

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 next issue.

For Sale—New and second hand iron-working machinery. Prompt delivery. W. P. Davis, Rochester, N. Y.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Barrel, Keg, and Hoghead Machinery. See adv. p. 30.

For best hoisting engine. J. S. Mundy, Newark, N. J. Best Ice and Refrigerating Machines made by David Boyle, Chicago, Ill. 155 machines in satisfactory use.

The Improved Hydraulic Jacks, Punches, 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.

"How to Keep Boilers Clean." Send your address for free 96 p. book. Jas. C. Hotchkiss, 120 Liberty St., N. Y.

Billings' Patent Adjustable Tap and Reamer Wrenches. Bronze Forgings. Billings & Spencer Co., Hartford, Conn.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

For low prices on Iron Pipe, Valves, Gates, Fittings, Iron and Brass Castings, and Plumbers' Supplies, write A. & W. S. Carr Co., 138 and 140 Centre St., New York.

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.

The Dwight Slate Machine Co., of Hartford, Conn., make the most extensive line of hand, foot, and automatic feed drills for light work, 1/2 in. holes and less. 1831 catalogue free.

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

Notes & Queries

HINTS TO CORRESPONDENTS.

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 This is for your information and not for publication.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

(2879) R. L. N. writes: 1. I have a very fine meerscham pipe that has become bruised and scratched; how can I repolish it? A. For your meerscham apply ordinary polishing processes, sand paper of progressive fineness, and fine crocus or rotten-stone eventually. 2. I have also an old violin that I would like to scrape and retain and varnish. What is the stain that puts such a rich color on violins? A. For staining a violin red dragon's blood may be used or red sanders wood. For yellow, aloes, annatto, gamboge, turmeric or saffron, dissolve in alcohol, filtering if necessary, and apply. The reds and yellows are to be mixed to suit the taste. There are many formulas for varnishes. One is fused amber 2 ounces, turpentine 5 ounces, drying linseed oil 5 ounces; dissolve by heat. For spirit varnish the following is a representative formula: Mastic and sandarac, of each 1 drachm, lac 6 1/2 drachms, alcohol 5 fl. oz. It is no easy matter to varnish a violin successfully. Some makers apply no stain, but use colored varnish. The above colors may be used in the spirit varnish. A large number of coats are given and each coat is rubbed down with ground pumice and water or with fine sand paper.

(2880) C. A. A. says: I noticed a query in the issue of November 8, 1-90, page 290, query 2558, a statement that a boat 25 or 30 feet long would not go much more than 10 miles an hour. 1. Why will not a boat of that size go 16 knots an hour as well as a 5,000 ton steamer, with the same propeller of horse power? A. Small boats as well as large ones have their propelling power proportioned to the use that the boat is made for. If carrying capacity is sacrificed, great speed may be obtained. 2. Will not the same sized boat go faster with side wheels than with a propeller with the same horse power? A. There is but little difference between side wheels and propellers in still water. There is no reason why small boats should make as high speed as large ones. The conditions of resistance and power are not the same. A small boat cannot carry as great power in proportion to tonnage, with best lines for speed, as large ones.

(2881) E. S. L. asks whether tallow can be deodorized, and whether, by doing so, the lubricating qualities of the tallow would be preserved or lost? A. See query 2878. The lubricating qualities would remain, but the traces of acid it would retain might do much harm.

(2882) W. F. W. says: I have a six-cell plunge battery, capacity of each cell 80 cubic inches, size of zinc plates 3x5 inches, five-sixteenths inch thick, one zinc and two carbons in each cell. 1. What is its voltage? A. At the start about 12 volts, rapidly running down to 6 or 8 volts. 2. What candle power lamp, and of what voltage will it run most successfully for one hour, for two hours, for three hours? A. Use an 8 volt lamp. 3. Will the light fail much at the end of times mentioned? A. Yes; it will run down rapidly. 4. What are the latest opinions of the best authorities regarding the value of Dr. Koch's consumption cure? A. We refer you to our columns for several accounts. On the whole, opinions are favorable. 5. Is consump-

tion contagious? A. Probably not. 6. Some time ago you gave a receipt for making a baking powder of tartaric acid and bicarbonate of soda. It is an excellent powder and stronger than any I can buy, but upon standing it becomes lumpy. Shall I add flour? A. Use more flour and mix more thoroughly and keep dry. 7. Where powders are manufactured for the trade what methods are used for mixing the ingredients? A. Sifting machines are excellent mixers, and need not cost very much. Your other queries we cannot undertake to answer. For information on consumption, its contagiousness and cure, we refer you to our SUPPLEMENT, Nos. 338, 242, 243, 77, 297, and many others.

