

covers which fit tight enough to prevent evaporation of the contents. All medical authorities do not consider that this process of preserving fruit by salicylic acid is healthy.

(6918) G. K. D. says: I write to ask if you can furnish me with the approximate formula (as exact as possible) of the composition used for making the Swedish safety matches, both the composition in the head of the match and the composition of the coating on the box on which the match is struck. I refer to safety matches in general, not especially to the Swedish make, although that is a very good sample. A. 1. Dip the splints in a paste composed of chlorate of potash, 6 parts; sulphide of antimony, 2 to 3 parts; glue, weighed dry, 1 part. The paste for the rubbing surface is amorphous phosphorus, 10 parts; oxide of manganese or sulphide of antimony, 8 parts; glue, 3 to 6 parts, weighed dry. The ingredients must be thoroughly mixed and care must be taken not to mix the chlorate of potash in the dry state with the other materials; it should be mixed first with the glue dissolved in warm water. The paste for the rubbing surface may be spread with a brush or spatula on the side of the box. 2. Glue, 18 parts; chrome yellow, 2 parts; oxide of iron, 2 parts; peroxide of manganese, 24 parts; hyposulphite of lead, 8 parts; and chlorate of potash, 36 parts. Composition for the box.—Hyposulphite of lead, 360 parts; chlorate of potash, 14 parts; oxide of iron, 7 parts; powdered glass, 8 parts; finest glue, 4 parts; and amorphous phosphorus, 24 parts. Glue is dissolved in water; other ingredients, being in powder, are afterward mixed with it to the consistency of paint and applied with a brush to the surface of the box.

(6919) G. M. asks (1) whether in the manufacture of calcium carbide for the production of acetylene gas, charcoal can be substituted for coal, in regions where wood is abundant and coal is scarce. A. Charcoal probably could be substituted for coal, but the economy of so doing, and its practicability, would have to be the subject of experiment. 2. A fuel gas made directly from wood or charcoal, the same as from coal in circumstances as described above? If so, where can I find a description of the process? A. Yes; wood, on account of the hydrogen contained, would work better perhaps than charcoal, and certainly much more economically, as it would avoid the loss of heating constituents incidental to the manufacture of charcoal. 3. Where can I find a description of the process for the manufacture of wood pulp for paper making? A. See SUPPLEMENT, Nos. 732, 733, 734, 843, 872, 937, 951, 959, 960, and 982, for valuable data. 4. What numbers of the SCIENTIFIC AMERICAN SUPPLEMENT contain an account of the electrical exhibition recently held in New York? A. Nos. 19, 20, 21, and 22, vol. 74.

TO INVENTORS.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

July 14, 1896,

AND EACH BEARING THAT DATE.

