about one ounce or less of the dry powdered salt with every 60 pounds of butter, and knead well. Be careful to crush all small lumps which may form, and have the substance well distributed throughout the mass. If the helenina is at all soluble in water, wash the butter with as concentrated a solution as possible, or else dilute with water the alcoholic extract and use that. The alcohol is not likely to affect the butter unless used in a concentrated form. Of course thoroughly mix the solution through the butter by kneading, etc.

(36) H. R. C. asks: Is there a point in the axis of a revolving wheel in which there is no motion? A. There seems to be much misunderstanding as to the meaning of the word axis, it being a line having neither breadth nor depth, around which a body revolves. Every particle of the body revolves or moves around its axis. The axis does not revolve. Axles revolve.

(37) W. H. D. asks (1) if worn out files can be recut by using acid? A. Yes. 2. With what success? A. Fair. 3. What acid to be used? A. 1 part nitric, 3 parts sulphuric, 7 parts water; dip from 5 seconds to 5 minutes. 4. What can be used in place of oil on the drawing and blanking dies? The oil touching certain rubber parts rots the rubber. A. Glycerine.

(38) W. M. B. asks for an easy and cheap way to clean beer bottles, that is, what can I put in water to make them become clean, and at the same time remove old labels, etc.? A. At factories where beer is bottled, the empties are cleaned by means of a revolving brush, which is pushed in through the mouth of the bottle, turned around once or twice, and then withdrawn. The labels are acted upon by simply soaking in water and then scraping with knives. If the bottles are contaminated with grease, alkalies are used to cleanse them, and sometimes acids are used, but we believe as a general thing that nothing but water is employed. See the article "How to Clean Bottles," SCIENTIFIC AMERICAN SUPPLEMENT, No. 318.

(39) C. D. writes: There is a bet between two miners here who are working Burleigh drills. A claims that there is more pressure in a 2½ inch pipe—a conductor of compressed air—than in the ¾ inch pipe leading from it. B claims that the pressure is not reduced by transmission into the smaller pipe. How is it? A. If the drill is not at work, the pressure is uniform throughout the various sized pipes. If a drill is running by a ¾ branch from a 2½ inch pipe, the pressure is less in the ¾ pipe than in the 2½ inch main—the amount depending upon the speed of the drill or the relative velocities of the air moving through the two pipes.

(40) J. H. desires a recipe to make Persian sherbet powders. A. We presume you refer to the following: Take 8 ounces carbonate of soda, 6 ounces tartaric acid, 2 pounds loaf sugar (finely powdered), 3 drachms essence of lemon. Let the powders be very dry. Mix them intimately, and keep them for use in a wide mouthed bottle, closely corked. Put 2 good sized teaspoonfuls into a tumbler, pour in ½ pint of cold water, stir briskly, and drink off. See also article on Summer Beverages in SCIENTIFIC AMERICAN SUPPLEMENT, No. 192.

(41) S. S. S. writes: I have a canvas and leather strop for stropping razors, but they don't put a keen edge on. What shall I put on to mend them? A. Razor paste is made as follows: Mix fine emery intimately with fat and wax until the proper consistency is obtained in the paste, and then rub it well into the leather strop. Prepare the emery by pounding thoroughly in a mortar the coarse kind, throwing it into a large jug of water, and stirring well. Immediately the large particles have sunk, pour off into a shallow plate or basin, and let the water evaporate. Another receipt is, levigated oxide of tin, prepared putty powder, 1 ounce, powdered oxalic acid ¼ ounce, powdered gum 20 grains; make into a stiff paste with water, and evenly and thinly spread it over the strop. With very little friction this paste gives a fine edge to the razor, and its efficiency is still further increased by moistening it.

(42) B. B. ask for a mixture that will clean rags that have been used in wiping off oil. A. Boil the rags with a dilute solution of caustic soda, and then wash in water to make them perfectly free from chemicals. 2. How wood filling is made of oil and corn starch? A. For porous hard woods, a filler is made by using boiled linseed oil and corn starch stirred into a very thick paste; add a little japan, and reduce with turpentine. Add no color for light ash; for dark ash and chestnut, use a little raw sienna; for walnut, burnt umber and a slight amount of Venetian red; for bay wood, burnt sienna. In no case use more color than is required to overcome the white appearance of the starch, unless you wish to stain the wood. The filler is worked with brush and rags in the usual manner.

(43) G. W. S. asks: What can I coat a muslin bag with so that it will be air tight and pliable, that it may be readily rolled when not inflated? A. Take 1½ ounces of India rubber, cut small, and of chloroform, ether (washed), or carbon disulphide, 1 pint; digest in the cold until solution is complete. Dries as soon as it is laid on. Pure gutta percha may be substituted for India rubber.

(44) J. S. McL. asks how the letter press printing plates are made of celluloid. A. The process is patented and the property of a company. It is partially secret also. 2. Is there a liquid solder that will solder metal plates together without the use of a hot soldering bolt? A. A so-called liquid solder is prepared as follows: Feed hydrochloric acid all the small pieces of zinc it will eat, dilute with equal amount of water, and it is ready for use.

(45) E. G. P. desires a receipt for whitening a helmet covered with white cotton cloth, something that will not rub off. A. There is no preparation for the purpose, but among individuals chalk is used frequently to cover over defects. A little pipe clay likewise might be used.

