

## RECENTLY PATENTED INVENTIONS.

## Electrical.

**RHEOSTAT.**—Thomas J. Parrish, Nevada, Mo. The base plate of this device is preferably made of hard rubber, brass or wood, with binding posts at one end and at the other end an upright supporting a helical coil with hollow central chamber, where a slide is arranged to move into or out of the coil, an external spring being adapted to bear upon different portions of the exterior of the coil to transmit the current through more or less of the coil, as desired.

**PHONOGRAPH.**—James P. Magenis, North Adams, Mass. This is a device in which, combined with the record cylinders, is a mouthpiece furnished with diaphragms having tracing points, a track to support the mouthpiece in the position of use, and other novel features, forming a phonograph in which a record may be made on two cylinders simultaneously, so that one may be retained as a file, or a message may be repeated from one cylinder to another.

**SUPPORT FOR TELEPHONE RECEIVERS.**—Simon Leberberg, Berlin, Germany. This is a device to enable the receiver to be held and adjusted for use to leave the hand at liberty for writing, etc., and consists of a horizontal jointed bracket in vertical bearings, a vertically movable upright in the outer member of the bracket, with a horizontal arm having at its outer end vertical spring clamps and connected by a universal joint to the upright.

**DRILL HOLE MAGNET.**—Charles S. Porter, Ivanhoe Furnace, Va. This is a magnet for lifting particles of iron and steel, broken bits, etc., from drill holes, being a permanent bar magnet flattened at one end and perforated to receive the link of a chain, while the keeper is formed of a bar of soft iron with its ends curved over toward each other and fitted to tightly clamp the ends of the permanent magnet, to preserve its strength when not in use.

## Mechanical.

**SANDPAPERING MACHINE.**—Axel K. Hattberg, Marshfield, Wis. This is a machine which provides for the holding of the work in yielding contact with the sandpapering cylinders, for a reciprocation of these cylinders in a line parallel with the shaft axes, and for the adjustment of the machine so that it can be readily used with material of different thicknesses.

**SPINNING AND TWISTING.**—Johann Boelsterli, Fussen, Bavaria, Germany. This is a flier and drag device for spinning and twisting machines in which the flier is independent of the bobbin spindle and terminates in a tubular spindle which rotates on a fixed bearing, the fibrous substance passing through this spindle or its bearing, over one arm of the flier, and downward and around half of the periphery of a ring connecting the ends of the flier arms, and thence to the spool, making a stronger spindle and giving easier access to it.

**MOTIVE POWER FOR JIGGERS.**—James Nicholas, Benton, Wis. The upper ends of the pitmen of two oppositely placed balance wheels are secured to the outer ends of the tongues of one or more jiggling machines, a large central drive cog wheel, rotated by a crank handle, communicating rapid motion to the balance wheels through side shafts and pinions, whereby the work will be lightened and its amount greatly increased, the device being also applicable to a variety of other uses.

**WISE.**—Charles Wies, Faulkton, South Dakota. This is an improvement in that class of vises whose sliding jaw is operated by a cam lever pivoted on the fixed jaw, and having a pendent lip or flange engaging shoulders or teeth on the shank of the sliding jaw, the novel feature being the means for pivoting and detachably holding the cam lever on the fixed jaw.

## Miscellaneous.

**MAP CASE.**—Charles M. Terrell and Hiram M. Chittenden, Omaha, Neb. This case has a transparent front, and two rollers are revolvably mounted in the case at proper distances apart, a web of flexible material being wrapped on the rollers and adapted by simple mechanism to be transferred from roller to roller reciprocally, thereby exposing any map, design, engraving, or like article to view, as it is drawn before the transparent face of the case.

**TIME AND DATE CALCULATOR.**—William R. Will, Baltimore, Md. This is a device more especially for use in banks and offices for mechanically determining the number of days between two dates, and consists of two stationary concentric scales oppositely numbered from 1 to 365, combined with a similarly numbered rotary adjustable circular scale, with other novel features.

**AERIAL MACHINE.**—Stewart Cairncross, Grafton, North Dakota. The gas bag of this machine is held to a suitable frame by netting, and on the lower face of the frame is a shaft carrying a propeller wheel to be operated by gearing devices from the cage below, the machine being normally adjusted to counterbalance the weight of the operator, so that it will only rise as he operates the propeller wheel, but the adjustment being such as to permit guiding the machine in any direction.

