

ward rinsing in same way. They should be perfectly free from dust by beating, and should be nailed down. Great care should be taken to rub them as dry as possible with a clean floor cloth. A small portion only should be done at a time. A carpet treated in this way will be greatly refreshed in color.

(10) R. E. B. asks for a recipe for making a shoe dressing or polish? A. Take gum arabic 4 ozs., molasses 1 1/4 ozs., good black ink 1/4 pint, strong vinegar 2 ozs., spirit of wine 1 oz., sweet oil 1 oz. Dissolve the gum in the ink, add the oil, rub them in a mortar until thoroughly united, then add the vinegar, lastly the spirit.

(11) W. G. asks: 1. Can I paint a hard finished wall with white lead thinned with linseed oil? A. Yes, if the wall has had time to season and become hard and dry. Paint should not be put upon hard finished walls before they have had two years' seasoning. They will probably require 4 or 5 coats to give them an even tint; let the color be a neutral gray approaching lavender. 2. Will it stand washing? A. It will stand a reasonable washing if you give the paint time to harden.

(12) W. S. P. asks how to re-gild an old picture frame? A. Take a sponge and some clean water and wash the frame well, then let it dry; procure some water gold size; mix some warm thin size with the gold size so as to enable you to work it with a camel-hair brush; give it two coats; when dry, rub it over with a piece of fine sandpaper; it will then be ready for gilding. When the frame is covered rest it on its edge to drain; when perfectly dry dip a brush into water and wipe the gold over with it; it will take the particles of gold off and make it appear solid. For any parts not covered, take bits of leaf with a dry brush and lay on as before; then give the whole a coat of clear parchment size, brush the back edges over with glue, and the frame is ready.

(13) G. V. B. asks: What is the size of the Corliss engine that was in the Centennial building? What sized boiler was used and what was the horse power? A. See SCIENTIFIC AMERICAN SUPPLEMENTS 19, 26, and 36.

Can I melt brass in an iron-pot? A. Yes, but the pot is likely to fall to pieces, and spill the brass that is melted in it.

(14) S. T. asks: How can I purify common sperm oil so that it can be used for sewing machines? A. Agitate the oil for some time with strong (cold) aqueous solution of tannin in excess; let stand 24 hours, draw off the oil, filter through a column (about 3 feet) of coarsely granular black oxide of manganese and then through a similar one of good animal charcoal also coarsely granular. The filters should be heated by a hot water or steam jacket.

(15) F. W. M. writes: 1. Will you please inform me what kind of oil paint I can use to paint pictures on canvas? A. You can obtain colors already ground in oil. Nut oil or fine linseed oil and turpentine are used. 2. Also what to use for backgrounds? A. The canvas is prepared by treating it with a thick sizing of Paris white. 3. What kinds of varnish to use to varnish the picture after it is painted? A. Use ordinary picture varnish, mastic, dammar, or amber.

(16) In answer to C. B. S.—It is what is known as Indian fiber—not ramie. It is not as valuable as flax.

(17) H. B. C. asks: What is the estimated weight of seasoned oak and pine per cubic foot? A. A cubic foot of live oak will weigh from 57 to 79—average 68; of red oak 47 to 54, average 51; and of white oak 43 to 67, average 50. A cubic foot of Georgia pine weighs from 38 to 58, average 48; of ordinary yellow pine 27 to 39, average 33; and of white pine from 21 to 35, average 28 lbs. See Hatfield's "Transverse Strains," p. 533.

(18) L. F. asks: What does black varnish on parts of a pattern denote? A. That the parts so varnished are core prints.

(19) F. A. asks: Should lathe centers be hardened? A. Yes, the live center to a blue, the dead center to a straw color.

(20) S. P. says: I am using an auger in the lathe to bore holes in end grain wood, and cannot bore straight. Can you tell me the reason? A. The screw end follows the direction of the grain of the wood. File the thread off the screw, leaving a sharp point, and your difficulty will disappear.

(21) J. R. asks: What can be done to help the acoustics of a public building when the sound of the voice of the speaker when loud or on a high key reverberates and all runs together in a confused jumble? The building has an arch in each end, and gable ceiling. The arch in end facing the speaker forms a sort of vestibule and the sound of the voice seems to go up behind this arch to the ceiling and cause the trouble. A. The confusion of hearing is probably caused by the waves of sound being diversely reflected from the two inclined surfaces of the ceiling. Consult p. 356, of vol. 29, 1873; also p. 302, vol. 30, 1874; also p. 324, vol. 30, 1874; also p. 186, vol. 32, 1875.

(22) R. A. asks how to make an æolian harp? A. Make a rectangular box of very thin boards about 5 inches deep and 6 inches wide, and long enough to fit across the window at which it is to be placed. At the top of each end of the box glue a strip of wood about half an inch in height, to serve as a bridge for the strings, which are stretched lengthwise across the top of the box and are made of catgut or wire. The strings should be tuned in unison by means of pegs constructed to control their tension, as in the violin.

