



(22) P. W. M. asks how to prepare self-raising flour. A. Reduce separately, by grinding, to impalpable powders, 1 lb. bicarbonate of soda, 2 1/2 lb. cream of tartar, 1 1/4 lb. salt. These should be intimately mixed together and then with 100 lb. fine flour. All of the substances employed should be thoroughly dry.

(23) J. W. asks: Is there any preparation or cement, or any way that thin sheet lead can be fastened to cast iron, so that it will adhere firmly and resist the action of the weather, that is, will not be loosened by ordinary use and exposure? A. The new sulphur sulphide composition, called Spence metal, is said to answer very well for this purpose. In a capacious iron vessel with a loose cover melt by heat, 2 lb. sulphur. Heat to bright redness in a sand crucible 3 lb. of coarsely powdered sulphide of iron (FeS2). Remove the crucible and melted sulphur out of doors, quickly, but cautiously, transfer the contents of the former to the latter, cover, and smother the flames by covering the pot with moist earth or sand. When cold remelt the contents of the pot at a gentle heat, and having packed the base of the joint, lead outside, with oakum, pour in the melted composition.

(24) E. A. R. asks for a formula for making the liquid for a barometer or storm glass. A. Dissolve 1 oz. each of potassium nitrate and ammonium chloride in 5 oz. of hot water and let it cool, dissolve in 3 oz. of spirit of wine, 3/8 oz. of good camphor. Filter the solutions, and gradually pour the solution of salts into the camphor solution with constant stirring until a slight permanent precipitate is produced. Pour this liquid into the tube and draw out the latter so that only a pin hole remains open.

(25) E. J. C. asks: What can be used in paste for wall paper to hinder its destruction by the silver moth? A. A small quantity of corrosive sublimate or zinc chloride—70 or 80 grains (dissolved in a little water) to the bucketful is usually employed and proves effectual.

(26) S. R. B. writes: I am a painter for a large iron foundry, and have much trouble to get a filler (that will harden quick) for rough castings. Some of our large castings are quite rough, and look bad when painted. Can you tell me of anything that will answer this purpose? A. The following would probably answer your purpose: Put 28 lb. each of common pitch and coal tar asphaltum into an iron pot and heat to boiling over a fire. Continue the boiling eight hours, or until all volatile matters and moisture are driven off. Let it stand all night, and next morning heat to boiling again and add 8 gallons of boiled oil, then gradually 10 lb red lead and 10 lb. litharge, and continue the boiling three hours longer or until a small sample of it when cooked on a glass plate will roll up very hard between the fingers. Then remove the pot out of doors (away from fire), let it cool down somewhat, and add 20 gallons of turpentine. This black will dry in less than half an hour if it has been properly boiled.

(27) J. R. asks: How can I render paper pulp or papier mache non-porous, impervious to water, and to the action of potash? Can I treat ordinary pressed paper to accomplish the above results? I want to turn out a sheet of paper with a glazed, marbled surface, about the thickness of an ordinary business card, rolled from the pulp, or of pressed sheets, that will be unharmed by weak potash in solution, somewhat stiff and tenacious, but not brittle. Can I do it? A. If not too expensive you might use a solution of gutta percha purified benzole as a sizing. We can think of nothing cheaper that will fully answer your requirements.

(28) R. J. B. asks for a good mixture for covering steam boilers and steam pipes. I happen to have some finely ground soapstone, with a little plumbago and mica in it. Is there anything with which it could be mixed so as to use it for the above purpose? A. Mix the powdered stone into a paste with an equal weight of plaster of Paris and the proper quantity of water, and cast in flat bricks or semi-cylindrical well oiled moulds, to fit the pipes, etc.

(29) J. A. S. asks: What chemicals are used in the Babcock fire extinguisher, and what are the directions for using the extinguisher? A. Bicarbonate of soda, water, and sulphuric acid. The soda is dissolved in water, the acid being contained in a leaden cup or bottle so arranged at the top that, when the handle at the top is pulled up the acid vessel is inverted and the contents thrown into the solution of bicarbonate of soda, 1 pint of strong acid will completely decompose nearly 3 1/4 lb. of bicarbonate of soda, resulting in the formation of sulphate of soda and carbonic acid (gas).

