

Elevator chain link and pulley, S. Stutz..... 251,315  
 Engine. See Compound engine. Rotary engine.  
 Excavating machine, W. H. Rodda..... 251,291  
 Excavating machine, earth, (ushing & Butler)..... 251,194  
 Explosive compound, G. Von Planitz..... 251,145  
 Extractor. See Bagasse juice extractor.  
 Farm gate, I. W. Fidler..... 251,202  
 Faucet, M. Tommast..... 251,076  
 Faucet attachment, C. H. Peltier..... 251,277  
 Feather purifying and renovating machine, W. McArthur..... 251,266  
 Feed bag for horses, Heiser & Wheaton..... 251,048  
 Feed cutter, J. Watson..... 251,146  
 Feed water generator, C. A. French..... 251,036  
 Feed water heater and purifier for steam boilers. Kelly & Hoffman..... 251,243  
 Fence post, C. R. Price..... 251,282  
 Fence wire, barbed, Neely & Marland..... 251,273  
 Fence wire, barbed, O. R. Olsen..... 251,276  
 Fertilizing material, machine for distributing, S. B. Hart..... 251,226  
 File cutting machine, J. H. Schaal..... 251,298  
 Filter, liquid, J. Benson..... 251,335  
 Finger ring, A. Bonniol..... 251,170  
 Firearm, breech-loading, W. H. Davenport..... 251,099  
 Firearm, revolving, O. A. & J. T. Smith..... 251,306  
 Fire kindler, W. Boyd..... 251,023  
 Flour mill dust collector, A. H. Kirk..... 251,120  
 Flour mill dust collector, A. N. Wolf..... 251,330  
 Foot warmer, S. Spoor..... 251,143  
 Frame. See Lounge frame. Saw frame.  
 Fruit drier, C. J. Geiger..... 251,213  
 Fuel feeder, pulverizer, C. H. Palmer..... 251,131  
 Furnace. See Hot air furnace. Hydrocarbon furnace.  
 Gag runner, W. M. Blaine..... 251,021  
 Gag runner, E. A. Cooper..... 251,190  
 Gas, apparatus for the manufacture of, Attrill & Farmer..... 251,085  
 Gas lighting device, electric, Frost & Lawrence (r)..... 9,981  
 Gate lock, G. A. Schram..... 251,139  
 Generator. See Feed water generator. Magneto signal generator.  
 Globe or shade holder, J. Stratton..... 251,314  
 Glove fastener, King & Hammond, Jr..... 251,246  
 Glove fastening, J. P. Miller..... 251,272  
 Grain binder, J. F. Appleby (r)..... 9,980  
 Grain binder, W. P. Hale..... 251,221  
 Grain binder, S. Johnston..... 251,053  
 Grain conveying apparatus, W. Bayley..... 251,334  
 Grain drill distributor, E. D. Mead..... 251,059  
 Grain drill tooth, S. B. Hart..... 251,225  
 Grain meter, A. Kaiser..... 251,258  
 Grass, treating salt marsh, J. Commins..... 251,188  
 Grinding mill, W. D. Gray..... 251,217  
 Grinding mill for grain, etc., A. Mechwart..... 251,124  
 Guard. See Car guard. Pantaloons guard.  
 Gutter holder, W. E. Brown..... 251,173  
 Halter, L. B. Stowell..... 251,074  
 Hand, device for training the muscles of the, H. Forbush..... 251,206  
 Handle. See Knife handle.  
 Handle for brushes, mirrors, and similar articles, Miles & McIntosh..... 251,060  
 Hanger. See Eaves trough hanger.  
 Harrow, spring tooth, W. S. Foster..... 251,208  
 Harrow tooth, H. R. Fargo..... 251,103  
 Harvester, J. W. Webster..... 251,147  
 Harvester conveyer, W. D. Ewart..... 251,339  
 Harvesting machine, root, J. Bartlett..... 251,161  
 Hay unloading and stacking apparatus, J. C. Austin..... 251,018  
 Heating and ventilating buildings, L. A. Spaulding..... 251,309  
 Hoe, R. S. Carr..... 251,094  
 Hoisting machine, F. M. Davis..... 251,100  
 Holder. See Bag holder. Globe or shade holder. Gutter holder.  
 Hook. See Lacing hook.  
 Hot air furnace, stove, etc., W. J. Towne..... 251,320  
 Hub, vehicle, J. Bohlander, Jr..... 251,090  
 Juller. See Buckwheat huller.  
 Hydraulic elevator or dumb waiter, A. Granville..... 251,042  
 Hydraulic motor, W. J. Silver..... 251,302  
 Hydrocarbon furnace, Jackson & Senn..... 251,052  
 Incubator, H. J. Haight..... 251,112  
 Invalid chair, folding, J. C. Klett..... 251,248  
 Iron. See Whiffletree shackle iron.  
 Ironing board, Fields & Mayfield..... 251,203  
 Jack. See Wagon jack.  
 Joint. See Rail joint.  
 Joint fastener, C. H. Olson..... 251,129  
 Key fastener, R. Gibbons..... 251,041  
 Kin for treating glass, tiles, pottery, etc., D. Thompson..... 251,319  
 Knife handle, O. A. Wilson..... 251,150  
 Knitting machine, W. Campion..... 251,184  
 Lacing hook, S. N. Smith..... 251,307  
 Lamp, gas, H. W. Fabian..... 251,102  
 Lamp, hunting, E. H. Brittan..... 251,025  
 Lamp, painter's burning, C. S. Tallmadge..... 251,075  
 Lanterns, picture feeding device for magic, E. J. Muylbridge..... 251,127  
 Lathing machine, W. E. Fischer..... 251,205  
 Lathe for varied work, turning, F. Hanson..... 251,224  
 Leather faced fabric for use in bookbinding, etc., W. Pyle..... 251,065  
 Leather round, machine for forming, C. W. Rogers..... 251,233  
 Liquid cooling or heating apparatus, A. Roos (r)..... 9,977  
 Lock. See Alarm lock. Gate lock.  
 Loom for weaving tufted fabrics, A. L. Skinner..... 251,301  
 Lounging frame, G. Weismann..... 251,081  
 Magneto signal generator, J. B. Odell..... 251,128  
 Marble, ornamenting artificial, V. J. Watts..... 251,327  
 Mat. See Oil cake mat.  
 Metal pot, J. V. Hope..... 251,230  
 Metallic compounds from sulphur and sulphides, manufacture of, J. B. Spence (r)..... 9,984  
 Meter. See Grain meter.  
 Middlings purifier, W. D. Gray..... 251,216  
 Middlings purifier and dust collector, combined, A. N. Wolf..... 251,331  
 Middlings purifiers, etc., dust collector for, A. H. Kirk..... 251,121  
 Mill. See Grinding mill. Stamp mill.  
 Mitten, Haight & Strossman..... 251,220  
 Morocco manufacturers, filling cup for, G. C. Walters..... 251,325  
 Motion, device for converting, W. B. Frisbie..... 251,107  
 Motor. See Hydraulic motor. Sewing machine motor.  
 Musical instruments, manufacture of key board coverings for, G. B. French..... 251,213  
 Odometer, L. C. Perkins..... 251,064  
 Oil and oleaginous matters from vegetable and animal matters, extraction of, W. Bell..... 251,088  
 Oil cake mat or mould, Magnin & McCarron..... 251,124  
 Oil can, Winfield & Grimmesey..... 251,151  
 Ore crusher and grinder, W. Gutenberger..... 251,044  
 Organ coupler, J. Camidge..... 251,027  
 Ozone machine, H. Milsom (r)..... 9,976  
 Packet folding and compressing machine, G. Prichard..... 251,281