(46) S. J. H. asks for some means by which the odor of a new refrigerator can be gotten rid of. I have tried charcoal, but without relief. Water, butter, and milk suffer most, but other things more or less. A. There is no very satisfactory means that we can recommend for this purpose. A vessel filled with water or milk will absorb odor about as quickly as anything. The refrigerator should be lined with metal, and that thoroughly washed. 2. What will destroy currant worms? A. See the plan recommended in SCIENTIFIC AMERICAN SUPPLEMENT, No. 242, under title of "Currant Worms." See also "Black Ants as a Cure for Currant Worms," given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 316. 3. Will remedy for currant worms be efficacious in destroying slugs on a rose bush? A. Sprinkling beds of vegetables and flowers with a weak solution of chloride of lime is said to effectually preserve them from caterpillars, slugs, etc.

(47) J. A. J. wishes to have full particulars of how to cover copper wire with gutta percha and cotton, etc., also how to construct a cheap machine to do the same. A. The copper wire is drawn through vessels containing the guttapercha in a melted condition. A sufficiency of this material adheres to the wire as it cools. It is then passed through suitable dies, in order to give proper shape and thickness. There are several modifications of this general process, and the entire manipulation is patented.

(48) S. T.—We know of no mineral glaze that is pliable.

(49) J. M. S.—For cleaning a running engine, use tripoli or rotten stone with kerosene oil. If the hollow places get gummy, use a stick dipped in the mixture. Sometimes it is necessary to use emery cloth or flour of emery on neglected parts. After once getting your engine clean, the less emery you have around the better. If you wipe and clean every day, use only a little whiting wet with kerosene. If you use mineral oil for lubricating, you may need but very little polishing powder of any kind. Use only whiting on the brass.

(50) T. C.—The "invention" you mention as having been recently brought out by an exhibition company for producing tableaux, etc., was fully described by us some twelve years ago, as Pepper's ghost. The real figure, which is not seen by the observer, is seated below the stage, in the light of a strong lamp, and facing a mirror, while above the figure is a piece of plate glass, both mirror and glass being placed at an angle of about 45°. The ghostly image or reflection is then seen by the observer apparently above and behind the real figure.

(51) J. W. B. asks (1) how to make a Grenet battery. A. Procure two plates of zinc two inches by six, and four plates of carbon of the same size, and two jars adapted to receive them. Amalgamate the zincs, place one zinc between two carbon plates in each cell, and separate the carbons from the zinc by means of rubber or wood; the distance should be ¼ inch. Place in each cell a bichromate solution which you will find described in recent Notes and Queries. Connect the zinc of one cell with the carbons of the other, and connect the remaining carbons and zinc plates with your lamp; arrange the elements so that you can readily plunge them into or withdraw them from the solution. 2. How to make an electro magnet, and if No. 20 of cotton insulated wire would do? A. For instructions on electro-magnets consult SUPPLEMENT, No. 182, in which you will find a great variety of forms described. Cotton insulated wire will do. 3. Could old insulated wire (cotton covered) be made good by running it through melted shoemaker's wax, leaving a thick coat over the cotton? A. Old insulated wire will answer; better coat it with beeswax or with paraffine.

(52) C. L. M. asks: Which side of a belt should be run on the face of a pulley—the grain or flesh side? Which will develop the most power, and why? A. All the best belt makers say, run grain side to the pulley, and it is claimed that 33 per cent more power can thus be transmitted than with the flesh side next the pulley. The grain of the leather has a velvety surface, which enables it to hug the pulley closer than will the hard flesh side. Some users run the flesh side to the pulley for small belts, and then daub and stick up the belt with beeswax or resin to make it take hold, but this is not economical for the life of a belt, is unworkmanlike, and there is always more or less fussiness in running machinery where the belts are so treated, instead of their running for years without any attention, as they will sometimes do when run grain side to the pulley, and of proper size to transmit the desired power.

(53) E. J. S.—The Waterbury watch was invented by Mr. D. A. A. Buck, who also built an engine so small that, with boiler, governor, and pumps, it would stand on a gold dollar. It was ⅝ inch high, had 148 separate pieces, held together by 52 screws, and 3 drops of water were required for the boiler. Diameter of cylinder one-sixteenth inch, stroke three thirty-seconds inch, total weight 15 grains.

(54) J. C. T. asks: Will a spring, if it is held in tension, lose its elasticity if it not used? Take for example a spring door hinge held either open or shut for a year at a time, and not used in that period, would the spring have lost much of its strength? What is the best metal to make springs of for that purpose, and how long would they probably retain their elasticity if strained in either direction? A. Hardened steel springs retain their elasticity under restraint for many years. Brass springs weaken.

(55) H. H. L.—An electric current must have both quantity and intensity to kill an individual. We do not believe there is any practical way of glazing porous paper so it will take ink, except by the use of size, as paper manufacturers do.

(56) H. P. B.—No insulation for magnetism has been discovered. A substance for this purpose might find some applications which would render it valuable.

(57) W. H. B.—The pitch of screws is a matter of study in regard to the lines of the boat. The narrow, fine lined boat will allow of greater pitch than a blunt, wide boat. The proposed speed of screw and boat are also essential elements in the computation. Screws vary in pitch from one and a half to twice their diameters. You will find interesting details in regard to power, velocity, and form of screw propellers in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 370, 101, 272, 15, 208, and a book on screw propulsion, by Walker, 75 cents, which you may obtain through this office.