(2883) H. C. P. says: Will you please inform me through your columns the life of different woods used for railroad ties? The life of rails? A. The life of ties and rails depends entirely upon the amount and weight of traffic. Of uncreosoted woods, chestnut lasts the longest, 5 to 14 years, white oak 5 to 10, spruce 4 to 7 years, hemlock 4 to 8 years. Steel rails last from 9 to 25 years; iron rails are nearly out of use.

(2884) J. R. & J. B. ask: 1. Why is a ship built and launched stern first? Is there not a scientific problem attached? A. Because the fullness of the stern prevents the shipping of water. 2. What is the best rust preventive for blue steel? A. Thin mastic or shellac varnish.

(2885) G. F. D. says: I have a quantity of electrolyte metal that I wish to use to back up curved electro shells in casting box, but I find it too thick and sluggish to run well and fill out the mould. Can you inform me if a mixture of tin with it will make it more fluid, and if so, in what proportion should it be used? Is there any other metal equally effective? A. Our electrolyte says when he uses the old metal he adds for each 100 pounds of it 4 pounds of tin and 3 pounds of antimony, and finds the metal then flows nicely. It would, he says, make still better plates if 25 pounds new metal were added.

(2886) H. R. C. asks: What is a good transparent cement for microscopical purposes? A. The following is highly recommended:

- Gum dammar..... 5 drachms.
Gum mastic..... 3 "
Dried Canada balsam..... 3 "
Chloroform..... 1 fl. oz.
Spirits of turpentine..... 1 " "

Dissolve by shaking, then filter through filter paper.

(2887) C. E. R. asks: Would you please inform me what will give black ink a good gloss without making it sticky? A. Gum arabic.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. 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

March 3, 1891.

AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

- Adding and writing machine, A. C. Ludlum (r)..... 11,147
Adding machine, Beardley & Hosen..... 447,457
Aerating machine, D. J. Rowland..... 447,393
Aerator, L. J. Macy..... 447,573
Agitator for kettles or tanks, J. Hobbs..... 447,566
Air brake, T. J. Hogan..... 447,751
Annunciator, electrical, W. E. Cram..... 447,558
Atomizer, C. F. Bachler..... 447,539
Axle bearing, D. W. Worth..... 447,683
Axle bearing, D. W. Copeland..... 447,298
Axle bearing, S. B. Goff..... 447,608
Axle bearing, A. R. Hamilton..... 447,514
Axle journal bearing, car, G. N. Secets..... 447,527
Bak, See Shoulder strap bag.
Bag holder, J. M. Holladay..... 447,686
Ballast loading apparatus, Butler & Simmons, Jr..... 447,490
Bandage, anti-spruing, A. Mosterts..... 447,695
Banner, H. W. Mundhenk..... 447,826
Bar, See Detector bar.
Barkling, G. H. Ziebler..... 447,598
Bed support, folding, H. Waddell..... 447,530
Beer, finishing, C. Zwietsch..... 447,484
Bell pull, electrical door, L. W. Cleveland..... 447,748
Bell tension device, J. C. Bryce..... 447,444
Bicycle, V. M. Moore..... 447,311
Bicycle, W. F. Thompson..... 447,582
Bicycle pedal, W. C. Worth..... 447,393
Bin or holder for coffee, etc., B. R. Bacon..... 447,532
Board, See Ironing board. Keyboard.
Boat detaching apparatus, M. Wozan..... 447,421
Boiler, See Steam boiler. Wash boiler.
Boilers, etc., tool for plugging openings in, H. S. Bolt, E. Huber..... 447,516
Book case, I. C. Woolver..... 447,628
Book, in dexed, H. A. Silvera..... 447,711
Book rack, J. W. Hine..... 447,730
Boot or shoe nailing machine, S. W. Robinson..... 447,359
Bottle collar, absorber, B. H. Day, Jr..... 447,635
Bottle forming machine, T. B. Howe..... 447,452
Bottle forming machine, class, T. B. Howe..... 447,451
Bottles, fraud preventive in capsuled, C. Cheswright..... 447,397
Bottling aerated water, machine for, T. Ferguson..... 447,508
Box, See Street washer box. Stuffing box. Tobacco box.
Brace, See Shoulder brace.
Bracelet, A. W. Magerhans..... 447,692
Brake, See Air brake. Vehicle brake. Wagon brake.
Brake apparatus, safety, J. H. Von Hoechstatten..... 447,710
Brake lever and lock, J. L. Barker..... 447,600
Brick machine, S. B. Frank..... 447,675
Brick, paving, A. Jones..... 447,612
Bridge gate, H. E. Dewey..... 447,636
Burial case, W. W. Butler..... 447,662
Butter lifter, Bailey & Stevenson..... 447,296
Button, separable, E. Pringle..... 447,346
Calves, tool for dehorning, C. T. Ingraham..... 447,611
Camera, See Solar reflecting camera.
Candle holder, A. Messmer..... 447,339
Capsule, gelatine, S. E. Heineman..... 447,514
Car coupling, D. Bowles..... 447,522
Car coupling, H. F. Finerty..... 447,296
Car coupling, R. McMahon..... 447,737
Car coupling, H. Moyer..... 447,712
Car coupling, Pedersen & Miller..... 447,718
Car coupling, H. Sommerfeld..... 447,375
Car couplings, lever bracket for, T. L. McKeen..... 447,578
Card draw, G. L. Harvey..... 447,323
Car step, E. E. Fashion..... 447,384