(23) In answer to S. M. B.—The chimney shaft should be carried up well above the house, and higher than any portion of it, or than any surrounding object. It has always been regarded as a good plan to make the throat of the flue a little smaller than the flue itself, and to make the sides of the fireplace diminish to the throat by convex rather than by concave lines. Moreover, no two fireplaces should discharge into the same flue, nor any aperture for ventilation be introduced into a fire flue.

(24) N. Y. asks: What kinds of knives are used to sever the paper in newspaper printing presses? A. Knives with a serrated edge.

(25) L. L. asks: How can I recover lead from brass? A. Place it in a ladle and over the fire, and melt it with grease or oil.

(26) P. S. asks: Have there been any locomotives made in which all the working parts were of steel, including connecting and other rods? A. Yes.

(27) J. K. asks: Is there any difference in the grain emery used for cutting and that used for polishing purposes? A. Yes, one is made by crushing between rollers and the other between stamps.

(28) O. F. asks: Are small emery wheels run at the same speed as large ones, and if not, why not? A. They are not, because of the extra quantity of countershafting required to increase the revolutions sufficiently to give the required speed in feet per minute.

(29) A. L. asks: If the curves of the teeth upon a wheel are struck with compasses, can those teeth be properly termed epicycloidal? A. No; but the approximation is very near.

(30) O. F. asks: Do gear wheels made of brass composition run well together? A. Yes.

(31) R. R. asks: What is the objection to heating small pieces of steel in the open fire (to harden them)? A. Decarbonization takes place, injuring the steel.

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

C. F. M.—Worth from two to three dollars per ton in New York. It is used principally for making fireproof boiler and roofing felts, paints, artificial stones, cement, etc.—N. A. R.—It is an impure kaolin containing iron sesquioxide, lime salts and silica. Calcareous clay often accompanies such deposits. Its precise value could only be determined by quantitative analysis.—T. K.—The stones supposed to be diamonds are quartz crystals (specific gravity 2.7). Diamonds may occur in such gangue. The stones are identified by their specific gravity (=3.52-3.55); by their extreme hardness, scratching corundum or sapphire; by their crystalline form (regular octohedron or cube, or some form geometrically connected with these); many exhibit a peculiar appearance arising from the faces being curved or rounded. They are unaffected by acids or alkalis.

OFFICIAL INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending December 11, 1877, 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 various inventions with their patent numbers and dates. Includes items like Air compressor, Animal trap, Bag fastener, Baling press, Barrel washer, Bath, electro-vapor, Battery, curative magnetic, Bed attachment, invalid, Bedstead, sofa, Bee hive, Beer cooler, Bobbin winder, Boot and shoe, Boots, dressing, Bottle, vegetable, Bracelet, F. Lichtenfels, Brake, railway air, Brick machine, Kearsley, Lewis, & Jenkins, Brick mould, S. Folwell, Buckle, C. F. Moore, Burglar alarm, E. D. Reichard, Button and button fastening, C. E. Bates, Can and box, F. M. Simpson, Can, oil, F. Schelling, Can-seaming machine, W. Handy, Cane-grinding mill, I. A. Hedges, Car axle box, T. W. Lillard, Car axle box, L. Rossiter, Car axle box, brass, W. F. Jenkins, Jr., Car coupling, W. V. Perry, Car coupling, J. S. Wertz, Car roof, Powers & Needham, Car, stock, C. R. Evans, Cars, steam pipe coupling for railroad, F. King, Carbureters, jacket and condenser, A. W. Porter, Carriage axle box, W. A. Sittou, Carriage foot rest, M. Seward, Cartridge belt, W. Rogers, Chain link, ornamental, L. Heckmann, Chair, folding, X. Earle, Check rower, J. Johnson, Cheese vat, N. M. Wells, Jr., Churn, G. H. Bradshaw, Churn, E. Brough, Churn, J. W. Mosher, Churn, S. Neis, Churn power, C. M. Riddle, Churn, rotary, J. W. Hazelrigg, Cigarette, asbestos, W. Brisbane, Clasp, ship carpenter's, B. F. Hardesty, Clasp, E. K. Haynes, Clock keys, manufacture of, Ellis & Lewis, Clothes dryer, J. Schater, Clothes rack, portable, G. F. Ruckwardt, Cock, stop, M. Burnett, Cocks or taps, steam or other, R. J. Crickmer, Cockeye, M. Fries, Coffin and casket, L. M. Drake, Collar pad, M. F. Sauer, Column, A. Bonzano, Compass, mariner's, J. A. Marden, Corn stalk cutter, W. Barnes, Cotton separator and cleaner, R. R. Gwathey, Cream, raising, J. S. Watrous

