## Business and Personal.

*The charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.*

For Sale—28" x 12" and 32" x 16' engine lathes. New, with compound rest and power cross feed. W. P. Davis, Rochester, N. Y.

Acme engine, 1 to 5 H. P. See adv. next issue.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

Best 15 in. Shapers, $245. Am. Tool Co., Cleveland, O.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York.

Beach's Improved Pat. Thread Cutting and Diamond Point Lathe Tool. Billings & Spencer Co., Hartford, Ct.

Centrifugal Pumps for paper and pulp mills. Irrigating and sand pumping plants. Irvin Van Wie, Syracuse, N. Y.

For Sale—A vacuum pan, a digester or converter, a still. All copper. Apply to J. Edw. Crusel, New Orleans, La.

For Sale—Patent 445,891, Cotton Scraper. New and valuable. Send 2 cents for circular. Jas. Hobbs, Lagarto, Texas.

Wanted—Machine for cutting old style through dovetail to lock boxes. Address Boxmaker, care of Scientific American.

Scale removed and prevented in boilers; for each 50 horse, 10 cents a week. Pittsburgh (Pa.) Boiler Scale Resolvent Co.

Have mill and power. Want to associate with one having patented article to manufacture. Address "B.," care Scientific American.

For Sale—A quantity of scrap rosewood, averaging in size from 1¼ to 1½ inches diameter, of various lengths. Address The James Cunningham, Son & Company, Rochester, N. Y.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, $4; Munn & Co., publishers, 361 Broadway, N. Y.

For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 36 Rodney St., Brooklyn, N. Y.

Wanted—A first class man as assistant to superintendent of motive power, to take charge of railroad engine shops. Address, stating age, references, and salary expected, to J. M. C., care Scientific American.

☞ Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Automatic Springless Door Latch. Patent for sale entire, or arrangements made to manufacture on royalty. Patent dated Nov. 10, 1891. See page 339. Address for particulars T. C. Mace, Cameron, Mo.

The Akron Iron Company, of Akron, Ohio, have recently issued a new catalogue (for their Eastern department) of shafting, pulleys, friction clutches, and other power transmitting machinery. As a special feature, it contains numerous millwrights' tables and other technical information that is of interest and value to superintendents, engineers, and machinists. These special features make this catalogue well worthy of preservation as a handbook on the subject of power transmission. It is furnished with special indexes to facilitate quick reference. A copy will be furnished upon application to Akron Iron Company, Akron, Ohio, *providing this paper is mentioned.*

## Notes & Queries

### HINTS TO CORRESPONDENTS.

**Names and Address** must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.

**References** to former articles or answers should give date of paper and page or number of question.

**Inquiries** not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

**Special Written Information** on matters of personal rather than general interest cannot be expected without remuneration.

**Scientific American Supplements** referred to may be had at the office. Price 10 cents each.

**Books** referred to promptly supplied on receipt of price.

**Minerals** sent for examination should be distinctly marked or labeled.

(3674) V. E. H. asks: How are spiral brass springs made to hold their temper? A. Spiral brass springs cannot be recuperated. Get new ones when the old weaken.

(3675) F. P. C. asks for the formula for the so-called eggs of Pharaoh's serpents. A. See our SUPPLEMENT, No. 259, for the original formula, which gives off injurious vapors. To avoid this another formula gives potassium bichromate 2 parts, potassium nitrate 1 part, white sugar 3 parts. Pulverize each ingredient separately and mix without further pulverizing. Enclose in little paper cones. Do not inhale the dust in pulverizing the potassium bichromate.

(3676) H. H. G. asks for the cheapest as well as the least complicated way of making fuel gas on a small scale. Also the material used in the making of the gas. A. It is made by blowing air and steam mixed through incandescent coal. Either anthracite or bituminous coal may be used. Sometimes the air and steam are blown alternately, the products of the air blast being allowed to escape. This gives a gas of more intense heating power. You will find articles on the subject in our SUPPLEMENT, Nos. 276, 278, 531, 654, and many others.

(3677) E. B. N. asks: What solution that will be a cheap and good one can be used to clean dirt off from geological specimens and that will not injure the specimens? A. It depends on the nature of the specimens and of the dirt. Good soap and water with a scrubbing brush, or a wire brush such as foundry men use, are available.

(3678) E. D. asks for the composition of the substance on the trick matches inclosed; when struck a slight explosion takes place and the flame is extinguished. A. It is a compound of silver, probably fulminate, gummed to the match.