- Card wheel, M. A. Andrews..... 447,581
Card holder, J. R. West..... 447,786
Carriage, attaching, baby, W. T. Bunshead..... 447,608
Carriage, baby, W. Gardner..... 447,606
Carriage, convertible, G. E. Spare..... 447,547
Carriage seat, Wells & Morrill..... 447,591
Carrier, See Sheaf carrier.
Cart, dumping, A. Behrman..... 447,442
Cart, road, for electric cars, A. C. Seibold..... 447,331
Case, See Book case. Burial case. Flour and cereal testing case.
Centrifugal separating apparatus, A. Wahlin..... 447,530
Chain, R. Paxson..... 447,620
Chain link, wire, O. D. Wright..... 447,597
Chair, See Convalescent chair. Dental chair.
Chairback, detachable, J. H. Haulenbeck..... 447,682
Charcoal, apparatus for fireburning animal, Grimm & Pennypacker..... 447,313
Chopper, See Cotton chopper.
Churn, R. Crouch..... 447,399
Churn motor, J. S. Hayes..... 447,670
Cider press and mill, J. E. Gearhart..... 447,677
Cistern cleaning device, O. I. Searles et al..... 447,263
Clamp, Plischke & Brueckel..... 447,526
Clasp, See Garment clasp.
Clay, feeding apparatus for use in burning, H. G. & W. Butler..... 447,459
Clay, feeding apparatus for use in burning, H. G. & W. Butler..... 447,459
Closet cistern, B. R. Bacon..... 447,534
Clothes drier, Ansley & Boyd..... 447,551
Clothes pin, A. G. Bowman..... 447,504
Clothes wringer, T. R. Brinkley..... 447,439
Clover huller, L. S. Whiting..... 447,713
Coat and hat hook, C. Glover..... 447,510
Cogwheel, L. Atwood..... 447,552
Collar fastener, horse, H. F. Seavert..... 447,386
Collar, horse, J. P. Trautmann..... 447,449
Comb, grinding machine, S. Samuel..... 447,531
Combination lock, J. E. Farnsworth..... 447,639
Commutator brush, W. Main..... 447,469
Commutator brush, E. W. Rice, Jr..... 447,352
Concrete mixer, S. R. Scharf..... 447,366
Condenser, surface, L. A. Bergerer..... 447,385
Conduits, surface, for electric wires, S. H. Conductors, turn-out and crossing for line, S. H. Short..... 447,485
Conduit for underground trolley wires, H. J. Medbery..... 447,388
Convertible chair, C. F. Kramer..... 447,432
Copper holder, K. Agnes..... 447,531
Corset fastening, T. J. Brough..... 447,641
Cotton chopper, J. W. Cobb..... 447,749
Cotton opener, etc., R. Schallbaum..... 447,265
Coupling, See Car Coupling. Locomotive coupling. Pipe coupling. Safety coupling. Thill coupling.
Crate, fruit, Horn & McArthur..... 447,657
Crate, spring bottom, H. W. Hammond..... 447,320
Creels, friction attachment for spool, W. Slade..... 447,496
Cuff holder, H. D. Mugerdtichyan..... 447,493
Cuff holder and distender, B. R. Bacon..... 447,553
Cultivator, M. W. Brinkerhoff..... 447,443
