

Gas burner, regenerative, H. C. Campbell..... 337,130
 Gas, electrical torch for lighting, J. D. Culp..... 336,988
 Gas engine, G. C. Anthony..... 337,226
 Gas reg. lator, J. E. Miller..... 337,012
 Gas supply pipe, G. Russell..... 337,850
 Gasometer, G. E. Johnson..... 337,065
 Gate. See Railway gate.
 Gate, G. A. Grant..... 337,148
 Gate, F. W. Sensiba..... 337,069
 Gate, W. L. & J. C. Wilson..... 337,104
 Generator. See Steam generator.
 Glassmaker's mould, F. S. Shirley..... 337,204
 Glassware, E. D. Libbey..... 337,170
 Glassware, decorated, A. Hamprecht..... 337,324
 Glassware, manufacture of decorated, A. Hamprécht..... 337,325
 Grain binder, P. P. Coler..... 336,895
 Grain drier, Ehlmann & Mayer..... 336,906
 Grain hulling and scouring machine, F. B. Rolle..... 337,284
 Grain separator and cleaner, J. P. Bond..... 337,234
 Grinding mill, J. B. Alfrey..... 336,979
 Guitar, J. Klueber..... 337,337
 Gun barrels, machine for finishing, J. M. Clough..... 337,247
 Gun, magazine, A. Burgess..... 337,239
 Hame, J. F. Knorr..... 337,338
 Handle. See File handle. Tool handle.
 Hanger. See Coat hanger.
 Harness ring holder, G. W. Swinehart..... 337,031
 Harrow, A. C. Evans..... 336,906
 Harrow, J. A. Minger..... 337,186
 Harrow, disk, Phelps & Swift..... 337,017
 Harvester and binder, Whiteley & Bayley..... 337,220
 Harvester reel, A. Stark..... 336,850
 Harvester reel, adjustable, J. H. Borse..... 337,285
 Harvesting machine, cotton, C. T. Mason, Jr..... 337,007
 Harvesting sack supporter, J. E. Poteet..... 337,194
 Hat and coat hook, wire, F. Taylor..... 336,960
 Hat ventilator, F. C. Bowen..... 337,124
 Hay carrier, W. Loudon..... 337,173
 Hay loader, L. H. Robbins..... 336,948
 Hay rack, J. A. Grassman..... 337,321
 Hay rack, J. A. Withrow..... 337,105
 Hay rake, two-horse, Anderson & Rutherford..... 337,111
 Heater. See Feed water heater. Hot water heater.
 Holder. See Bedclothes holder. Billiard chalk holder. Bolt holder. Broom holder. Harness ring holder.
 Honey box case and clamp, O. S. Foster..... 337,143
 Hook. See Back band hook. Fishing hook. Hat and coat hook. Whiffletree hook.
 Horse bed, automatic, T. M. McDonough..... 337,070
 Horse block, W. N. Bell..... 336,986
 Horse rake and carrier truck, combined, J. H. Barley..... 337,228
 Horseshoe, W. Somerville, Sr..... 337,030
 Horseshoes, tool for expanding, H. Wilcox..... 337,321
 Hose spanner, F. W. Gray..... 336,915
 Hot water heater, H. K. Kriebel..... 337,068
 Household press, J. L. Smith..... 336,956
 Hub, wheel, French & Maltby..... 337,319
 Hydraulic apparatus, L. Belder..... 337,118
 Hydraulic elevator engine, J. Gibbins..... 337,056
 Hydrocarbon engine, J. P. Holland..... 337,000
 Ice elevators, slush remover for, J. S. Field..... 337,318
 Incubator, W. Y. Cowl..... 337,308
 Indicator. See Mechanical key indicator.
 Inhalers, mixing and vaporizing device for, G. E. Johnson..... 337,066
 Iron. See Smoothing iron.
 Jack. See Jumping jack.
 Joints, stop for expansion, J. B. White..... 337,087