(3679) W. O. B. asks: How can I purify and make into the solid state a solution containing nitric and hydrochloric acids and pure gold leaf, in order to use the same as a tanning solution for photographic prints? A. Evaporate nearly to dryness, add more water and re-evaporate, and repeat until it is neutral in reaction. If you evaporate to full dryness, there is danger of producing a basic salt.

(3680) G. H. asks: 1. How is gasoline gas made for illuminating purposes? A. Gas can be made from gasoline by passing air over its surface. The air takes up enough of the vapor to burn. The temperature of the gasoline tends to fall on account of the absorption of heat by the evaporation; hence the apparatus should be kept at a constant temperature as far as possible. 2. Is the gas referred to very dangerous? A. No; it is used in a great many country houses with success. 3. Is the gas very easily blown out. If so, is there any protection for the light? A. It is more easily extinguished than pure coal gas. It is burned in Argand burners with chimneys or in special open and unprotected burners. 4. Has heat or cold any effect on the light? A. Heat would tend to improve it, and sufficient cold might by condensing the gasoline in the pipes extinguish it. Under ordinary conditions it gives no trouble. 5. What is the cost of gasoline light per thousand feet? A. No figure can be given, as the gas is not measured. It is a cheap form of illuminant.

(3681) S. A. A. asks how to make a gold plating solution (the best), how to couple and use it with my dynamo which I made like that described in SUPPLEMENT, No. 161, only with the drum armature. Field is wound with No. 16 and armature with No. 18 double covered magnet wire. It works well. I would like the solution and connections fully described, so I can make it myself. I am a practical watchmaker and a subscriber. A. For information on plating solutions we refer you to SUPPLEMENT, No. 310. A dynamo wound as you have it is not suitable for plating, as it gives a current of too high an E. M. F. Probably an armature wound with No. 10 or No. 12 wire would answer. Consult SUPPLEMENT, Nos. 720 and 793, for information on small plating dynamos.


### 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 unequaled facilities for procuring patents everywhere. 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, New York.


