RECENTLY PATENTED INVENTIONS Engineering.

BOILER FEEDER AND METER.-John E. Winder, Pacific, Mo. This invention relates to boiler feeders heretofore patented by the same inventor A water receptacle containing a float is connected with the boiler, a steam chest being connected with the receptacle and with the boiler, there being a valve in the steam chest. The entire amount of water taken into the receptacle is indicated on a register or meter, the device being simple and durable in construction and automatic in operation.

Railway Appliances.

CAR COUPLING. - David Altman. Macon, Ga. This is an improvement on a former patented invention of the same inventor, and provides a coupling which is simple and easy of operation, and by which the cars can be coupled and uncoupled without requiring the trainman to go between them. The drawhead has the usual flaring mouth, and is provided with a coupling pin opening in its top, adjacent to which are guide frames to retain levers extending to both sides of the car and adapted to properly manipulate the pin.

RAILWAY SIGNALING APPARATUS. John D. Taylor, Piketon, Ohio. Two patents have been granted this inventor, one of which covers an improvement on his previous patent, and provides for the transmission of signals with certainty and accuracy. It consists in the combination of a polarized relay for receiving the signal from the main line and operating the local circuit and electrically-operated signal receiving and transmitting devices. The other invention is designed to place the control of trains on any system of blocks in the hands of one man, who will have an efficient means of knowing the exact location of all trains, and will consequently know just what signals to give to following trains. The current for operating the system is furnished from a battery or dynamo at the block dispatcher's office, and the intermediate and terminal stations are provided with distinctive sets of apparatus. The danger system is automatically set, and cannot be changed except by the block dispatches, the system being designed to obviate errors by incompetent operators and reduce the cost of operating the block signaling system.

Electrical.

CURRENT REGULATOR. - Joseph A. Williams, Cleveland, Ohio. This is a device for attachment to dynamos, to regulate the current by moving the brushes toward or away from the neutral line. A compound thermostatic bar is combined with the circuit wires of a dynamo, and a pair of compound thermostatic bars are oppositely arranged with respect to each other, and connected with the movable brush holding bar, while current-shifting devices are arranged to throw the current into one or the other of the secondary compound thermostatic bars.

THERMOSTAT. - Jesse C. Sims, May nard, Mass. A mercury thermometer tube of the usual description has oppositely arranged lateral branch tubes in which are sealed platinum wires, which touch the mercury as it rises in the tube. On opposite sides of the thermometer are rods carrying sliding metallic blocks adapted to be clamped in a desired position, the blocks having holes and binding screws for connection with wires. The blocks are set opposite and near the point on the thermometer scale at which it is desired to sound an alarm or close a circuit, and wires from the blocks are connected with the alarm it is desired to operate, when, on the rising of the mercury in the tube to form a contact with the wires, the circuit is closed and the alarm is sounded. To indicate a falling temperature the apparatus is placed on a closed circuit, the falling mercury then breaking the circuit and sounding the alarm.

Mechanical.

AUGER. - William Brede and Leon A. De la Nux, Paauhau Mill, Hamakua, Hawaii. This is a tool in which the cutters are detachably attached to the web of the shank in such a manner as to be expeditiously and conveniently applied and removed, the cutters defining the hole to be cut and preventing the web upon entering the wood from tearing its upper surface. The web has dovetail tapcring recesses in its edges, at each side of which are downwardly tapering spurs, the cutters fitting in the recesses and a pin passed through the cutters and the web.

STOVE PIPE FITTING TOOL. - Elliott D. Fisher, Franklinville, N. Y. This is a tool for ex-

so that it may be conveniently moved about as desired ccording to the location of the material and the supply of the motive agent.

DIE FOR BUTTON MACHINES. - Leo Prange, Brooklyn, N.Y. This die is formed by breaking a piece of hard metal into two parts, the broken surface of each part constituting the face of the die, the grain of the fractured surface forming a stipple into which ornaments are sunken, the dies being especially adapted for pressing glass or jet buttons.

MECHANICAL MOVEMENT. - Jesse Morningstar, Archbold, Ohio. According to this invention, a circular strap is held on a cam wheel adapted to be driven and provided with trunnions, a shaft with a forked end being engaged by the trunnions, and the haft being adapted to carry a crank arm to connect with the device to be driven. The device is simple in construction and designed for effective use on various machines, specially for converting the rotary motion of the mai. Jriving shaft of a mower into a reciprocat ing motion .. actuate the knives.

Miscellaneous,

SLATE ATTACHMENT.-Maud Wyman, Oakland, Cal. This is an appliance for assisting pupils in learning to write or draw letters, figures, etc. It consists of a box containing a slate, above and beneath which at the upper and lower sides are journaled parallel shafts carrying endless bands, upon which the letters or figures are displayed. Means are provided for actuating the bands to expose such letters, etc., so that they may be copied upon the slate.

WAISTBAND. - A novel waistband designed to connect pants and shirt waists with a yielding connection has been patented by Mr. Frederick Spitz, of New York City. In this invention the band is provided with a series of eyelets arranged in pairs one above the other, with loops of cord extending through the eyelets and secured to the face of the band, by a loop formed of the material of the band. On the portion of the cord loop projecting inside the band is placed a metallic slide to regulate the length of the portion of the loop which receives the button of the shirt waist. This waistband is principally designed for use on children's clothing, but it may be applied with equal advantage to sporting suits.