 Jumping jack, J. A. Kienard..... 336,923
 Key. See Extension key.
 Knife sharpener, Shaw & Walden..... 337,023
 Knob, door, E. Thistle..... 337,033
 Lamp burner, T. B. Willson..... 337,102
 Lamp, electric arc, J. J. Wood..... 337,289
 Lamp reservoir, W. P. Butler..... 337,302
 Lamp shade, electric, P. H. Klein, Jr..... 337,336
 Lamps, heating attachment for, S. H. Dibble..... 337,135
 Land roller, Helm & Nickenich..... 337,264
 Last, R. L. Campbell..... 337,131
 Latch, night, Barnes & Woolaston..... 337,115
 Leather stuffing, J. A. J. Shultz..... 337,287
 Leg, artificial, R. C. D. Nam..... 336,904
 Lens tester, G. Johnston..... 337,388
 Lift or hoist, J. M. de Aguirre y Lizola..... 337,049
 Lifter. See Sash lifter. Transom lifter.
 Lock. See Bicycle lock. Door lock. Nut lock. Trunk lock. Seal lock.
 Lubricator. See Axle lubricator.
 Manure pouch, T. M. McDonough..... 337,181
 Map, chart, and bookcase, combined, D. D. Van Wie..... 337,095
 Marker, land, A. T. Stewart..... 337,032
 Matches, machine for making, Norris & Hagan..... 337,074
 Measure, shoemaker's, A. S. Adler..... 337,039
 Metal bars, machine for swaging, J. Berry..... 337,297
 Metal wheels, mechanism for the manufacture of, J. R. Little..... 337,172
 Meter. See Electric current meter.
 Middlings purifier, C. N. Smith..... 337,207
 Mill. See Grinding mill.
 Mould. See Glassmaker's mould.
 Moulding, cloth covered, J. Maxwell..... 337,008
 Moulding machines, cutter for, H. C. T. nis..... 337,353
 Mop wringer, D. Lynch..... 337,274
 Motion, device for converting reciprocating into rotary, M. G. Adams..... 336,978
 Motor. See Spring motor.
 Mucilage bottle, W. H. Redington..... 336,945
 Music strips, making, R. B. tterworth..... 337,304
 Musical key indicator, O. H. Goodwin..... 337,320
 Nail capping machine, J. M. Ellis..... 336,994
 Nut lock, J. M. Calendas..... 336,892
 Oar, jointed boat, B. F. Bennett..... 336,886
 Ore cr. sher, S. G. Rollins..... 337,085
 Ores, etc., machine for concentrating, F. H. Blake..... 337,122
 Organ stop action, combination, W. H. Price, Jr..... 337,348
 Organs, pneumatic action for, I. Bassett..... 336,982
 Organs, pneumatic action for, C. S. Haskell..... 337,326
 Oven, W. Miller..... 336,937
 Overall, C. Erlanger..... 337,316
 Ox shoes, die for trimming, J. Deeble..... 336,901
 Ox shoes, manufacture of, J. Deeble..... 336,900
 Package, cylindrical wooden, J. Tomlinson..... 336,983
 Package for belt dressing compounds, J. H. Brin-gold..... 337,235
 Packing, W. White, Jr..... 337,100
 Packing for car axle boxes, E. Waite..... 336,966
 Pad. See Blotting pad.
 Paint exhibitor, T. C. Van Arsdale..... 337,034
 Pan. See Ash pan.
 Paper calendaring machine, M. Solinger..... 337,028
 Paper cting machine, B. Sandmann..... 337,286
 Paper, grease proof, D. Heston..... 337,155
 Paper hangings, etc., exhibitor for, L. A. Ely..... 337,315
 Paper machines, stock regulator for, C. Potter..... 337,080
 Paper tubes, machine for making, M. D. Knowl-ton..... 337,105