Cultivator shovel and knife, S. J. Fish..... 447,305
Curtain pull, J. O. Remington..... 447,414
Cutter, See Dado cutter. Meat or vegetable cutter.
Cyclometer, E. R. De Wolfe..... 447,540
Dado cutter, W. R. Fox..... 447,716
Dental chair, A. Brust..... 447,457
Dental motor, electric, H. H. Blades..... 447,291
Desk curtain, J. N. Roberts..... 447,415
Detector bar, L. N. Mosier..... 447,694
Door mat, J. G. Battelle..... 447,456
Doors, fire, A. F. Miller..... 447,300
Draught attachment, spring, H. Barber..... 447,289
Draughtsman's curve, H. B. Williams..... 447,523
Dredges in place, apparatus for holding, J. Kennedy..... 447,717
Drier, See Clothes drier.
Drill, See Hand drill.
Drill tooth, Marr & Smith..... 447,518
Drills, driving mechanism for hand, J. W. Knapp..... 447,614
Drilling machine, iron, C. K. Dawes..... 447,562
Drilling or spinning machine, U. & H. E. Eberhardt..... 447,541
Drink mixer, Bew..... 447,674
Drugs, use, vessel holder for, J. C. D. Curtis..... 447,635
Drying apparatus, vacuum, E. Passburg..... 447,345
Dust collector, C. Kutsche..... 447,338
Dye, orange, C. Duisberg..... 447,303
Dye, violet, C. Duisberg..... 447,302
Ear wires, device for making, S. Goldner..... 447,455
Ear wax, See Electric heater.
Electric cut-out, G. C. Gammon..... 447,676
Electric heater, C. C. Rich..... 447,353
Electric lighting system, B. B. Ward..... 447,482
Electric motor, Meyrowitz & Buchhop..... 447,734
Electric motor, R. W. Traylor..... 447,704
Electric motor or generator, dynamo, E. Thomson..... 447,384
Electric snap switch, G. W. Hart..... 447,728
Electrical subway, J. C. Reilly..... 447,350
Electrical transformer, R. Kennedy..... 447,569
Electric magnet, C. G. Sanderson..... 447,529
Electricity of stony shells, backing for, C. Wolfe..... 447,626
Elevator, T. L. Marvel..... 447,435
Engine, See Rotary engine. Steam engine.
Engines, cut-off rear for, N. Chandler..... 447,603
Engines, grease separator for steam, Hussey & McCarroll..... 447,327
Fence, C. Crabbs..... 447,539
Fence, A. F. Eisey..... 447,672
Fence, L. Noggle..... 447,545
Fence, J. B. Roberts..... 447,455
Fence, T. A. Teedy..... 447,588
Fence, W. J. Whittier..... 447,426
Fifth wheel, vehicle, W. W. Grier..... 447,312
File or binder, spindle, R. B. Gatling..... 447,565
Filter, W. M. & H. Jewell..... 447,568
Fire escape, H. Wilson..... 447,501
Fire extinguishing apparatus, H. C. Carver..... 447,701
Fire extinguishing apparatus, H. C. Prunty..... 447,476
Flood gate, L. L. Gray..... 447,679
Flour and cereal testing case, J. W. Burk..... 447,661
Folding screen, J. W. Campbell..... 447,461
Fork guard, S. Nowill..... 447,641