Table listing inventions with patent numbers, including: Acid, amidoalkylsalicylic, G. A. Welter; Advertising device and cigar cutter, combined, H. F. N. ...; Aging beer, wine, etc., process of an apparatus for, F. C. Wiedring; Air compressor, L. W. Noyes; Alarm, See Bicycle alarm. Fire and burglar alarm; Animal trap, T. H. Cottrell; Annunciator system for buildings, J. M. Arthur; Armor plates or the like, apparatus for manufacturing, V. E. L. Demme; Antographic register, W. L. Eary; Bag holder, W. H. Boyd; Ball throwing device, F. W. Randolph; Bearing, Thomas T. Wynn; Bearing for axles, ball, T. H. Holman; Bearing, roller, R. Scharfe; Bearing, roller, G. C. Twyman; Bed bottom, spring, R. S. Sample; Bell alarm, J. Boyd; Bell, bicycle, C. Zimm; Berth, folding, P. Fraser; Beveling machine attachment, V. Royle; Bicycle, E. Grilli; Bicycle, aerial, H. B. Nickerson; Bicycle alarm, W. M. Brand et al.; Bicycle attachment, R. Grilli; Bicycle crank, A. Urub; Bicycle crank shaft, L. Sr., & C. O. Barnes; Bicycle frame, L. Sr., & C. O. Barnes; Bicycle handle bar, V. E. Rumbaerger; Bicycle lock, Thomas & Forbes; Bicycle or velocipede pedal, W. Groth; Bicycle stand, movable, H. N. Timms; Bicycle support, D. W. Albright; Bicycle support, R. Holmes; Bicycle supporting post, R. F. W. Beardsley; Bicycle, etc., brake for, W. J. Fitzgerald; Blind for window, T. B. Astford; Block, See Tackle block; Blow testing apparatus, coin controlled, Field & Warner; Boat, R. S. Peabody; Boiler, See Domestic boiler. Steam boiler; Boiler cleaning apparatus, G. E. Kemp; Boiler water front, G. Tetley; Book, memorandum, Gallsway & Langhelm; Boot cleaning machine, H. Southey; Bottle cap, F. W. Coleman; Bottle cooler, L. P. Bachand; Bottle, mullage, F. A. Glines; Bottle stopper, Lacavalieri; Bottle wrapper, J. J. Hinde; Box, See Packing and shipping box. Pill box; Brake, See Car brake. Fluid pressure brake; Bridge, basket or lifting, E. S. Shaw; Burial casket pedestal, B. Lackford & Holdsworth; Burner, See Hydrocarbon burner; Button, cuff, C. Holman; Buttoner, band, F. S. McKenney; Buttoning electric, F. Brisenmeister; Can, See Milk can; Can, C. T. Draper; Can capping machine, J. Baker; Can cooling machinery, H. Schaake; Can opener, J. W. Merriam; Cane juice, apparatus for fumigating, J. A. Fay; Car brake, electric, W. V. Groth; Car brake, tramway, J. B. Payne; Car coupling, A. H. Bezoo; Car coupling, G. B. Quarrier; Car door, J. W. Parker; Car fender, C. E. Cobly; Car fender, C. B. Finny;