FISH PRESERVE DAM, - Samuel Mc-Elroy, Brooklyn, N. Y. This invention provides an improved dam specially designed for streams and ponds containing game fish, permitting the free discharge of the ordinary and extraordinary stream and storm flow without allowing the fish to escape. Combined with the ordinary weir is an auxiliary weir of novel construction, with screens, on the up stream side of the dam, alongside the ordinary weir, and adapted to dischargeinto it, the auxiliary weir forming a sufficient outlet for any surplus water, while the fish are retained.

RECOVERING VAPORIZED SOLVENTS. -James R. Whiting, New York City, and William A Lawrence, Waterville, N. Y. This invention covers an improved method of extracting the active principles and valuable contents of hops by bringing the hops in contact with petroleum, ether, etc., as practiced under a former patented invention of the same inventors. The invention provides for the more rapid and complete recovery of the vaporized solvents in the extractor among the hops after the solvents containing the extract have been drawn off, accomplishing this object by the use of steam, while the steam is at all times kep from contact with the hops.

WELL DRILL APPLIANCE. - Edmund R. Bristol, Jordan, Minn. This is a device for remov ing broken piston rods from wells. A tube is adapted to be passed into the well having a head on its lower end with a central opening less in diameter on the top than on the bottom, the head passing with its central opening on the end of the broken piston rod, while a tool slides in the tube and has a wedge on its lower end adapted to pass into the head to wedge past the broken end of the rod. The device is of simple construction and designed to be durable and efficient.

LAMP. - Frederick S. Dellenbaugh Mount Vernon, N. Y. This is a device for the burning of a solid substance, as a stick of paraffine, with a wick, to afford an absolutely safe lamp for use at sea, on rail wave, or in the household, while being clean and giving a brilliant light. The lamp may be of any desired size or shape, but in its body is held the burner tube with slots through which melted paraffine 1s passed to the wick, the tube being fitted with a lifter which constant ly forces the stick of paraffine up against a stop.

FOUNTAIN INKSTAND. - Charles W. Rohrkaste, Beaver Falls, Pa. This device has a casing panding one end of a stove pipe joint and correspond- in which is an ink well, a funnel sliding down into the ingly contracting the end of a similar pipe joint to ink well through a top opening in the casing, while a adapt them for a sliding connection. It is a compact flexible cylinder is secured to the well and to the casing. and simple implement with a hollow conical body having an annular slightly sloping shoulder formed on presses on the funnel, the pressure of the air on the ink causes the latter to rise into the flaring mouth of the funnel. This inkstand can be readily taken apart for filling and cleaning.

DOOR CHECK.—Herman A. J. Rieckert. New York City. By this invention toggle levers are

adapted to be supported on the door casing and press on the door, a spring formed by a hollow ball of flexibl material being connected with a joint of the toggle levers. The device is very simple and durable in construction, and adapted for use on doors mounted to swing in both directions, serving to retain the door in a closed position and prevent it from swinging forward beyond the normal position when opened in either direction.

UMBRELLA HOLDER.-Joseph C. Garott, Brooklyn, N. Y. This is a stand designed more especially for holding umbrellas in stores or shops when on exhibition or sale, allowing quite full examination of them without unnecessary handling, and so that they present an attractive appearance to buyer and seller and are locked safely against theft. In each end of a suitable base, preferably of ornamentally moulded wood, is screwed a post, which may be a metal tube, and these posts give support to bent wire end parts adapted to hold two series of crossed umbrellas at each ide of another series of central upright umbrellas.

BOOT BLACKING BRUSH. - Robert L. Stevens, Ward, Pa. This is a machine for pollshing boots by the wearer without stooping over. A pair of horizontal rock shafts are journaled beneath a foot rest near the bottom of a vertical frame, the rock shafts carrying brushes on opposite sides of the foot rest, while a hand lever extends upward from each rock shaft. The boot or shoe, having been daubed with blacking, is placed on the foot rest, when the hand lever is reciprocated, rocking the shafts and reciprocating the brushes along the foot rest, thereby cleaning or polishing the boot or shoe,

ICE CREEPER.-Rollin A. Camp, Saginaw, Mich. This is a device to prevent pedestrians from slipping on ice or frozen surfaces. It consists of a plate formed in sections, one section being slotted and having a flange and the other having a cam, while each section has a series of apertures and a spur, the spur of one section projecting through the apertures of the other section. The device is simple and inexpensive, and can be readily put on or taken off the boot or shoe or applied over a rubber or other overshoe.

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

SCIENTIFIC AMERICAN BUILDING EDITION.

TABLE OF CONTENTS.

