

reaction with a few drops of nitric and sulphuric acids, bichromate of potassa, and caustic soda respectively, with a standard sample of the pure oil.

(17) C. & Co. ask: What chemicals are used in the dyeing of Pampas grass, red, blue, yellow, etc.? A. Use warm aqueous and alcoholic solutions of any of the soluble aniline dyes.

(18) R. M. asks: What book would you advise for new beginners in electroplating, brass, copper, tin, silver plating, nickel, etc.? A. Consult Fesquet's "Electro-Metallurgy;" Napier's "Electro-Metallurgy;" Roseleur's "Galvanoplastic Manipulations."

(19) Z. C. writes: In No. 21 of the current volume of the SCIENTIFIC AMERICAN, you give a receipt for making a "copying pad" as follows: 1 oz. Cooper's gelatine to 6 1/4 fluid oz. glycerine. I undertook to make a pad, following the receipt to the letter, and found that the pad would not abstract any ink (aniline according to the receipt) from a piece of paper. I then heated the mixture again and added another ounce gelatine. This time the pad would give four good copies, and only six which were at all legible. Then I added 1/2 oz. more gelatine, and can now take 15 good copies. A. You will have better results if you use more glycerine, as directed, and expel all or as much of the water as possible by heating over a salt water bath for some time. Pads made according to the receipt have yielded upwards of a hundred and fifty distinct copies.

(20) J. K. asks for some good stove polish that can be prepared at home—something that will not burn off. A. Common stove blacking is graphite or plumbago reduced to a fine powder by grinding. We know of nothing better. 2. What will remove stains from stove zinc, and restore its look of newness? A. The planished surface is imparted by rolling the warm sheet metal; the finish cannot readily be restored. The surface may be cleaned and brightened by moistening it with a strong solution of oxalic acid in water, and drying with sawdust, or better, with whiting.

(21) H. B. asks (1) for a receipt for making self-raising flour. A. The following are the compositions of several of these powders in extensive use: 1. Bicarbonate soda, 23 oz.; burnt alum, 19 oz.; starch, 57 oz. 2. Bicarbonate soda, 2 1/4 oz.; sesquicarb. ammonia, 2 1/4 oz.; starch, 47 oz.; burnt alum, 26 1/2 oz. 3. Bicarbonate soda, 31 oz.; burnt alum, 29 1/4 oz.; starch, 39 oz. 2. For cementing leather on friction pulleys? A. Good glue is commonly employed, we believe.

(22) G. O. asks how to clear a warehouse of weevil. They live on the grain in the cracks of the floor when the house is empty. A. Dalmatian (Persian) insect powder, when well distributed, does very well.

(23) B. F. M. asks: What chemicals are used for taking the solar spectrum in colors? Can you tell me a compound that will turn yellow in daylight, also one that will turn red? A. Photographing in the natural colors has never been accomplished by direct means, although monochromatic prints in several colors have been obtained. The results in color photography by indirect means, attained by Vogel, Vidal, Alfred, and others have been noticed in the back numbers of the SCIENTIFIC AMERICAN. Consult some late work on photography and photographic chemistry. See pp. 132 and 133, Vol. 35, SCIENTIFIC AMERICAN.

(24) J. W. asks how phosphor bronze is formed, and how the phosphorus is added to the metal, and how many ounces is given to a pound of metal. A. Wrap the phosphorus—about 1-10th of one per cent—in foil, and force it by means of an earthen rod having a bell-shaped cavity at the end, beneath the surface of the molten metal (bronze). The phosphorus must be free from moisture, and great care must be observed in handling it to avoid accident.

(25) R. H. B. writes: A correspondent of the Derrick states that gold was extracted from petroleum oil in New York city. Does petroleum contain gold; if so, in what quantity? A. According to Mr. John Turnbridge, of Newark, New Jersey, small quantities of gold have been found in petroleum residues. See article "Petroleum and Gold," p. 377, No. 24, Vol. 39, SCIENTIFIC AMERICAN.

(26) C. C. asks (1) for the name of the acid for testing gold and silver. A. The acid used with the touchstone is pure nitric acid slightly diluted. 2. What is the best material for polishing steel and brass? A. Emery flour and oil are in general use.

COMMUNICATIONS RECEIVED.

- On Collisions at Sea. By W. L. Fish Story. By C. F. L. On War Vessels. By J. L. R. On Panama Ship Railway. By W. E. A. On Ice Boats. By L. On Ice Boats. By A. F. B.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were

Granted in the Week Ending

December 2, 1879,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, or any patent issued since 1867, will be furnished from this office for one dollar. In ordering please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Advertising device, J. J. Cohen..... 222,243 Aging spirits and alcoholic liquids, J. L. Martin... 222,298

Table listing various inventions with their patent numbers, including Agricultural implement, Alumina and carbonate of soda, Annunciator, Pneumatic, C. E. Zindars, etc.

Table listing various inventions with their patent numbers, including Paper from coniferous trees, Picture frame, H. B. Johnson, Pillow sham frame, J. R. Adams, etc.

Advertisements.