Paint compound for metallic surfaces, E. Jones..... 251,054  
 Paints for ships' bottoms, etc., manufacture of, Percy & Mott, Jr..... 251,279  
 Paintings, canvas stretcher for oil, M. Lazerges..... 251,253  
 Pantaloons guard or protector, A. Ligabue..... 251,257  
 Pigment and process of making the same, zinc, J. Cawley..... 251,187  
 Pin. See Safety pin.  
 Pin and clasp, combined, E. H. Lecour..... 251,254  
 Planter and cultivator, combined, J. C. Sebring..... 251,301  
 Planter, corn, E. C. Creamer..... 251,096  
 Plow, C. H. Remington..... 251,287  
 Plow, gang, R. Mills..... 251,271  
 Plow, planting, T. Pates..... 251,132  
 Plow, sulky planting, J. P. Black..... 251,089  
 Post. See Fence post.  
 Pot. See Metal pot.  
 Power, wheel for transmitting, A. J. Brill..... 251,024  
 Press. See Baling press.  
 Pulley grinding machine, F. M. Simmons..... 251,141  
 Pump, oil, A. J. Lewis..... 251,255  
 Rail joint, D. D. Defenbach..... 251,030  
 Railway and telegraph signal, H. J. Sprague..... 251,310  
 Railway switch, A. Row..... 251,067  
 Railway switch, R. P. Williams..... 251,083  
 Railway tie, C. F. Kreuz..... 251,251  
 Railway, traction rope, S. H. Terry..... 251,317  
 Rein attachment, check, F. R. Alderman..... 251,152  
 Rendering tanks, apparatus for expelling volatile matter from the refuse from, Fowler & Neill..... 251,105  
 Ring. See Earring. Finger ring.  
 Rings of celluloid, etc., forming hollow, D. C. Lockwood..... 251,258  
 Rings of celluloid, etc., forming solid, D. C. Lockwood..... 251,259  
 Rivets, manufacture of, E. Maynz..... 251,265  
 Rocking chair foot stool, F. Franz..... 251,034  
 Roller. See Curtain roller. Shade roller.  
 Rotary engine, R. H. Isbell..... 251,051  
 Sae iron by burning gas, device for heating, R. H. & J. W. Gardner..... 251,108  
 Safety pin, T. W. Foster..... 251,209 to 251,211  
 Sash fastener, S. W. Shaw..... 251,070  
 Sash fastener and burglar alarm, I. Brooke..... 251,026  
 Saw, H. Westphal..... 251,149  
 Saw frame, C. H. Bennett..... 251,166  
 Saw gummer, P. Sisson..... 251,308  
 Saw mill feeding appliance, G. Mee..... 251,269  
 Saw setting machine, H. A. Kimball..... 251,055  
 Scale beam, S. J. Austin..... 251,086  
 Scale for weighing bushels, S. J. Austin..... 251,087  
 Screw cutting machine, Vandenberg & Gilkerson..... 251,322  
 Screw threading nipples, etc., machine for, C. C. Walworth..... 251,079  
 Screw threads, device for cutting, C. C. Walworth..... 251,090  
 Seat. See Chair seat.  
 Secondary batteries, automatic switch for, C. E. Buell..... 251,179  
 Secretary, cabinet, and bookcase, combined, D. J. Stein..... 251,313  
 Seed drill, J. Bartlett..... 251,160  
 Seed dropper, centrifugal, J. C. Zimmerman..... 251,332  
 Sewage, process of and apparatus for utilizing, C. F. Langford..... 251,056  
 Sewing machine, J. A. Davis..... 251,195  
 Sewing machine, S. & A. Keats..... 251,240  
 Sewing machine, L. Manning..... 251,263  
 Sewing machine, F. H. Richards..... 251,136  
 Sewing machine attachment, Hadley & Grout..... 251,219  
 Sewing machine bobbin winder, G. S. Rominger..... 251,294  