- 1. Elegant plate in colors showing the residence of Henry Ivison, Esq., at Rutherford, N. J. One of the most picturesque and best appointed house in the vicinity of New York. Also photo graphic perspective view, floor plans, etc.
- Plate in colors showing the residence of Mr. George 2 Comstock, of Bridgeport, Conn. One of the handsomest in Bridgeport. Photographic perspective view, floor plans, etc. Cost \$10,000.
- 3. Design for a staircase of pleasing and novel appearance.
- 4. Photographic views and floor plans of a colonia cottage in Armour Villa Park, Bronxville, N. Y.
- Cost \$2,800. W. W. Kent, architect, New York. 5. Engravings showing a perspective and floor plans of the residence of Mr. George Burnham, at Powelton Ave. Philadelphia, Pa.
- 6. Sketch of a drawing room.
- A dwelling at New Haven, Conn. Cost complete \$6,345. Perspective view, floor plans, etc.
- 8. Illustrations showing perspectives and ground plan of the First Presbyterian church, recently erected at Rutherford, N. J. Total cost complete \$70,000. Messrs. Fowler & Hough, New York, architects.
- A very attractive and picturesque cottage erected at Wayne, Pa. Cost \$3,800 complete. Floor plans, perspective elevation, etc.
- 10. A cottage at Fanwood, N. J. Cost \$4,200 complete. Photographic view, floor plans, etc.
- 11. Sketch showing the new "Empire Theater" of Philadelphia, Pa., designed to be one of the most commodious play houses in America. Architect Augus S. Wade.
 - Miscellaneous contents: Statuary marble.-John W. Root .- Ornament in architecture .- Steam pipe required for heating .- Painting ironwork .- Architectural foliage .- A luxurious bath .- Hardwood finish .- Decorations of the Hotel Metropole, London. England.--Oldest dwelling in the United

Business and Personal.

MAY 9, 1891.

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 Sale--New and second hand lathes, planers drills, shapers, engines, and boilers, belting, pulleys, and shaft ing. W. P. Davis, Rechester, N. Y.

Barrel, Keg, and Hogshead Machinery. See adv.p.189. Presses & Dies. Ferracute Mach. Co, Bridgeton, N. J, For best hoisting engine. J. S. Mundv. Newark. N. J. Best Ice and Refrigerating Machines made by David Boyle, Chicage, Ill. 170 machines in satisfactory use.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeen, 24 Columbia St., New York.

Patent 427,311, issued May 6, for sale or arrangement tor manufacturing .- Chas. Gurney, Mount Morris, N. Y. "How to Keep Boilers Clean." Send your address for free 96 p. book. Jas. C. Hetchkiss, 112 Liberty St., N. Y.

Screw machines, milling machines, and drill presses. The Garvin Mach, Co., Laight and Canal Sts., New York, C. E. Billings' Patent Surface Gauge. Drop Forgings. Brenze Fergings. Billings & Spencer Co., Hartford, Conn. For Sale -- A patent for carpet laying and fastening machine. Patented April 7, 1891. Address G. Geglio, 633 W. 48th St., New York City.

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

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

For low prices on Iron Pipe, Valves, Gates, Fittings, Iron and Brass Castings, and Plumbers' Supplies, write A. & W. S. Carr Co., 138 and 140 Centre St., New York.

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

A rare opportunity for a young man with a few thousand dellars capital to secure a permanent position as manager of a Western water works company. Address President Water Co., care this paper.

Engineers, manufacturers, and makers are invited to send gratuitously catalogues, price-lists, and trade terms to George T. Poole, Assoc. R. I. B. A., Assoc. M. I. C. E., Colonial Architect and Superintendent of Public Works, Department of Public Works and Buildings, Perth, Western Australia.

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.

- 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 P' cents each, Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(2996) J. B. S. writes: SCIENTIFIC AMERICAN SUPPLEMENT, No. 779, page 12444, central column, about 2 inches from the bottom : "This lamp has no chiraney and burns ordinary paraffine oil with a blue flame like a Bunsen gas jet." Be kind enough to describe the lamp or burner producing the blue flame. A. This burner is an atomizer similar to those used for spraying perfumery, medicine, etc. You will find it described on page 101 of "Experimental Science,"

(2997) R. M. W. asks: How can tortoise shell be polished? A. After the tortoise shell is scraped smooth with a piece of glass, rub it with fine sand paper or Dutch rushes; repeat the rubbing with a bit of felt dipped in very finely powdered charcoal, and, lastly, apply rotten stone or putty powder, and finish with a piece of chamous skin damped with a little sweet oil, or still better, rub it with subnitrate of bismuth applied by the palm of the hand.

(2998) W. D. F. asks: How can I test drinking water for the presence oflead? A. Test by acidulating the water with hydrochloric acid and running udrogen culphide ges through it, this is preferable by States.-An improved gas engine, illustrated.-A if the gas cannot be readily made, hydrogen sulphide water will answer. If sufficient lead be present, a black precipitate will be formed. Lead pipes in time become covered with a coating which prevents the water from coming in contact with the metal.

it near its center of length, an inward curvature produced on the edge of its small end and a flarin." mouth on its larger end.

BELT COUPLING.-William P. White, Voluntown, Conn. This coupling consists of two outwardly bent coupling pieces having interlocking hooks and eyes with transverse slots, clamps entering the concave portions of the coupling pieces and havin(; projecting hooks adapted to extend through the slots of the coupling pieces. The device forms a simple and durable coupling of metal, designed to be quickly and easily applied, fastening the ends of the belt so they are not liable to tear, while the united portions will run smoothly over the pulley.