(58) G. M. G. asks: 1. What pressure is a steam trap for returning water from heating coils, etc., to the boiler liable to? A. The boiler pressure. 2. What pressure or strain is it liable to besides the regular boiler pressure? A. None, by its proper use.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

June 30, 1885,

AND EACH BEARING THAT DATE.

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

Air compressor, W. T. Fox 321,206, 321,207
Alarm. See Burglar alarm.
Amalgamator, dry ore, H. Kappner 320,937
Axle and box, carriage, J. Fowler 321,205
Axle iron, carriage, C. F. Harrington 321,291
Axle nut, vehicle, A. V. Smith 321,255
Bandage, suspensory, E. G. Winchester 321,072
Bathtub, portable, C. A. Hayward 321,217
Bearing, anti-frictional, T. R. Ferrall 321,350, 321,351
Bed, sofa, J. Loebig 321,305
Bedstead, J. Garrand 320,925
Beeswax extractor, J. D. Enas 321,090
Belt clasp, G. E. Zeltmacher 321,170
Belting, B. L. Stowe 321,153, 321,154
Bench. See Draw bench.
Bicycle, W. N. Eyster 320,917
Blasting timber, W. T. McCall 321,208
Boiler. See Steam boiler.
Bolt. See Flour bolt.
Book backing, G. A. Schurmann 321,142
Boot and shoe edge trimming machines, cutter head for, C. A. Gilman 321,3 7
Boot or shoe, P. Fischer 321,200
Boots or shoes, manufacture of, G. Boivin 321,182
Bottle stopper, E. H. Morgan 321,236
Bottle washer, H. P. Merriam 321,128
Box. See Paper box.
Box, A. Saupiquet 321,056
Bracelet clasp fastening, G. W. Washburn 321,066
Bracket. See Lamp bracket.
Brake. See Car brake. Wagon brake.
Bran duster and cleaner, Hogeboom & Smith 321,108
Breast shield, J. B. Phillips 320,961
Brick machine, H. Martin 320,944
Bridges, safety gate for pivot, J. H. Quackenbush 321,249
Bridle blinder, H. A. Johnson 321,112
Buckle, J. M. Basinger 321,175
Bureau, D. R. Kinley 321,037
Burglar alarm and sash fastener, combined, J. Brady 321,184
Burner. See Gas burner.
Buttonholes, device for cutting and centering, F. W. Ostrom 320,958
Buttons to fabrics, implement for securing, Wilkins & Miller 321,411
Calcimine, K. A. Hohenstein 321,109
Camera. See Photographic camera.
Can. See Creaming can. Oil can. Sheet metal can.
Can heading machine, F. A. Walsh 321,263
Cane, apparatus for treating sugar, H. J. Chapin 321,006
Car brake, F. G. Susemihl 321,397
Car brake, Wescott & Bristol 321,070
Car brake and starter, E. L. Heidenreich 321,218
Car coupling, L. Anderson 321,271
Car coupling, E. M. Brown 321,276
Car coupling, Curtis & Wood, Jr 321,344
Car coupling, M. Fennell 321,014
Car coupling, J. N. Leroux 321,372
Car coupling, J. McCoy 321,127
Car coupling, J. O'Brien 320,955
Car coupling, W. S. Temple 320,983
Car coupling, Westbrook & Cook 321,328
Car, dumping, J. M. Hartman 321,024
Car platform safety gate, J. T. Loweth 321,373
Car starter, J. King 321,225
Car starter, J. Van Zandt 321,405
Car ventilator, Doyle & Stanley 321,346
Car wheel, J. L. Tucker 320,986
Car wheel, self-lubricating, P. B. Perkins 321,243
Car window, railway, J. R. Whitney 321,266
Card grinding machine, wire, W. Decker 321,088
Carding machine, G. & E. Ashworth 321,331
Carriage, W. E. Roberts 321,386
Carriage and cradle, combined, Hemelright & Stone 321,219
Carriage seat, C. Morgan 321,131
Carriage spring, S. Gilbert 320,926
Carriage, spring, C. C. Hayes 321,106
Carrier. See Straw carrier. Trace carrier.
Cartridge, A. S. Lyman 321,042, 321,374
Cartridge loading machine, Strand & Gilburg 321,257
Case. See Clock case. Ticket case. Watch case.
Cash and parcels in drygoods stores, device for transporting, J. R. H. Hinton 321,360
Cash carrying apparatus, D. H. Rice 320,965
Cash register and indicator, C. J. Weinman 321,163
Cement, manufacture of, Lesley & Griffith 321,121
Cement, manufacture of Portland, Lesley & Griffith 321,120
Chain, drive, E. Huber 321,361
Chair. See Convertible chair. Infant's posing chair. Revolving chair. Rocking chair.
Check rower, O. J. Colton 321,087
Chickens, artificial mother for raising, H. B. Tatham, Jr 321,060
Chocolate cream drops and other confectionery, marking, Hawley & Hoops 321,216
Chuck for gem settings, O. I. Loveren 321,041
Churn, Burt & Burgess 321,339
Cider press, E. W. Lehman 321,039
Cigar machine, G. W. Tanner 321,259
Cigar support, C. C. Knowlton 320,938
Clay crushing machine, Alsip & Drake 320,905
Clock case, A. D. Tyrrill 321,402
Clock, electric, F. Bauman 320,997
Coal drilling machine, Johnson & Thompson 321,034
Coffin, S. Coombe 321,280
Collar and swe t pad, horse, E. L. McClain 321,128
Convertible chair, E. H. Lewis 321,230
Cork retainer, E. H. Morgan 321,237
Corset, L. S. Purinton 320,964
Corset bustle attachment, M. A. Waterhouse 321,408
Corsets, etc., stiffener for, J. F. J. Gunning 321,289
Cot, folding, H. D. Hard 321,211
Cotton and hay press, R. Garside 321,208
Cotton chopper, J. F. Barringer 321,174
