

a dark gray permanent color? It is called "steel bronze" dip. A. The gray or black dip referred to is prepared as follows: Hydrochloric acid, 12 lbs.; ferrous sulphate (copperas), 1 lb.; arsenious acid (pure white arsenic), 1 lb.; dissolve in the acid. Dip the articles bright in dilute nitric acid, rinse in clean water, and immerse in the bronze dip until the proper color is developed. Rinse in cold water and dry in warm sawdust. The green lacquer usually employed is made by digesting together in a warm place, with occasional agitation, shellac, 5 ozs.; sandarac, 4 ozs.; gamboge, 1 oz.; turmeric, 6 ozs.; wood spirit, 1/2 gallon.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

E. A. S.—They are iron garnets—the well formed crystals are sometimes used as jewelry.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure the receipt of original papers and contributions on the following subjects:

- Government Manufactures. By F. M. S.
Bromide of Ammonium. By E. H. W.
Aluminum as a Negative Element in Galvanic Batteries. By J. M. S.
Acoustic Telephones, etc. By J. J. B.
On Small Steamboats. By G. H. S.
On Economy of Weight in Gearing. By J. O. B.
On the History of the American Lead Pencil Manufacture.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were

Granted in the Week Ending

October 22, 1878,

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, 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.

Table listing inventions with numbers, including: Air tight vessel, Alloy for coin, Alloy used with other alloys, Alphabet block, Axle box lid, Axle skein, Bag fastener, Bag fastener and tag holder, Bands, cords, and ropes, Barrel and keg, Barrel heads, Barrels, Basket, Bed bottom, Beers in kegs, Berth for vessels, Bibb or cock, Binder for manifold writing, Binder, temporary, Boiler cleaner, Boilers, incrustations from, Boot and shoe insole, Boot, India rubber, Bracket, Brake, wagon, Brush, Brush, wagon, Butter package, Button and fastener, Can for fluids, Candles, reflector for, Cars, heating railway, Cars, sand box for street, Carriage top prop, Cartridge, Casting sash weights, Chart, dress, Churn, V. Seachrist, Churn, reciprocating, Cloth measuring apparatus, Cloth drying machine, Clothes drier, Clothes pounder, Coin detector, Cooker and steam washer, Corset clasp, Countersink, Crane for hoisting car wheels, Crayon mould section mould, Cultivator, riding, Cultivator, wheel, Cultivator, wheel, Curtain cord tightener, Curtain fixture, Cut off, Dish, covered, Door sealer, Draught equalizer, Dredging machine, Egg beater, Elevators, hydraulic, Engine, portable, Evaporator and fruit drier, Feather renovator, Feed water heater, Felly for vehicle wheels, Fence post, Fire escape, Fire extinguishing apparatus, Flour bolt, Furnace, annealing, Furnace, annealing, Furnace, gas generating, Furnace, steam boiler, Furnaces, combustion in, Furnaces, cylinder from blast, Gas, manufacturing, Gate, Hadley & Dean, Gate fence.