# INDEX OF INVENTIONS

**For which Letters Patent of the United States were Granted**

**November 17, 1891.**

**AND EACH BEARING THAT DATE.**

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

Air compressor, E. Hill ... 463,386
Alarm. See Fire alarm.
Alloy, metallic, T. MacKellar ... 463,427
Aluminum sulphide, process of and apparatus for preparing, P. A. Emanuel ... 463,143
Animal trap, J. Wigger ... 463,238
Armature for dynamos or electric motors, B. D. Southard ... 463,174
Automatic switch, H. M. Abernethy ... 463,412
Bag. See Mail bag.
Baking or cooking vessel, K. M. Dean ... 463,492
Baking pan, Zoeggele & Murphy ... 463,590
Bale ties, machine for making, C. B. Brainard ... 463,593
Bank protector, J. A. Saxon ... 463,549
Bar. See Boring bar. Cutter bar.
Barrel closure, C. W. Moore ... 463,252, 463,253
Baseball indicator, J. L. Cutler ... 463,491
Bathing apparatus, vapor, N. Crank ... 463,490
Battery. See Galvanic battery.
Beaming machines, pressure attachment for plain, T. S. Brown ... 463,415
Bedstead, folding, W. D. Snyder ... 463,221
Bedsteads, leg attachment for folding, F. B. Williams ... 463,411
Bells, loop for cow, O. B. Wilson ... 463,565
Belt tightener, T. S. Brown ... 463,414
Binder, temporary, F. J. Vernon ... 463,323
Bit stock, W. Cameron ... 463,440
Blanket, waterproof, H. W. Libbey ... 463,280
Blast furnace lining, J. Gayley ... 463,146, 463,147
Block. See Boot block.
Blower or fan, electric, W. B. Snow ... 463,585
Board. See Ironing board. Multiple switch board. Telephone switch board.
Boiler. See Wash boiler.
Boiler furnace, J. C. Henderson ... 463,191
Book, check, G. L. Winn ... 463,567
Boot block, L. O. Michael ... 463,404
Boring bar, L. Burst ... 463,480
Bottle necks, tool for threading, T. T. McCoy ... 463,575
Bottle washing machine, O. Eick ... 463,360
Bottles, machine or apparatus for capsuling, C. Cheswright ... 463,576
Bottles, packing for, E. D. Averell ... 463,300
Box. See Cheese box. Letter box. Miter box.
Box fastener, J. C. Walker ... 463,347
Bracket. See Insulator bracket.
Brake. See Car brake.
Brick kiln, W. P. Grath ... 463,601
Brick kiln, Pike & Castle ... 463,167
Brick press, G. A. Blinn ... 463,246
Bridge gate, M. Grady ... 463,313
Bridge gate, H. H. Schlee *et al.* ... 463,237
Bridge gate, A. J. Smith ... 463,393
Broom, C. W. Mansfield ... 463,448
Buckle fastener, F. A. Blackburn ... 463,476
Buckle, suspender, D. L. Smith ... 463,374
Burglar or animal trap, W. F. McCready ... 463,597
Buttonhole piece, A. Shea ... 463,344
Button setting machine, Eggleston & Welles ... 463,202
Camera. See Photographic camera.
Can capping machine, W. S. Bacon ... 463,591
Can opener, G. L. Allen ... 463,131
Canning purposes, funnel for, B. S. Beam ... 463,473
Canopy rod clamp, R. F. Painter ... 463,165
Car brake, C. W. Duncan ... 463,598
Car brake, R. R. Gairing ... 463,187
Car brake, O. A. Henjum ... 463,152
Car brakes, actuating device for, V. Angerer ... 463,433
Car buffer, railway, S. H. Springer ... 463,296
Car coupling, H. W. Hoss ... 463,513
Car coupling, P. Lee ... 463,522
Car coupling, W. R. Teegua den ... 463,177
Car coupling, J. Timms ... 463,357
Car couplings, operating device for, J. Timms ... 463,358
Car door, J. L. Stagg ... 463,204
Car door fastener, H. E. & H. E. Hoke ... 463,511
Car, dumping, J. J. Souder ... 463,178
Car fender, Bertsche & Ortner ... 463,438
Car for electric railways, motor, T. E. Adams ... 463,359
Car heater, railway, W. C. Baker (r) ... 11,202
Car step, adjustable, D. W. Clark ... 463,481
Car wheel, chilled, W. W. Lobdell ... 463,426
Cars, heating and ventilating railway, W. G. Creamer ... 463,270
Cars, heating railway, T. McGrory ... 463,405
Carpet and weather strip, combined, J. H. Gingrich ... 463,148
Carriage, two-seated, F. N. Vanier ... 463,179, 463,180
Cart, road, G. A. Brice ... 463,478
Cartridge shells, machine for reducing and finishing, W. Mason ... 463,403
