. This coupling is formed with hollow sections secured to the main steam supply pipes, preferably by a shouldered end projecting into the main pipe, and held by ring clamps having their ends riveted together, being intended mainly for use with railway passenger cars, being adapted for automatic coupling and ready uncoupling.

CAN FILLING MACHINE.-Francis M. Nichols, Chillicothe, Ohio. This machine has a measure carrier with disks, each having tubes or cylinders open at both ends, the tubes of one disk sliding within those of the other, the apparatus providing means for filling cans with measured quantities of corn, tomatoes, etc., the cans being automatically fed forward to receive their intended contents.

TESTING DEVICE FOR COUNTING MECHANISMS.—Paul C. Illgen, Leipsic, Saxony, Germany. Numbered counting disks are operated by a rotating shaft, in connection with a supplementary disk, whereby the accuracy of the number shown on the counting disks may be determined, when, if the figures do not agree, the counting mechanism is proved to be out of order.

REFUSE EJECTOR.—John S. Wallace, Nelsonville, Ohio. This device is specially designed to remove refuse from ocean steamers, coal mines, etc., and consists of a discharge pipe into which projects a steam pipe carrying superheated steam, a refuse feed pipe discharging into the discharge pipe, and a gas pipe also opening therein, by means of which the smoke and gases from the furnace combine with the superheated steam.

PURIFYING IRON.—Nathaniel Booth, Hollidaysburg, Pa. This invention covers a compound for purifying iron in blast and pudding furnaces, the compound consisting of red prussiate of potash, bimanganese, etc., in stated proportions, heing designed to eliminate phosphorus, silicon, sulphur, etc., from the metal, and especially applicable to red-short iron, reducing its crystalline character to a fibrous condition.

DOUBLE SULPHATE OF ANTIMONY.-Carl J. E. De Haeu, List, near Hanover, Prussia, Germany. This is a process of manufacturing the double fluoride of antimony and sulphate of ammonia and then evaporating the mixture, for the industrial applimore expensive tartar emetic.

CRACKER CUTTING DIE. - Carl Herrmann, New York City. This is a die provided with a face built up of removable sections which may be easily renewed when broken by an ordinary workman, and the die may be quickly repaired or partially refaced should it be broken by contact with hard substances in the dough or otherwise.

Pa. This invention relates to spring forks to be used in connection with the wheels of a bicycle or similar and reproductions of water color studies, such as the

machine, and provides means whereby the jolting beautiful work shown by Measra Blomfield and Phene motion of the wheels when passing over obstructions or a rough road will not be communicated to the rider or to the steering arms or handles.

COVER FOR MILK CANS. - Joseph C. Vail, Maple's Mill, Ill. This cover is made of an upperplate and an under apertured plate separated from the upper plate by spacing strips, the space be tween the two plates being ventilated, thus providing for the ventilation of the vessel while excluding dust,

KALEIDOSCOPE.—Joseph W. Lovibund, Salisbury, Wilts County, England. In this device, instead of the usual irregularly shaped and variously colored pieces of glass, disks are employed, independently movable by a rolling motion in the field of view to separately or conjointly produce designs of great variety, which may be infinitely varied and repeated or reproduced at will.

TOY RACE TRACK. - William N. Mc-Manus, New York City. In this toy track a real race is simulated by a number of miniature figures carried about a circular race course, and after a number of times round the figures are projected forward by an impulse to the finish line, the invention being an improvement on a former patented invention of the same

NECKTIE. - Miner W. Bruce, Knox Center, Neb. This tie has two retaining tapes extend ing from opposite ends of the shield partly encircling the collar, one of the tapes being permanently secured to the shield and the other detachable, both tapes carrying hooks adapted to engage apertures arranged in the sides of the collar.

HOSE SUPPORTER.—Miner W. Bruce Knox Center, Neb. This supporter consists of an elastic divided band having hooks attached to its ends a clasp for attachment to the hose also having a hook, while an endless cord is passed around all the hooks and slides freely thereon, any slack in the elastic band of the supporter being automatically taken up by the clasp-carrying cord.

GARTER. - Jacob Katzenberg, New York City. This garter consists of an elastic tape having its ends united by a metal clasp applied to the tape a short distance from its extremities, the ends being left free to form the bow pieces which cover the clasp at the front,

Syringe.—Jay W. Kirkwood, Silver Mountain, Idaho. This is a medical syringe having or near their rear ends and both having openings through the forward end of the syringe, a piston working within the inner chamber, whereby the syringe operates simultaneously to discharge a medicated fluid and to remove by suction foreign matter.