**MIDDINGS PURIFIER.**—Robert L. Hotrel, Cedarville, Cal. This is a machine designed to be simple and durable in construction and very effective in operation, the invention covering various novel parts and details and their combinations.

**FRACTURE APPARATUS.**—Thomas M. Miller, Medford, Wis. This invention provides a device whereby a fractured limb may be held in position for bandaging or the application of plaster of Paris with the least inconvenience to the patient, while affording great facility for the operator, and whereby also the limb may be stretched or raised and lowered as desired, with rests for the limb capable of lateral adjustment.

**COAL ELEVATOR.**—Angus H. McLean, Saginaw, Mich. This elevator is designed especially for loading coal from a bin into the tender of an engine, and provides means whereby the bucket will be raised by the engine, and at the proper moment, as the tender is brought in front of the bucket, the latter will be dumped to deliver the coal into the tender.

**BOX CLAMP.**—Robert H. Blair, Kansas City, Mo. This is a clamp especially adapted for use on boxes containing nursery stock, where there is considerable spring to the sides of the box, the clamp consisting essentially of two upright side pieces adapted to fit against the sides of the box, each piece having an angular lower end to fit beneath the box, and having notches near the top, a cross bar with a slot in one end fitting upon the side pieces, provided with a swinging lever adapted to engage the notches.

**VEHICLE SPRING.**—Phaon J. Kern, Frankfort, Ind. This invention relates more particularly to springs for road carts, providing what is designed to be a simple, cheap, and effective arrangement of springs, the invention consisting in the novel arrangement and peculiar combination of parts.

**DESK AND ITS SUPPORTS.**—William A. Roos, New York City. This invention is more particularly designed for a window desk, or for desks to be used in doorways, and other places, and provides novel combinations of parts for supporting the desk, adjusting its top to various angles, shutting or closing it when not needed, and its ready attachment and detachment.

**STEAM FOOD COOKER.**—Olive C. Christin, Bodie, Cal. This cooker has several sections, the lower one being a boiler and the upper sections divided into compartments with through and through passages for the steam, whereby several different kinds of edibles may be cooked at once, with economy of time, space, labor and fuel, and without giving one the flavor of the other.

**DOOR CHECK.**—Charles W. Fishel and Frank S. Hotchkiss, Carbondale, Col. This is a door holder whose main feature is a spring catch adapted to receive and firmly clasp a knob or projection attached to the door, the spring catch being inclosed in and protected by a detachable barrel or tube applied to the part having a screw for attaching it to the wall.

## SCIENTIFIC AMERICAN BUILDING EDITION.

AUGUST NUMBER.—(No. 58.)

## TABLE OF CONTENTS.

1. Elegant plate in colors showing perspective and floor plans of an attractive little cottage recently erected at a cost of only \$900 at Sunapee, N. H., from plans by Munn & Co., architects, New York. Sheet of details, etc.
2. Plate in colors of Mr. Charles Barnard's cottage at Stamford, Conn. Perspective elevation, floor plans, sheet of details, etc. Cost \$2,000.
3. Chateau de Chenonceaux, erected in the reign of Francis the First. Page engraving.
4. A cottage at Villa Park, New York. Cost \$3,400 complete. Floor plans, perspective elevation, etc.
5. A residence on Chester Hill, Mount Vernon, N. Y. Cost \$5,500 complete. Perspective view and floor plans.
6. A block of city residences erected for Dr. F. E. Robinson, on West End Avenue, New York City. Floor plans and perspective view.
7. General view and details of Festival Hall of the Union of German Singers at Vienna.
8. Residence at Greenwich, Conn. Cost \$7,800. Perspective and floor plans.
9. Dwelling at Stamford, Conn. Cost \$5,000. Plans and perspective elevation.
10. A dwelling at Holyoke, Mass., erected at a cost of \$9,500 complete. Rosseter & Wright, New York, architects. Floor plans and perspective view.
11. Dwelling and store at Mount Vernon, N. Y. W. S. Stickles, architect, Mount Vernon. Cost \$5,600 complete. Plans and perspective elevation.
12. An elegant residence erected on the Highlands, Springfield, Mass., at a cost of \$6,000. Floor plans and perspective view.
13. Attractive stable at Montclair, N. J. Cost complete \$3,200. J. C. Cady, New York, architect.
14. Miscellaneous: Steam as a fire extinguisher.—Trees and streets.—Portrait and biographical sketch of John Ruskin.—A porch covered with clematis montana, illustrated.—Prevention of decay in stone.—The porcelain tower at Nankin.—The Howard heater, illustrated.—Effective lightning rods.—An improved square chisel mortiser and borer, illustrated.—Zinc and brick work.—The Hartman sliding blinds.—An improved mitering machine, illustrated.—An improved twist machine, illustrated.—An improved heater, illustrated.—A perfect sanitary wash tub, illustrated.—An improved bench plane, illustrated.—A large contract for steel roofing.—New York Central Iron Works Company.