Case. See Watch case.
Centerpiece, collapsible, C. W. Young ... 463,376
Chair. See Dental chair.
Chair, P. Flowers ... 463,600
Check row attachment, L. Scofield ... 463,457
Checking and unchecking device, C. C. Lovejoy ... 463,306
Cheese box, J. Grieb ... 463,189
Chimney cowl, I. C. Schneider ... 463,202
Chocolate pot, C. J. Mulford ... 463,335
Chopper. See Cotton chopper.
Chuck, drill, F. N. Gardner ... 463,331
Chuck jaw, lathe, J. N. Skinner ... 463,373
Chuck, lathe, J. N. Skinner ... 463,392
Chuck, work holding, J. A. Giles ... 463,332
Churn valve, M. L. Hoyt ... 463,422
Cigar bunching machine, T. & L. B. Hancock ... 463,508
Cigar lighting apparatus, electric, W. W. Foster ... 463,384
Clamp. See Canopy rod clamp.
Cleaner. See Cotton cleaner. Tooth cleaner.
Cloth finishing machines, cloth guiding mechanism for, W. C. Peirce ... 463,581
Cloth guiding machine, J. J. Schofield ... 463,552
Clothes drier, J. McKinnon ... 463,540
Clothes line and suspension device, A. J. A. Cox ... 463,441
Clothes line, chain link, I. H. Frost ... 463,400
Clothes line support, R. McNab ... 463,163
Clothes pin, T. Garrison ... 463,504
Clutch, friction, F. H. Brewster ... 463,350
Coffee pot, T. Glynn ... 463,505
Coffin lid and hinge, W. J. Collinson ... 463,488
Coin holder, E. Side ... 463,256
Coin holders, etc., locking device for, E. B. Koopman ... 463,250
Column, architectural, J. M. Larimer ... 463,318
Commode, F. Koskul ... 463,279
Compound engine, S. F. Prince, Jr. ... 463,450
Condenser, smoke, W. J. Batchman ... 463,184
Cooking apparatus, P. L. Dermigny ... 463,495
Cooking vessel, steam, Halliburton & Owens ... 463,228
Core making machine, centrifugal, J. E. McCanna ... 463,536
Cotton chopper, J. M. Lankford ... 463,232
Cotton cleaner, J. F. Cunningham, Sr. ... 463,330
Cotton pickers, lap smoothing device for, W. H. Morgan ... 463,533
Coupling. See Car coupling. Electric wire coupling. Rope or cable coupling.
Coupling, J. Brandner ... 463,301
Crushing and pulverizing machine, R. McCully ... 463,538
Crushing machine, R. McCully ... 463,162, 463,539
Cuff holder, E. K. Heaps ... 463,369
Cultivation, apparatus for steam, R. H. Fowler *et al.* ... 463,502
Cultivator, C. Hiestand ... 463,229
Cultivator and weed cutter, E. S. Gerow ... 463,352
Curling iron, M. Campbell ... 463,328
Current motor, alternating or pulsating, L. Gutmann ... 463,314
Curtain stretcher, G. S. Dippry ... 463,303
Cut-out, H. Lemp ... 463,213
Cutter. See Meat cutter.
Cutter bar, P. A. Erickson ... 463,227
Cutter head, S. J. Shimer ... 463,555
Cycle, A. H. Overman ... 463,390
Damper, E. Johnson ... 463,333
Damper, J. A. Palmer ... 463,406
Dash pot, E. C. Flagg ... 463,382
Dental chair, G. W. Archer ... 463,348
Diving suit, J. L. Boucher *et al.* ... 463,477
Dock scraper, J. Hackett ... 463,353
Door securer, H. W. Chase ... 463,226
Door securer, J. L. Frazier ... 463,361
Doors, counterbalancing device for, J. J. Graves ... 463,153
Dress form, Perkins & Gooding ... 463,343
Dress form, W. Vogler ... 463,346
Drier. See Clothes drier.
Drill. See Grain drill.
Drilling tool, A. D. & H. E. Goodell ... 463,507
Drinks, recording apparatus for dispensing, W. M. Fowler ... 463,304
Educational appliance, T. Hooly ... 463,230
Egg holder, A. Iske ... 463,604
Election booth, portable, W. H. Bliss ... 463,439
Electric lights, mast arm for, V. A. Thomas ... 463,586
Electric lock, W. J. O. Johnson ... 463,155
Electric lock, F. H. Starrett ... 463,297
Electric machine, dynamo, M. C. Burt ... 463,242
Electric motors, circuit and switch for, W. Lahmeyer ... 463,605
Electric stop mechanism, L. Mellett ... 463,198
Electric switch, E. J. Bagnall ... 463,311
Electric switch, A. Swan ... 463,396
Electric wire coupling, F. X. Gartland ... 463,420
Electrical conductor, P. H. Holmes ... 463,512
Electrical conduit, J. C. Love ... 463,197
Electro-magnetic switch, Herrick & Rand ... 463,192