 Sewing machine motor, C. W. Foster..... 251,207  
 Shade roller, spring, D. M. Kempster..... 251,244  
 Shaft support and step reliever, upright, J. M. Finch..... 251,104  
 Shaft support, vehicle, R. Kirk..... 251,247  
 Sheet metal wiring machine, C. Riessner..... 251,289  
 Shot, manufacturing drop, C. A. Bragg..... 251,092  
 Sifter and strainer, Walker & Nichols..... 251,078  
 Signal. See Railway and telegraph signal. Telephone signal.  
 Sizing paper, cloth, and other fibrous substances, P. E. Minor..... 251,062  
 Skate, roller, H. L. True..... 251,321  
 Smoke consuming apparatus, locomotive, H. M. Smith..... 251,142  
 Snap hooks, manufacturing, J. B. Sargent..... 251,297  
 Soap, making, F. R. Robinson..... 251,137  
 Sole edge finisher, M. Dudley..... 251,032  
 Spring. See Carriage spring. Door spring. Vehicle spring. Wagon spring.  
 Spur, A. Buermann..... 251,336  
 Stamp mill, J. F. Marvin..... 251,264  
 Stan l. See Tile stand.  
 Stand boiler, W. W. Austin (r)..... 9,974  
 Steam engine, W. Von Pittler..... 251,144  
 Stone breaking and crushing machine, R. D. Gates..... 251,038  
 Stone breaking and ore crushing machine, R. D. Gates..... 251,039, 251,040  
 Stool, piano, S. W. Shaw..... 251,069  
 Stopper. See Bottle stopper.  
 Storing tank for petroleum, G. W. King..... 251,245  
 Stove, W. H. Henserson..... 251,117  
 Stove and range, gas cooking, W. W. Goodwin..... 251,215  
 Stove board, R. M. Hidelman..... 251,167  
 Stove, gas and oil heating, Carswell & Miller..... 251,185  
 Sulky, W. S. Frazier..... 251,106  
 Switch. See Railway switch.  
 Table. See Turn table.  
 Table ware, hollow, H. Korf, Jr..... 251,250  
 Telegraph and electric time system, combined district, C. E. Buell..... 251,176  
 Telegraphic relay, C. E. Buell..... 251,177  
 Telephone and telegraph switch board, C. F. Danforth..... 251,098  
 Telephone circuits, utilizing secondary batteries on, C. E. Buell..... 251,181  
 Telephone pole piece, T. A. Watson..... 251,326  
 Telephone signal and switch, C. E. Buell..... 251,180  
 Telephone station apparatus, J. O. Jeffries..... 251,234  
 Telephone switch board, J. A. McCoy..... 251,153  
 Telephone switch device, C. E. Buell..... 251,278  
 Telephony, J. H. Rogers..... 251,232  
 Thrasher, field, H. Jory..... 251,119  
 Thrashing machines, attachment for cleaning shoes of, H. Hamilton..... 251,045  
 Ticket canceler and register, E. I. Blount..... 251,022  
 Ticket case, W. H. Rushforth..... 251,296  
 Tie. See Railway tie.  
 Tile stand and support, G. D. Corey..... 251,029  
 Tobacco fly exterminator, J. B. Hamilton..... 251,222  
 Tobacco hilling machine, F. Rice et al..... 251,135  
 Tobacco stem flattener, N. H. Borgfeldt..... 251,171  
 Tooth, artificial, C. H. Mack (r)..... 9,985  
 Torpedo boat, G. H. Reynolds..... 251,288  
 Torpedo grate, T. N. Howell..... 251,281  
 Toy horses and cart, F. W. Carpenter..... 251,083  
 Transom adjuster, B. H. Carter..... 251,028  
 Truck, barrel, J. Youll..... 251,084  
 Truss, hernial, W. Nelson..... 251,343  
 Tub. See Bath tub.  
 Turn table, Haugh & Leeds..... 251,241