Table listing inventions with patent numbers, including: Car safety guard, street, C. M. Pratt; Car unloading apparatus, railway, J. McBride; Carbureter, J. S. Porter; Card clothing to bars of flats, fastener for securing, J. W. Arnold; Card, information, H. P. Stamford; Carding engine bend, Tweedale & Smalley; Cargo trimmer, A. H. Hawwood; Cash register, F. Clifton; Cereals, process of and apparatus for hulling and cooking, K. Hopkins; Chain, drive, G. W. Schwartz, Jr.; Chain link, detachable, J. M. Dodge; Chair, See Folding chair; Chair attachment, H. Berkemeyer; Chimney cow, D. Scott; Chuck, F. W. Siegel; Churning apparatus, mechanism for operating, C. E. Perkins; Circuit controlling device, J. H. Clark; Cleaner, See Wire cleaning clamp; Cleaner, See Dish cleaner. Street cleaner; Clock, electric, program, A. J. Reams; Cloth cutting machine, F. H. Caldwell; Clutch, friction, I. E. Storry; Coal handling apparatus, J. M. Dodge; Coating metal by electrolysis, H. Alexander; Cook, waste, I. N. Glauber; Cooking method of an apparatus for drying, A. F. Ramos; Coke drawing, cleaning, sprinkling and loading machine, combined, J. A. Montgomery; Collar, horse, R. G. Lehman; Collars and cuts, machine for folding and pressing, A. E. Peck; Concentrator, W. H. Rockwell; Concentrator and amalgamator, J. B. Rossman; Cooler, See Bottle cooler; Corn holder, J. Huxtable; Corn husker, G. C. Janney; Corset, M. F. Lincoln; Coupling, See Car coupling. Hose coupling; Pill coupling; Crusher mill, J. Walker; Curling iron, A. Morley; Curtain, flexible, T. R. Bunn; Curtain holder, C. J. Swanson; Cutter, See Knife. Meat cutter; Cycle driving mechanism, E. Koblmeyer; Cycle or velocipede, P. H. Pritchett; Damper, Dugan & Bailey; Dental engines, electric generator attachment for, C. L. Woolley; Dental suction plant, making, J. O. Scott; Die, See Gage. Grinding die; Die, cleaner, J. E. Durand; Disinfecting apparatus, F. W. Weiss; Display frame, L. T. Snow; Display stand, illuminating, A. F. Baumer; Domestic engine, T. Wynn; Door or shutter, Mathew & Prier; Door or window fastening, L. Grossmann; Drawing table, Laughlin & House; Dredger, G. H. Nichols; Educational appliance, W. E. Munson; Egg tester, J. R. Rorer; Electric atomizer, G. Luvara; Electric heater, C. H. Minchew; Electric light for cold storage rooms, D. E. & R. H. Hayes; Electric machine, dynamo, W. Cooper; Electric machine, dynamo, A. L. Parcell; Electric measuring instrument for measurement of, S. Evershed; Electrical apparatus, protective appliance for, A. de Khotinsky; Electrolysis, method of and apparatus for regulating temperature of, Krosberg & Straub; Elevators, belt chamber or seat for hydraulic, G. H. Evans; Engine, See Rotary engine. Rotary steam engine. Steam engine; Envelope, M. Donnelly; Excavating, etc., bucket or grapple for, G. M. Urie; Excavator, J. J. Prendergast; Eyes, device for assembling, A. C. Estabrook; Eyes, instrument for determining errors of refraction in, A. Clarke; Fabric cutting machine, Palmer & Mercer; Faucet for liquids under pressure, regulator, S. C. Freed; Fence machine, wire, A. Brown; Fertilizer, means for distributing, H. H. Gridley; File, bill, J. M. Butcher; File for holding sales slips, Grady & Robson; Fire alarm system, automatic, J. Young; Fire and burglar alarm, J. T. Peet; Fire extinguisher, D. Farwell, Jr.; Fire extinguisher, automatic, C. E. Buell; Fire pill, chemical, C. R. Macomber; Fishing reel, E. C. vom Hofe; Flour packer, W. J. Hobbs; Flute cutter, P. Dixon; Flue expanders, machine for operating, J. A. Barbydt; Flue stop, R. C. Skinner; Fluid pressure brake, J. M. Hurst; Flushing chair, T. A. Switz; Folding chair, T. A. Switz; Frog, wrecking, C. K. Marshall; Fuel, feeding pulverized, E. C. Smith; Fuel pulverizing machine, E. C. Smith; Furnaces, slice bar for boiler or other level grate, J. W. Wetmore; Gage, See Sling gage. Water gage. Wheel gage; Game apparatus, H. M. Holland; Gas apparatus, L. Stevens; Gas generator, L. & L. Stevens, Jr.; Gas generator, acetylene, H. Morley; Gas generator, fire condition indicator for, H. K. Morrison; Gas regulator, J. S. Connolly; Gate, See Wire gate; Gate, W. Heaton; Gate, J. Simpson; Generator, See Gas generator. Steam generator; Governor stop motion, Lindren & Whitley; Grate, F. G. Saylor; Grinding mill, D. L. Sprague; Grubber, brush, C. E. Alvord; Gun, air, automatic, F. E. Benet & Marcio; Hand rake, S. H. Guernsey; Harness strap hook, J. C. Fiedler; Harrow, J. McCormack; Harrow, disc, S. W. Woodlan; Harvesting, W. R. Baer; Hay carrier, W. E. Gamson; Headlight for street cars, electric, A. C. Thompson; Headlight, locomotive, E. L. Hall; Heater, See Electric heater. Steam water heater. Water heater; Heating apparatus, C. J. Ridgway; Heating apparatus, automatic regulator for, J. B. Webster; Heating apparatus, steam, G. A. Barnard; Hinge, roller bearing, Dicke & Gaertner; Hog, scalding and suspending apparatus, D. W. Imman; Hominy or bulled cereals, process of and apparatus for producing, K. Hopkins; Hook, See Harness strap hook. Whimtree hook; Horse power, J. W. Storey; Hose coupling, E. J. Walker; Hub, wheel, L. Sr., & C. O. Barnes; Hydrocarbon burner, Dr. F. McKinney; Hydrocarbon burner, E. G. Mummery; Ice shaver and scoop, A. Geering; Incubator, G. W. Harey; Indicator, See Speed and direction indicator. Time indicator; Inkstand and pen rack, combined, H. Mover; Insulating conduit, armored, B. T. Elwell; Ironing board, adjustable, C. J. Cramer; Knitting machine, circular, H. E. Harbaugh; Knitting machine, F. E. Bunsel; Lace fastener, shoe, H. Zabl; Lamp and lamp stove, W. Porter; Lamp burner, Kepler & Bashore; Lamp, central draft, Johnson & Jones; Lamp, electric arc, J. C. Knecht; Lamp extinguisher, W. J. Gamson; Lamp globe, Bordel & Paerondak; Lamp stand, electric, W. J. Gridley; Lamps, wick adjuster for central draught, N. Johnson; Lantern, magic, Hastings & Russell; Lifter, See Saw lifter; Linotype machine, C. Mergenthaler; Linotype machine, C. Muehleisen; Liquid sprinkling device, Mamanx & Kelly; Liquids, etc., means for lifting and transferring, A. G. Paul; Lock, See Bicycle lock. Master key pin lock. Pipe lock. Seal lock. Window lock; Lock, H. D. Hinckley;