Table listing inventions with numbers, including: Grain binder, Grain cleaning machine, Grain cleaning machine, Maloney & Shoemaker, Grain from vessels, unloading, Grain separator, Grain separator, Smith & Chase, Grindstone frame, Gun cleaner, Hammock and tent, portable, Harvester cutter bar, Hat tip, Hides and skins, scouring, Hitching post, Holdback, Hops, disintegrating stalks of, Horses' heels, pad for, Hose reel, Index, revolving, Indexing apparatus, Indicator and alarm, low water, Indicator, station, Injector, Inkstand, calendar, Insulating railway tracks, Journal bearings, composition for, Ladder, firemen's, Ladle, metal foundry, Lamp wick attachment, Lamps, lantern for street, Keefe & Orsburn, Lantern, A. W. Paull, Lantern, E. Tufts, Last channeling machine, Lathing machine, Copeland & Crisp, Lifting jack, Locomotive, Lightning rod, Log turner, Loom let-off mechanism, Loom take-up and let-off, Main and pipe, Middlings separator, Middlings separator, A. Morley, Milker, cow, Mill, fulling, Mill, water, Mills, measurer for fulling, Moulding machine, Muff, Music leaf turner, Oyster package, Packing, rubber, Paddlewheel, feathering, Padlock, permutation, Pails, bail ear for, Pantaloon protector, Paper damping implement, Paper pulp, wood grinder for, Paper, waxing, S. Hammer Schlag, Pin, flower, Pipe connections, lining for, Pipe moulding machine, Pipes, etc., locker for gas and water, Plane, bench, Planter, corn, Plow, J. Lane, Plow, T. F. McNair, Plow colter, Plow standard, Plow, sulky, Plow, sulky, T. Meikle, Pressure regulator or governor, Pulley, G. Taylor, Pump, oil well, Railway rail, Railway signal, electric, Railway track cattle guard, Railways, construction of, Raker and loader, hay, Razor strop, Razor strop case, Reapers, adjustable reel for, Refrigerator, G. F. Smith, Refrigerator, A. Zinsser, Roof, battening, Roof, fire and water proof, Rubber tubes, vulcanizing, Saddle, harness, Saddle, Holmes & Eldridge, Sand paper holder, Saw set, Saw set, A. Buell, Sawing machine, scroll, Scales, spring, Sewing machine, C. Myles, Sewing machine, C. M. Bradford, Sewing machine fan attachment, Sewing machine, wax thread, Sheep rack, Ship building, Slate grinding machine, Sleigh knee, Smoke and spark conveyer, Smoke stack, Smoothing iron, Spinning spindle, Spoke trimmer, Spring, carriage, Spring, vehicle, Springs, coil for spiral, Stall for vessels, horse and cattle, Stamp, ore, Stamp rods, tappet for, Stirrup, Stock feeding device, Stuffing box and packing, Sugar centrifugal machine, Sulky, T. H. Brown, Surveying instruments, tripod head for, Syringe, W. T. Reaser, Table leaf support, Tallow, artificial, Target, ball, Tea pot handle, Telegraph repeater, Telephone, speaking, Telephone switch, Telephone transmitter, Tension wheel, Thill coupling, Ticket and label holder, Top, spinning, Toy, W. La Montagne, Umbrella support, Valve, globe, Valve, slide, Varnish, M. Mackay, Vise, W. X. Stevens, Wash board, Water closet, C. Rogers, Water wheel, turbine, Well, paraffine from oil, Wheat heater, Whistle, fog and alarm, Wood steaming apparatus, Wool washing machine.

TRADE MARKS. Alloy of metal, Smith & Egge Manufacturing Co., Baking powders, Braid and tape, Bread, A. Brown, Cigars, Seubert & Warner, Cigars, J. D. Culp & Co., Cigars, M. Jacoby, Cigars, C. G. Petersen, Cigars, cigarettes, etc., Goodwin & Co., Cough remedies, C. White, Flavor for porter, D. D. Williamson, Medicated lozenges, Sholey & Roberts, Mineral water, Apollinaris Company, Photographs, etc., Artotype Company, Salt, A. Deakin, Shaving soap, C. Pauly, Smoking tobacco, Roulhac & Co., Soap, F. Treukamp, Spool cotton, R. W. Ferguson, Steel pens, L. Dreka, Theatrical and gymnastic apparatus, W. Farini.

DESIGNS. Carpet, J. Magee, Carpet, J. Neil, Carpet, T. J. Stearns, Cigar box, E. Hantsche, Moulded cards, J. Holley, Padlocks, J. Gerard, Pencil cases, C. W. Gessner, Spoon and fork handles, G. W. Hull.

English Patents Issued to Americans. From November 15 to November 19, inclusive. Firearms, D. B. Wesson, Springfield, Mass., Hemp machinery, J. Good, Brooklyn, N. Y., Illuminating gas, O. Lugo, Flushing, N. Y., Mashing process, A. E. Ferve et al., Tivoli, N. Y., Pavement, wooden, A. Whitehead, Cincinnati, O., Refining saccharine liquids, J. W. Decastro, N. Y. city, Sheaves or pulleys, H. Loud, Boston, Mass.

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 be had 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.