Furnaces, apparatus for removing slag from, W. Harwood..... 447,683
Furnaces, fuel feeder for, R. Newton..... 447,544
Furnaces, steam and air injector for, S. R. Earle..... 447,563
Gauge for carpentry, M. Cridge..... 447,604
Game counter, Vilaseca y Velasco..... 447,454
Garment clasp, J. H. Murch..... 447,730
Gas, apparatus for the manufacture of, P. E. De Mill, Jr..... 447,693
Gas meter, Mitchell & Lawson..... 447,693
Gate, See Bridge. Flood gate. Railway track gate. Registering gate.
Gate, A. Garret..... 447,441
Gate, J. E. Buck..... 447,959
Gate, W. H. Smith..... 447,374
Gearing, J. Daily..... 447,447
Glassware, apparatus for grinding or polishing, H. Schulze-Berke..... 447,700
Glass, M. P. Thompson..... 447,599
Gong, alarm, N. J. Busby..... 447,557
Grain scouring machine, D. E. Sibley..... 447,370
Grain separator, F. F. Landis..... 447,433
Grinding mill, J. C. Woodcock..... 447,596
Guard, See Fork guard. Railway cattle guard.
Gun, automatic, H. S. Maxson..... 447,524
Gun barrel drilling machine, C. W. Sponser..... 447,713
Guns, cartridge feed case for magazine, K. R. Milovanovich-Koka..... 447,577
Hame, R. E. Krumm..... 447,466
Hame fastener, C. H. Smith..... 447,587
Hanger, See Valve hanger. Tobacco hanger.
Harrow, J. H. Moore..... 447,472
Harvester and weed cutter, bean, W. Carver..... 447,602
Harvester, corn, S. Brooke..... 447,246
Harvester, corn, S. C. Kenaga..... 447,465
Harvester, corn, T. C. John..... 447,629
Harvester reel, D. T. Towne..... 447,481
Hasplock, W. W. Pursell..... 447,698
Hasplock, seal, A. Clark..... 447,604
Hat conformator and stretcher, combined, H. Lyons..... 447,751
Heater, electric, for ironing, S. H. King..... 447,330
Heating apparatus, steam, R. W. King..... 447,330
Heel machine, J. A. Hall..... 447,317
Heel trimming machine, H. W. Wmter..... 447,734
Hoist, F. E. Young..... 447,483
Holder, See Bag holder. Candle holder. Card holder. Copy holder. Cuff holder. Plow block holder.
Hook, See Coat and hat hook. Rope hook. Snap hook.
Horseshoe, W. Somerville, Sr..... 447,416
Hose washing machine, A. B. Cosby..... 447,694
Hose, See Valve hanger.
Hydroscope, A. Hagstrom..... 447,726
Ice cream freezer, J. A. Buffer..... 447,747
Ice plane, C. Bew..... 447,655
Incubator, H. H. Unland..... 447,453
Indicator, See Station or street indicator.
Inking pad, E. J. Brooks..... 447,714
Ironing machine, J. G. Crawford..... 447,559
Jacket for making garment patterns, E. A. Berry..... 447,554
Jar, See Preserve jar.
Journal bearing, M. N. Lovell..... 447,492
Jug tops, manufacture of, H. Wright..... 447,502
Keyboard, transposing, J. M. Gilbert..... 447,641