NEW BOOKS AND PUBLICATIONS.

INCANDESCENT WIRING HAND BOOK. By F. B. Badt. Electrician Publishing Company, Chicago, Ill. 1889. Pp. 66. Price \$1.

The practical side of electric wiring, with the electri cal arithmetic necessary for "house engineering" is treated of by the author in a clear and succinct style. Numerous illustrations are embodied in the text, and the manual is one that will, we doubt not, be well received by the profession generally. It is a hand book, a code to be always at hand, as well as in the library The need for a practical discussion of electrical problems is a growing one, and all worthy accessories to the literature of the subject are to be welcomed.

ACADEMY ARCHITECTURE AND ARCHI-TECTURAL REVIEW. Quarto pamphlet. Pp. 102. Edited and published by Alex. Koch and C. W. English, Chancery Lane, W. C., London, England. Wm. Mueller, New York. Price \$2.50.

We are informed that the European edition met with so much success that the London publishers decided to issue an American edition. Every page contains one or more plates of buildings, bits of detail or architectural sketches from an English point of view without any descriptive text. The work is arranged in two parts, the first containing miniature reproductions of designs, studies and sketches of architectural work that were exhibited at this year's academy exhibition, and the second part, designs of notable buildings executed within the last five years, confined however to European work. The most notable work at the Academy is reproduced, particularly an interior view of Mr. E. R. Robson's People's Palace reading room. Mr. D'Oyly Carte's new theater in Cambridge Circus by T. E. Colcutt, the famous Hotel Metropole at Brighton, in Mr. Waterhouse's best style, also a chapel in Duke Street, Mayfair, by him, interesting from the massive yet graceful treatment of the spire. The most charming bit in the whole work is a water color sketch of a Norman gateway and library at Windsor Castle, by Phene Spiers, the famous teacher of drawing. The frontispiece is the chef d'œuvre of the English work, viz., the Brownlow Street front of University College, Liverpool, by Mr. Waterhouse. Sir Arthur Blomfield contributes a beautiful sketch of a reredos for new Church of St. Mary, Portsea. The chief works of interest in the second sait of fluoride of antimony, consisting in mixing part are the several drawings of the Hofburg Theater, Vienna. A study of the various features of the design is full of interest. It marks the monumental feeling bet cation of the compound in the dyeing art in lieu of the terthan any other design exhibited. The point of view taken for the perspective does not do the noble front justice. The horizon line is too high. The elevations are much more satisfactory to one accustomed to interpret them. The publishers announce their intention to confinue this work by an annual number. We wish them every possible success. The plates are excellent, More than that, there is not a poorly drawn sketch in the collection, and for one who desires to carefully study English work, no better opportunity could be BICYCLE.-Louis A. Hill, Philadelphia, found, The only regret we have to record is the evident lack of space for more sketches of plans, bits of detail,

Spiers. If English plans could have American elevations and groupings, or American elevations and feeling for contrasts could have English planning, modern architecture would be worthy of the closest study and highest praise.

- L'ART D'EMPAILLER LES PETITS ANIMAUX. By Paul Combes. Librairie de la Science en Famille. No. 118 Rue d'Askes, Paris, France. This is a little pamphlet of 32 pages on the methods of mounting animals.
- LA PHOTOGRAPHIE ET SES APPLICATION. I. LA FERRO-TYPIE. Obtention directe des positifs a la chambre noire. By F. Dronin. Libraire de la Science en Famille. Paris, France. Pamphlet of 36 pages.
- CONSEILS PRATIQUES AUX AMATEURS D'ELECTRI-CITE. Piles, sonneries, accumulateurs, allumoirs, appareils de secrete, etc. Par Drouin et Huche, Pamphlet of 46 pages. Librarie de la Science en Famille. Paris, France.
- 2 Qu'on PEUT FAIRE AVEC LES OEUFS. Collection complete et variee des experience faciles et awns antes pouvant etre executee par tout le monde avec des oeufs. Par Prof. Abel Cepak. Ch. Mendel, Parie, France. Thisis an illustrated paper-covered book of 175 pages on the various tricks and experi-ments that may be made with eggs.

Any of the above books may be purchased through this office. Send for new book catalogue just pub-

Address Munn & Co., 361 Broadway, New York.

SCIENTIFIC AMERICAN

BUILDING EDITION.

AUGUST NUMBER.-(No. 46.)

TABLE OF CONTENTS.