(30) J. C. K. writes: I am making brands out of pure copper, and very often have trouble in casting, as it does not run well and leave holes in the edges of the letters of the brands. Can you tell me how to prevent this? Can I mix anything with the copper, that it will make as good a brand as pure copper? If so, please name it. A. The addition of a small quantity of zinc and about one-tenth of one per cent of phosphorus will sharpen the casting and in a great measure prevent the formation of blow holes.

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

M. G. M.—The rock is hornblende. It contains much sulphide of iron, some copper and zinc, but no appreciable quantity of free gold. The sulphurets may be richly auriferous, but an assay would be required to settle this point.—H. L. E.—Quartz rock containing crystallized sulphide of iron—pyrites—no value.—J. L. R.—The fine brassy piece is chiefly iron sulphide—pyrites; the other is manganese iron oxide and augite.—J. E. C.—It is a good ferruginous clay—almost too "fat" for brick-making alone, but good for pottery of some varieties.

COMMUNICATIONS RECEIVED.

- Is Steam Explosive? By S. G.
On Tornadoes. By B. W. D.
On Gravitation and Motion. By W. R. B.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending May 3, 1881, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, 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. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

Table listing inventions with names and dates. Includes: Adjustable chair, folding, A. G. Fuller; Animal shears, J. J. Bogard; Axle, wagon, A. W. & L. W. Stevens; Bale tie buckle, cotton, G. T. Pittman; Baling press, P. K. Decker; Baling press, W. D. Leavitt; Band tightener, J. L. Sheppard; Barrel cover, S. W. Sheldon; Batting machine for making cotton, T. F. Dunn; Bed, F. Roehner; Bed, cot, C. Glenn; Bed, cot, H. W. Ladd; Bed, spring, F. B. Mix; Belt stretcher, graduated, L. Walden; Berth, self-leveling, J. H. Porter; Bicycle, J. Harrington; Bobbins, machine for making metal, E. Wilder; Boiler furnace, P. L. Weimer; Boiler tube ferrule, G. W. Duvall; Books, binding, H. D. Baumfalk; Boot and shoe, R. W. Cone; Boot and shoe crimping board, Gibbs & Feardon; Boot and shoe heel burnisher, Z. Beaudry; Boot and shoe heel stiffeners, machine for shaping, L. Coté; Boot and shoe heels, machine for trimming, the edges of, A. W. Towne; Boot and shoe jack, Z. Beaudry; Bottle stopper and fastener therefor, H. M. Sweeney; Bottles, tool for finishing and forming threads on the tops of glass, Reiss & Gerber; Bracelet, L. P. & P. Jeanne; Bracelet, M. Pollak; Bracelet, N. B. Smith; Bracelet and similar articles of jewelry, C. E. Mason; Brass, forming articles of, J. Spruce; Broiler, D. Lambert; Buckle, J. Burket; Buckle, harness, C. A. Foote; Burglar alarm, R. Muench; Burglar alarm, W. H. Reiff; Burglar alarm, electric, S. S. Applegate; Butter tub, L. D. Goodwin; Butter worker, J. McAnespey; Button, S. W. Shorey; Button, sleeve, G. E. Adams; Calendar, J. R. Swain; Cane, spittoon, M. L. Baxter; Car brake, Sinn & Stauder; Car brake and starter, J. Seeberger; Car coupling, J. C. Moffitt; Car coupling tool, A. K. McKee; Car, dumping, D. E. Small; Car moving lever, L. Heller; Car, sleeping, G. Leve; Car wheel, J. Rigby; Card, etc., celluloid playing, Hart & Bacon; Carding engine for making mottled yarn, W. Ferguson; Carding machines, cylinder or roller for, H. L. Moulton; Carriage, child's, W. X. Stevens; Cartridge shells, machine for heading, A. C. Hobbs; Casting apparatus, stereotype, E. P. Brown; Cataplasm or poultice, S. Brown; Celluloid, decorating, Hart & Bacon; Centrifugal machine, T. H. Miller; Chain, drive, J. M. Dodge; Chain, drive, W. D. Ewart; Cheese hoop, H. W. Millar; Churn, E. J. Olson; Churn cover attachment, M. O. Stoddard; Cider mill and press, C. Kieser; Cisterns, device for removing sediment from, J. H. Keller; Clothes rack, G. Beneké; Cock and sewer gas cut-off, compound water, W. Cahoon, Jr.; Coffee, peanuts, etc., machine for roasting, W. E. Vernon; Coffee pot, J. Dowling; Cornice, extension window, J. Moore; Corset clasp, A. T. Miller; Corsets, etc., stiffener for, Warner & Tallman; Cotton and hull separating machines, cylinder for seed, W. Deering; Cultivator, F. Bateman; Cultivator, P. Seitz; Dies, device for the manufacture of, G. F. Champney; Door spring, Z. Cobb; Door spring, L. M. Devore; Door spring, S. Jarvis; Door spring, D. C. Stover; Doubling, twisting, and winding machinery, J. Boyd; Draught equalizer, A. Wheeler; Draught frame, vehicle, A. & C. E. Wnuck; Dray, J. J. Carnell; Earthenware stew pan, J. Cook; Egg carrier, D. Goodwillie; Electric machine, dynamo, H. J. Miller; Elevator, C. W. Baldwin; Elevator gate, automatic, G. Woods; Engraved plates, producing, A. Jones; Fan attachment, A. Duke; Fanning mill, E. J. Devens; Fastening pin for braids or