- Knob, door, H. F. Keil..... 447,613
Ladder, fire, H. Ives..... 447,429
Lamp brackets, universal joint for incandescent, Bennett & Freeze..... 447,486
Lamp, electric arc, L. H. Buchanan..... 447,476
Lamp, electric arc, E. Thomson..... 447,383
Lamp lighter, J. Witzell..... 447,383
Lamp socket, incandescent, H. J. Gutman..... 447,315
Lamp, electric for electric cars, A. C. Seibold..... 447,702
Lantern, W. C. Wintfield..... 447,549
Lathe centers, machine for grinding, W. Barker..... 447,553
Lathe safety attachment, W. Gleason..... 447,670
Lens, marine, R. D. Haines..... 447,727
Lifter, See Butter lifter.
Liquid purifier, G. G. Schroeder..... 447,585
Lock, See Combination lock. Hasp lock. Nut lock. Permutation lock. Seal lock. Time lock.
Lock, G. T. Rogers..... 447,623
Locomotive coupling, T. L. McKeen..... 447,579
Log cross-cutting machine, T. S. Crane..... 447,422
Logs buoyant device for rendering, G. Duryee..... 447,688
Loom, C. Alvord..... 447,652
Loom shuttle, A. H. Steele..... 447,500
Loom shuttle tension regulating device, S. & A. Bentley..... 447,629
Mail sack, B. Main..... 447,311
Mail sack dropper, J. F. Mains..... 447,670
Mandrel, expanding, J. D. M. Dubrule..... 447,487
Mat, See Door mat.
Matrix making machine, T. C. Hargrave..... 447,449
Matrix making machine, electric, T. C. Hargrave..... 447,321
Measures, for electric cars, A. C. Seibold..... 447,702
Meat or vegetable cutter, fruit press, etc., A. Nittinger, Sr..... 447,581
Metal, method of and apparatus for solidifying molten, G. W. Goetz..... 447,511
Meter, See Gas meter. Water meter.
Mill, See Grinding machine.
Mineral wool, manufacturing, C. H. Rockwell..... 447,360
Miners' hats, lamp carrier for, C. H. Hockwood..... 447,325
Mould, G. W. Beyer..... 447,555
Mouldings, apparatus for treating composition for ornamenting, G. W. Landon..... 447,738
Mole, surface, F. H. Howard..... 447,432
Mop head, F. P. White..... 447,650
Mop wringer, W. S. Jarboe..... 447,732
Motor, See Churn motor. Dental motor. Electric motor.
Motor, T. Sutherland..... 447,648
Mower, J. J. Jenney..... 447,417
Mowing machine, L. K. Morrow..... 447,342
Musical instrument, stringed, O. Lenzier, Sr..... 447,689
Mustache trainer, I. Commons..... 447,333
Nailing machine, Robinson & Watt..... 447,358
Nailing machine, hand, E. E. Crawford..... 447,388
Necktie fastener, F. H. Howard..... 447,432
Nut lock, F. T. L. Pollard..... 447,311
Nut lock, Gram & Bard..... 447,311
Nut lock, T. P. Pollard..... 447,697
Nut lock, A. F. Pritschyan..... 447,738
Nut lock, E. W. Sprague..... 447,703
Nut lock, F. H. Howard..... 447,432
Ordnance, breech-loading, C. W. Sponser..... 447,376
Ores for amalgamation, preparing, H. S. Myers..... 447,344
Organ pedal attachment, M. B. Crowell..... 447,560
Overshoe, H. Eley..... 447,564
Pad, See Inking pad.
Paper, See Grinding machine.
Paper, distinctive, J. Macdonough..... 447,336
Paper fixture, toilet, S. Wheeler..... 447,419
Partition, sliding, J. Hayes..... 447,610
Pen, lead, B. B. Goldsmith..... 447,310
Pencil sharpener, A. F. A. King..... 447,431
Permutation lock, J. P. Phillips..... 447,621
Permutation lock, Phillips & Greenhoe..... 447,621
Permutation lock, B. M. Quarles, Jr..... 447,519
Piano, D. L. Stirn..... 447,380
Pianos, pedal action for, F. Hammerle..... 447,319
Pin, See Clothes pin.
Pipe, See Smoking pipe.
Pipe coupling, hot water heating, Johnson & Curtis..... 447,329
Pipe hanger, R. C. Carpenter..... 447,327
Pipe wrench, D. P. Stanton..... 447,377
Plastic material, producing articles of, G. W. Beyer..... 447,556
Plow, A. F. Bail..... 447,521
Plow, R. S. Hyer..... 447,417
Plow, W. W. Speer..... 447,498
Plow bolt holder, N. W. Vernon..... 447,706
Plow, gang, L. Gibbs..... 447,424
Plow, W. F. Thompson, Jr..... 447,300
Plows, etc., perforated blade for, V. Rhodes..... 447,437
Power shipping mechanism, S. Letieq..... 447,334
Press, See Cider press. Printing press.
Preserve jar, A. Steilner..... 447,479