Table listing various inventions with their patent numbers and dates. Includes items like Crib, folding, W. G. Reed, Crushing and grinding mill, Roberts & Cadogan, Cultivator, I. Barber, Curtain fixture, J. C. Lake, Dental spittoon, W. M. Reynolds, Dentist's chair, F. Peters, Desk, writing, D. J. Stein, Drawing frames, H. S. Houghton, Evaporating pan, W. B. & H. C. Atkinson, Feather renovator, D. Farrar, Feed water heater, J. L. Bogert, Fence, barbed wire, L. M. McFarland, Fence, metallic, C. J. Reiling, Fence, wire, E. M. Crandal, Fence, wire, W. A. Middleton, Firearm, breech-loading, W. M. Clark, Firearm, breech-loading, F. Ralph, Fire escape, E. E. Everitt, Fire escape, M. Kertson, Fire kindler, A. Matchett, Fishing flies, book for carrying, H. H. Holt, Foundry apparatus, J. P. Broadmeadow, Fruit box, Shepard & Lewis, Furnace, ore-roasting, E. G. Hall, Furnace, smelting, Cheney & Butterfield, Game board, E. Worch, Gas and water mains, forming joints, W. Painter, Gas brackets, stop work for swing, A. Langerfeld, Gas burner, T. B. Dexter, Gas burner, regulator, J. Cooper, Gas meter, F. Klingmuller, Gas, electrical regulator, J. Davidson, Gas trap, sink, J. A. Thompson, Grain binder, J. F. Gordon, Grain binders, lever take up for, T. H. Parvin, Grain drill, A. Runyan, Grain troller, A. H. Vitt, Grinder, sickle, W. S. Ingraham, Grinding mill, A. H. Wagner, Gun, spring air, M. Weber, Gunpowder, charcoal retort, M. Nichols, Harvester, S. Spencer, Hat box, F. Jenkins, Hay and cotton press, P. K. Dederick, Hay fork, horse, E. V. R. Gardner, Hay rake, horse, J. H. Shireman, Hinge, gate, Townsend & Vickers, Hoe, J. Walker, Hoop-bending machine, E. B. Holmes, Horseshoe nails, machine for, F. Sandham, Hub-boring machine, J. C. Cornell, Hydraulic engine, G. H. Everson, Ink for cancelling, C. C. Egerton, Journal box, anti-friction, E. C. Davey, Kettle, steam cooking, W. G. Flanders, Lamp bracket, A. D. & E. M. Judd, Lamp, carburetting, J. J. & F. G. Palmer, Lamp extinguisher, E. Mercier, Lamp, petroleum, W. Dette, Lamp shade, M. D. Marcy, Lantern, signal, Evans & Wood, Limb, artificial, E. Osborne, Lock for drawers, G. B. Cowles, Lock for drawers, E. L. Perkins, Lock, permutation, H. Clarke, Lock, time, J. Sargent, Locomotive head light, C. T. Ham, Locomotive spark arrester, J. Hewitt, Loom, W. Riding, Lubricator, Higgins & Devereux, Manure drill, Miller & Ludwig, Mash tub, J. Geemen, Medical compound, D. Manbeck, Mill spindle spring, Buschmann & Brown, Millstones, ventilating, H. N. Leas, Mixing and mashing machine, W. Von Sydow, Motor, water, F. W. Tuerk, Jr., Napkin ring and holder, J. Annin, Nut lock, G. J. Carney, Orthographic and numerical frame, H. O. Harden, Pencil, H. L. Lipman, Pencil, J. Reckendorfer, Pencil sharpener, H. Wakeman, Pianoforte sounding board, S. P. Hinds, Piano rack attachment, E. A. Norton, Pickle assorter, J. H. Heinz, Pictures, mounting, J. W. Junker, Planter, cotton, D. Bronaugh, Planter, cotton seed, P. Trayser, Plants, applying poison to, J. L. Goodin, Plow, W. W. Dawson, Plow, S. A. Knox, Plow, revolving, H. Skillings, Plow, sulky, Fuller & Boyd, Plow, sulky, J. Hamaker, Plows, riding attachment for, Bailey & Marshall, Pocket book fastening, D. M. Read, Propeller, screw, W. W. Shoe, Propeller, steering, W. W. Shoe, Propelling attachment for vessels, J. Curtis, Propelling vessels, S. H. Cowles, Pump and check valve, G. F. Blake, Pump, double-acting, W. M. Whiteley, Pump, double-acting force, G. W. Hooper, Pump, force, W. H. McGrew, Radiator, steam, J. H. Mills, Railroad switch, C. W. Simonds, Railway and conduit, combined, J. B. Ward, Railway and locomotive, G. F. W. Reble, Refrigerating transportation case, R. B. Lamb, Refrigerator and counter, combined, F. Roloson, Rein holder, C. Conderman, Rein holder, W. S. Marsh, Rifle barrel, W. Littlejohn, Rope, light weight, A. D. Leday, Sad iron, D. A. Barnes, Sash fastener, F. M. Faircloth, Jr., Saw, shingle, J. Morreau, Saw set, G. W. Bugbee, Sawing machine, circular, G. J. Kautz, Scales for weighing, spring, R. Ehmer, Screw-cutting dies, holder for, F. P. Sheldon, Screw, wood, H. A. Harvey, Sewing machine, C. F. Bosworth, Sewing machine, C. O. Crosby, Sewing machine, boot and shoe, J. Keats, Sewing machine table, S. W. Wardwell, Jr., Sewing machine mechanism, J. F. Chamberlain, Ship's log, D. Carroll, Ship's masts, deck support for, E. Robbins, Shoe, T. Dowling, Shoe fastening, C. F. Sylvester, Shoe lacing fastening, T. A. McDonald, Shot, apparatus for making, B. Tatham, Shutter bower, T. Thorn, Shuttle box mechanism, A. B. Capron, Skating surface roller, G. M. Rollins, Sled propeller, D. Williams, Sole channeling machine, L. Goddu, Spice box and grinder, Seifert & Manger, Spike extractor, J. C. Chapman, Spur, heel, G. W. Elliott, Stand, flower and merchandise, D. M. Haight