BRICK PRESS. - John P. Alston, Renovo, Pa. This press has a vertical steam cylinder in the upper end of its frame, the piston operating a plunger, below which is supported a mould, in the bottom of which is a plunger supported by a crosshead. the plungers being so connected that on the raising of the upper plunger the lower plunger will rise to expel pressure so that they will not be injured. The operation is automatic, and the frame is mounted on wheels

FIRE PROTECTOR. - Willie F. Bean and Frederick W. Dunnell, Springfield, and George B. Noyes, Lawrence, Mass. This invention provides a curtain of asbestos or other suitable material, attached to a spring-actuated roller above a window of a building, whereby the curtain may be quickly drawn over the window as a protection from fire in an adjoining building. The curtain is also designed to be moved in a frame, so that it may be operated from the outside of the building if desired, in connection with a life-saving car.

DOOR SPRING. - Charles W. Harvey, Los Angeles, Cal., and Charles J. Root, Bristol, Conn. The bracket or support of this device has a vertical socket, and a drum with a ribbon or the like, with an actuating spring, while the spring shaft is extended beyond the head of the drum, such extension fitting in the vertical socket. The device is very simple and inthe brick, which are removed by an equal and steady expensive, while it can be easily adjusted to suit right all newsdealers. or left hand doors, and the tension of the spring can be readily increased or diminished.

sanitary laundry tub, illustrated .- Real estate investments,-American tin and terne plates.-An easily coupled door hanger, illustrated,-Architectural wood work, illustrated.-An improved scroll saw, illustrated.-Improved system of fireproofing, illustrated.-The new Bolton heater. illustrated .- The Sturtevant system of heating and ventilating school houses.-Finishing natural woods.

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

> MUNN & CO., PUBLISHERS, 881 Broadway, New York.

(2999) H. E. asks: Which are the three largest navies in the world at present? A. English, French, Russian.

(3000) J. W. W. asks: How can graphite rod be soldered or fastened to copper wire, or what kind of solder is necessary, and is there such a solder as copper solder? A. You can cast lead around the end of your graphite rod, or you can copper the rod by the galvanic method. The wire can be soldered to the lead or copper by means of soft solder or by the galvanic method, in which case copper is the solder.

(3001) J. S.-Loof or loofah is the name of the fruit of Lutta Egyptiaca, a plant belonging to the order Cucurbitacese, which includes the pump-kin, squash, cucumber, the various kinds of melons, etc. The fruit is fibrous and netted within and is cut up when dry and used as a fleshrubber in Turkish baths. Hence the fruit has been called the towel gourd. The ibrous substance of the, fruit is also used for washing dishes.

MAY NUMBER.-(No. 67.)

299

and grapple operating mechanism, C. F.

and has therefore been named the vegetable dish cloth The plants belonging to the genus Luffa are natives of tropical Asia and Africa.

(3002) G. H. L. asks: 1. What is the inclosed powder, and what is it worth per pound? A. Potassium nitrate, worth 10 to 12 cents a pound in small quantities. 2. What is chromic acid worth per pound and why is it not more generally used in batteries instead of electropoion fluid? A. 40 cents a pound. It is often used with water and sulphuric acid for batteries. Alone it is not a substitute for electropoion fluid. 3 The formula for electropoion fluid as generally used is five parts of a saturated solution of potass. bichromate and one part sulphuric acid. Now, as the formula for producing chromic acid is 100 parts saturated solution potass. bichromate and 150 parts sulphuric acid, and as the end sought for is the liberation of chromic acid, it would seem to me that not enough sulpburic acid is used to secure economic working. Am I right? A. Working on the basis of saturated solutions is misleading. For electropoion fluid a good formula-and there are a number-is the following : Mix one gallon sulphuric acid with three gallons of water. In a separate vessel dissolve 6 pounds of bichromate of potash in 2 gallons of boiling water, then mix the two solutions carefully. Use when cold. You misapprehend the object of the sulphuric acid. It not only has to set free chromic acid, but has to supply the acid radical to combine with the chromium, and forming with the potassium sulphate chrome alum, and with zinc, zinc sulphate. 4. I have twice tried a battery, using electropoion fluid with sodium bichrom. in porous cup and sal-ammoniac in outer jar, and both times, after the it in kerosene, turpentine, or some other oil, I tie it in cell had been set up two days, the porous cup would two strands hard knot around the bottle where I desire burst, bluish crystals forming in the pores. Why is it? to make the cut. This done, and after wiping off the A. It is hard to assign the exact cause from your description. As the combination is a bad one you should fire to the string, carefully and slowly rotating the botavoid it, and use sulphuric acid dilnted with water in the, in order that the flame may creep around. Then, the outer cell.

(3003) F. G. S. asks (1) a simple way of testing milk so as to find out whether it has been adulterated with water, etc. A. There is no simple way that is reliable. The lactometer (a specially graduated hydrometer) gives some clew and is extensively used, See SUPPLEMENT, Nos. 71 and 292. There are also color or transparency tests. 2. Also a simple process for recutting files with acid. A. Clean with hot lye, benzine or turpentine and wash in warm water. Immerse in a jar containing 1 volume each of nitric and A. The Jablochkoff battery has a negative plate of cast sulphuric acids and 2 volumes of water. The files iron, positive of carbon, with fused sodium nitrate as should be put in toe downward for an hour or more. Wash finally. For sund blast sharpening see our SUP- to what the process was by which the ancients need to PLEMENT, No. 416. 3. In making permanent magnets is it best to temper the steel as hard as possible ? A. No. Draw to a straw color.