Type writing machine, L. S. Crandall..... 251,338  
 Valve, J. H. Quinn..... 251,283  
 Valve, slide, W. J. Reaer..... 251,134  
 Vehicle, W. W. Grier..... 251,043  
 Vehicle spring, G. E. Harris (r)..... 9,975  
 Vehicle spring, J. H. Howe..... 251,233  
 Vehicle spring, Karnatz, Jr. & Budlong..... 251,239  
 Vehicle wheel, R. W. Davis..... 251,196  
 Vehicle wheel small band, Schoent & Link..... 251,300  
 Velocipede, marine, D. Urch..... 251,077  
 Vest, J. W. Rosenthal..... 251,295  
 Wagon body corner piece, R. B. Perkins..... 251,278  
 Wagon, buckboard, J. Hansel..... 251,115  
 Wagon jack, D. G. Benner..... 251,020  
 Wagon running gear, Dulmaine & Poole..... 251,197  
 Wagon side bar, E. W. Pancher..... 251,199  
 Wagon spring, A. J. Fromm..... 251,037  
 Warping and beaming yarn, machine for, Walmsley & Lang..... 251,304  
 Washing machine, M. J. Fenwick..... 251,301  
 Watchmaker's and jeweler's tool, O. W. Bullock..... 251,182  
 Watchmaker's combination tool, O. W. Bullock..... 251,183  
 Watch movement packing case, C. G. Schmidt..... 251,299  
 Weather strip, W. Clark..... 251,095  
 Well cleaner, H. C. Mehring..... 251,135  
 Wheel. See Vehicle wheel.  
 Whiffletree shackle iron, W. R. Scofield..... 251,140  
 Wire rope and cable, A. S. Halliday..... 251,114  
 Wire stretcher, Allardice & Tubbs..... 251,153  
 Wrench. See Bung bush wrench.