Pattern lining, M. Stocker..... 337,030
 Picking or ginning machines, doffing apparatus for, S. R. Parkhurst..... 337,014
 Picture frame, G. H. Thonssen..... 337,033
 Picture mats, etc., mechanism for the manufac-ture of, Caldwell & Smith..... 337,129
 Pill roller, J. D. Kutzner..... 337,342
 Pin. See Connecting pin.
 Pin rails, dr m attachment for, A. F. Spear..... 337,029
 Pipe. See Gas supply pipe.
 Pipe connection, B. P. Bower..... 337,126
 Plaiting machine, R. W. Henderson..... 336,999
 Planter, corn, M. E. Doolittle..... 337,318
 Planter, corn, J. W. Harbin..... 337,281
 Planter, force feed seed, J. H. Keedy..... 337,268
 Planter, lister corn, M. M. Holmes..... 337,156
 Plow, F. Reyner..... 336,946
 Plow, gang, J. J. Young..... 337,107
 Plow, steam, G. Willard..... 336,969
 Post stock and cultivator combined, J. A. Lifsey..... 337,009
 Post. See Fence post.
 Posts, base for, W. H. Kellogg..... 337,163
 Pot. See Firepot.
 Potato digger, J. H. Lewis..... 337,169
 Potato sprinker, W. H. Moore..... 336,938
 Press. See Baling press. Household press.
 Printer's galley, D. W. Whitaker..... 337,218
 P ller. See Stump or stone puller.
 Pulley, E. C. Sooy..... 336,958
 Pulley, belt, F. Siebert..... 337,024
 Pump, W. P. Andrews..... 337,040
 P mp, J. M. Laing..... 337,167
 Pump, J. M. Normand..... 336,940
 Pump, centrifugal, W. O. Webber..... 337,216
 Pump, chain, Tyler & Carter..... 337,354
 P mps, steam valve gear for duplex steam, J. S. Klein..... 336,924
 Punch, Platts & Crane..... 337,077
 Punch, clinching, J. R. Watson..... 337,036
 Punching machine, R. H. Dowell..... 337,139
 Quilling machine, M. H. Marc s..... 337,178
 Rack. See Display rack. Hay rack.
 Rafts and booms, plug for, T. Irvine..... 336,920
 Railway crossing, M. A. Dilley..... 337,253
 Railway gate, J. H. Pollard..... 337,079
 Railway nut wrench, A. J. Forbes..... 336,908
 Railway signaling apparatus, F. N. Kelsey..... 337,269
 Railway switch stand, Brown & Meeker..... 336,988
 Railway system, pendant car elevated, P. Hale..... 337,149
 Railway time signal, C. Barry..... 337,229
 Railway trains, revolving signal for, I. Rickard..... 337,283
 Rake. See Hay rake. Horse rake.
 Ram, hydraulic, A. Baer..... 337,112
 Reclining chair, L. Davis..... 337,132
 Recorder. See Car seat recorder.
 Reel. See Belt reel. Carpet cleaning reel. Har-vester reel.
 Reel, J. M. Bannan..... 336,885
 Refrigerator, E. S. Farson..... 337,256
 Refrigerator, well, J. E. Grosjean..... 337,058
 Reg lator. See Electric machine regulator. Gas regulator.
 Revolver, H. Schl nd..... 337,201
 Ring. See Curtain pole ring.
 Rivet, E. Flagg..... 337,142
 Roller. See Land roller. Pill roller.
 Rotary engine, T. P. Coombs..... 336,896
 Saddle, harness, P. W. Corcoran..... 337,047
 Saddle, harness, W. S. Webster..... 337,217
 Sash fastener, A. D. McCall..... 336,932
 Sash lift, A. Wiggers..... 337,088
 Saw setting and g mming tool, combined, D. McDonough..... 336,983