Table listing various inventions with their patent numbers and dates. Includes items like Stand revolving dry goods, J. Danner, Stay end clip, M. Seward, Steam boilers, heater and feeder for, J. B. Hyde, Steam engine cylinder, H. F. Frisbie, Steam trap, return, T. E. McNeill, Steering apparatus, J. P. Dorr, Steering apparatus, submarine, J. L. Lay, Steering apparatus, torpedo, J. L. Lay, Stench trap, S. Buhner, Stove, T. J. March, Stove and oven, portable, W. Clifford, Stove, heating, D. B. Eberly, Stove leg, W. Bourn, Stove pipe thimble, Vose & Pierce, Stud and button, G. Pitts, Stuffingbox for propeller shafts, F. H. Lauten, Swing, J. F. Eller, Swing, J. H. Fisher, Telegraph, telephonic, T. A. Edison, Telegraph, electro-harmonic, T. A. Edison, Thill coupling, W. H. Brace, Thill coupling, C. E. Pickering, Tobacco, plug, J. L. Jones, Tooth picks, machine for making, W. F. Swathel, Toy theater, sectional, J. W. Scott, Toy work bench and tool chest, A. Eriebach, Truck, locomotive, W. Mason, Tubing G. Matheson, Turning angular bodies, S. Pischlowitz, Turning wooden axles, Coulter & McKenzie, Valve, garden, V. Kingwell, Valve, globe, T. Davis, Valve motion for steam engines, H. Taylor, Valve, puppet, H. F. Frisbie, Vases, device for decorating, W. T. Murphy, Vehicle, side spring, W. W. Grier, Veneers, machine for cutting, W. E. Harris, Ventilator, G. Hayes, Wagon, side spring, H. S. Marvin, Wagons, draft attachment, C. F. & E. E. Whipple, Washing machine, Overshiner & Shannon, Water engine, Woodbury & Wood, Water meter, piston, A. C. Austin, Water meter, rotary, J. H. Swartz, Weather strip, W. C. Mathews, Weed cutter, J. A. Lees, Weighing device, F. H. Lindsley, Well boring apparatus, Vaughn & Jackson, Whiffletree coupling, H. K. Porter, Whip socket fastening, G. E. Hendey, Windmill, R. R. Lander, Windmill, E. S. Smith, Yarn, dressing cotton, W. H. Perkins

DESIGNS PATENTED, 10,338.—INKSTAND.—J. B. Döbelmann, Brooklyn, N. Y. 10,339.—TOILET FRAMES.—E. W. Hutchins et al., Fremont, Ohio. 10,340.—PENDULUMS.—E. Ingraham, Bristol, Conn. 10,341.—CUFF AND COLLAR BOX.—A. N. Luchs, New York city. 10,342.—BOX STOVES.—N. S. Vedder, Troy, N. Y. 10,343.—FRANKLIN STOVE.—N. S. Vedder et al., Troy, N. Y. 10,344.—COOKING RANGES.—N. S. Vedder et al., Troy, N. Y. 10,345.—PARLOR STOVE.—N. S. Vedder et al., Troy, N. Y. 10,346.—FANCY CASSIMERES.—F. S. Bosworth, Providence, R. I. 10,347.—CASKET Mouldings.—W. M. Smith, Meriden, Conn. 10,348.—CASKET SCREW.—W. M. Smith, Meriden, Conn. 10,349 to 10,351.—STEP PLATE.—M. Krickl, New York city.

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