Printer's press guide, J. G. & J. A. Boehringer..... 447,383
Printing press, J. W. Mather..... 447,301
Printing press, W. B. Lawrence..... 447,491
Printing press, chromatic, A. Fayol..... 447,507
Printing presses, registering device for, J. Brooks..... 447,536
Privy vault, A. Lister..... 447,572
Projectile or shell, manufacture of hollow, R. Low..... 447,680
Protector, See Screw protector.
Pulp cylinders, machine for making, F. L. Bartlett..... 447,455
Pulverizer, S. B. Frank..... 447,674
Pump apparatus, track, M. B. Mills..... 447,318
Puzzle, P. H. Wheeler..... 447,418
Quilting machine, M. Koch..... 447,570
Rack, See Book rack.
Railway cattle guard, B. Wolhaupter..... 447,391
Railway, electric, W. H. Knight..... 447,332
Railway, P. W. Hall..... 447,332
Railway tie, R. Robinson..... 447,336
Railway track gate, W. P. Elliott..... 447,463
Railways, trolley for electric, Cavert & Wiswall..... 447,632
Ram, hydraulic, G. Yellott..... 447,550
Range and position finder, I. N. Lewis..... 447,545
Reefer, See Refrigerator.
Refrigerator, D. Gaul..... 447,403
Refrigerator, O. Kutsche..... 447,467
Register, See Weigher register.
Registering gate, E. R. Guerra..... 447,680
Regulator, See Temperature regulator. Weigher register.
Rein support, J. W. Beyron..... 447,656
Rheostat, J. O'Meara..... 447,494
Rock drill, A. W. & Z. W. Daw..... 447,686
Rock for paving purposes, apparatus for treating viscous, A. W. Hyde..... 447,711
Rope hook, J. K. Miller..... 447,618
Rotary engine, W. G. & A. W. Billings..... 447,585
Rubber boot, W. R. Smith..... 447,497
Rule, flexible, Blake, Zed & Bradley..... 447,657
Sad iron heater, Chadwick & Roberts..... 447,445
Safe, See Carriage safe.
Safe, J. White..... 447,709
Safe or vault, W. Corliss..... 447,488
Safety coupling, T. O. Perry..... 447,413
Salesman and change maker, automatic, G. D. Morse et al..... 447,348
Sand, band, M. P. Thompson..... 447,599
Sand band, F. S. Rolfe..... 447,361
Sash fastener, I. Giles..... 447,404
Saw set, A. Fager..... 447,722
Saw setting and indicating device, A. Harman..... 447,322
Scale board dishes, machine for forming and placing metal pieces on, J. J. Haden..... 447,316
Scale, drill and tap, B. H. Pomeroy..... 447,475
Scale, weighing, G. Lundberg..... 447,691
Screen, See Folding screen. Window screen.
Screw protector, set, H. B. Walmsley..... 447,742
Seal lock, O. P. Iix..... 447,489
Seat, See Carriage seat.
Separator, See Grain separator.
Sewing machine, M. Gardner..... 447,306
Sewing machine feeding mechanism, M. Gardner..... 447,402
Sewing machine needle guide, G. S. Hill..... 447,729
Shade roller, J. A. Turner..... 447,705
Sheaf carrier, T. C. Hargrave..... 447,408
Sheet metal, machine for trimming and compressing, G. D. Herboldshimer..... 447,517
Shirt and drawers, combined, S. H. Halstead..... 447,408
Shock compressor, J. K. Miller..... 447,619
Shoulder brace, H. Heyder..... 447,404
Shovel, strap bag or knapsack, combined, J. T. Dwyer..... 447,609
Shovel, See Cultivator shovel.
Show stand, E. Brockmann..... 447,658
Shutter bowler, T. W. Bartholomew..... 447,290
Shutter fastener, W. J. Monks..... 447,543
Signal, See Railway signal.
Smoke consuming apparatus, F. T. Schmidt..... 447,367
Smoking pipe, J. Arbtin..... 447,653
Snap hook, G. M. Hubbard..... 447,567
Solar reflecting camera, R. N. Reed..... 447,645
Sole machine, C. A. Wentworth..... 447,389
Sole, See Carriage sole.
Spindle driving bands, tension regulating device for, W. Dootson..... 447,301
Spinning and twisting machines, washer for, J. Walker..... 447,388
Spinning spindle support, E. S. Draper..... 447,400
Spring, See Watch case spring.
Stable, combined partitioned and box stall for, G. F. Davis..... 447,561
Stamps or other articles, holder for postage, B. F. Carpenter..... 447,683
Stand, See Show stand. Switch stand.
Staple clinching device, wire, E. Grumch..... 447,314
Staple clinching device, wire, E. Grumch..... 447,314
Station or street indicator, W. S. Mallard..... 447,417