 Saw tooth, W. B. Risdon..... 337,083
 Saw tooth, C. J. Wilson..... 337,103
 Scraper and br sh, combined shoe, W. P. Man-ning..... 336,931
 Screen. See Extension screen.
 Seal lock, G. Koch..... 336,925
 Seat. See Wagon seat. Washtub seat.
 Secondary battery, C. F. Br sh..... 337,298
 Separator. See Cackle and grain separator. Cream separator. Grain separator.
 Sewing machine, boot and shoe, E. Adams..... 337,291
 Sewing machine, buttonhole, J. W. Lufkin..... 337,278
 Ships, apparatus for bending the ribs or frames of metallic, W. M. Bailey..... 337,113
 Shirt, E. A. Krones..... 337,341
 Shoe, seamless, A. Graff..... 336,913
 Shoe, spring, J. Gluecksmann..... 337,146
 Shutter fastener, F. A. S. Perry..... 337,076
 Shutter, inside, R. Blair..... 337,121
 Siding and roofing board, J. W. Crabbe..... 337,310
 Sign, R. Nicol, Jr..... 337,188
 Signal. See Railway time signal.
 Signal horn, C. A. Volke..... 337,098
 Signal or call box, Davis, Jr. & Gale..... 337,356
 Skate, L. Hull..... 336,919
 Skate, roller, J. B. Harris, Jr..... 337,151
 Skate, roller, S. E. Shute..... 337,205
 Skating, etc., means for the constr ction of sur-faces for, J. A. Calantarients..... 337,128
 Smoke conductor, T. Rundle, Jr..... 337,087
 Smoothing iron, Kearns & Noble..... 337,267
 Smut machine, S. Wohlrab..... 337,219
 Snow plow, Ormerod & Croskey..... 337,075
 Snow plow, J. M. Poitras..... 337,078
 Soap, C. H. Walker..... 337,085
 Soldering machine, can, D. M. Monroe..... 337,277
 Spindle. See Spinning spindle.
 Spinning spindle and bearing therefor, E. Dum-mer..... 336,908
 Spoons, manufacture of, W. A. Warner..... 337,099
 Spring. See Carriage spring. Vehicle spring.
 Spring, J. H. Davis..... 337,048
 Spring motor, H. E. Marchand..... 337,177
 Sprinkler. See Potato sprinker.
 Squeezer and strainer, combined, J. Mikel..... 337,185
 Squib, E. J. Cotter..... 337,307
 Stalk cutter, J. H. Jones..... 337,335
 Stamp, printing, H. Holt..... 337,331
 Stand. See Railway switch stand. Switch stand.
 Staple holding implement, C. E. Van Dusen..... 337,212
 Steam boiler, Dougherty & Feeley..... 337,138
 Steam boiler, sectional, R. R. Zell (r)..... 10,696
 Steam engine, J. T. Metcalfe..... 337,184
 Steam engine, fireless, M. Honigmann..... 337,062
 Steam engine indicators, device for operating, J. R. Goddard..... 337,147
 Steam generator, J. R. Moore..... 337,073
 Steamboat stage, J. Patin..... 337,281
 Stacking supporter, C. J. Haley..... 336,917
 Stopper. See Bottle stopper.
 Stopper fastener, F. W. Seymour..... 337,202
 Stove lids, pattern for moulding, E. Evans..... 337,052
 Stoves or ranges, plate joint for, N. A. Boynton..... 337,127
 Strawberry r nner cutter, double, G. W. Love..... 337,174
 Streetsanding machine, B. Butler..... 337,300
 String gauge, C. F. Albert..... 337,224
 Stump or stone puller, T. B. Barber..... 337,114
 Switch stand, A. A. Strom..... 337,352