Enameling ovens, device for charging and discharging, A. H. Franck ... 463,503
End gate, wagon, I. W. & W. A. Harlan ... 463,276
Engine. See Compound engine. Rotary steam engine. Water engine.
Engineer's wrench, D. H. Carpenter ... 463,137
Envelope machine, W. D. Slater ... 463,458, 463,459
Envelope making machine, J. Dennis *et al.* ... 463,399
Evaporating apparatus, E. Theisen ... 463,466
Evaporating apparatus, continuous, O. Schulz ... 463,338
Excelsior cutting machine, J. Pratt ... 463,200
Excelsior machine, W. S. Minor ... 463,530
Fabric. See Knit fabric.
Farm gate, W. Scott *et al.* ... 463,554
Fastening attachment, O. A. Elliott ... 463,351
Feed hopper, A. F. Dellone ... 463,493
Fellies, device for expanding, Thomson & Cottrell ... 463,206
Fence, wire, A. F. Dickey ... 463,446
Fender. See Car fender.
Fertilizer, apparatus for obtaining, separating, and disinfecting a, M. Nadiein ... 463,429
Filling band, F. N. & J. H. F. Dixon ... 463,380
Filter, W. Weaver ... 463,410
Fire alarm, Bichet & Whitney ... 463,570
Fire alarm system, automatic, G. W. Brown ... 463,608
Fire lamps, thermo-circuit closer for electric, Wrigley & Chambers ... 463,298
Firearm, magazine, A. A. Burgess ... 463,225
Fire escape, L. A. Haight ... 463,243
Fire lighter, automatic, L. Beach ... 463,437
Fireplace lining, J. F. Hewitt ... 463,278
Fireplaces, sectional fireboard and damper connection for, J. Wisdom ... 463,208
Fishing reel, W. H. Atkinson ... 463,377
Fishing reel, C. H. Miller ... 463,319
Folding machine, C. W. Shippee ... 463,170
Frame. See Post drill frame. Spectacle frame.
Fruit gatherer, R. B. Vanderburg ... 463,178
Fumigator, W. Martin ... 463,367
Furnace. See Boiler furnace. Hot air furnace. Muffle furnace.
Furnace, W. Swindell ... 463,176
Furnace for glass works, E. Gobbe ... 463,149
Galley stick, side-locking, Alfson & Jansen ... 463,325
Galvanic battery, W. A. Crowdus ... 463,247, 463,248
Game apparatus, H. Decker ... 463,271
Game apparatus, F. C. Hamilton ... 463,602
Game apparatus, E. F. Rogers ... 463,454
Game counter, W. H. Atkinson ... 463,378
Gas engine operating mechanism, Barrett & Daly ... 463,435
Gas, manufacturing, Collins, Jr., & Knapp ... 463,139
Gas or petroleum motors, igniting device for, E. Kaselowsky ... 463,231
Gate. See Bridge gate. End gate. Farm gate. Railway gate. Safety gate.
Gate, S. L. Retan ... 463,452
Gate, W. R. White ... 463,324
Gate worker, S. Portis ... 463,546
Gear, reversible friction, G. K. Moehle ... 463,532
Generator. See Heat generator. Steam generator.
Gilding cards, etc., machine for, R. M. Hunter ... 463,370
Glove, J. W. Begg ... 463,290
Grain binder, K. C. Kunkle ... 463,219
Grain drill, O. L. Peterson ... 463,542
Guard. See Snow guard. Torpedo guard.
Gun carriage, pneumatically operated, H. A. Spiller ... 463,463
Gun carriages, pneumatic recoil check for, H. A. Spiller ... 463,462
Hame, L. Anderson ... 463,223
Hame fastener, L. Anderson ... 463,222
Hammer, J. W. Carver ... 463,417
Hammer, drop, E. Hammesfahr ... 463,574
Harp, J. C. St. John ... 463,368
Harrow, O. J. Childs ... 463,594
Hat sizing machine, Simmonds & Linega ... 463,339
Hay rake, J. H. Soehren ... 463,461
Hay rake, horse, D. G. Auchey ... 463,299
Heat generator, portable, A. White ... 463,559
Heater. See Car heater.
Heating apparatus, H. H. Daw ... 463,186
Hitching device, L. Weishan *et al.* ... 463,398
Holder. See Coin holder. Cuff holder. Egg holder. Lathe tool holder. Pencil and sponge holder. Rein holder. Sack holder. Tug holder.
Hook. See Trolley hook. Trolling hook.
Hoop or band rolling mill, T. V. Allis ... 463,266
Horse blanket, O. B. Fales ... 463,381
Horseshoe, J. Benfield ... 463,474
Hot air furnace, A. C. Barler ... 463,209
Hub and axle, W. W. Flewelling ... 463,272
Ice breaking and electric current transmitter, C. Smith ... 463,257
Indicator. See Baseball indicator.
Inkstand or bottle, W. Rodiger ... 463,214
Insoles, machine for hammering down the edges of, F. F. Field ... 463,447