Table listing inventions with patent numbers, including: Telephone system, W. R. Patterson; Telephone system, A. Graham; Telephone transmitter, H. A. Martin; Thermostat, L. G. Woolley; Thill coupling, W. L. De Grace; Thill coupling, G. A. Dwyer; Thill retainer, J. Barr; Ticket stamping and supplying apparatus, coin controlled, C. Berdorf; Tilt and recorder, combined, W. T. Blaine; Time indicator and register, Helfenstein & Holmes; Tire, bicycle, H. A. Veazie; Tire, elastic steel, B. Frolich; Tire tightener, F. M. Cromer; Tire, pneumatic, T. B. Sloper; Tire wheel, H. A. Veazie; Tires, device for inflating pneumatic, F. A. Busch; Tires to wheels, machine for securing, W. M. Hamilton; Toilet box, M. S. Rowland; Toong operating apparatus, E. Aiken; Toy, automatic, A. G. Paul; Toy, mechanical, W. L. Urquhart; Toy puzzle, A. H. Jones; Trace carrier, F. P. McElfresh; Track brake, H. Austin; Track construction and fittings, E. Clifton; Transformer, electrical, M. Dean; Transformer, rotary, E. Thomson; Trap, See Animal trap; Trestle, adjustable, J. C. Crist; Tripping millinery, S. Symons; Tripping register, W. T. Blaine; Trolley car, H. H. Blaisdell; Trolley track, L. Coburn; Trolley wheel, W. C. Cottrell; Trunk cabinet, Cavanaugh & Lusberg; Tube, See Metal tube; Tube machine, metal, G. W. Peters; Typetting machine, S. H. & P. E. Hodgkin; Typetting or composing machine, S. H. & P. E. Hodgkin; Umbrella case, G. K. Lloyd; Valve, A. M. Clark; Valve, H. E. Wells; Valve, automatic, A. G. Paul; Valve, automatic stop, J. S. Dodge; Valve device, compound engine, E. F. C. Davis; Valve, engine, C. A. Wheeler; Valve, hydraulic pressure regulating, E. O. Thompson; Valve operating device, E. F. C. Davis; Valve operating mechanism, engine, Sheaf & Riggs; Valve, quick action triple, W. Hirst; Valve, safety gas, C. O. Jackson; Valve, signaling safety, J. J. Roy; Valve, steam, R. M. Kirby; Vehicle braking gear, Woodworth; Vehicle running gear, E. J. Laban; Velocipede, F. S. Buckingham; Velocipede, P. T. Millet; Vending machine, coin actuated, J. F. Beretta; Vending machine, coin controlled, C. E. McDowell; Vessels, apparatus for raising surken, C. Cummings; Vessels, etc., automatic means for closing leaks in marine, H. Bricard; Violin bow, J. D. Loppentien; Washboard, E. L. Chase; Washbasin, W. B. Bolton; Watch stem winding and setting, G. A. & J. E. Lockwood; Water gauge, C. B. Mather; Water heater, M. J. Lordier; Water purifying apparatus, R. T. Seaward; Weather vane, ornamental indicator for, A. J. Munson; Weighing apparatus, V. Ratcliff; Welding machine, seam, M. Baumann; Wheel, See Pleasure wheel. Suspension wheel; Wheel gear, adjustable, E. A. Thiem; Wheel rim, T. Kunds; Whiffletree hook, M. L. Hayward; Window attachment, M. M. Kingman; Window, F. C. von Heydebrandt und der Laas; Window lock, V. Tolf; Window screen, J. A. Crocker; Wire confining clamp, reeled, C. R. Hartmann; Wire gate, G. Roth; Wire stretcher, W. C. Cross; Wire stretcher, D. H. Folk; Wire stretcher, G. W. G. Wrench; Wrench, See Bucket rod wrench;