DESIGNS.

Bed bottom, cot, H. W. Lead..... 12,618  
 Glassware, J. W. Campbell..... 12,615  
 Hair front, J. R. Krane..... 12,617  
 Harness mountings, S. S. Sargeant..... 12,627  
 Hat and coat rack, J. R. Palmenberg..... 12,625  
 Jewelry, H. G. Mackinney..... 12,619  
 Oil cloth, carpet, etc., C. T. & V. E. Meyer..... 12,620 to 12,624  
 Stove, H. C. Bascom..... 12,613  
 Stove, Bascom & Heister..... 12,603, 12,608 to 12,612  
 Stove, Bascom & Hoages..... 12,604 to 12,607  
 Stove, F. W. Copeland et al..... 12,616  
 Stove, W. & G. D. Sanford..... 12,626

TRADE MARKS.

Cigars, A. Allones..... 8,935  
 Cigars, L. Gomez..... 8,940  
 Cigars, M. Valle y Ca..... 8,943  
 Clam chowder, canned oysters, clams, and analogous goods, E. Mehl & Co..... 8,930  
 Dentifrice, C. E. Fougere..... 8,946  
 Flour, T. W. Floyd & Co..... 8,925  
 Flour, Hazall-Crenshaw Company..... 8,941, 8,942  
 Horseshoe nails, W. M. Mooney & Co..... 8,934  
 Ink, black fluid writing, Fountain Ink Co..... 8,926 to 8,928  
 Oil, beef, H. Berthold..... 8,923  
 Oil cloths, T. Potter, Sons & Co..... 8,931  
 Razors and files, Heller & Bros..... 8,929  
 Razors, scissors, and pocket and table cutlery, T. R. Cadman..... 8,945  
 Starch, laundry and table, American Starch Co..... 8,922  
 Tobacco, chewing and smoking, W. W. Wood..... 8,947, 8,948  
 Tobacco, plug and twist chewing and smoking, Biting & Whitaker..... 8,936, 3,367, 8,944  
 Umbrella frames, steel, S. Fox & Co..... 8,932, 8,933  
 Watch case springs, O. W. Bullock..... 8,924  
 Wine, champagne, C. N. Farre..... 8,938, 8,939

Advertisements.