Coupling. See Car coupling. Hose coupling. Pipe coupling. Thill coupling. Wagon box coupling.
Crackers, machine for packing, J. McClurg 320,946
Creaming can, F. G. Butler 321,340
Creaming can, D. Fuller 321,354
Crushing roll, H. J. Chapin 321,007
Cultivator and seeder frame, G. D. Rowell 320,970
Cultivator attachment, L. Theis 320,984
Cultivator, wheel, Swope & Rude 321,399
Cutter head, J. B. Mahffey 321,378
Dampening machine, G. L. Shorey 320,977
Darner and mender, combined, G. F. Atkinson 320,905
Decorating shells, T. McCusker 320,947
Demijohn, E. R. Emerson 321,012
Dental tool holder, L. T. White 321,265
Desk, J. E. W. Poolman 321,383
Desk curtain, slatted, F. A. Coffin 320,913
Desk, school, J. H. Stiggleman 321,322
Diamond, artificial, E. E. Kipling 321,302
Die. See Wire drawing die.
Digester door, T. F. Rowland 320,971
Disinfecting compound, F. Jossa 321,369
Door handle, sliding, O. Seely 321,143
Door hanger, C. W. Bullard 321,081
Door hanger, E. C. Stearns 321,151
Door, hanging, C. W. Emerson 321,198
Draw bench, J. J. Fisher 320,922
Drawer, furniture, C. E. Birckhead 321,078
Drawing frame, J. H. Wilson 321,267
Drier. See Fruit drier.
Drill. See Grain drill. Metal drill. Twist drill.
Drilling machine, U. & H. E. Eberhardt 321,196
Ear jewels, ball cover for, G. W. Washburn 321,407
Earring, C. E. Westcott 320,991
Eaves trough hanger, W. C. Berger 321,180
Eccentric, shifting, Black & Kaffenberger 321,001
Egg beater, J. E. Welling 321,327
Electric cable joint, W. R. Patterson 321,240
Electric motor, J. M. Pendleton 321,049
Electric responding signals, producing, A. G. Holcombe 221,110
Electrical conductors, into conduits, driving, D. N. Hurlbut 321,363
Electrical instruments, protector for, D. J. Cartwright 320,912
Electro-dynamic motor, F. J. Sprague, 321,147, 321,148, 321,150
Elevator cages, safety device for, P. F. Laarman 321,308
Embroidering machine, hand, S. A. Scofield 321,318
Engine. See Rotary engine. Steam engine.
Envelope machine, L. P. Bouvier 321,183
Envelope, reversible, J. Hoffmann 321,297
Evaporating apparatus for brine, etc., M. P. Hayes 321,025
Excavator, H. Rengstorff 321,051
Exercising apparatus, J. E. Rubesam 321,388
Exercising machine, Clarke & Harsin 321,278
Exercising stool or chair, portable, G. J. F. Tate 321,157
Extractor. See Beeswax extractor. Nail extractor.
Fan, fly, W. R. Fowler 321,352
Fanning mill, Bales & Riley 321,270
Fastener, A. P. Moses 320,953
Feed water heater, W. H. Burk 321,338
Feed water heater and purifier, A. W. Ward 321,406
Fence, I. W. Archibald 321,171
Fence, barbed, E. S. Wheeler 321,264
Fence making machine, J. M. Harrop 321,359
Fences, machine for manufacturing, C. A. Norling 321,047
Fifth wheel, J. M. Foote 321,203
File, bill, T. E. Baden 321,333
File rack, newspaper, H. D. West 321,164
Filter, V. M. Law 321,228
Filter, J. Thomson 320,985
Fire escape, Hargrave, Sr., & Lee 321,212
Fire escape, W. R. Pyne 321,385
Fire extinguisher, chemical, J. A. Wagner 321,161
Fire kindler, J. E. Hignutt 321,027
Fire tube boiler, N. W. Pratt 321,248
Floor boards, device for setting, F. W. French 321,353
Flour bolt, N. W. Holt (r) 10,617
Flour mill roller, J. Pauly 321,241
Frame. See Drawing frame. Grindstone frame. Slate frame. Wire frame.
Fruit drier, L. W. Parsons 321,135
Fruit jar, S. R. Barhite 321,272
Fruit jar cap, C. G. Imlay 321,220
Furnace. See Glass furnace. Metallurgical furnace. Ore roasting furnace. Portable furnace.
Gauge. See Screw thread gauge.
Game counter and register, A. Nicken 321,046
Gas, apparatus for the manufacture of, W. F. M. McCarty 321,124
Gas burner, Boone & Whitfield 321,274
Gas, making, W. F. M. McCarty 321,125
Gas regulator and meter, Pew & Shields 321,136
Gate. See Railway gate. Swinging gate.
Gate, J. Hause 321,215
Generator. See Steam generator.
Glandor packing follower, R. M. Fryer 320,924
Glass furnace, regenerating and reverberating, W. F. Modes 320,951
Glass tubing, manufacturing, W. L. Jukes 321,369
Glassware, ornamenting the handles of articles of, J. S. Dignam 320,915
Glove, boxing, A. R. Rumsy 320,972
Glove fastening, G. W. Prentice 321,050
Grader or road scraper, B. R. Abbott 321,269
Grain drill, H. C. Beebe 321,273
Graining composition, T. Head 321,295
Grapling bucket, W. G. Thompson 321,158, 321,159
Grinding ring, metallic, J. G. Mole 321,045
Grindstone frame, J. B. Johnson 321,221
Gunnery, A. S. Lyman 321,043
Gymnastic performance with rats, birds, etc., implement for, J. B. Peirano 320,960
Hame, J. Bloedel 321,002
Hame, G. J. Letchworth 321,122
Hame fastener, Heinzer & Gillingham 321,026
Handle. See Door handle. Shovel handle. Surgical instrument handle.
Hanger. See Door hanger. Eaves trough hanger.
Harrow, H. L. Whitman 321,071
Harrow, rotary, C. Hawley 321,105
Harrow, wheel, D. H. Dolby 321,283
Harvester finger bar, W. L. Walker 320,988
Harvester reel, D. Gingrich 320,927