- 1. Elegant plate in colors of a cottage for twelve hubdred dollars. Perspective elevation, floor plans, page of details, etc.
- 2. Plate in colors showing perspective elevation and floor plans for a small frame cottage to cost one thousand dollars. Page of details, etc.
- Page engraving of the new and elegant Trinity church at Tiffin, Ohio, designed by F. K. Hewitt, architect.
- 4. A New England mansion. W. B. Tubby, New York, architect. Perspective elevation and floor plans.
- 5. Elevation in perspective and floor plans of a cottage at Jersey City Heights. Cost twelve thousand dollars
- A cottage recently erected at Bridgeport, Conn. at a cost of two thousand three hundred dollars. Floor plans and perspective.
- 7. A handsome country residence at Belle Haven Park, Greenwich, Conn. Cost eleven thousand dollars. Perspective and floor plans.
- 8. A house for eight thousand dollars, recently erected at Bridgeport, Conn. Perspective view and floor
- The New United States court house and post office, Charleston, S. C. Cost three hundred thousand dollars. Perspective and plans.
- 10. A cottage at Bedford Park, New York. Cost three thousand five hundred dollars. Plans and per spective.
- House for three thousand six hundred dollars, recently erected on Armory Hill, Springfield, Mass. Perspective elevation and floor plans.
- 12. Page of designs of ornamental well curbs
- 13. Brick dwellings recently erected in Jersey City, N. J., at a cost of three thousand eight hundred dollars each. Plans and perspective.
- 14. A corner residence on Jersey City Heights, N. J. Cost eighteen thousand dollars. Plans and perspective.
- 15. The great chapel, cathedral of Toledo, Spain's drawn by Antonio Hebert. Full page engraving
- 16. Engraving of the Lessing theater in Berlin,
- 17. View of the new electrical labratory of Purdue University at La Fayette, Indiana.
- 18. View of the street front of the handsome Brooklyn,
- N. Y., library. 19. Miscellaneous Contents: Hints to architects.-

Iron bricks.-Hard woods.-Prevention of diphtheria. Overthrowing a chimney.—The manufacture of Roman bricks,-Woods for inside finish.—Jim Fisk's monument.—Experiments on mortar and concrete, with illustrations.-Clamp for pulling street piling, illustrated.—The Eiffel tower,-Sixteen stories the limit.-A singular fireplace explosion. - An ornamental stairway, illustrated.-The Hess system of ventilating and warming.-Hints about lawns.-Hot water heating, illustrated.-The "Timby "automatic sash lock, illustrated,-A solid guaranty for roofing plates.—High speed automatic engines.—Metallic shingles and roofing tiles.-Electrical appliances for houses, 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 ARCHITEC TURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

The Fullness, Richness, Cheapness, and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural publication in the world. Sold by all newadealers

> MUNN & CO., PUBLISHERA 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.

The man or woman who is profitably employed is generally happy. If you are not happy, it may be because you have not found your proper work. We earnestly urge all such persons to write to be B. F. Johnson & Co., 1009 Main St., Richmond, Va., and they can show you a work in which you can be happily and profitably employed.

Wanted-Second hand surveyor's transit. Box 274, El Dorado, Kas.

Model steam engine, Cir, free. Edgar Side, Phila., Pa.

For Sale-A valuable metallic roofing patent. No crews or nails necessary; unequaled for lightness durability. Address Julius Klehe, Mauch Chunk, Pa.

For Sale or Royalty-Baling press, patent No. 406,680, described in SCIENTIFIC AMERICAN, No. 5, Vol. 61. Has great compressing power; light and easy to operate. Meets a long felt want of farmers, broom corn, cotton, and wool growers. Manufacturers on royalty can have a bargain. W. E. Walter, Silver City, Idaho.

The Lowrie toilet stand, illustrated in this paper, May 26. 1888 (no movable bowl or pitcher required), is now on sale in elegantly finished quartered oak, with movable top, by Wm. R. Farrand, Detroit, Mich.

For Sale.—Buckle~patent No. 407,919, July 30, 1889. For description see page 98.

Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

For the latest improved diamond prospecting drills, ddress the M. C. Bullock Mfg. Co., Chicago, Ill.

-Ball Engine Automatic cut-off. Ball Engine Co., Erie, Pa. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works ma-chinery, and containing reports of tests, on application. Screw machines, milling machines, and drill presses,

E. E. Garvin & Co., Laight and Canal Streets, New York. Planing and Matching Machines. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn. Packer Ratchet Drills are drop forged from Norway

iron and bar steel. Billings & Spencer Co., Hartford, Conn. Rubber Belting, all sizes, 771% per cent from regular st. All kinds of Rubber Goods at low prices. John W.