Inside Page, each insertion --- 75 cents a line. Back Page, each insertion --- \$1.00 a line. (About eight words to a line.) Engravings may head advertisements at the same rate per line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

The publishers of this paper guarantee to advertisers a circulation of not less than 50,000 copies every weekly issue.

SILVERING GLASS.—THE LATEST AND Best Method of Silvering Mirrors and other articles of Glass by Chaman's, Siemens's, Pettieau's, Draper's, and Lavat's Processes. SUPPLEMENT 105. Price 10 cents.

BRIEF HISTORY OF BESSEMER-STEEL. By Henry Bessemer. An exceedingly interesting sketch of the history of Bessemer steel, from the period of the great invention down to the present time, as given by Mr. Bessemer himself at a meeting of the Iron and Steel Institute, and wherein the celebrated inventor recalls some of the incidents connected with his first presentation of the discovery to the scientific world; such as the incredulity of those to whom he suggested the use of his steel for rails, etc. Concluding with a sketch of the history of the Bessemer steel as applied to ship-building. Illustrated with engravings of the specimens that were exhibited by the author to illustrate his paper. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 183. To be had at this office, and of all newsdealers.

GALVANIC BATTERIES.—A NEW AND valuable paper. By George M. Hopkins. Containing full instructions and working drawings for the construction of nearly every known form of Battery, and its maintenance. This paper includes all of the principal batteries used for Experiment, Telegraphy, Telephony, Electro-metallurgy, Electric Light, running induction coils, and other purposes. Also, Earth-batteries, Dry and Moist Piles, Simple Batteries, costing only a few cents. Sulphate of Copper, Nitric, Chromic Acid, Quick-silver, Gas, Secondary, and Thermo-electric Batteries are included. It is the most comprehensive paper yet published on the subject. Illustrated with nearly fifty engravings. Contained in SCIENTIFIC AMERICAN SUPPLEMENT 157, 158, 159. Price 10 cents each. To be had at this office and of all newsdealers.

ICE-BOAT WHIFF.—FULL WORKING drawings and description, with dimensions of the model ice-yacht Whiff, the fastest yacht in the world. Exhibited at the Centennial, by Irving Grinnell. With 14 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT 63. Price 10 cents. To be had at this office and at all news stores. Any intelligent person, with the aid of the drawings and directions given in the above number of the SUPPLEMENT, may readily construct a first-class ice-boat, of any desired size, at a small cost.

ICE-BOATS — THEIR CONSTRUCTION and management. With working drawings, details, and directions in full. Four engravings, showing model of construction. Views of the two fastest ice-sailing boats used on the Hudson river in winter. By H. Horsfall, M.E. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, 1. The same number also contains the rules and regulations for the formation of ice-boat clubs, the sailing and management of ice-boats. Price 10 cents.

PATENTS

CAVEATS, COPYRIGHTS, LABEL REGISTRATION, ETC.

Messrs. Munn & Co., in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine Improvements, and to act as Solicitors of Patents for Inventors. In this line of business they have had OVER THIRTY YEARS' EXPERIENCE, and now have unequalled facilities for the Preparation of Patent Drawings, Specifications, and the Prosecution of Applications for Patents in the United States, Canada, and Foreign Countries.

We send free of charge, on application, a pamphlet containing further information about Patents and how to procure them; directions concerning Labels, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments, Rejected Cases, Hints on the Sale of Patents, etc.

Foreign Patents.—We also send, free of charge, a Synopsis of Foreign Patent Laws, showing the cost and method of securing patents in all the principal countries of the world. American inventors should bear in mind that, as a general rule, any invention that is valuable to the patentee in this country is worth equally as much in England and some other foreign countries. Five patents—embracing Canadian, English, German, French, and Belgian—will secure to an inventor the exclusive monopoly by his discovery among about ONE HUNDRED AND FIFTY MILLIONS of the most intelligent people in the world. The facilities of business and steam communication are such that patents can be obtained abroad by our citizens almost as easily as at home. The expense to apply for an English patent is \$75; German, \$100; French, \$100; Belgian, \$100; Canadian, \$50.

Copies of Patents.—Persons desiring any patent issued from 1836 to November 26, 1877, can be supplied with official copies at reasonable cost, the price depending upon the extent of drawings and length of specifications.

Any patent issued since November 27, 1867, at which time the Patent Office commenced printing the drawings and specifications, may be had by remitting to this office \$1.

A copy of the claims of any patent issued since 1836 will be furnished for \$1.

When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent.

A pamphlet, containing full directions for obtaining United States patents sent free. A handsomely bound Reference Book, gilt edges, contains 140 pages and many engravings and tables important to every patentee and mechanic, and is a useful hand book of reference for everybody. Price 25 cents, mailed free.

Address MUNN & CO., Publishers SCIENTIFIC AMERICAN, 37 Park Row, New York. BRANCH OFFICE—Corner of F and 14th Streets Washington, D. C.

DESIGNS.

Table listing various designs with their numbers, including Brass tubing, W. T. Mersereau, Knitted fabric, C. E. Bean, Plug tobacco, Hancock & Whitlock, etc.