Hasp lock, C. P. Pond 321,243
Hay binder, G. Banks 321,173
Headlight, locomotive, G. S. Riley 321,316
Heater. See Feed water heater.
Heel trimming machine, C. W. Glidden 321,017
Heeling machine, Tyler & Merritt 321,401
Hoes, manufacture of pronged, F. A. Sibley 320,978
Hoisting apparatus, G. H. Bryant 321,004
Holdback for vehicles, E. G. Lynch 321,375
Holder. See Dental tool holder. Paper holder.
Hoof trimmer, C. E. Hunt 321,029
Hook. See Pad hook. Snap hook.
Hose coupling, L. F. Longmore 320,939
Hose reel, L. C. Baldwin 321,172
Hub attaching device, C. T. Wecker 321,068
Ice creeper, M. B. Mayer 320,945
Incandescents, mould for making, O. A. Moses 321,309
Infant's posing chair, M. T. Baldwin 321,076
Inkstand, J. Brooke 321,185
Insulating electric wires, compound for, R. S. Ferguson *et al* 320,921
Interlocking eyes, machine for forming, R. Fairies 321,013
Jack. See Wagon jack.
Jar. See Fruit jar.
Joint. See Electric cable joint.
Journal bearing, C. F. Brigham 320,909
Knitted garment, W. Reichman 321,250
Lacing, C. F. Spencer 321,145
Lacing for corsets, gloves, etc., C. F. Spencer 321,146
Lamp bracket, O. R. Grimmesey 321,020
Lamp bracket, S. W. Macomber 320,941
Lamp burner, S. G. Stoddard 321,395
Lamp burner, Argand, J. A. Cowles 321,281
Lamp, safety, J. L. Williams 321,166
Lantern, F. Reinschmidt 321,314
Latch, G. J. Cline 321,279
Leather dressing machine, F. B. Batchelder 320,966
Leather, manufacture of glazed, T. R. Clark 321,191
Lemon squeezer, F. M. May 321,044
Lightning protector for electrical circuits, W. F. M. McCarty 321,235
Liming vat, T. Johnstonbaugh 321,300
Lint making machine, J. Webster 321,409
Lock. See Hasp lock. Mortise lock
Lock, T. W. Markham 321,306
Locomotive, road, G. G. Buckland 321,005
Loom shuttle, C. Falvey 320,919
Loom weft stop motion, L. J. Knowles 321,226
Lumber drier, W. B. Beard 321,336
Lumber piler, C. E. Dunshee 321,348
Mat. See Seed press mat.
Measuring and marking cloth, machine for, Smith & Roswall 321,393
Mechanical movement, L. D. Farra 321,199
Mechanical movement, S. Tideman 321,062
Metal drill, F. H. Richards 320,966
Metal drills, manufacture of, F. H. Richards 320,967
Metallurgical furnace, S. T. Owens 321,311
Mill. See Fanning mill. Sawmill. Triturating mill. Windmill.
Mining machine, coal, J. W. Harrison 321,103
Moistening roller, D. A. Alden 321,075
Mould. See Sand mould.
Money receiving, registering, recording, and ticket issuing device, H. T. Davis 321,010
Monument, R Goodman 321,018
Mordant, O. Prinz 320,963
Mortise lock, P. Murphy 321,380
Motion, apparatus for transmitting differential rotary, G. F. Clemons 321,086
Motion, device for converting, H. C. Kring 321,371
Motor. See Electric motor. Electro-dynamic motor. Water motor.
Mower, B. Saunders 321,141
Multiple switch board system, C. E. Scribner 321,057
Music leaf turner, E. Negroni 321,278
Music recording attachment for key board instruments, B. Greiner 321,358
Nail and screw, combined, H. A. Schirmer 321,389
Nail extractor, L. Howard 321,298
Nail plate feeder, D. W. Keith 321,114
Nut lock, J. C. Cookerley 320,914
Odometer. B. F. Hutches, Jr 321,365
Oil can, A. F. Ahlum 321,074
Ore roasting furnace, W. Bruckner 321,003
Ore separating and concentrating machine, H. Landrin 321,118
Ore separator and concentrator, J. Behm 320,998
Oven, bake, J. L. W. Olsen 321,239
Pad. See Collar sweat pad. Truss pad.
Pad hook, sweat, J. Straus 321,155
Paper box, F. P. Birley 321,181
Paper holder, Osgood & Longmore 320,956
Papermakers' use, manufacture of an aluminous sizing material for, R. A. Fisher 321,094
Papermakers' use, manufacture of sizing for, R. A. Fisher 321,097
Papermakers' use, manufacture of sizing material for, R. A. Fisher 321,085, 321,088
Papermakers' use, neutral sizing material for, R. A. Fisher 321,092, 321,093
Papermaking machines, felt whipper for, W. A. Philpott, Jr 321,312
Paper, preserving and waterproofing, C. A. Maxfield (r) 10,618
Paper, sizing material to be used in the manufacture of, R. A. Fisher 321,086
Paper, etc., staining, M. B. Martin 321,234
Pavement, H. C. Underwood 321,403
Photo-relievos, producing, L. H. Philippi 321,244
Photographic camera, T. Samuels 321,139
Piano action, W. Fischer 321,201
Pipe, J. Steel 320,981
Pipe bowl cover and stuffer, combined, Havell & Williams 321,104
Pipe coupling, H. R. Borie 320,907
Pipe coupling machine, W. A. Wheeler 321,165
Planing and matching machine, J. B. Mahaffey 321,377
Plant washes, mixing and agitating apparatus for, E. J. Delaney 321,089
Planter check rower, corn, L. D. Benner 321,077
Planter, corn, Calef & Tracy 321,186
Planter, corn, G. L. Hudson 321,362
Planter, corn, M. & A. Runstetler 320,943
Planter, cotton, J. H. Stanton 321,321
Planter, potato, L. P. Hildebrand 321,296
Pliers, nut, H. F. Osborne 321,133
Plow, G. B. Casaday ..... 321,187 to 321,189