Buckley, 156 South Street. New York, Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Hoisting Engines, Friction Clutch Pulleys, Cut-off Couplings. The D. Frisbie Co., 112 Liberty St., N. Y.

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

The best Coffee roasters, coolers, stoners, separators, polishers, scourers, glossing apparatus, milling and peaberry machines: also rice and macaroni machinery, are built by The Hungerford Co., Broad and Front Sts., N. Y.

Lather for cutting irregular forms. Handle and spoke lathes. I. E. Merritt Co., Lockport. N. Y.

Pattern makers' lathe. Back knife gauge lathe for turning chair stock. Rollstone Machine Co., Fitchburg,

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

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



HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our

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.

price.

Minerals sent for examination should be distinctly marked or labeled.

(1141) A. G. D.—The outside of a galvanized iron roof has a zinc surface which, being in cantact with moistair, is slowly oxidized. The oxide shows as a light white powder which sticks to the hand as you brush it over the surface. Rains wash the oxide into the tank and the water absorbs it to a large degree. This is very noticeable wherever plumbing is done with galvanized pipe. The first water that is drawn after the pipe has been closed over night tastes strongly of zinc. Hence housekeepers are contioned to always waste as much water as has lain in a galvanized pipe over night. The oxide of zinc is poisonous. The oxide of iron is not poisonous. For this reason we recommend the painting of zinc or galvanized roofs with oxide of iron paint or paint made from pulverized slate or mica. Even a coat of boiled lineed oil will protect the roof from oxidizing. A physician or druggist should be able to advise you as to the effect of using the water from a galvanized roof. Any person using spring water should be able to detect the zinc taste in the water from

(1142) J. S.—The rule of your council in regard to kind of pipe and fittings is very absurd. The universal practice in the United States for gas fitting is to use black iron pipe, malleable iron fittings,

tees, and elbows. Bending and offsetting of the pipe is a matter of economy or taste with the pipe fitters. Offsets are generally bent if not too large to insert conveniently. Bends made on ends of small pipes 1/4 inch. 1/4 inch. and 1/6 inch. for terminals for chandelier and bracket connections, are properly used to prevent unscrewing of the short piece through the plastering. These bent pieces have a piece of flat iron or a strap soldered to them so as to anchor the pieces for solid support to the chandeliers and brackets. The licensing and registration of gas fitters and plumbers is a subject of municipal regulation in all large cities.

(1143) O. E. Z. asks: 1. Is not an ampere the current produced by one volt through the resistance of one ohm? If so, how can a dynamo have a capacity of 130 amperes and 100 volts? A. Yes. The capacity of a dynamo in amperes is calculated by dividing the electromotive force by the resistance. 2. What does E. M. F. indicate? A. E. M. F. stands for electromotive force. Electromotive force is the power of the current to overcome resistance. 3. Watt? A. A watt mutiplied into an ampere; 746 watts constitute an electrical horse power.

(1144) G. B. asks (1) information on blue printing and reproduction of drawings. A. We refer you for blue printing, etc., to Scientific Ameri-CAN SUPPLEMENT, No. 584. In other numbers you will find much information on this line of subjects, for which we refer you to our index of papers in SUPPLEdrawing ink. A. For waterproof drawing ink rub up the pigment with a solution of shellac in hot borax solution. This will be nearly waterproof.

(1145) J. M. D. asks: 1. What is the best material to use for a diaphragm in non-electric or an electric telephone? A. For an acoustic telephone used a diaphragm made of wood, pasteboard, sheet iron, or strained parchment. For an electric telephone use telephone box (or case) is composed have an effect on the sound? A. Probably the box acts to some extent as a resonator, but it has no great effect upon the sound. 3. If so, what is the best material for such use? A. Such wood assounding boards are made of, spruce for

(1146) S. J. asks for a chewing gum, having some cereal in its composition. A. Take of balsam tolu 4 ounces white resin 16 ounces, sheep's suet 11/2 ounces, more or less of the latter according to the season. Of this preparation take 2 ounces, soften in a water bath and mix in 1 ounce white sugar and 3 ounces oatmeal. Roll portions of proper size in sugar or flour and form insticks to suit.