60 Chromo and Perfumed Cards [no 3alkel, Name in Gold and Jet, 10c. CLINTON BF'S, Clintonville, Ct.

GREAT SUCCESS OF Massey's Revolving Shoe Heel Protector. 250,000 pairs sold first year. All first-class dealers are ordering them. Warranted to wear the heel evenly on all sides, maintaining an upright tread to the foot, and avoiding uneven wear of the sole and upper. It doubles the durability of shoes and boots. Liberal discounts to the Trade. N. H. - In ordering, send width of heel for proper size. Address: MASSEY REVOLVING SHOE HEEL CO., 826 Broadway, New York.

SEND 30 CENTS BY MAIL AND GET A KEY THAT WILL WIND ANY WATCH AND NOT WEAR OUT. Circulars of new goods free. J. S. Birch & Co. 33 Dey St., N. Y.

PAINT FROM A SANITARY POINT OF VIEW.—Cases described in which White Lead Paint in Dwellings never Dries, but gives off Poisonous Particles which are inhaled by the inmates, causing Depression, Weakness, Headache, and Loss of Appetite. The New Zinc White is recommended, with covering qualities equal to White Lead. SUPPLEMENT 154. Price 10 cents.

ESTABLISHED 1844. JOSEPH C. TODD, ENGINEER AND MACHINIST. Flax, Hemp, Jute, Rope, Oakum and Bagging Machinery, Steam Engines, Boilers, etc. I also manufacture Baxter's New Portable Engine of 1877. Can be seen in operation at my store. A one horse-power portable engine, complete, \$125; two horse-power, \$225; two and a half horse-power, \$250; three horse-power, \$275. Manufactured exclusively by J. C. TODD, 10 Barclay St., New York, or Paterson, N. J.

ELEVATORS. HAND POWER AND HYDRAULIC. FREIGHT AND PASSENGER. SHAFING PULLEYS & HANGERS. S. GRAVES & SON ROCHESTER N.Y.

65 MIXED CARDS with name, 10c. and stamp. 65 Agent's Outfit, 10c. L. C. COE & CO. Bristol, Ct.

Can I Obtain a Patent? This is the first inquiry that naturally occurs to every author or discoverer of a new idea or improvement. The quickest and best way to obtain a satisfactory answer, without expense is to write to us (Munn & Co.), describing the invention, with a small sketch. All we need is to get the idea. Do not use pale ink. Be brief. Send stamps for postage. We will immediately answer and inform you whether or not your improvement is probably patentable; and if so, give you the necessary instructions for further procedure. Our long experience enables us to decide quickly. For this advice we make no charge. All persons who desire to consult us in regard to obtaining patents are cordially invited to do so. We shall be happy to see them in person at our office, or to advise them by letter. In all cases, they may expect from us a careful consideration of their plans, an honest opinion, and a prompt reply. What Security Have I that my communication to Munn & Co. will be faithfully guarded and remain confidential? Answer.—You have none except our well-known integrity in this respect, based upon a most extensive practice of thirty years' standing. Our clients are numbered by hundreds of thousands. They are to be found in every town and city in the Union. Please to make inquiry about us. Such a thing as the betrayal of a client's interests, when committed to our professional care, never has occurred, and is not likely to occur. All business and communications intrusted to us are kept secret and confidential. Address MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, 37 Park Row New York.

WATCHES

FOR GIRLS AND BOYS.

Genuine Gold Hunting Case Watch for girls, \$16.00. Coin Silver Hunting Case, Full Jeweled, Patent Lever Watch for boys, \$11.00. Guaranteed. Sent by Registered mail on receipt of price, or by express C. O. D. on receipt of \$2.00 on account. A more satisfactory gift cannot be imagined. J. BRIDE & CO. Watches, Novelties, etc. Salesroom, 297 Broadway, N. Y. P. O. Box 2778. (Factory, Brooklyn, E. D. Established 1870.)