Plow, G. A. Kelly 321,224
Plow, A. Snow 321,319
Plow, sulky, J. E. Turk 321,324
Plow, wheel, E. D. & O. B. Reynolds 321,052
Poison distributer, Duncan & Pillow 321,011
Portable furnace, J. W. Babbit 321,332
Power transmitting apparatus, L. G. Careaga y Saenz 321,083
Press. See Cider press. Cotton and hay press.
Propelling marine vessels, W. O. Robbins 321,138
Protector. See Lightning protector. Vest protector.
Pulley, F. S. & E. B. Belanger 321,179
Pump, air, G. F. Dailey 321,008
Pump, force, T. Barber 321,335
Pump, measuring, J. H. Thorn 321,061
Rack. See File rack.
Radiator, steam, J. H. Lounsbury 321,252
Rails, switches, etc., blocking and guarding, Newton & Wing 321,132
Railway and tramway chair, etc., J. Poyser 321,247
Railway, endless rope traction, A. S. Hallidie 321,022
Railway gate, A. M. Woodruff 321,167
Railway signal, A. B. Snyder 321,256
Railway switch, P. E. Bird 321,079
Railway switch, J. R. Stephens 320,982
Railway switch lock, R. Lehmann 321,040
Railway system, electric, F. J. Sprague 321,149
Rake teeth, machine for bending, A. J. Green 321,019
Razor strop, A. McDonald 320,948
Reamer, adjustable, Kelly & Groves 321,116
Reel. See Hose reel.
Refrigerator, J. M. Harney 321,213
Refrigerator ice holder, C. Huss 321,364
Register. See Cash register.
Registering apparatus, electrical, C. W. Weiss 321,069
Regulator. See Gas regulator.
Rendering tanks, apparatus for treating the products of, L. J. Cadwell 320,911
Revolver, W. C. A. Bullock 320,910
Revolving chair, C. A. Graef 321,101
Rheostat, J. Doyle 321,285
Riding habit, lady's, G. Muller 320,954
Ring. See Earring.
Rivet studs, making, J. Tillotson 321,260
Rocking chair, J. E. Wakefield 321,063
Roll for rerolling old rails, Graham & Milliken 321,102
Roller mill feed mechanism, W. Hutchison 321,090
Rolling mill hooking and carrying machine, L. S. Saylor 320,973
Roofing tile, flexible, L. B. Snow 320,979
Rope or cord fastening, G. R. Peare 320,959
Rotary engine, H. Sewrey 321,254
Rubber and making same, vulcanized soft, F. Wilhoft 321,410
Rubber plates for the vulcanizer, preparing, J. Spyer 320,980
Saddle bags, J. J. Stephens 321,152
Salt grainer attachment, J. Cusson 321,345
Salt, manufacture of, J. M. Duncan 321,347
Sand mould, J. Hobbs 320,934
Sash balance, H. E. Dorman 321,284
Sash balancing device, H. Jones 321,035
Sash fastener, W. Robinson 321,055
Saw guide, D. Parkhurst 321,134
Sawmill, band, J. Cook 321,194
Sawmill dog, L. Johnson 321,222
Sawmill set works, Delaney & Bond 321,282
Saw swaging and jointing machine, W. Lyon 321,376
Sawing machine, circular, J. Connell 321,192
Scale and flour and bran packer, combined electrical weighing, C. W. Roth 321,357
Scale, automatic grain, J. F. Milligan 321,129
School seat and settee, adjustable, J. Pedersen 321,242
Scraper or planer, road, H. D. Cook 329,193
Screwdriver, N. W. Farrand 320,920
Screw fastening for boxes or cases, E. Ritter 321,054
Screw, gimlet pointed rolled wood, H. A. Harvey 321,214
Screw machine, metal, L. P. Smith 321,059
Screw tapping machine, T. F. Hammer 321,023
Screw thread gauge, A. Shedlock 320,976
Seal, E. J. Brooks 321,275
Seed press mat, C. H. Struebig 321,258
Separating machine, Mumford & Moodie 321,379
Separator. See Ore separator.
Sewer trap, L. Fall 320,918
Sewing machine, buttonhole, F. W. Ostrom 320,957
Sewing machine needle guard, S. W. Wardwell, Jr 321,065
Sewing machine presser foot, H. P. Lancaster 321,304
Sewing machine quilting attachment, H. T. Davis 321,009
Sewing machine quilting attachment, D. R. Fraley 321,287
Sewing machine shuttle, J. H. Osborn 321,381
Sewing machine tucker attachment, S. Needles 321,310
Shafting, making long lengths of, T. R. Morgan, Sr 320,952
Shafts, ball and roller bearing for, D. H. Rice 321,053
Shafts, step bearing for vertical, J. P. Frizell 321,288
Shank stiffener, J. M. Watson 320,989
Shears, A. J. Lytle 320,940
Sheet metal can, Burger & Lee 321,277
Shirt, E. Krahn 321,370
Shovel. See Snow shovel.
Shovel handle, E. K. Holton 321,028
Shutter, fireproof, C. C. Schreiber 320,974
Shutter worker, G. W. Stover 321,396
Shutter worker, J. N. Worthington 321,268
Sifter, ash, J. McAuliffe 321,307
Sign, C. C. Scales 321,252
Signal. See Railway signal.
Signaling apparatus, individual, E. F. Frost 320,923
Skate, C. O. Yale 321,412
Skate, roller, C. J. Becktel 321,337
Skate, roller, A. Hall 321,290
Skate, roller, I. Lancaster 321,227
Skate, roller, J. A. Turnbull 321,261
Skate, roller, J. N. Ward 321,064
Skate, roller, L. D. York 320,993
Skating rinks, inclined floor or platform for, W. Staats 321,320
Slate frame and pencil case, J. H. Johnson 321,366
Smelting ores, M. D. Brett 320,908
Snap hook, C. Blanchard 321,080
Snow plow, P. O. King 321,301
Snow shovel, H. D. Waite 321,326
Sodium sulphite, making, E. Carey *et al* 321,341
Sole channeling machine, J. E. Jackson 321,032