ribbons, A. Kimball; Faucet, self-closing, J. C. G. Hupfel; Feather renovator, G. W. Blngaman; Feed water regulator, C. H. Kubne; Fence, D. Wright; Fence post, E. Poutous; Fibrous material for spinning, weaving, etc., production of, C. Bocking; Filtering sugar liquor, H. E. Niese; Fire extinguishing apparatus, A. M. Granger; Flour bolt, J. M. Case; Food, process of and apparatus for preparing, W. S. Fickett; Fruit and vegetable slicer, E. Manley; Fruit jar, W. R. Van Vliet; Furnace, A. B. Turner; Furnace grate, C. T. Beers; Furnaces, sawdust feeder for, S. Sykes; Gas, apparatus for heating retort benches in the manufacture of, A. W. Wilkinson; Gas engine, C. J. B. Gaume; Gas pressure regulator, P. Noyes; Gate, A. P. Campton; Gate, J. Deppeler; Gate, J. C. Garretson; Glass furnace, J. W. Vogel; Glass house furnaces, teazer for, L. Fischer; Glass, melting and purifying, J. Reese; Glove or mitten thumb or glove finger, C. A. Browne; Glue, manufacture of, Seltsam & Hagen; Grain and seed separator, P. C. Compton; Grain, method of and apparatus for steeping, T. A. & W. T. Jebb; Grinding grain, etc., roller mill for, J. A. A. Buchholz; Hame strap attachment and buckle, combined, W. B. Hayden; Hammer power, C. M. Brown; Hammocks, etc., clamp for adjusting, V. P. Travers; Handle, C. E. Waldeck; Harmonica, T. Meinholt; Harness pad attachment, G. Theobald; Harpoon, bomb, E. Pierce; Harrow, alk, Galt & Tracy; Harrow teeth, machine for making, J. Morgan; Harvester header, D. C. Matteson; Hasp lock, J. G. Krichbaum; Hat felting, process of and apparatus for, J. Wharton; Heel finishing machine, J. G. Ross; Hemp, flax, etc., machine for hacking or dressing, T. Tebow; Hides, machine for dressing, C. Schultz; Hinge and stay, trunk, C. D. Sigbee; Hog trap, A. St. Mary; Holdback attachment for harness, A. P. Folsom; Horse detacher, J. N. Smith; Horseshoe blank bar, J. N. Clarke; Hose nozzle, Martin & Paxson; Index, E. N. Heath; Indigo, manufacture of artificial, A. Baejer; Indigo, manufacture of artificial, Baejer & Emmerling; Insect trap, T. H. Dibble; Iron, machine for breaking pig, T. A. Blake; Jewelry, enameling, C. F. Aliesky; Knife and fork, combined, A. W. Cox; Knob attachment, E. H. Phipps; Ladder, folding, W. H. Rushforth; Ladder, step, J. Moomy; Lamp burner, Mouck & George; Lamp, electric, L. G. Woolley; Lamps, construction of, F. Siemens; Lantern, signal, J. G. Hope; Lantern, submarine, L. Fowler; Lard, apparatus for transporting, V. W. Macfarlane; Last, E. F. Jones; Lathe arbor and polishing coil, J. A. Kimball; Lathe, bobbin turning, J. B. Fellows; Lead and crayon holder, H. Harris; Lead pipe machine for making curved, R. Layng; Leather dressing machine, W. Goodman; Lemon squeezer, J. C. Steber; Letter tie, J. N. Price; Lightning arrester, J. L. Finn; Lime, burning, F. B. Livingston; Liquid transportation crate, A. A. Bennett; Loom, Smith & Skinner; Loom picker stick and picker, J. Horsfall; Looms, securing pickers to the picker sticks of, F. H. Doe; Magnet for separating iron chips, G. E. Bowers; Mail bag fastening, X. Viger; Manure spreader, J. S. Kemp; Wash machine, A. Mattingly; Mast, self-adjusting ship, W. Lyman; Match safe, A. Mead; Medical compound, W. H. Holland; Metal box, D. M. Somers; Metal joint for wooden and similar structures, W. B. White; Metallurgical furnaces, process of and apparatus for regenerating and utilizing the waste gases of, J. Reese; Metallurgical furnace, regenerative, J. Reese; Milk setting apparatus, M. O. Stoddard; Milk skimming device, A. Lewis; Mouldings, cloth faced, J. Maxwell; Mouldings, making ornamental picture, G. F. Stratton; Motive power, apparatus for the generation of, J. S. Du Bois; Muffed furnaces, device for introducing pans into, G. P. Chapman; Musical instruments, octave coupler for, G. O. Stearns; Nut, screw, W. Courtenay; Oil, apparatus for and process of cooling and refining, W. G. Warden; Oil, apparatus for cooling and drying the air blast employed in cooling and refining, G. H. Perkins; Oil, apparatus for cooling and drying the air blast employed in cooling and refining, W. G. Warden; Oil, apparatus for purifying, A. Koellner; Oil can for lubricating, H. P. Harshman; Ores, process of and apparatus for desulphurizing and preparing, F. W. Wiesbrock; Organ coupler, E. B. Carpenter; Package fastener, C. K. Stinson; Paint, slate roofing, J. L. Fauss; Pantaloons guard, G. W. Watson; Paper bag machine, W. C. Cross; Paper cutters, parallel gauge for, J. B. Murray; Paper dome, E. C. W., & G. A. Waters; Paper, photographic, T. C. Roche; Parer, apple, D. H. Whittemore; Pen, fountain, A. J. Kletzer; Photochromic pictures or prints, producing, T. Pixis; Picture frame, A. Wolf; Pill rounding machine, G. F. Chappell; Planter, seed, J. A. Houser; Platform or step register, H. D. Fieldus; Plow, G. B. St. John; Plow, sulky, H. E. Keeves; Plow sulky, H. Weber, Jr.