(3004) D. B.-Red marking ink unaffected by soap alkalies is made as follows: Enough finely powdered cinnabar to form a moderately thick liquid is very intimately mixed with egg albumen previously diluted with an equal bulk of water, and beaten to a froth and filtered through fine linen. Marks are formed on cloth with this liquid by means of a quill and | explosive. Such proportion however must he nearly are fixed after they have become dry by pressing on the exact. reverse side with a hot iron. This might work in a rubber stamp by adding glycerine, but we recommend you to use the quill.

(3005) Mrs. E. C. H.-The glistening substance in the sand is finely pulverized mica. The socalled star of Bethlehem may have been a sudden outburst by collision of two stars. The outbursts of star light at various times since have been called stars of Bethelem. They were accidental and without regu- A. Use water or alcohol. larity of time and duration. They may appear at any time, but have nothing to do with the brilliant glows of the planet Venus.

(3006) A. G. L. asks how to copper-plate on the surface of plaster of Paris, the copper plate to be about an 8th or 16th of an inch thick. A. Coat with graphite rubbed on with a brush. Dust on some iron dust or very fine filings and pour some sulphate of copper solution over it. Then proceed to plate. The thickness seems excessive.

(3007) J. H. R. asks whether there is any difference between platina and platinum. A. There is no difference; the last, "platinum," is the best usage

(3008) I. M. T. asks how to ink a type writer ribbon with the ink used with the copying pad described in Scientific American Supplement, No. A. Rub the ink on the ribbon with a stiff brush. For type-writer inks we refer you to the Scientific AMERICAN, No. 21, vol. 59.

(3009) W. R. asks for a good harness dressing. A. 1/4 ounce isinglass. 1/4 ounce indigo, 4 ounces logwood, 2 ounces soft soap, 4 ounces best glue and 20 ounces vinegar. The whole is warmed, mixed, strained, and allowed to cool.

(3012) J. F. C. asks: 1. What is the composition of the alkali found in the soil of western lands ? A. The composition varies. An efflorescence from near Humboldt Lake, Nevada, contained:

Salt..... 49.67 Sesquicarbonate of sodium..... 1815

2

Borate of sodium......11.30 What is a simple and reliable test for the same? A

No fixed test can be given. 3. Where can I find a full description of the storage battery, with explanation of its action ? A. See our SUPPLEMENT, Nos. 338, 314, 342, 416, 517, 722.

(3013) G. F. K. asks: What are the chemicals used as a precipitate to determine the deposits in the water of an artesian well for boiler purposes? A. Clear lime water will precipitate any bicarbonate of lime that may be in solution. Alcohol added in large quantity, say in equal volume, will precipitate sulphate of lime. Care must be taken in executing the first test, as lime water in the air rapidly becomes clouded. The vessel in which the precipitation is effected should be covered immediately after the addition of lime water. If a test tube, the thumb may be placed over it and the whole may be shaken.

(3014) J. P. B. writes : In your paper of the 18th April, 1891, I noticed a communication from George M. Turner, regarding his mode of cutting off the bottom of a bottle. The most satisfactory and simple way I have ever tried is as follows: Having selected a small bnt well twisted cotton string, and saturated excess of oil that may ooze out on the bottle, I set when the oil has burned out, I trace around the bottle with a small brush wet (not dripping) in water. In nine times out of ten a successful cut can be made. Care should be taken, however, to have the bottle uncorked, and in no case have it contain moisture, these precautions being necessary to prevent explosion.

(3015) C. B. N. asks: 1. What is the chemical that is used to oxidize carbon in batteries in which the carbon takes the place of the zinc in ordinary galvanic batteries? What is the composition of same ? the electrolyte. 2. What is the latest theory in regard harden or temper copper? A. It is we believe still unknown.

(3016) W. S. M. writes : In your SCIEN-TIFIC AMERICAN of January 10, 1891, on page 21, under the subject "Improved Lamps Greatly Needed," I would inquire what kind of gas is it that is generated in the wick of a lamp tube ? A. The gas is a heavy hydrocarbon, easily condensible and inflammable in the air, and if mixed with the right proportion of air, it is

(3017) A. B. C. asks for a receipt for making a good liquid dentifrice. A. Carbonate of potash 1/2 ounce, honey 4 ounces, alcohol 2 ounces, water 10 ounces, oil of wintergreen and oil of rose enough to suit the taste. Color with cochineal if desired,

(3018) C. A. W. asks: By what solvent can I obtain a pure solution of ichthyol up to5 per cent?

(3019) R. W. R. writes: 1. What other moulding material is used in manufacturing rubber stamps besides plaster of Paris and stereo process ? A. Flong and oxychloride of zinc matrices may be used for rubber stamps. We refer you to "Rubber Hand Stamps and the Manipulation of India Rubber " \$1 by mail. 2. Also what is used to soften silex, I mean prepared silex, such as dentists use to cement porcelain teeth? A. Treatment with muriatic acid might effect this. It is removed from teeth by mechanical treatment.