Syringe, W. H. Conkle..... 337,249
 Tacks, device for driving and bending headless, Higgins & Condit..... 337,061
 Teakettle spout, J. W. Yates..... 337,077
 Telegraph, duplex, B. E. J. Ellis..... 337,314
 Telegraphic relay, polarized, J. C. Ludwik..... 337,272
 Telephone, S. Bergmann..... 337,231
 Telephone, Edison & Bergmann..... 337,254
 Telephone call, J. C. Wilson..... 336,972
 Telephone receiver, S. Bergmann..... 337,232
 Tire upsetter, W. M. Helms..... 337,265
 Tool handle, J. Chantrell..... 337,242
 Toy money box, J. H. Bowen..... 337,125
 Train signaling apparatus, J. P. A. Hanlon et al..... 337,260
 Transom lifter, J. F. Wollensak..... 336,975
 Trap. See Animal trap.
 Tree feller and pile c tter, W. G. Rendall..... 337,018
 Tricycle, F. White..... 336,968
 Trousers stretcher, Melvenna & Rollason..... 337,071
 Truck, car, F. A. Bartholomew..... 336,983
 Truck, traveling suspension, H. J. McArdle..... 337,179
 Trunk, S. Hermann..... 337,828
 Trunk lock, F. W. Mix..... 337,187
 Truss, abdominal, C. Zimmer..... 337,240
 Tube. See Paper tube.
 Tube punching machine, C. P. Higgins..... 337,330
 Tubes, forming serpentine, N. W. Pratt..... 337,282
 Tubes, machine for sizing, straightening, and fin-ishing, J. K. Davis..... 336,899
 T g, D. Hawn..... 337,263
 T g fastener, spring, L. H. Nusbaum..... 337,347
 T g, hame, J. T. Condon..... 337,248
 Umbrella, P. Meyer, Jr..... 337,276
 Umbrella casing, R. E. Ghezzi..... 337,145
 Underwaist or strengthening corset for children, E. Nagle..... 337,280
 Valve motion, J. S. Ash..... 337,293
 Valve, relief, J. Eriscoe..... 337,236
 Valve, slide, C. H. Baker..... 336,980
 Vegetable cutter, J. H. Fraumann..... 336,949
 Vehicle brake, W. J. Devers..... 337,134
 Vehicle chain, J. E. Bimm..... 337,120
 Vehicle dash frame, W. I. Atwood..... 337,294
 Vehicle spring, C. H. Terry..... 337,208
 Vehicle, two-wheeled, J. G. Gay..... 337,258
 Velocipede, E. G. Latta..... 337,271
 Veneering with fabric, G. Muller..... 337,346
 Ventilating mines, apparatus for, Graves & King-ley..... 336,914
 Ventilator. See Hat ventilator.
 Violin bows, device for securing, C. F. Harring-ton..... 337,059
 Vise jaws, die forming, C. Konold..... 337,339
 Vise jaws, machine for making, C. Konold..... 337,340
 Wagon seat, J. L. Hughes..... 337,033
 Washboard, G. P. F ller..... 336,910
 Washboard, E. L. Pridham..... 337,349
 Washtub seat, C. H. Kelley..... 337,001
 Washer. See Bottle washer.
 Washing machine, D. G. Colbert..... 337,046
 Washing machine, E. W. Dixon..... 337,136
 Washing machine, D. D. Fredericks..... 337,144
 Washing machine, A. Malcolm..... 336,930
 Water closet cistern, J. Demarest..... 337,133
 Water elevator, J. C. Davis..... 337,251
 Water, purifying, H. H. Smith..... 337,026
 Watersupply system, C. H. Godfrey..... 336, 7
 Weather strip, T. J. Fitzpatrick..... 336,907
 Weather strip for doors, A. J. Davis..... 337,250
 Wheat and other grain, machine for peeling, J. J. Hubbell..... 337,160
 Wheel. See Metal wheel. Wind wheel.
 Wheel, S. T. Williams..... 337,236
 Whiffletree evener spring casing, T. J. Christy..... 336,961
 Whiffletree hook, F. Eggers..... 337,225
 Winch, steam, A. J. Maginnis..... 337,175
 Wind wheel, J. T. Thomson..... 337,094
 Window, J. S. Pihlstrom..... 337,198
 Wire cutter, D. Houghton..... 337,159
 Wool drying machine, J. H. Lorimer..... 336,928
 Wrench. See Railway nut wrench.
 Wringer. See Mop wringer.

