

pressed to the surface. The surface of the celluloid when cold requires finishing and polishing much in the manner of ivory. It easily takes fire, and is considered a dangerous article to handle near fire.

(8) A. B. S. asks: Can a flue plate on a tubular boiler that has a crack between two flues (distance between flues about 3/8 inch) be repaired, without taking out the flue plate, and if so, how should it be done? A. There is no satisfactory way of repairing a cracked tube sheet. A hole may be drilled and patches bolted on both sides with iron putty for a temporary expedient.

(9) A. E. asks: Which is most economical to use on a 30 horse power engine—a 6 foot or a 7 foot balance wheel; and what is the difference in cost of these wheels, each having an 18 inch face? A. So small a difference will have very little effect. Evenness of motion depends upon weight and diameter of balance wheel. The larger size will give a better effect with the same weight. Apart from the convenience of belting, there is economy in a large balance wheel.

(10) C. A. S. asks: What will remove limestone from steam copper coil? Coil is used in heating water, and deposit is on outside. A. Hydrochloric acid 1 part, water 3 parts. Swab the coil with the mixture, let it stand an hour or two, and wash with a stiff brush and water. Parts that do not come off the first time, treat again.

(11) E. A. C. asks for a marking ink for wooden packages. A. Dissolve asphalt in naphtha or oil of turpentine to a thin fluid. This dries quickly, and the markings are nearly indestructible.

(12) C. A. H. asks a formula for making a cement to cement glass lenses to iron block while grinding. Now use a cement of pitch, resin, and wood ashes, but it often breaks delicate lenses, or during the process of grinding loosens itself from the glass. A. 10 parts resin, 2 parts shellac, 1 part rouge; melt, mix, and add enough turpentine to make it tough, so as not to splinter under pressure from the thumb nail, at the working temperature of the room.

(13) R. & Co. ask (1) how pulverized stearite (soapstone) is applied for finishing walls or ceilings. A. The material is ground with linseed oil, same as any dry pigment is mixed with oil to produce a paint. It is said that by its use the parts coated become fireproof.

(14) L. K. asks what the size is made of that is used to put on flock. A. The size used for flock work is made from glue, but you will find it best to purchase the article from some ink manufacturer. Details of preparation, obtained from long experience, make it possible for these makers to produce a better size than can be made by a private individual.

(15) A. L. S. asks: How many distinct substances are known to science, and how many are used as medicines? A. There are about 67 distinct elements known to science; of these, perhaps 50 are used in medicine.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. In addition to our facilities for preparing drawings and specifications quickly, the applicant can rest assured that his case will be filed in the Patent Office without delay. Every application, in which the fees have been paid, is sent usually to the Patent Office the same day the papers are signed at our office, or received by mail, so there is no delay in filing the case, a complaint we often hear from other sources. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, N. Y.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted, March 16, 1886,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions such as Aerial navigation, Air as a motive power, Alarm, Aluminium from aluminous ores, Atmospheric pressure apparatus, Automatic sprinkler, Axle box, Axle lubricator, Bale ties, Baling press, Banjo, Barrel head, Bathing apparatus, Beams locking device, Bearing, Bed and fire escape, Bed bottom, Bedstead, Beer, receptacle for carrying, etc.