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 unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

(3010) P. J. M.-Our navy ranks at pres- INDEX OF INVENTIONS

attery. See Electric battery. leading and burnishing tool, J. H. Busell	Grain, apparatus for conditioning or drying, C. Mallinson Grapple and grapple operating mechanism, C. F.
	Grinding machine, D. Ashton
ied, sofa, M. Rosenzweiz	Grinding machine.cutlery, H. A. Axtell Grinding mill, H. A. Duc, Jr
iilliard button, C. L. Gill	Guard. See Cattle guard. Mill carriage wheel guard. Gumming machine. W. J. Anderson
ard. See Drill bit. oard. See Game board, Wash board. Soller. See Exg boiler. Steam boiler. 10t milling machine, & H. Webb	Gumming machine, W. J. Anderson
book holder, A. S. Held. book, memorandum, C. C. Rueger	Gymnastic apparatus, i. retereou
oots or snoes, elastic neel for, w. B. Manny 401,200 ottle and drinking glass holder, combined, W. Wilkinson	Handle. See Auger handle. Hanger. See Lamp hanger. Harness, J. Hutchinson
sox. See A xle box. Cash box. Miter box. Tele-	
ox strap, H. S. Brewington	Harrow, disk, C. La Dow. Harvester, corn, I. T. Graham. Harvester, pea, D. L. Barnes. Hay ricker, C. W. Ham Heater, See Sad iron heater. Heater, H. Hyde.
Bridge, suspension, A. W. Tucker	Heater, H. Hyde Hemp brake and cleaner, J. D. & J. H. Shely Holdback, vehicle S. McDonald
burner, See Hydrocarbon burner. Lamp	Heaptrake and cleaner, J. D. & J. H. Shely Holdback, vehicle, S. McDonald Holder. See Book holder. Bottle and drinking glass holder. Sash holder. Towel holder, Hook. See Snap hook. Wire hook. Hook and moulding for hanging clothes or nic.
Butter workers cooler for E D Wilcox 451 352	Hook and moulding for hanging clothes or pic- tures, combined, A. H. G. Elten
Button, E. N. Chapman 451025 hutton fastener, C. La Dow. 451419 hutton fastener, G. W. Prentice. 451,070 nutton fastener, J. F. Thayer. 451,070 alendar for time pieces, D. E. Grant. 451,042	tures, combined, A. H. G. Elten
Alendar for time pieces, D. E. Grant	Horse power, A. F. Clement Horseshoe, G. D. Lynch Hose band tightener, C. L. Halstead
alendar for time pieces, D. E. Grant	Hot water for consumption and heating pur- poses, method of and apparatus for electrical- y supplying, M. W. Dewe and heating pur- Hot water for consumption and heating pur- pustion water for electrically supplying. M
Car brake, railway, P. F. White	Hot water for consumption and heating pur- poses, system for electrically supplying, M W. Dewey
ar, raiway, L. J. Harris	Hydrocarbon burner, J. Nichols Indicator. See Electric indicator, Inkstand, E. T. Darke
	Insulating swing joint, H. P. Drew Insulator, R. D. Haines
means for securing the roof tin of, L. J. Har- ris	Jack. See Lifting jack. Join. See Insulating swing joint. Railway joint.
therewith, E. J. Frost. 451.036	Journal boxes, die for forming, E. W. Mackenzie
arding engine, C. Whitaker	Knitted drawers, J. Holmes. Knitting machine. circular, N. J. Winlund451,28 Knitting wheel blade, R. W. Gormly
Carpet fastener, H. Grommet	Knitting machine: creutar A. J. winneda. 33.25 Knitting wheel blade, R. W. Gormly. Landy, C. A. Sigelen. Lamp burner, S. G. Stoddard. Lamp, electric arc, J. H. R. Ward. Lamp, electric arc, J. H. R. Ward. Lamp, electric arc, C. G. Young Lamp hanger, electric, P. S. Bates. Lamp hanger, electric, P. S. Bates.
Cash and parcel carrying apparatus, H. L. Love-	Lamp, electric arc, J. H. R. Ward. Lamp, electricarc, J. H. R. Ward.
Dash box and tray, receiver's, B. F. Carman	Lamp. electric arc, C. G. Young Lamp hanger, electric, P. S. Bates Lamp or lantern, F. Dietz
Cattle guard, surface, L. J. Strait	Lamp, pocket, J. H. Farrel. Lamp shade, rotary, L. F. Wakeman. Lamps suspended, adjustable rest for holding electric, Danals & Perry.
Tasting machine, stereetype, k night & Quanchi 451.141 Tattle guard, surface, L. J. Strait	electric, Danals & Perry. Lamps, suspending device for electric, D. P Thomson
bhairs, fan attachment for rocking, C. C. Spals- bary 451,187, 451,187, 451,187, 451,187, 451,187, 451,247	Landside, adjustable, L. F. Wakeman. Lantern for advertising purposes, magic, J. W See
Dhart fur draughting garments, H. G. Kennedy 451,247 Ogar, S. Heilbroner	Lathe boring attachment, J. Walker Leather articles, dressing for, J. W. Foster Leather whitening and softening machine, P. W
Dick, advertising, F. Redman	Lens, annular, E. W. Laurencot. Lifting jack, T. Maxon Lifting jack, C. C. Smalley. Lock. See Combination lock. Nut lock. Page
Clutch, friction, J. E. Windle 451,005	lock.
Joan into Vesseis, apparatus for loading, w. Grun- der	Machinist's gauge and gauge holder, C. M. Gran nis. Measure and heater, combined milk, A. J. Howe
Combination lock, J. H. & H. Morris	Measure and heater, combined milk, A. J. Howe. Meat cutter, 11. W. Hueffelman
Copying book pad, E. R. Solliday	Metal plates, apparatus for coating, S. Y. Buck
Cork wiring machine, B. Merritt	man Metallic furring and lathing, R. W. Gibson Meter. See Electric meter.
Coupling. See Basin coupling. Car coupling. <u>Grane, traveling</u> , F. N. Dixon	Milk cooler, W. W. Conder Mill. See Grinding mill. Saw mill. Stone say mill.
Crate, Tolding poultry, W. Paschal	Mill carriage wheel guard, J. W. Zimmerman Miter box, E. E. Wagoner Moulder's fiask, F. Baugh
Cultivator beam, D. E. Barton	Mitor back, E. Waroner Moulder's flask, F. Baurh. Moulding flask, N. G. Stader. Mosquito net frame, C. C. Lee. Motion, mechanism for converting, Worms & Motion, Mechanism for converting, Worms &
Cultivator, planter, and fertilizer distributer, combined, E. C. Worrell	Motor. See Electric motor. Water motor.
per cutter. Cylindrical cutter, W. Evans	, Motor engine worked by the vapor of ether o other volatile liquids, P. De Susini
Dental engine, G. W. Nutz	Nail, G. T. Shepley. Nailing machines, apparatus for feeding nails t box, J. M. Webster.
son	obr. J. M. Wester. Nut lock, D. Rhodes. Nut lock, A. B. Schofield Oar or paddle, feathering, Houck & Dice Oil can, A. J. Tschantz.
	Oar or paddle, feathering, Houck & Dice Oil can, A. J. Tschantz Ointment, L. Miles
Digger. See Potato digger. Direct-acting engine. F.F. Nickel	
Doubling, twisting, and winding machines, auto- matic stepping mechanism for, J. Boyd	Organ, J. R. Hessler. Organ stop action, combination, G. S. Hutchings Oven door fastening. J. Thomson.
Drill bit, R. McKee	Oven door fastening, J. Thompson Packing, piston, A. C. Ellithorpe Pad. See Copying book pad. Padlock W. D. Dooronus
Edging machine, S. Y. Buckman	Padlock, M. Jackson
Egg boller or cooker, F. F. Bryant	Paint, G. Walker.
Electric conductors, safety connection for. R. H. Gould. 451,377 Electric connection, H. J. Brewer. 451,364 Electric indicator, J. L. Ricketts. 451,226	Paper cutter, combination, C, E. Willis Paper cutting machine, A. Malm Paper, etcmachine for slitting and winding. E
Electric indicator, J. L. Ricketts	Paper, etc. machine for slitting and winding, E J.&C.E. Pope Paste, comminuted compound, J. W. Schoon maker
Bectric machines, regulator for dynamo, F. 51,312 Electric meter, F. K. Irving	maker Permutation lock, H. Goodacre Photographic cameras, slide shutter for, J. F Connon
Electric switch, H. A. Chase	Pianos, lamp support for, W. Anderson. Pie ventilator, S. Jenkins.