Sowing machine, T. D. Galloway 321,099
Speculum, rectal, W. M. Baldwin, Jr 321,334
Sphere, terrestro-siderial, J. G. & M. L. Berneike 320,999
Spring. See Carriage spring.
Square, bevel, J. O. Grover 320,931
Stair rod, T. Worley 321,168
Stamp, hand, W. H. Keeler 321,223
Steam boiler, C. M. Giddings 321,015
Steam boiler header, R. R. Zell 321,320
Steam boiler separator, C. M. Giddings 321,016
Steam boilers, etc., covering for, J. G. Naardt 321,233
Steam engine, L. B. Carricaburu 321,084
Steam engine, D. D. Pinkham 321,313
Steam engine, compound, I. A. Turner 321,325
Steam generator, J. Robb 321,251
Stone, composition of matter for facing brown stone and for making artificial, B. E. Ratcliffe 321,137
Stone dressing machine, J. Mann 320,942
Stone sawing or rubbing machines, sand and water feeding mechanism for, E. J. Hawley 321,293
Stool pedestal, J. S. Dunlap 320,916
Stool, piano, A. J. Kedney 321,113
Stopper. See Bottle stopper.
Store service apparatus, D. E. Crosby 321,343
Store service apparatus, H. H. Hayden 321,294
Stove heating attachment, L. W. Turner 321,400
Stovepipe ventilator, W. St. Mielcarek 321,394
Straw carrier, E. L. Hall 321,210
Surgical instrument handle, A. J. Unger 321,160
Suspension device, C. J. Petersen 321,382
Swinging gate, Goff & Ploughe 320,929
Switch. See Track switch.
Switch lock, Hilburn & Hoehn 321,107
Tag, marking, J. P. Presley 321,384
Telegraph, fire and police alarm, C. Selden 321,058
Telegraphs, electro-magnetic escapement apparatus for printing, G. B. Scott 320,975
Telegraphic and telephonic systems, preventing interference in combined, F. Van Ryssel-berghe 320,987
Telegraphic call instrument, F. B. Wood 321,073
Telephone and telegraph lines, preventing induction in, F. Van Rysselberghe 321,404
Telephone exchanges, multiple switch board for, C. E. Scribner 321,391
Telephone, mechanical, J. R. Holcomb *et al* 320,935
Telephone transmitter, H. S. Thornberry 321,323
Telephones, duplicate switch board system for, C. E. Scribner 321,390
Tellurian, J. G. & M. L. Berneike 321,000
Thill coupling, F. D. Kernochan 321,036
Thill coupling, E. E. Swift 321,398
Thill couplings, anti-rattler and shaft support for, B. Chamberlain 321,190
Thrashing machines, rake for conducting grain to, J. T. Watkins 321,067
Ticket case, C. E. McElroy 320,949
Time recorder and station indicator, automatic, G. E. Schlegelmilch 321,317
Tongs, pipe, G. B. Koons 321,038
Tongue support, vehicle, F. Callan 321,082
Trace carrier, A. Maxwell 321,123
Track switch, E. L. Giles 321,356
Trap. See Sewer trap.
Treadle, A. Ball 320,996
Tricycle, T. R. A. Weber *et al* 321,162
Triturating mill, J. R. Alsing 320,994
Truck and bag holder, combined, E. J. Earl 321,286
Truck, car, W. H. H. Sisum 321,392
Truck, fire, W. T. Covert 321,342
Truss pad, H. G. Farr 321,091
Tub. See Bathtub.
Tube skelps, machine for bending, J. Hooven 320,936
Tug, hame, C. C. Schwaner 321,253
Twist drill, A. Soderstrom 321,144
Twist drills, machine for making, F. H. Richards, 320,968, 320,969
Umbrella frames, machine for riveting, A. Ligibel 321,231
Valve, G. F. Pottle 320,962
Valve gear, J. R. Deering 321,195
Valve gear, F. W. Jenkins 321,111
Valve gear, A. B. Landis 321,117
Valve, rotary steam, G. W. Sypher 321,156
Valve, steam-actuated, L. B. Carricaburu 321,085
Valve, steam boiler, Edwards & Schultz 321,197
Vat. See Liming vat.
Vehicle, two-wheeled, Sanders & Whitcomb 321,140
Vehicle wheel, A. W. Grant 320,930
Vehicle wheel, T. M. Hammond 320,932
Ventilator. See Car ventilator. Stovepipe ventilator.
Vest protector, T. S. Beals 321,177
Wagon box coupling, D. M. Jones 321,367
Wagon brake, C. Behringer 321,178
Wagon brake lever, G. P. Riester 321,315
Wagon jack, F. Kellogg 321,115
Washer. See Bottle washer.
Washing machine, G. A. Eppel 321,349
Washing machine, J. Howell 321,299
Washing machine, A. T. Jackson 321,031
Washing machine, P. Lawson 321,119
Washing machine, C. Whisler 321,329
Watch case, E. Haas 321,021
Watches, machine for roughing out pinions for, C. V. Woerd 320,992
Water closet bowl, porcelain, R. H. Watson 320
Water closets, water supply apparatus for, T. McHugh 320,950
Water conveying apparatus, A. C. Hare 320,933
Water courses, apparatus for cleaning, widening, and deepening, Gifford & Jones 321,355
Water motor, H. L. Walker 321,262
Wave power, mechanism for utilizing, C. Leavitt 321,229
Weighing and sacking machine, automatic, F. M. Gladish 321,209
Wheel. See Car wheel. Fifth wheel. Vehicle wheel.
Whisky, making, F. M. Young 321,169
Whistle, A. L. Fisher 321,202
Wig, A. F. Godefroy 320,928
Windmill, S. E. Goodhue 321,100
Windmill, T. Hatfill 321,292
Window, J. S. Pihlstrom 321,245
Wire drawing die, E. M. Johnson 321,033
Wire frame, H. F. Fordham 321,204
Wire stretcher and staple puller, combined, E. Moore 321,130
Wrapper for silks, etc., T. J. Oakley 321,048