Advertisements.
 Inside Page, each insertion - - - 25 cents a line.
 Back Page, each insertion - - - \$1.00 a line.
 (About eight words to a line.)
 Engravings may head advertisements at the same rate per line, by measurement, as the letter press. Adver-tisements must be received at publication office as early as Thursday morning to appear in next issue.

Remington Standard Type-Writer
 Purchasers per-mitted to return by Express C. O. D. for full purchase price at any time within thirty days, thus giving an opportu-nity for comparison with other ma-chines.

Wyckoff, Seamans & Benedict,
 339 Broadway New York.

A TREATISE ON STEAM BOILER INCrustATION
 and Methods for Preventing Corrosion and the Forma-tion of Scale, including Methods for Determining the Constituents and a Description of Dr. Clark's Soap Test for Determining the Degree of Hardness of Water; the Effects of Rain, River, Well, and Sea Waters on Steam Boilers; Compounds and Apparatus for Purifying, Soft-ening, Heating, Filtering, Spraying, and Separating For-eign Matter with from Mine, River, Well, and other Wa-ters; Apparatus for Feeding Chemicals with the Water to Steam Boilers, and for Economizing in the Quantity of Water Consumed for Generating Steam in Places where the Supply of Water is Limited; Devices for Re-moving the Mud and Sediment and for blowing off the Less Crystalline Substances and Salt from Steam Bo-ilers; Including also a Description of Com pounds for Soft-ening Incrustations and Methods Claimed as Preven-tives to the Incrustation and Corrosion of Land and Marine Steam Boilers; also a Complete List of all Ameri-can Patents issued by the Government of the United States from 1790 to July 1, 1884, for Compounds and Me-chanical Devices for Purifying Water and for Prevent-ing the Incrustation of Steam Boilers. Illustrated by sixty-five engravings. By Charles Thomas Davis, author of "A Practical Treatise on the Manufacture of Bricks, Tiles, Terra-Cotta," etc. Price \$2.00. A catalogue of books sent to all who will apply. Address MUNN & Co., 361 Broadway, New York City.

Syracuse Malleable Iron Works

PETROLEUM AS FUEL IN LOCOMO-tive Engines. A paper by Thomas Urquhart.—How loco-motives are arranged for burning petroleum. The spray injector for engine of petroleum. Experimental engines and tenders. Results of comparative trials. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 455. Price 10 cents. To be had at this office and all newdealers.

MODERN BRONZE ALLOYS.—A PA-per by F. F. Nixey, C.E., presenting some valuable data concerning such bronzes as are being usefully em-ployed for engineering purposes. The bronzes of an-cients. Composition of bronzes. Phosphor bronzes and its applications. Silicon bronze. Manganese bronze. Delta metal. Phosphor-copper. Phosphor-manganese bronze. Phosphor-lead bronze. Phosphor-iron. Aluminum bronze. Silveroid. Cobalt bronze. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 465. Price 10 cents. To be had at this office and from all newdealers.

THE RESOURCES OF ALASKA.—AN interesting paper by Frederick Schwatka. Timber lands. Yellow cedar and its value. The salmon indus-try and salmon canneries. Whale fishery. Scenery of Southeastern Alaska. The fur industry. Mineral re-sources. Agriculture. Contained in SCIENTIFIC AMER-ICAN SUPPLEMENT No. 496. Price 10 cents. To be had at this office and from all newdealers.

HELP WANTED. \$50 A WEEK and ex-penses paid. Valuable outfit and particulars free. J. F. HILL & CO., Aug sta, Maine.

STEAM CATAMARAN MAY BAR-rett.—Plans and specifications of the catamaran May Barrett, a family r iding boat built for use on rivers and lakes. Construction of hulls, deck beams, main deck, upper works, engine and boiler, wheel. With 10 figures. Contained in SCIENTIFIC AMERICAN SUPPLE-MENT No. 472. Price 10 cents. To be had at this office and from all newdealers.

Woodworking Machinery.
 For Planing Mills, Furniture and Chair Factories, Car and Agricultural Works, Carriage and Buggy Shops, and General Wood Workers. Manufact'd by The Eran Company, Cincinnati, O. U. S. Patents. Full assortment of Plan Saw Blades.

FRICITION CLUTCH
Pulleys and Cut-off Couplings.
 JAS. HUNTER & SON, North Adams, Mass.

PERFUMES.—A PAPER BY JACOB Jesson, describing various articles used in perfumery, and the mode of preparing essences therefrom, giving the amount and cost of material required, and stating over thirty formulas for making cherries, etc. With the cost of each. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 472. Price 10 cents. To be had at this office and from all newdealers.

Draftsman's Adjustable Curve Ruler, makes any shape curve, \$1.50. F. W. DAVENPORT, Providence, R. I. Send for card.

PERFECT
NEWSPAPER FILE
 The Koch Patent File, for preserving newspapers, magazines, and pamphlets, has been recently improved and price reduced. Subscribers to the SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT can be supplied for the low price of \$1.50 by mail, or \$1.25 at the office of this paper. Heavy board sides; inscription "SCIENTIFIC AMERICAN" in gilt. Necessary for every one who wishes to preserve the paper.
 Address
MUNN & CO.,
 Publishers SCIENTIFIC AMERICAN.

THE ONLY PRACTICAL
ELECTRIC MOTORS
 FOR FAMILY SEWING MACHINES
 THE ELECTRO-DYNAMIC CO. PHILA.
 224 CARTER ST. PHILADELPHIA, PA.