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

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## 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 Sale—New and second hand iron-working machinery. Prompt delivery. W. P. Davis, Rochester, N. Y. Acme engine, 1 to 5 H. P. See adv. next issue.

Turk water motors at 12 Cortlandt St., New York. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Hoisting Engines. The D. Frisbie Co., New York city.

Billings' Drop Forged Lathe Dogs, 12 sizes— $\frac{1}{2}$  to 4 inches. Billings & Spencer Co., Hartford, Conn.

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

Best Ice and Refrigerating Machines made by David Boyle, Chicago, Ill. 156 machines in satisfactory use.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 12.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Light and Canal Sts., New York.

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For Sale—Patented register for machines, No. 432,441, issued July 15, 1890. See page 89. Address R. Ruhlman, Trenton, N. J.

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## Notes & Queries

## HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(2363) E. W. H. asks: What kind of material is generally used for balloons? A. Muslin varnished with luseed oil varnish is often used. For an excellent article on the subject we refer you to our SUPPLEMENT, No. 726. Silk is often recommended, but is too expensive, and probably more liable to heating while stowed away.

(2364) C. A. asks: 1. What is the mode of cleaning a meerschau pipe? Please give process fully. A. Cork up the stem aperture, moisten the interior of the bowl with a little alcohol, and light it. When burned out, scrape the charcoal out with a knife. A button of meerschau should be kept in the bottom of the bowl to prevent the point of the knife penetrating the base and spoiling the pipe. 2. What is mode of connections on the old style frictional plate electric machine, and what materials should rubbers be made of? A. Either the rubbers or prime conductor must be insulated, and the one that is not insulated should be connected to the ground. The rubbers may be made of felt rubbed with a very little grease and an amalgam of tin and mercury. 3. A good recipe for ginger beer. A. Crush sixteen ounces of the best ginger, and put it in a large tub, boil ten gallons of water and pour thereon, add six pounds best white sugar, one ounce cream of tartar, and ounce tartaric acid, stir the whole up with a stick till the sugar is dissolved, allow it to stand till sufficiently cooled, then add one pint brewer's yeast; stir this in, let it stand for twelve hours or until a scum forms on the top, then drain it off, add one ounce of soluble essence of lemon, clarify, bottle, and tie down.

(2365) J. P. asks how he can plate a silver ring with gold and not use an electric current. A. You must apply amalgam gilding. The article is "quicked" by dipping into a solution of nitrate of mercury. It is then rubbed with an amalgam of gold 1 part, mercury 3 parts. A brush is used for the rubbing. It is then gradually heated until the mercury is all expelled, which requires less than a red heat, and is rubbed up and polished. This is an extinct art practically, as battery plating has displaced it.

(2366) L. W. asks how to detect tinctura cantharidin in coffee. A. Extract the coffee with ether or chloroform and evaporate to dryness. By volatilization, pure cantharidin mixed with caffeine can be obtained. Weak alkali will dissolve the cantharidin. Precipitate with acid, filter, and test by second volatilization and examine under the microscope, comparing it with a sample of known cantharidin.

(2367) H. V. asks where he can purchase a book of designs used for papier mache decorations and terra cotta workings, designs that would answer for interior and exterior work on houses. A. We can supply you with Interior Decoration, by Brunner & Tryon, \$3. 2. Would you also inform me what is the composition of the plaster work on the outside of frame houses? A. Use a cement mortar, 1 part Port land or even Rosendale cement to  $1\frac{1}{2}$  or 2 parts sand. The only rule to apply in working rapidly setting cement or plaster of Paris is to mix the ingredients dry, then moisten and mix, and only mix small quantities.

(2368) J. H. J. asks how to blacken brass and German silver. A. A very simple process consists in dipping the metal in solution of nitrate of copper and heating over a flame or clear fire. This must be repeated until a black is produced. Or proceed thus: Polish with tripoli or other agent, then wash with a solution of 1 part nitrate of tin and 2 parts chloride of gold; after 12 or 15 minutes wipe off. If the solution is acid, the color will be darkened.