 Jabloxes, die for forming, E. W. Mackenzie-ughes
 51.052

 Jabloxes, die for forming, E. W. Mackenzie-ughes
 51.052

 Jabloxes, die for forming, E. W. Mackenzie-ed drawers, J. Holmes
 51.052

 Jing machine. circular, N. J. Winhund...451.285
 51.376

 Jing machine. circular, N. J. Winhund...451.285
 51.376

 Jing wheel blade, R. W. Gormly
 51.376

 J. C. A. Sigelen
 51.376

 J. electric arc, R. Scherbauer
 51.376

 J. electric arc, A. J. H. R. Ward
 51.169

 J. electric arc, A. J. H. R. Ward
 51.169

 J. electric arc, C. G. Young
 451.101

 J. hanger, electric, P. S. Bates
 51.103

 J. pocket, J. H. Farrel
 51.210

 Sadae, rotary, L. F. Wakeman
 51.121

 Sa suspended, adjustable rest for holding
 54.108

 S. suspending device for electric, D. P.
 51.109

 Sa suspending device for e al boxes, die for forming, E. W. Mackenzie-451,**8%** 451,330 451,288 **451,**339 plates, apparatus for coating, S. Y. Bucklic furring and lathing, R. W. Gibson 451,264 . See Electric meter. See Electric meter. See Electric meter. See Grinding mill. Saw mill. Stone saw 451,110 451,156
 Actenues
 451,100

 Cck, M. Jackson
 451,100

 Cck, permutation, L. H. Ayres
 451,356

 Cord lock, H. Staeding
 451,201

 G. Walker
 451,201

 pot, R. S. & T. F. Reilley
 451,211

 r cutting machine, A. Malm
 451,217

 etc. machine for slitting and winding, E.
 451,278
. etc.. machine for slitting and winding, в. & С. Е. Роре , comminuted compound, J. W. Schoon-451,278

ent among the smallest, but the people have exp tions of improvement

(3011) C. S. asks: 1. Where can I rubber (like the one inclosed) one foot square, or : Address the New York Rubber .Belting and Pa Company of this city. 2. How can it be faster cloth? A. It cannot be satisfactorily secured. 3. the cloth, attached to rubber, shrink, if kept alw water ? A. Not to any great extent. If completel bedded in India rubber, the shripkage will be stil 4. What kind of cloth should be used? A. C drilling or sheeting will answer. 5. Is cloth made proof in any other way, that is just as durable a above mentioned, where the cloth is folded brought apart every five minutes or so? A. No. there any metal, and what kind, that won't rust i in water (being in frictional contact with anothe face)? A. Platinum, also, within measurable li bronze, brass, aluminum bronze, and Babbitt met Where it can be done, what sub-tance should be for covering, and how to protect metal where it is water ? A. Apply japanning baked on. The m of applying a rubber coating to cloth is quite co cated. It is described in "Rubber Hand Stamp the Manipulation of India Rubber," \$1, by mail.