DESIGNS.

Carriage step, J. M. Foote 16,138
Closet hopper, H. W. Mansur 16,139
Gimp, H. Wynkoop 16,144
Grate, fireplace, Read & Calely 16,142
Hair crimp, C. C. E. Van Alstine 16,143
Thermometer back, C. H. Myers 16,140, 16,141

TRADE MARKS.

Beer, lager, J. Ruppert 12,372
Bitters, E. Jeserich 12,362
Case containing selected instruments and standard remedies, portable, Sun Chemical Company 12,374
Chewing gum, Adams & Sons 12,343
Cocoanut, preserved, Croft & Allen 12,359
Cottons, bleached, white, and colored, J. W. Woods 12,376
Dress shields, A. H. Brinkmann 12,345
Flour, wheat, Fisher & Wise 12,348
Flour, wheat, Oliver & Imboden Company 12,365, 12,366
Food for infants and invalids, Wells & Richardson Company 12,358
Gloves, kid, Newman & Levinson 12,353
Hair tonic, Bloomingdale & Rich 12,344
Hats, fur and wool, Knights of Labor Co-operative Hat Company 12,363
Lamps, copper or brass kerosene, Geiss & Kleine 12,361
Mathematical instruments, C. Proebster, Jr 12,370
Meat extract, Liebig's Extract of Meat Company, 12,349 to 12,351
Medicine, the vehicle of which is in granular form, A. C. Chanteaud 12,346
Oil, hoof, A. Spietaler 12,373
Powders for the cure of cholera in animals and fowls, H. Copeland 12,347
Ranges and furnaces, J. J. Richardson 12,371
Ribbons and dress goods, silk, Phoenix Manufacturing Company 12,369
Soap, laundry, Oberne, Hosick & Co 12,354
Soap, toilet, S. W. McBride 12,364
Starch, maize, Danville Refining Company 12,360
Tacks, Pennsylvania Tack Works 12,367
Tobacco, plug, Perkins & Ernst 12,368
Tobacco, smoking and chewing, H. W. Meyer 12,352
Tobacco, smoking, fine-cut, and plug, Wellman & Dwire Tobacco Company 12,375
Towels, certain sanitary, Southall Bros. & Barclay 12,356
Vitreous material and certain articles made therefrom, Vitrite Company 12,357
Wines, champagne, Rheingauer Schaumweinfabrik Schierstein 12,355

A Printed copy of the specifications and drawing of any patent in the foregoing list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired, and remit to Munn & Co., 361 Broadway, New York. 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.

Canadian Patents may now be obtained by the inventors for any of the inventions named in the foregoing list, at a cost of $40 each. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.