(2369) F. P. asks (1) for the best preparation to use of soda and tartaric acid for aerated water. A. Use 4 parts bicarbonate of soda to  $3\frac{1}{2}$  parts tartaric acid. A slight excess of acid may be used to give pleasant acidity. 2. Is there anything better or cheaper that can be used without a special apparatus? A. No.

(2370) M. H. asks: 1. Is there such a thing as liquid vaseline? A. No. Kerosene and heavy paraffine oils may be taken as the nearest approach to it. 2. What is the most practical formula for determining the flow of water from an artesian well? A. Determine the head of water or pressure at the mouth, and apply the formula

$$Q = a \sqrt{2gh}$$

in which  $a$  = area of pipe in square feet, and  $h$  head in feet, and  $g = 32.5$ . 3. What is the formula for determining the number of gallons of water discharged per minute by a mountain stream? A. Determine its profile and the current velocity, and calculate the flow from these data. 4. For determining the number of gallons of water discharged per minute by a river. A. Determine its profile and the current velocity at different depths, and from these calculate the amount of water. 5. Can the magnetic variation be found by means of an ordinary compass, Jacob mounting, or ball and socket movement? A. Not very accurately. Works on surveying tell how to determine the true meridian, with which you can compare your compass. We can supply you with "A Practical Treatise on Surveying," by Gillespie, price \$3.50. 6. What is the best method to preserve poplar trees from being worm-eaten, and what is the scientific name of the worm that destroys them? A. Spray with Parisgreen and water. For publications and information on subject, address the Department of Agriculture, Washington, D. C.

(2371) J. H. J. writes: 1. Where are phonographic dolls to be purchased, and what is the price? A. For phonograph dolls, address the North American Phonograph Company, New York, N. Y. 2. Professor Steele, in his Series in the Natural Sciences, gives two experiments with sodium sulphate ( $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ ); one is given in his "Fourteen Weeks in Chemistry," page 133, bottom of page, the other in his "Popular Physics," page 261, bottom of the page. I have tried both of these, and do not succeed. Can you suggest what the difficulty is? A. Sometimes these experiments in crystallization fail unaccountably. By using fresh soda sulphate each time you have a better chance of success. 3. In catalogues of "weights of precision" I have seen "riders" spoken of in connection with some sets. What are they and what is their use? A. A "rider" is a weight made of wire that is used like a steelyard weight upon the arm of the balance which must be graduated, generally in twelfths. Thus a twelve milligramme rider gives one milligramme for each division. 4. In a great number of receipts paraffine is used. What is paraffine? Druggists in Shanghai tell me it is an extra refined kerosene oil. Is this right? A. Paraffine wax is meant—the substance from which paraffine candles are made. It is a white solid substance, a product of distillation of coal. It is not an oil in your case, although it is a common name for refined petroleum.

(2372) G. W. writes: In the process of rendering fat and bone boiling from the refuse of markets, a very strong and disagreeable odor is engendered. By the most recent machinery this odor is directed from the vat through a pipe to a furnace fire. The pressure forcing the odor in steam form through the coal bed in the furnace from six to eight inches thick. Now the question is, does this odor become odorless from this furnace heat, or is it brought back through the chimney in a warm form with the same smell to foul the air? Would the smell be greater some distance from the factory, say a mile to a mile and a half, than near to it? A. The process described we should judge could be made perfectly effectual, and would quite destroy the odors if properly conducted. The odoriferous compounds would be oxidized and decomposed, not merely disseminated. No smell should be found near to or far from the factory.

(2373) P. I. W. M. Co. asks: Can you give process for recovering metals? We melt antimony, lead, and tin together. We have a quantity of the ash or dross. We wish to separate the metal from waste. A. The dross undoubtedly consists of the oxides of the metals. By melting in crucibles with powdered charcoal at a high heat, some could be recovered, but probably not enough to pay. By proper precautions the waste could be kept low. We would suggest keeping melted salt upon the metal in the crucibles, or even a layer of charcoal in coarse powder, and also keeping the crucibles covered.

(2374) C. C. W. writes: I have some pieces of serpentine rock which I wish to polish highly on one surface. Can you tell me how to do this? A. This has to be done by rubbing with proper polishing agent. A piece of moist sandstone may be used to produce the flat surface, or a plate of iron with sand and water will answer. This is followed by pumice stone ground to a flat face, and then a compact linen cushion is used with fine emery. Finally apply to the washed surface putty powder and water with a linen cushion. In Workshop Receipts, 1st series, \$2, there is quite an article on the subject under "Marble Working."