Inside Page, each insertion - - - 75 cents a line.  
 Back Page, each insertion - - - \$1.00 a line.  
 (About eight words to a line.)  
 Engravings may bear advertisements at the same rate per line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

**MALLEABLE** AND FINE GRAY IRON ALSO STEEL CASTINGS FROM SPECIAL PATTERNS  
 THOMAS DEVLIN & CO. FINE FINISHING JAPANNING AND POLISHING  
 LEHIGH AVE. & AMERICAN ST. PHILA.

**ICE MAKING MACHINES, COLD AIR MACHINES,**  
 For Brewers, Pork Packers, Cold Storage Warehouses, Hospitals, etc.  
 Send for ILLUSTRATED and DESCRIPTIVE CIRCULARS.  
**PICOTET ARTIFICIAL ICE CO. (Limited),**  
 142 Greenwich Street,  
 P. O. Box 3035. New York City, N. Y.

**THE INFLUENCE OF SURFACE CONDITION** on the Strength of Steel—A paper describing the results of a series of experiments recently undertaken in England to ascertain the strength of steel under various surface conditions. With three tables giving results of the tests, and 20 figures showing the nature of the fractures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 302. Price 10 cents. To be had at this office and from all newdealers.

**C. J. GODFREY & SON,**  
 UNION CITY, CONN.  
 Manufacturers of Metallic shells, Ferrules, Cups, Boxes, Blanks, and all kinds of small Pressed and Stamped Work, in Copper, Brass, Zinc, Iron, or Tin. Seamless Brass and Steel Ferrules for Files, Chisels, and other Tool Handles. Also Inkling Pad Boxes, of various kinds, for Rubber Stamps. Pocket Match Safes, and everything in the line of Metallic Notions, Small Wares, & Novelties made to order on application. Gold, Silver, & Nickel Plating when desired. Orders solicited & estimates furnished.

**WANTED,**  
 Patented Articles of merit, to introduce through agents in exclusive territory, or Patent to handle on royalty.  
 J. H. ORR, No. 355 E. Fulton St., Columbus, O.

**ACME CUBE PIPE TONGS**  
 VARYING IN SIZES FROM 4 INCHES TO 12 INCHES  
 MOST EFFICIENT MADE  
 NOBLE HALL & CO. SOLE MFRS. ERIE PA.

**WANTED—SECOND-HAND TALLOW PRESS FOR** Oil Making.—S. MOULSON, Rochester, N. Y.

**PUNCHED WORK** of every description. Dies and Punches furnished. Low Estimates.  
 GEO. VAN SANDS, Middletown, Conn.

**FREE,** 100 SELECTIONS for Autograph Albums, 1 pk. Transparent Cards, 1 pk. Fun Cards, 1 pk. Escort Cards, 1 pk. Flirtation Cards, Language of Flowers, 6 Actress Pictures, 1 Star Puzzle, 2 Chemical Puzzles, and an eight-page literary paper on trial 3 months. All the above sent on receipt of 2¢. In stamps to cover postage, etc. Address **KENDALL & CO.,** Boston, Mass.

**GET THE BEST AND CHEAPEST.**  
 TRADE MARK  
**Silver Finish.**  
**J. A. FAY & CO.,**  
 (Cincinnati, Ohio, U. S. A.)  
 Exclusive Agents and Importers for the United States, of the  
**CELEBRATED**  
**PERIN BAND SAW BLADES,**  
 Manufactured superior to all others in quality, finish, uniformity of temper, and general durability. The Perin Saw outwears three ordinary saws.

**SLATE MACHINERY WANTED.**  
 Makers of Machinery for Slate working into Tables, Mantels, Cisterns, etc., are requested to communicate, with prices of all tools requisite to fit up a first-class mill, such as saws, planers, etc., with T. BACON, 39 St. Francis Xavier St., Montreal, Canada.

**MINERAL WOOL.**  
 This fireproof and inextinguishable material successfully prevents loss of heat by radiation, keeps frost from water pipes, and admits sound checks spread of fire in walls, partitions, doors of dwellings. 25 cts. per cubic foot.  
**U. S. MINERAL WOOL CO.,** 16 Cortlandt St., N. Y.