(1147) E. B. asks a good recipe for compressed yeast and the length of time it will keep. A. Vienna yeast is said to be thus made: Indian corn, barley, and rye (all sprouting) are powdered and mixed and macerated in water at a temperature from 149° to 167° Fah. Saccharification soon takes place, when the liquid is drawn off so as to be clear. and a very little yeast is added. The yeast forms a thick scum on the surface. It is removed, drained, and pressed in a hydraulic press. It may be removed several times. It will keep from 8 to 15 days.

(1148) E. N. B. asks: 1. Which city furnishes the greatest yearly output of steel rails, St. Louis or Pittsburg? A. Pittsburg. 2. What is the best anthority in chess for amateur players? A. The new edition of chess, by G. H. Gossip, which we can mail for \$3. We also refer to numerous Scientific Ameri-CAN SUPPLEMENTS. 3. The address of Herr Steinitz; chess monthly. A. International Chess Magazine, New York city.

(1149) L. M. P. asks (1) why several seeds, mostly beans and corn, when they are being grub eaten, become notably hot. A. Because the corn is fermenting at the same time, and the slow combustion of and whitish by a rather long exposure to humidity. I A. Nothing better than scraping or other mechanical polishing will produce the desired effect. Some polrouge rubbed on with a chamois, might be superior to scraping.

(1150) J. H. K. asks: 1. How can cloth and duck lining be made waterproof, not affecting color or original finish? A. Paraffin melted in with a hot. iron is very effectual, and while somewhat changing the generated, not using fire? A. For very intense heat ence in the quality of fire brick on the market. the voltaic arc, where the temperature can be further intensified by the concentration of the sun's rays thereon by a concave mirror or convex lens. The secondary spark due to opening and breaking an electric circuit is heat

piece with ${\boldsymbol a}$ rod. It is not profitable to lay small water is kept running all the time, it will be safe and free from contamination from the zinc coating.

(1152) G. E. H. asks the best method of to brass or phosphor bronze, and the desire being to make a joint that will not weaken with age and that will only be affected by such a degree of heat as indicates the proximity of fire. A. A solder made 1 part A blow pipe is better than a copper, as the copper is

new government cruiser Baltimore, see Scientific AMERICAN, July 20, 1889. For the theory of the com- plete mould for casting an image in. Oil the mould pound engine, see Scientific American Supplement,

(1154) R. writes: The purpose of the chip inclosed is to color small articles and especially Easter eggs. It is used by stirring the chip in a cup of hot water until the color is extracted from chip. Then the article is allowed to remain in this water for a few moments. I have seen the following colors prepared in desired tint in alcohol and mix with a hot solution of dry. You may, while they are still moist, dip them in the dry colors so as to cause some to adhere. You may also substitute gum arabic for gelatine.

(1155) J. H. P. asks: What paper gives full account of comets? A. See Scientific American is the unit of electrical power. It is equal to a volt Supplement, Nos. 284, 260, 323, 330, 331, 343, 172, 173,

> (1156) F. N. asks the price of tin per pound, also if there are any mines in the United States producing tin. A It is about 20 cents per pound. It has been found in Dakota, in the Black Hills, but as yet in comparatively small quantities.

(1157) C. H. G. writes: 1. What is a madstone? Are there any well authenticated cases MENT. 2. For a good recipe for waterproof, India, or where hydrophobia has been prevented by applying a madstone to the wound caused by the bite of a mad dog? A. The madstone is a porous stone that acts by capillary attraction to withdraw the venom from a newly made wound. It is doubtless of some effect in such cases. A carbonized deer's horn has been recommended for the purpose.

(1158) L. L. P. asks how sulphur acts to free tin from zinc when sprinkled on the melted an iron diaphragm. 2. Does the material of which a alloy? A. The sulphur combines with the zinc, forming sulphide of zinc, which separates from and tends to float upon the melted tin.

(1159) J. K. asks a formula for erasing the white stains that occur in some of the bricks in newly constructed buildings? A. Wash with dilute

(1160) H. A. Z. asks: Can cast iron be made stronger, and suitable for a small cannon, by the addition of aluminum in ladle, and what proportion would be best? Also, could copper, aluminum, and iron be used for the above? A. One-tenth of one per cent of aluminum mixed with cast iron by placing the required quantity in the ladle before tapping largely increases its strength and solidity; 5 to 10 per cent aluminum with copper makes aluminum bronze, which is nearly as strong as steel. One-tenth of one per cent of tin in cast iron also increases its strength and solidity. Copper is of doubtful effect when mixed with cast iron.

(1161) C. F. R. asks: How many feet fall of water is necessary to obtain a pressure of 25 pounds per square inch? A. 57½ feet is the hydrostatic column of water equal to 25 pounds pressure.