Table listing inventions such as Belt, machinery, Bit holder, Bleaching apparatus, Blower handle, Board, Boat detaching device, Boiler, Book holder, Book felt, Boot and shoe lasting machine, Boot, rubber, Boots and shoes, Bottles, apparatus for drawing corks, Bracket clamp for shingling, Brake, Brick kiln furnace, Brick or other kiln, Brick, tile, etc., Brick walls, Brushes, Brush, commutator, Brushes while being filed, Buckle, Buggy spring, Bullet, Bung, Buoy, Burglar alarm, Button, Button, changeable, Button hook, Calculating device, Camera stands, Can opener, Candle holder, Cap, Cap, traveling, Car brake, Car coupling, Car coupling, Brown & Wilson, Car coupling, F. N. Eddeleman, Car coupling, D. B. Gray, Car coupling, C. Keeler, Car coupling, J. C. F. McCauley, Car coupling, E. G. Sessions, Car cover, Car door fastener, Car freight, Car step, Cars, automatic brake, Cars, dust guard, Carriage, baby, Carriage curtain fastener, Carriage top, Carrier, Cash and parcel carrier, Cash and parcel transfer system, Cash and parcel transmitting apparatus, Cash and parcel transmitting apparatus for store service, Cash indicator and check receiver, Casting hearth-plate catches and grate hooks, Ceiling, fireproof, Chain machine, Chair, Churn, Churn closing device, Clasp, Cleaner, Clothes, fork, Clothes line fastener, Clothes rack, Clock, gauge, Coffin, Combination lock for money drawers, Compass, mariner's signal, Convertible chair, Cooker, farina, Cord holder operating mechanism, Corn shock compressing device, Cornice bending machine, Corset, Corset cover, Counting register, Coupling, Crockery ware, Cultivator, Cultivator, wheel, Curtain roller, Cutlery, Dental bridge work, Desk, cabinet, Dies, holding, Digger, Dioramic or panoramic structure, Dish washing machine, Distributer, Door securer, Drier, Drill, Drilling machine, Drum, stovepipe, Egg case, Electric lighting apparatus, Electric machine, dynamo, Electric machine, dynamo, C. J. Van Depoele, Electric motor, Electrical translating devices, Electro magnetic motor, Electro magnetic reciprocating engine, Engine, Envelopes, device for opening, Exercising machine, Eye bars, manufacture of, Fabrics, spreader for spreading and stretching, Fan and operating machinery, Farm gate, Fastener, metallic, Faucet and beer pump, Fence machine, Fence post, Fence posts, wire fastening device, Fence posts, wire stretching device, Fence wire and other strands, Fence wire, barbed, Fences, anchoring device, Fertilizer distributor, Fifth wheels, die for making, File box, File, check, T. A. O'Keefe, Firearm, G. D. Potter, Firearm barrel, Firearm, breech-loading, Firearm, electric, Firearm, repeating, Firearms, safety catch, Fire escape, Fishing, snell, Folding machine, Folding machine, E. P. Donnell, Fork, Frame, See Spinning frame, Frog, spring, Fruit basket cover, Fruit jar, Fruit picker, Fuel, feeding fine, Furnace, See Brick kiln furnace, Furniture handle, Gauge, Galvanic battery, Galvanometer, Garbage destroyer, Garment supporter, Garment supporter, H. A. Seymour, Gas conduits, coupling for joints, Gas, furnace for the combustion of natural, Gas, etc., parallel drop bracket, Gas traps, safety seal, Gas, utilization of natural, Gate, See Farm gate, Gate, C. W. Gillis, Gate, W. M. Price, Gate, J. W. White, Gold and silver from ores and mattes, Governor, automatic marine, Grain binder, Grain cleaner, Grain register, Grate for furnaces, Grating, Grinding mill, Gun barrel, Gun, electric, S. Russell, Hammock stretcher, Hand rake, Harrow and replanter, Harrow and seed planter, Harrow, spring tooth, Harrow tooth, Harrow, wheel, Harvester, low binding grain, Harvester reel, Hat felting machine, Hay burning apparatus, Hay loader, Hay rake and tedder, Head dress, Hoeing machine, Hog and chicken cholera remedy, Hoisting apparatus, Holder, Holder, card holder, Line holder, Hoof cleaner and trimmer, Hook, See Button hook, Hops to obtain extracts therefrom, Horse detaching device, Horse marsh shoe, Horseshoe, C. S. Canfield, Horseshoe, C. J. Le Roy, Hose supporter, Hydrant, Hydraulic motor, Injector, Insect powder gun, Insecticides, Intestines, machine for cleaning, Ironing board, Jar, See Fruit jar, Joint, See Pipe joint, Kiln, See Brick or other kiln, Lime kiln, Kiln for and method of burning clay, Ladder and adjustable platform, Ladder, extension, Lamp, Argand, Lamp, electric arc, Lamps, automatic cut-out for electric, Lamps, carbon for incandescent, Lantern, L. E. Johnson, Lantern, magic, Latch and lock, Lath, sheathing, Leather splitting machine, Lime kiln, Garner & Hill, Line holder, Lock, See Combination lock, Locomotives, Lubricator, Match box and cigar cutter, Match box and cigar holder, Matches, manufacture of, Mechanical movement, Mechanical movement, F. Jackson, Metal bending machine, Meter, See Volt-ampere meter, Milk pans, ventilating cover, Milking machine, Mill, See Grinding mill, Motion, device for converting, Motion device for converting reciprocating into rotary, Motor, See Electric magnetic motor, Mower, lawn, D. Arndt, Music leaf turner, Musical instruments, manufacture of reeds, Nail, See Shoe nail, Nail holder, Needle case, Nipper or wiper for lasting machines, Nut lock, Oil cup for skate and other journals, Oil press, Oiler and wiper for commutators, Overall, M. Vanderbeugle, Paper bag machine, Paper weight, Pea sheller, Peanut roaster, Pen and fountain pen holder, Pen, fountain, Permutation lock, Photographic background and foreground, Photographic sensitized paper, Pipe joint, Pipe wrench, Planter, corn, Planters, hill marking attachment, Plow, garden, Plow, planting, Post, See Fence post, Potato digger, Potato digger, Pressure regulator, Printer's quoin, Printing machines, cushioning apparatus, Printing on resawed lumber, Propelling vessels, tube motor, Propelling and steering vessels, Protector, Pug mill, Pulley bearing, Pulverizing mill, Pump, duplex propeller, Pump, spraying, Rack, See Folding rack, Rafting logs, Rails, machine for stamping, Railway crossings, Railway, electric, Railway frog, Railway rails, fastening for, Railway signal, Railway tie, Rake, See Hand rake, Rake, L. Ehrlich, Reel, See Harvester reel, Refrigerator, Refrigerating machine, Register, See Counting register, Register, Rein attachment, Roaster, See Peanut roaster, Rock drill, Rock drill, band, Rock drills, carriage for, Rocking chair, Rocking chair, reclining, Rubber cloth, joining pieces of, Rubber cloth, mechanism for joining pieces of, Saddle, riding, Safety switch, Salts, making fluorine, Saw, drag, Warren & Potter, Saw machine, band, Saw making machine, Sawmill, band, Sawmill, band, D. K. Allington, Sawmill, band, H. R. Barnhurst, Sawmill, band, Griswold & Barnhurst, Sawmill, dog, T. J. Neacy, Sawmill, reciprocating, Sawmill, saw sash for reciprocating, Saw set, Bugbee & Danner, Saws, machine for filing cotton gin, Sawing machine, circular, Scraper and grader, Screw machine, Seal lock, Sealing machine, Seaming machine, Sewing, book, Sewing machine, book, Sewing machine, presser foot, Sewing machine shuttle, Sewing machine spool holder, Sewing machine quilting attachment, Sewing machines, grinding attachment, Shears, A. M. Barnett, Shoe, T. R. Evans, Shoe fastening, Shoe nail, Signal, Skate, roller, Skate, roller, C. Heacock, Skate, roller, Sleigh, bob, Soldering tool, Sower, broadcast seed, Sowing machine, Spinning frame, Spinning machine spindle bolster, Spring, See Buggy spring, Vehicle spring, Sprinkler, Stamp, self-inking hand,