ecta-		Eyeleting machine, F. Bean 451.361	Press. See Drawing or stamping press, Power
	For which Letters Patent of the	Fastening device, C. La Dow 451,420	press.
	FOR WHICH DELETS FALENCE OF THE	Faucet, measuring, G. W. Miller 451,129	Pressure equalizer, C. C. Worthington 451,148
	United States were Granted	Felley wheel. J. H. Ball 451,013	Printing machines, sheet delivery apparatus for,
get	United States were Granted	Fence, F. Fulkerson	C. B. Cottrell 451,168
		Fence, hedge, E. H. Neiman 451,066	Printing presses, ink roller lifting device for cyl-
more?	A1 00 1001	Fence post, H. Brown 451,151	inder, M. W. Fisher 451,372
cking	April 28, 1891.	Fence stay, wire, S. F. Duncan 451083	
	• •	Fiber feeding machine, F. G. & A. C. Sargent 451,136	
ied to	· · · · · · · · · · · · · · · · · · ·	Fibers, machine for the extraction of, G. F. Mil-	Protector. See Pocket protector.
Will	AND EACH BEARING THAT DATE.	ler	Pulley, separable. H. J. Gilbert 451.038
		File, document, G. F. W. Schultze 451,310	Pulley, split, J. B. Cornwall
ays in		Filter, J. F. Le Beau 451,060	
yem-	[See note at end of list about copies of these patents.]	Firearms. safety lock for, W. H. Whitney 451,191	Pump cylinder, S. A. Rouse 451073
•		Fire extinguisher head, automatic, W. F. Singer . 451,280 Flask. See Moulder's flask. Moulding flask.	Punch, check, F. M. Clark 451,368
l less.			Punch, ticket, W. H. Donovan 451,180
otton	Advertising bulletin and train annunciator, St.	Flour and meal safe, F. Beane	Railway, electric, R. M. Hunter
01101	John & Jennings	Frame. See Mosquito net frame.	Railway joint, W. H. Sutton 451,164
water-	Air brake, A. P. Massey	Fringe making machine, C. W. Arnold451,440, 451.441	Polimor vol obciv U U C Sintegnich 451 296
s the	Air bulb, valved rubber, W. F. Ware 451,179	Fringe making machine, O. Arnold	Railway switch, F. F. Schmidt 451.076
	Alloy, J. W. Langley	Fuel, artificial. D. E. Bangs	Railway switch, street, Ward & Martin 451,093
and	Alloy, aluminum, J. W. Langley	Furnace. See Glass melting furnace. Tire heat-	Railway tie, L. L. Frost
6. Is	Alloys of aluminum, manufacturing, J. W. Lang-	ing furnace.	Railway tie, B. Smith 451.295
	lev 451.404	Furnace, T. B. Moore 451,185	Railway time signal, O. V. Blazier
f kept	Animal tran. C. W. Barkley	Furniture, F. W. Cowles 451,389	Railway tracks, grass burner for, A. H. Bradley 451,218
r sur-	Animal trap, J. S. Knowels 451,057	Gauge. See Machinist's gauge. Shoe sole gauge.	Rallways, electric signal for, U. S. Jackson 451,157
i sui-	Animal trap, A. C. Skinner 451,163	Tire gauge.	Railways, rail splice and bolt for, Weller & Mann. 451.350
imits,	Armature for electric motors and generators, P.	Game board, W. E. Wise	
al. 7.	Grant 451,242	Garnett machines, stop motion for the feed rolls	B. Jennings
	Atomizer, A. M. Shurtleff451,078, 451,079	of. J. \$15gram 451.234	Recorder. See Time recorder.
e used	Auger handle, H. Naylor	Gas cocks, machine for turning keys for, F. B.	Recutting machine, S. E. Plummer
under	Axle box, car, G. F. Godley 451,195	Manville 451,184	Refrigerating machine, G. H. Holgate 451,393
	Axle boxes, dust shield for, G. F. Godley 451,196	Generator. See Steam generator.	Register. See Cash register.
ethod .	Axle spindle nut. C. E. Darrow 451,390		Rifle, portable magnetic, W. C. Edwards 451,208
m.1;	Baby's chair, C. D. Koeser 451,058	plate, E. Homan 451,303	Rock drills, rotating mechanism for, H. Ball 451,425
mpli-	Baby walker, H. W. Lawson 451,128	Glass melting furnace, H. Burgess 451,287	Roller. See Copying roller.
sand	Barrel closure, H. C. Strout 451,415	Gong striking machine, electro-mechanical, T. F.	Roof creeper. F. F. Bentley 451,150
	Basin coupling, J. W. Hale 451.324	Gaynor	Roundabout, J. C. Fowler 451.373
	Basel, A. B. Fisher	Govenaor, engine, H. J. Hartig	Sad iron heater, J. G. Bailey