(1162) Amateur writes: Is there any formula or receipe for a mixture into which cardboard used for outdoor signs, can be immersed, and made superficially, or better still thoroughly, waterproof? A. Heat the cardboard in melted paraffin, as hot as the paper will stand.

(1163) M. R. asks: 1. What does the word feathering mean as applied to the wheels of the new steamer Puritan? A. A feathering wheel has its buckets pinioned to be movable by an arm and connected with an eccentric, so that the buckets dip and leave the water vertically. 2. Is the Redeman-Tilford steel process used in the manufacture of steel plates for steamboat boilers, and if so, where? A. We have no information as to the localities of steel works using the Redeman-Tilford process. Steel plate for boilers is fermentation develops sensible heat. 2. A recipe known in the market as Bessemer or open hearth steel. to restore clean and transparent glassware made dim Its individual quality is quoted under certain stamps or the makers' names. 3. Does the United States mahave tried many acids, muriatic among them, and rine law confine steamboat builders to certain estabalways without success. Scraping is very troublesome. lished forms of steam boilers, and so forbid or make impossible novelties or improvements? A. United States marine inspectors have not established special ishing powders, such as flour of emery, followed by forms for boilers. The regulations relate to quality and strength of material. The inspection of boilers covers also the elements of safety in form. 4. I want to build an arch in a furnace; fire brick and fire clay mortar will not withstand the heat for any time. What material must I use? A. Fire brick and fire clay are used in our hottest furnaces. Use only No. 1 extra brick appearance, is on the whole about the best application. and fire mortar made with the same kind of brick pul-2. What is the smallest space in which heat can be | verized mixed with best fire clay. There is great differ-

(1164) W. M. L. asks how much of a resistance coil would be required to reduce a 500 volt current (of the Thomson-Houston) to the right strength for simple electric motor. A. No general rule can be and represents a certain degree of given; try it on a shunt circuit from main line. connections often act as resistance coils. If the cur-(1151) F. D. M. asks how to clean out rent is of the alternating type, the motor will not work. the rust from an iron waterpipe. Mypipe is 800 feet long, 2. Would an amalgamated zinc interfere with the curthree-quarter inch, and is so filled up with rust that the rent, if a solution of rock salt be used as a solution, water barely runs through it. A. The pipe cannot be with copper as the other pole? A. It will by its recleaned out without taking it apart and cleaning each sistance, and according to the order of the plates will increase or decrease the electromotive force. 3. Has wrought iron pipe that is not galvanized. It soon ruets lightning ever been measured with regard to volts and and stops up. Galvanized pipe does not rust, and if the amperes? A. Not accurately. It is of many thousand volts potential. We do not understand your fourth

(1165) J. M. asks (1) how to make the soldering automatic sprinklers, the solder being applied cakes of paint, black and colors, used in stenciling. A. See answer to query No. 1006. 2. How to make a plaster cast of a hand or foot. A. Oil the hand. Provide a soft pillow, and cover it with a towel, and over that a newspaper. The hand is pressed down into this each of tin and lead and 2 parts bismuth, melting at until partly embedded, and the plaster mixed with 200° Fab., is usually used for sprinklers. Use soft or alum water is poured over it and backed up by a stiffer white resin or Venice turpentine for flux in soldering. portion. The hand must be kept perfectly still, of course; in a few minutes the plaster will have set. It slightly absorbed by the solder, which may change its is now removed from the hand, the faces smoothed and rubbed with lard, the hand replaced, and a second cast. Bit. See Boring bit.

(1153) T. S.-For a description of the ing taken of the other side. Owing to the use of the lard, the two will easily separate and will form a combefore using it. It may be made in several pieces. If a man's hand with hair upon it is the object, it should first be shaved. Instead of a pillow, sand may be used for the embedding material. Care must be taken to avoid "undercutting." The foot is an easier object. but little embedding being required for the first casting.

(1166) E. B. writes: 1. I want to dissolve or disintegrate a composition in nature like glass this way: Red, purple, blue, and yellow. How is this or porcelain which is subjected when fused to great composition prepared? A. Dissolve aniline colors of the heat—white heat at least; can it be done? A. This can be done by fusing the fively powdered material with gelatine. Dip the chips into this and allow them to carbonate of soda, or more simply by treatment with hydrofluoric acid in a platinum dish. 2. Is there any acid which will attack glass or porcelain? A. Hydrofluoric acid. 3. Can feldspar, after being fused as described, be dissolved? A. By the fusion method or treatment with hydrofluoric acid. 4. What acids will destroy platinum? A. It dissolves in the presence of chlorine. A mixture of 3 parts hydrochloric and 1 part nitric acids is often used for its solution.