Table listing inventions with names and dates. Includes: Pocket for wearing apparel, G. D. Paul; Printing presses, registering apparatus for plate, J. Carson; Pulley, metal, J. D. Milburn; Pump, air, C. K. Hamilton; Pump, sand, T. Malcolmson; Punch, J. W. Calef; Railway cross tie, I. W. Fleck; Railway signaling apparatus, F. S. Guerber; Railway switch and signal apparatus, Schnabel & Henning; Refrigerating machine, pneumatic, M. J. Klein; Rein attachment, driving, A. E. Taylor; Rein holder, J. H. Baldwin; Revolving rake, sulky, H. Hitchcock; Rolling axles, machine for, J. H. Whitney; Saccharine liquids of low grades, purifying, A. Behr; Sash fastener, W. H. King; Sash holder, J. H. Lynch; Sash tightener, L. Schneider; Saw filing machine, gin, Hartsell & Walters; Saw handle, crosscut, B. A. Husbands; Saw tooth, E. S. Snyder; Sawing machine, hank, N. M. Lawrence; Scraper, road, T. McCosh; Seal press, lead, J. W. Calef; Seam, sheet metal, T. H. Dibble; Seaming machine for pipe elbows, L. Thierry; Seed and cotton seed oil, preserving cotton, F. R. Lanier; Sewing and other small machines, spring power motor for working, T. H. Baldwin; Sewing, book, C. Chambers, Jr.; Sewing machine, E. T. Thomas; Sewing machine needles, machine for manufacturing, E. Wilder; Sewing machine stands, fly wheel and bearing for, G. A. Fairfield; Shears, J. W. Calef; Sheet metal can box, G. F. Griffin; Shoe exhibitor, J. S. Palmer; Shoe stretching device, C. B. Webb; Shuttle worker, L. Huntoon; Skate, roller, E. J. F. Coleman; Skate, roller, W. F. Cornelius; Snap hook, W. B. Hayden; Sodium carbonate, apparatus for the manufacture of, M. F. J. Gerstenhofer; Solar transit, G. N. Saegmuller; Spark arrester and consumer, A. Berney; Spike extractor, R. Hawkey; Stamp canceler and register, L. R. Lupton; Steam engine, compound, C. B. Turner; Still, petroleum, H. E. Lutz; Stone or building block, artificial, J. H. Thorpe; Store service apparatus, H. H. Hayden; Stove cover, H. A. Matthews; Stove ornament, H. A. Matthews; Stove pipe elbow machine, G. A. Riese; Stump extractor, J. Fuller; Tan vat and stirrer, combined, C. Flohr; Tap for threading sockets, J. McCandless; Telegraph and telephone wires, testing station for underground, H. B. Lamb; Telegraph, printing, H. Van Roevenbergh; Telegraph sounder, T. H. Herndon; Telegraphic relay and repeater, C. A. Randall; Telephone central office apparatus, T. G. Ellsworth; Telephone circuit and gas lighting apparatus, combined police, G. D. Bancroft; Telephone signaling apparatus, G. L. Anders; Telephone toll system and apparatus, See & Mc-Maken; Telephonic receiver, C. A. Randall; Telephonic transmitter, C. A. Randall; Terra cotta, etc., manufacture of perforated blocks of, A. Reeve; Thill coupler, anti-rattler for, Sanborn & Ferry; Tilting chair, F. Chichester; Tobacco packing machine, C. C. Clawson; Toe weight, C. Drew; Toy, J. H. Bowen; Toy savings bank, J. Murray; Trace attachment for harness hames, G. M. Strong; Tracheotome, L. J. Lyman; Tramway for carrying cars around curves, cable, S. R. Mathewson; Truck, car, A. westlake; Tube sections, machine for preparing and welding, J. Saeder; Twist drills, manufacturing, T. P. Farmer; Type writer, J. H. Phipps; Valve apparatus, C. N. Dutton; Vapor burner, W. H. Dunsha; Velocipede, F. Fowler; Vise, engraver's, H. Schmidt; Wagon, road, C. W. Salahee; Washing machine, C. W. Posten; Water cooler and filter, P. De Vries; Water purifying apparatus, S. E. Collins; Water wheel, H. Fake; Waterproofing cloth, etc., J. M. Aulestia; Weighing machines, electric automatic recording instrument for, W. H. Beehler; Well point, A. D. Cook; Well pole, W. C. Allison; Wood shaping machine, W. Madison; Wool from vegetable fiber, manufacturing artificial, M. Neumann; Yarn felting machine, L. Bourau.