**THE FLIGHT OF BIRDS.—BY A. C. Campbell.** An interesting paper, in which the author explains the structure of the bird's wing, and the mechanical principles involved in flight, and from thence shows how the bird contrives to sustain itself against gravity and to acquire any desired speed. Illustrated with 7 cuts. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 298. Price 10 cents. To be had at this office and from all newdealers.

**BAND SAW BLADES** Patent Process. Send for sample saw and catalogue. H. A. KIMBALL, Agt., 614 Filbert St., Philadelphia, Pa.

**PATENTS SOLD** Partners Secured.  
 Joint Stock Companies formed. Stock placed for Incorporated Companies. Good investments always on hand. Highest references given. Circulars free. R. L. RICHARDS & CO., Brokers, 733 BROADWAY, New York.

**“International Agency”** for Electrical Instruments.”  
 PRINCIPAL OFFICE:  
**BERLIN, GROSSBEERENSTRASSE, 84,**  
 Offers superior facilities for the introduction of American useful inventions and specialties of merit in the various European countries. Inventors and manufacturers are invited to communicate. Good American and European references.

For Shop Rights to build small boilers costing five dollars per H. P., address T. McDONOUGH, Montclair, N. J.

**FEED WATER PURIFIER** FOR STEAM BOILERS U. S. & FOREIGN PATENTS

**WANTED,** Parties of tact and capital, to assist in securing foreign patents on invention for certainly preventing loss of pocketbooks and valuables by accident or theft. Very valuable. United States Patent is allowed. THOS. B. DENISTON, Box 176, Peru, Ind.

**SAWS** How to straighten and gum all kinds. Address A. E. WILBUR, Schenectady, Otsego Co., N. Y.

**THE REASONING FACULTY OF ANIMALS.—By Joseph F. James.** An interesting paper, in which the author contends that instincts in animals are not of divine origin, but come into existence in obedience to natural laws, and in many cases ought to rank with the reason of man. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 298. Price 10 cents. To be had at this office and from all newdealers.

**SURGICAL** Instruments, Artificial Limbs, and Apparatus for Deformities. D. W. KOLBE & SON, 1207 Arch St., Philadelphia, Pa. Established 1849.

**SLIDE RESTS,** \$12 to \$40. E. R. BROWN, Windsor, Ct.

**SPECIAL MACHINERY, TOOLS, EXPERIMENTAL** Work, etc. S. McHENRY, 927 Filbert St., Philadelphia, Pa. Fine work solicited.

**THE QUALITY OF STEAM.—A VALUABLE** paper read before the American Railway Master Mechanics' Association, June, 1881, by John A. Hill, M. E., showing the necessity of an exact knowledge of the thermal value of steam in estimating the economy of engine and boiler performance. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 302. Price 10 cents. To be had at this office and from all newdealers.

**TOOLS OF ALL KINDS**  
**PATENTS.**  
 MESSRS. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine Improvements, and to act as Solicitors of Patents for Inventors.  
 In this line of business they have had thirty-five years' experience, and now have unequalled facilities for the preparation of Patent Drawings, Specifications, and the prosecution of Applications for Patents in the United States, Canada, and Foreign Countries. Messrs. Munn & Co. also attend to the preparation of Caveats, Copyrights for Books, Labels, Reissues, Assignments, and Reports on Infringements of Patents. All business entrusted to them is done with special care and promptness, on very reasonable terms.  
 A pamphlet sent free of charge, on application, containing full information about Patents and how to procure them; directions concerning Labels, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments; Rejected Cases, Hints on the Sale of Patents, etc.  
 We also send, free of charge, a Synopsis of Foreign Patent Laws, showing the cost and method of securing patents in all the principal countries of the world.  
**MUNN & CO.,** Solicitors of Patents,  
 37 Park Row, New York.  
 BRANCH OFFICE—Corner of F and 7th Streets, Washington, D. C.