OZONE AND THE ATMOSPHERE.—BY ALBERT R. LEEDS, Ph.D. A valuable and exhaustive paper, giving Table of Percentage of Atmospheric Ozone at various Localities in the U. S., Register of Ozone Observations for One Month at Upper Saranac Lake, N. Y., with Thermometric, Barometric, Hygrometric, and other observations; Examination of Methods in Ozonometry, and the Preparation of Ozone by Electrolysis of Water (one engraving), by Electricity (one engraving) and by Chemical Methods; the Collection and Preservation of Ozone. Critical Examination of Ozonoscopes, with useful remarks on Paper Starch, and Preparation of Pure Potassium Iodide. Classification of Ozonoscopes. Examination of Ozonoscopes under known conditions. Influence upon Ozonoscopes of Constituents of the Atmosphere other than Ozone. Ozonoscopes (after Ozonizing) with Sulphurous Anhydride, Ozonoscopes with Nitrous Fumes, and with Hydrogen Peroxide. Action of Ozone upon the Coloring Matter of Flowers. SUPPLEMENT 154. Price 10 cents.

T. G. SELLEW, Manufacturer of DESKS, OFFICE And Library Furniture. 111 Fulton St., N. Y. Fine Cylinder and Roll Desks, Banks and Offices fitted up. Agent for Wootton's Secretary, the DESK OF THE AGE.

ON CHRONIC MALARIAL POISONING. BY ALFRED L. Loomis, M.D. A Highly Instructive Clinical Lecture, delivered at the University Medical College, N. Y. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 1022. Price 10 cents. To be had at this office and of all newsdealers.

PROSPECTUS OF THE Scientific American FOR 1879. The Most Popular Scientific Paper in the World.

VOLUME XL.—NEW SERIES. The publishers of the SCIENTIFIC AMERICAN beg to announce that on the Fourth day of January, 1879, a new volume will be commenced. It will continue to be the aim of the publishers to render the contents of the new volume as, or more, attractive and useful than any of its predecessors. Only \$3.20 a Year including Postage. Weekly. 52 Numbers a Year.

This widely circulated and splendidly illustrated paper is published weekly. Every number contains sixteen pages of useful information, and a large number of original engravings of new inventions and discoveries, representing Engineering Works, Steam Machinery, New Inventions, Novelties in Mechanics, Manufactures, Chemistry, Electricity, Telegraphy, Photography, Architecture, Agriculture, Horticulture, Natural History, etc.

All Classes of Readers find in THE SCIENTIFIC AMERICAN a popular resume of the best scientific information of the day; and it is the aim of the publishers to present it in an attractive form, avoiding as much as possible abstruse terms. To every intelligent mind, this journal affords a constant supply of instructive reading. It is promotive of knowledge and progress in every community where it circulates.

Terms of Subscription.—One copy of THE SCIENTIFIC AMERICAN will be sent for one year—52 numbers—postage prepaid, to any subscriber in the United States or Canada, on receipt of three dollars and twenty cents by the publishers; six months, \$1.50; three months, \$1.00.

Clubs.—One extra copy of THE SCIENTIFIC AMERICAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copies at same proportionate rate. Postage prepaid.

One copy of THE SCIENTIFIC AMERICAN and one copy of THE SCIENTIFIC AMERICAN SUPPLEMENT will be sent for one year, postage prepaid, to any subscriber in the United States or Canada, on receipt of seven dollars by the publishers.

The safest way to remit is by Postal Order, Draft, or Express. Money carefully placed inside of envelopes, securely sealed, and correctly addressed, seldom goes astray, but is at the sender's risk. Address all letters and make all orders, drafts, etc., payable to MUNN & CO., 37 Park Row, New York.

To Foreign Subscribers.—Under the facilities of the Postal Union, the SCIENTIFIC AMERICAN is now sent by post direct from New York, with regularity, to subscribers in Great Britain, India, Australia, and all other British colonies; to France, Austria, Belgium, Germany, Russia, and all other European States; Japan, Brazil, Mexico, and all States of Central and South America. Terms, when sent to foreign countries, Canada excepted, \$4, gold, for SCIENTIFIC AMERICAN, 1 year; \$3, gold, for both SCIENTIFIC AMERICAN and SUPPLEMENT for 1 year. This includes postage, which we pay. Remit by postal order or draft to order of Munn & Co., 37 Park Row, New York.