DESIGNS.

Table listing designs with names and dates. Includes: Bracket, H. Jaworski; Carpet, A. L. Halliday; Carpet, J. B. Neil; Hair front, J. R. Krause; Lacing hook for boots, shoes, etc., M. Bray; Spoons, forks, etc., handle for, S. W. Belk.

English Patents Issued to Americans.

From April 29 to May 3, 1881, inclusive.

Table listing English patents issued to Americans with names and dates. Includes: Bottle stopper, J. Wills, New York city; Centrifugal machine, S. H. Hepworth, Yonkers, N. Y.; Dynamo-electric machine, C. F. Brush, Cleveland, O.; Electric light, T. A. Edison, Menlo Park, N. J.; Hydrocarbons, apparatus for utilizing, J. W. Honchin et al., Brooklyn, N. Y.; Oil, lubricating, H. Fink, Washington, D. C.; Pipes, metal welding, H. V. Hartz et al., Cleveland, O.; Reflectors, C. F. Brush, Cleveland, O.; Slide valves, W. S. Hughes et al., Long Island City, N. Y.; Sewing machines, J. Reece, Boston, Mass.; Steam generator, B. Brazelle, St. Louis, Mo.; Stool, music, M. H. Wilson, Brooklyn, N. Y.; Stone, artificial, G. Boden, Atlantic City, N. J.; Telegraphic cable, P. B. Delaney, New York city; Telephones, W. Main, Brooklyn, N. Y.