Insulator bracket, V. A. Thomas ... 463,567, 463,588
Insulator support, T. C. Smith ... 463,172
Iron. See Curling iron.
Ironing board, shirt, R. J. Brown ... 463,185
Jack. See Lifting jack. Wagon jack.
Jewelers' stock, tool for cutting, M. Eisler ... 463,497
Joint. See Railway rail joint.
Kiln. See Brick kiln.
Knit fabric and making the same, F. Wilcomb ... 463,561
Knitting machine stop motion, F. Wilcomb ... 463,562
Knitting machine, straight, F. Wilcomb ... 463,560
Knitting machines, stripping mechanism for circular, S. Wullschleger ... 463,432
Labeling machine, can, R. L. & H. F. Wight ... 463,607
Ladder support, Coburn & Sumner ... 463,218
Ladders, trolley support for step, A. A. Coburn ... 463,217
Lamp, duplex arc, E. P. Clark ... 463,595
Lamp, electric arc, W. Jandus ... 463,154
Lamp or lantern, signal, Huntington & Armour ... 463,402
Latch, J. K. Clark ... 463,485
Lathe tool holder, J. H. Steen ... 463,394
Lawn sweeper, L. A. Schaeffer ... 463,236
Leather shaving machine, W. S. Bacon ... 463,592
Letter box, house door, A. S. Adler ... 463,264
Letter box, street, A. S. Adler ... 463,265
Lifting jack, P. Griffin ... 463,385
Lifting jack, W. Orcutt ... 463,326
Link motion, J. Lunz ... 463,523
Lock. See Electric lock. Nut and bolt lock. Permutation lock.
Locomotive, electric, S. H. Short ... 463,356
Locomotives, power storing mechanism for electric, J. A. Hockett ... 463,315
Loom weft stop motion, Park & Goddard ... 463,372
Lubricator, T. S. Brown ... 463,416
Lubricator, J. Powell ... 463,320
Mail bag, W. F. Beasley ... 463,349
Mail sack crane, J. F. Mains ... 463,159
Mail sack cranes, sack holder for, J. F. Mains ... 463,158
Mantels for transportation, strengthening, C. A. Von Welsbach ... 463,473
Marbles from plastic material, machine for moulding, S. C. Dyke ... 463,418
Marker, land, W. D. Hervey ... 463,510
Mast fids, self-acting fastening for top, C. De Knorring ... 463,157
Mat. See Wire mat.
Matrix making and stereotyping machine, F. A. Johnson ... 463,388
Measure, liquid, Downham & Blauvelt ... 463,496
Measuring and recording apparatus, electric current, W. Thomson ... 463,558
Meat cutter, T. P. Ricks ... 463,255
Medicine, apparatus for directing the proper administration of, E. P. Roberts ... 463,409
Metal post, J. M. Larimer ... 463,317
Metals, etc., machine for testing the strength of, E. D. Estrada ... 463,259
Microscope, dissecting, L. E. Sayre ... 463,168
Milk or other food for calves, vessel for heating, C. H. Hollister ... 463,387
Mill. See Hoop or band rolling mill.
Millstone dressing machine, G. A. Smith ... 463,460
Miter box, A. Ward ... 463,216
Moulding machine, Moore & Clark ... 463,360
Money changing machine, M. D. Sweeney ... 463,375
Money payments, means for checking and recording, Messer & Thorpe ... 463,526, 463,527
Monuments, etc., name plate for, R. H. Follenius ... 463,500
Motion, hand device for imparting rotary, P. Lord ... 463,371
Motor. See Current motor. Sewing machine motor.
Mower attachment, lawn, F. W. Redel ... 463,451
Mowing machine pitman, J. F. Steward ... 463,341
Muffle furnace, E. O. Goss ... 463,401
Multiple switch board, F. A. Pickernell ... 463,545
Music leaf turner, B. F. D. Miller ... 463,529
Music rack for organs and upright pianos, W. Anderson ... 463,183
Nail machine, C. E. Houghton ... 463,362 to 463,365
Nut and bolt lock, M. A. Lee ... 463,521
Ordnance, etc., manufacture of, J. E. Bott ... 463,224
Ore concentrator, E. W. Clark ... 463,482
Ore sampling device, R. C. Hawley ... 463,509
Ore separator, W. D. Hoffman ... 463,385
Organ, cabinet, M. Clark ... 463,572
Oven, baking, Holmes & Teske ... 463,193
Oyster culture, apparatus for, E. Walton, Sr. ... 463,397
Packing, Missel & Meyer ... 463,531
Pad machine, W. S. Finney ... 463,210
Pan. See Baking pan.
Paper, albumenized, A. Bott ... 463,326
Paper box covering machine, J. A. Livers ... 463,196