> (1167) C. E. G. asks: 1. What acid will dissolve platinum? A. See answer to preceding query. 2. What acid will separate platinum from lead? A. To neutral solution of platinum add sulphuric acid, which will precipitate the lead as sulphate, leaving the platinum in solution.

> (1168) Courier.—The plant sent for identification is the common plantain, Plantage major, L., one of the commonest of weeds.

> (1169) R. J. P. asks: At what height do the clouds generally float? A. The height varies from the level of the ground, when they constitute fog or mist, to several miles. As a mean, 1,300 to 1,500 yards in winter and 3,300 to 4,000 yards in summer are given. Gay-Lussac observed clouds over 7,650 yards above the earth.

> (1170) M. O. K. asks: What process is best to extract the strength from sage leaf to get it strong and preserve it? A. Distill off the oil by boiling with water and collecting the distillate, separating by decantation the oil from the water.

> (1171) J. W. asks for a good receipt for cementing rubber to earthenware or chinaware so that it will stand ordinary rinsing or washing in tepid water. A. Soak strong shellac in ten times its weight of strong ammonia for three or four weeks. This makes a liquid cement, which, however, will not stand much heat. Or try a mixture of 1 part gutta percha with 10 parts asphalt melted together.

> (1172) D. L. B. asks for a good formula for aromatic toilet vinegar. A. A number of formulas are given, such as the following:

a, cologno cattacti	024
Alcohol3	pt.
Acetic acid 3	
Orange flower water 1/2	"
b. Extract of cassia	pt.
" " violet	
" rose	• • •
Tincture of orris	**
White wine vinegar	**
Digest for ten days and filter.	

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for pa tents 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 bad 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 ex MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broad

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

July 30, 1889,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.] Acid, making paraoxybenzoic, B. R. Seifert...... 407,906

ı	Alarm. See Burglar alarm.		I
ı	Alloy for secondary battery plates, E. R. Knowles	408,182	1
į	Alloy, non-magnetic, Osterman & Lacroix	408,130	I
	Animal trap, H. Barry	407,887	1
	Ant trap, E. E. Davis	407,889	1
	Antimony, double sulphate of, C. J. E. De Haen	407,925	1
	Anvil, farrier's, J. T. Nichols.	407,833	1
	Armatures, protecting case for, A. L. Riker	408,045	1
	Axle lubricator, carriage, J. A. Wilson	408,155	1
	Bale tie machine, wire, W. A. Laidlaw	408.114	
	Baling press, W. M. Denman	408,089	1
	Baling press, W. A. Laidlaw	408,115	1
	Ballot box, registering and canceling, L. M. Fos-		1
	ter		1
	Band cutter and feeder, L. Close	408,084	1
	Band cutter and feeder, D. West	407,803	1
	Basin, set wash, W. Scott	407,793	1
	Basket, waste, J. H. Osborne	408,129	1
	Batteries, gelatinizing electrolytes for galvanic,		1
	P. Schoop	408,138	1
	Batteries, means for measuring and regulating		1
	the charge and discharge of secondary, W. P.		1
	Kookogey	408,112	1
	Battery. See Galvanic battery. Secondary bat-		
	tery.		i
	Bed, folding, C. L. Gill		
	Bed, portable folding, W. W. St. John		
	Belt fastener, W. H. Bristoll		1
	Beltgear, reversing, H. E. Smith	408,049	1
	Bench. See Wash bench.	_	1
	Bicycle, L. A. Hill		
	Bill or tariff holder, M. T. Freeman et al	407,857	1
	Binder, temporary, A. G. Fisher	408,003)
	Rit See Roring hit.		٠,