DESIGNS.

Table listing designs with patent numbers, including: Badge, J. F. Shipp; Belt pin, B. Rice; Brush handle, bicycle, F. G. Neubert; Button, G. A. Decker; Cabinet, folding, E. H. Grant; Corkscrew collar, E. Walker; Cyclometer casing, F. Hart; Feed cutter knife, I. E. Smith; Gas lights, gallery for incandescent, W. E. Barrows; Holding machinery cross head, F. A. Bates; Mat, H. Stubner; Necktie holder, P. Hennessy; Oven, bake, E. H. Huenefeld; Pipe mouthpiece, M. Mayer; Refrigerator, C. H. J. Vouwie; Shelf bracket, T. Corcaden; Shutter bowing clasp, window, W. H. Bothwell; Silversmith's stock or ornament, P. Mubr; Tire valve cap, G. H. F. Schradler; Turning machine roller, M. Ross; Water pillow, A. A. Stoll;

TRADE MARKS.

Table listing trade marks with patent numbers, including: Bandages, suspensory, E. G. Rawson; Bicycles, Duerber Watch Case Manufacturing Company; Bicycles, Martin & Gibson Manufacturing Company; Bicycles, B. F. Haynor, Jr.; Bicycles and other velocipedes and parts thereof, Remington Arms Company; Carpet sweepers, Bissell Carpet Sweeper Company; Cement, imported, F. W. Douglas; Cigars, C. Upmann, Stiefel & Company; Clay building and paving material, burnt, Baritan Hollow and Porous Brick Company; Cotton flannels, Marshall Field & Company; Cotton goods, Marshall Field & Company; Cycle parts and accessories, Anglo-American Cycle Parts Company; Die fittings, Marshall Field & Company; Enamel and house paints, varnishes and japans, McLennan-French Paint Company; Fancy goods and notions, certain named, Marshall Field & Company; Farm implements, T. Cascaden, Jr.; Flour, J. B. Camors & Company; Flour, wheat, Christiansen & Henderson; Garment supporters, C. D. Shain; Gumbo, soluble sea island, R. W. L. Basin; Gumbo, superphosphated and fertilizing compositions, R. W. L. Basin; Gum, chewing, D. Norris; Lap robes, Rippowam Woolen Manufacturing Company; Linens, Reberhart & Raymann; Meat coloring and preservative of B. Heier; Meat extract, Liebig's Extract of Meat Company; Oils, lubricating, F. A. Sebnorr; Pills, J. Hughes; Powders for the feet, A. S. Olmsted; Preparations for preventing and relieving odors from perspiration, S. C. Noble; Pumps and engines, Geo. F. Blake Manufacturing Company; Remedies for rheumatism and gout, B. T. Jacobs; Suitings and sheetings, Wamsutta Mills; Waists for women and children, T. E. Fitzpatrick; Wood fillers, primers and paints, Bridgeport Wood Finishing Company;

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