Paper, machine for making transfer graining, C. Dahm ... 463,442
Pattern plate, J. M. Harrison ... 463,603
Pen filler, fountain, W. Rodiger ... 463,215
Pencil and sponge holder, school, S. M. Ashby ... 463,434
Permutation lock, C. E. Peck ... 463,269
Photograph exhibitor, C. G. Soderstrom ... 463,557
Photographic camera, F. Burrows ... 463,284
Piano, R. B. Watson ... 463,245
Pianoforte damper, E. Peterson ... 463,449
Pick, W. Wilson ... 463,239
Pin. See Clothes pin.
Pipe. See Sewer pipe.
Planing and matching machine, W. H. Doane ... 463,577
Planter, corn, P. F. Close ... 463,484
Plow, wheel, W. M. McCallister ... 463,535
Plumbers' rounded corner slabs, machine for moulding, W. H. Evans ... 463,144
Pneumatic signal, J. T. Pennycook ... 463,582
Pocketbooks, safety attachment for, E. D. Scott ... 463,169
Pole, adjustable, S. A. Bartlett ... 463,471
Post. See Metal post.
Post drill frame, A. Walker ... 463,469
Pot. See Chocolate pot. Coffee pot. Dash pot. Slag pot.
Press. See Brick press.
Projectile, A. Mieg ... 463,528
Propeller, screw, M. F. & B. F. Sparr ... 463,322
Protector. See Bank protector.
Puzzle, S. A. Law ... 463,426
Rack. See Music rack.
Radiators, air escape for, D. W. Dodson ... 463,291
Rail joints, fish plate connection for, G. W. Eddy ... 463,419
Railway conductors, crossing for electric, W. J. Silver ... 463,310
Railway gate, W. H. Close ... 463,485
Railway gate operating device, Stecker & Nordmann ... 463,205
Railway rail joint coupling, G. Weeks ... 463,258
Railway spike puller or extractor, P. Fowler ... 463,145
Railway switch, M. Hynes ... 463,579
Railway switch and lock apparatus, H. S. Pfeil ... 463,543
Railway switches, device for operating, W. A. Brown ... 463,136
Railway tie, metallic, E. Saunders ... 463,456
Railway water tanks, outlet valve for, C. J. Bascom ... 463,472
Railways, head chair for stub switches for, R. C. Schenck ... 463,430
Railways, rail joint for use on, J. J. Anderson ... 463,130
Rake. See Hay rake.
Reaming and tapping machine, W. Porteous ... 463,337
Reel. See Fishing reel.
Refrigerator and gas generator, combined, H. B. Cornish ... 463,489
Rein holder, J. E. Bowman ... 463,135
Rock, coal, or other minerals, machine for boring and mining, G. W. Elliott ... 463,498
Rolling machine, axle, J. S. Patten ... 463,541
Rope or cable coupling, C. Davidson ... 463,443
Rotary steam engine, S. G. Brosius ... 463,267
Rudder locking apparatus, J. Kitson ... 463,517
Rule, square, and circle marker, combination, A. C. Fowler ... 463,212
Sack holder, W. F. Jeans ... 463,354
Safety gate, automatic, E. W. Jackson ... 463,194
Sash balance, F. S. Clarkson ... 463,285
Sash fastener, J. De Mars ... 463,494
Sash fastener, C. Knapp ... 463,518
Saw gumming apparatus, C. R. Johnson ... 463,424
Sawmills, log turner for, H. O. Lange ... 463,334
Saw teeth, device for shaping swaged, J. F. Pribnow ... 463,547
Sawing machine, block, W. J. Perkins ... 463,233
Scales, scale beam for weighing, W. C. James ... 463,195
Scarf tip and fastener, combined, J. M. Fox ... 463,288
Scissors, W. H. Sample ... 463,455
Scoop, wheeled, R. M. & W. H. Brooks ... 463,571
Screen. See Window screen.
Screwdriver, automatic, A. D. & H. E. Goodell ... 463,506
Screw threads on tubular articles, method of and means for forming, A. Densmore ... 463,444
Screw-threaded bolts or screws, method of and means for producing, A. Densmore ... 463,445
Seaming the flanged edges of metallic elbows, machine for, D. A. Ritchie ... 463,408
Seeding machine, H. L. Brown ... 463,479
Semi-elliptic spring, E. Cliff ... 463,342
Separator. See Ore separator.
separator, J. F. Keiper ... 463,514
Sewer pipe, H. W. Libbey ... 463,281
Sewing machine, W. A. Neely ... 463,199
Sewing machine for stitching and cutting buttonholes, F. W. Ostrom ... 463,295
Sewing machine motor, Clayton & Duncan ... 463,596
Sewing on buttons, machine for, W. Mills ... 463,294

© 1891 SCIENTIFIC AMERICAN, INC.