	107
,	Boat raising and lowering apparatus, F. A. L. De
. !	Gruyter
l 'i	Boiler. See Sectional boiler. Steam boiler.
	Water tube boiler.
ιİ	Boiler furnace, steam, J. L. Gill, Jr
١	Boiler tubes, tool for cutting out, S. E. Condon 408,162
٠	Boilers, water regulator for, R. B. Brown 407,991
١	Book, blank, R. A. W. Winzenburg 407,886 Boot, felt, M. N. Drake 407,774
• ;	Boot or shoe nail, C. W. Glidden
3 .	Boots or shoes, tacking tool for, T. Brining 408,160
	Boring bit, J. C. Middleton
	ter box. Paper box. Signal box.
i Li	Bracket. See Desk bracket.
	Braid roll and small spool feeder, J. H. Morrison. 408,187 Brake. See Wagon brake.
٠!	Brake beam, E. W. M. Hughes
- 1	Brake coupling, automaticair, F. G. Roquemore 401,000
[Bridge guard, J. Ayres
f	Brushes, manufacture of, J. A. Read 407,900
t	Buckle, W. Blum
	Buckle, C. A. Mann 408,835 Bulkhead, W. T. Sylven 408,146
ιļ	Burglar alarm, T. J. Gordon
	Burial casket, T. McGovern
	Burial casket, J. D. Ripson
<u>.</u>	Cable grip device, J. T. Hodgins
	Calculating device, price, S. Hoadley
	Calelectric generator, E. G. Acheson407,761 to 407,763 Calendar, L. H. Orr
,	Can cover, milk, J. C. Vail 407,975
	Can filling machine, F. M. Nichols. 407,943 Car coupling, D. L. Barnes. 407,808
,	Car coupling, J. E. Davis, Jr
1	Car coupling, E. P. Eastwick, Jr
r	Car heater, railway, Kranwenkal & Kelley 408,113 Car roof attachment, W. P. Settles 408,139
8	Car wheels, making wrought iron, S. M. Vauclain. 408,056
•	Cars, bolster beam for, E. W. M. Hughes 408,023 Cars, card holder for, W. E. Thurber 408,054
	Cars, center plate for railway, E. W. M. Hughes 408,032
3	Cars, combined stake and pocket for, E. W. M.
t	Hughes
g	D. Body
7	Cars, pedestal for railway, E. W. M. Hughes 408,029
	Cars, shot-proof cage for railway, A. W. Mitchell. 407,832 Cars, stand box for railway, H. W. Jordan et al 405,178
r	Carbureting air, apparatus for, Deboutteville &
t	Malandin
	Card and check box. B. Dreyfuss
ì	Carriage bow, G. V. Montgomery 407,959
r	Carriage, child's, A. Woodward
8	Carriage jack, L. S. Monk
	Case. See Shipping case.
ı	Cash indicator and register, T. Carney
8	Cash indicator and register, H. A. Miles
	Cereals, scouring and decorticating, W. Ager 408,063
	Chair, G. E. Lord 408,118 Churn, B. Mitchum 408,126
	Cigar machines, apron for, J. J. Becker 408,067
	Clamp. See Hoof clamp.
	Clasp. See Corset clasp.

 Kiefer
 407,884

 offee pots, percolator for, J. M. Chadwick
 408,081

 Coffin, J. H. Dunn
 408,169

 Coke oven, A. Weber
 407,879

 Confectionery, machine for making, Knorpp &
 Corset clasp, W. F. Brooks...... 407,770 Hose coupling. Pipe coupling. Shaft coup-

Cleaner. See Flue cleaner. Seed cleaner.

Closet. See Dry closet. Water closet.

Clip or saddle rake tooth holder, L. W. O'Brian... 408,128

Cloth calendering roll, W. S. Granger...... 407,858

Clip. See Hame clip.

Coupling and uncoupling stick, F. W. Beall...... 408,158 Counting mechanisms, testing device for, P. C.

Crusher. See Harrow and clod crusher. Crushing and grinding mills, feeding crusher for, Cutlery handles, making, A. Johnston...... 407.826 Cutter. See Band cutter.
Cutting paper, trimming shades, etc., tool for. C.

Digger. See Potato digger. Dip net frame, C. E. Wheeler...... 407,979
 Distance instrument, W. Barton.
 407,767

 Distance instrument, A. B. Melhouse.
 407,786

 Doubling machine, J. H. Shearn.
 408,140
 Dough, machine for forming loaves of, F. West-

 Dust collector, E. Bretney
 408,074

 Dust collector, J. M. Case
 407,949

 Dye, compound orcin, R. Greville-Williams (r)
 11,016

 Electric projector, J. J. Wood
 407.914

 Electric switch, H. T. Riggs
 408.194

 Electrical indicator, E. R. Knowles
 408.018
 Elevator. See Hydraulic elevator. Engine. See Gas engine. Gas motor engine. Locomotive engine. Rotary engine. Steam en-

Eyeglasses, R. C. Kennedy 408,109
Eyeglasses, electric, H. Welcker 408,151
Fan for rocking furniture, McComas & Fitzhugh. 408,188 Felly support, wheel, I. Harris..... 408,103