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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 This is for our information and not for publication.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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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Minerals sent for examination should be distinctly marked or labeled.

(7072) R. B. D. writes: 1. Is old lead pipe sufficiently pure for storage battery plates? My battery will not remain charged, and I presume that it is because of local action on the surface of the plates. A. The old lead pipe should work for your battery. Probably there is a short circuit somewhere, either within the cell or between the plate terminals outside. Dampness might be at the root of the trouble. 2. In order to seal my storage cell with a permanent cover I filled the spaces between and around the plates with salt, filling the cell to within three-eighths inch of the top, and then poured a melted compound of paraffine wax and resin over the salt until the jar was full. When the compound was cool I inserted two tubes into the cell and got rid of the salt by passing a stream of water through the cell. Is it probable that the brine would injure the plates in this operation? A. This process should do no harm, provided the salt was all washed out. Otherwise the chlorine of the salt might affect the operations of forming, charging and discharging, or the hydrochloric acid set free might attack the lead and cause undue formation of lead sulphate.

(7073) S. A. says: Please give me a good formula for making white frosting, such as painters use on windows, that will stand a considerable heat. A. Put a piece of putty in muslin, twist the fabric tight and tie it into the shape of a pad; well clean the glass first, and then pat it over. The putty will exude sufficiently through the muslin to render the stain opaque. Let it dry hard and then varnish. If a pattern is required, cut it out in paper as a stencil; place it so as not to slip and proceed as above, removing the stencil when finished. If there should be any objection to the existence of the clear spaces, cover with slightly opaque varnish.

(7074) R. N. writes: 1 I am going to build a two sixteen candle power light dynamo. The dynamo I am using as a model is made to give an E. M. F. of 25 volts and a current of 8 amperes by using 8 pounds of wire No. 14 for the field cores and 1½ pounds No. 18 for the armature. By winding proper sizes of wire on the armature and field cores, any strength of current or potential should be obtainable within limits. 1. Now, I would like to know how many pounds and what size of wire should be used for the field cores and armature to obtain an E. M. F. of 100 volts and a current of 2 amperes. A. A rough, approximate rule to change voltage is to use wire whose cross sectional area is in inverse proportion to the voltage desired. Thus, if No. 14 and No. 18 wire respectively give 25 volts, then apply the proportion cross sectional areas of No. 14 and No. 18 respectively. Cross sectional area of desired wires : : 100: 25. This gives us No. 20 and 24 wire. 2. Could the wire on the armature and field cores be wound in four equal sections and connect these sections either in series or parallel like the armature of the magneto-electric machine in "Experimental Science," page 484, to secure a current of different voltage, say 100, 50, and 25 volts? A. This could be done, but would introduce more complication. 3. Would you advise to soak the wire in a solution of shellac while winding? Would single covered wire be safe? A. Use double covered wire and apply shellac to each layer after winding it on. 4. Please state the relative conductivity of aluminum. A. Copper=1. Aluminum=0·56 approximately.

(7075) C. O. H. writes: 1. I have a telephone line of about a quarter of a mile in length, using the Bell receivers. Every night, as soon as the arc lights in the streets are turned on, there is a peculiar humming noise heard in the telephone. Part of the way the line runs parallel with the arc and incandescent light wires, but not less than 80 or 100 feet from them. What is the cause of the humming, and how can it be remedied? A. The electric light circuit causes the trouble. A metallic circuit will greatly or entirely reduce it. 2. Would there be too much resistance to use transmitters made exactly like the receivers? A. No. 3. Would not the motor in the SCIENTIFIC AMERICAN SUPPLEMENT, No. 641, be much strengthened by filling in between each section of coils on the armature with pieces of sheet iron fitting closely to the core? A. At the expense of considerable additional complication this could be done. It would slightly increase the efficiency.

(7076) R. G. B. says: Can you suggest something that will prevent rust forming on steel surgical instruments? They are used only occasionally (3 or 4 times a week) and are in a dry cabinet in a dry office. It won't do to nickel plate them. A. 1. Clean frequently; after using, clean with dry chamois leather and wipe off with an oiled rag. 2. For this purpose the Lancet confidently recommends a mixture of equal parts of carbolic acid and olive oil, smeared over the surface of the instruments. This plan is much used by medical officers in the navy, and is found to preserve the polish and brightness of the steel, however moist and warm the climate may be.

(7077) D. E. S. asks: 1. Please answer the following questions as soon as convenient: 1. In transmitting music, speech, etc., by telephone would two dust transmitters with 500 ohm induction coils give better results, than one? Could two or more induction coils (500 ohms) be connected up with one transmitter to give loud results, and how connected? A. A single dust transmitter with proper collecting trumpet or cone should answer. We do not advise the use of more than one transmitter. 2. Can a funnel be attached to an ordinary telephone receiver so that all in a room may hear? Is there any loud receiver made? If so, by whom? If not, how could one be made? A. Yes; a large funnel helps, but the sound is apt to be rather weak. The loud speaking telephone of Edison is described in SUPPLEMENT, Nos. 127 and 138; other illustrated articles on such telephones will be found in SUPPLEMENT, Nos. 163, 207, 339, 350, 596, 719, 711, 769, and 997; price 10 cents each. 3. What is considered the best form of transmitter for long distance work—carbon contact or dust? A. The dust telephone. 4. For experimental work, what is the best and cheapest thing that can be introduced into a circuit to add resistance? A. A carbon rod laid in a groove in a paraffined board with sliding contact is excellent. Or simply use iron wire coils, remembering that unless wound antiinductively, i. e, doubled at center, they will create magnetic fields and affect delicate instruments. By using several carbon rods of different diameters a large range may be secured. See articles on the engineering details of long distance telephones, also the cost of such telephones, in SCIENTIFC AMERICAN, No. 4, vol. 64, No. 2, vol. 66, and No. 2, vol. 72, also SUPPLEMENT, Nos. 822, 836, and 895; price 10 cents each by mail.

(7078) J. J. H. asks for a good recipe for polish for brown russet leather shoes.

A. 1. Soft soap..... 2 parts.
Linseed oil..... 3 "
Annatto solution (in oil)..... 8 "
Beeswax..... 3 "
Turpentine..... 8 "
Water..... 8 "

Dissolve the soap in the water and add the annatto; melt the wax in the oil and turpentine, and gradually stir in the soap solution, stirring until cold.

2. Palm oil..... 16 parts.
Common soap..... 48 "
Oleic acid..... 32 "
Glycerin..... 10 "
Tannic acid..... 1 "

Melt the soap and palm oil together at a gentle heat, and add the oleic acid; dissolve the tannic acid in the glycerin, add to the hot soap and oil mixture, and stir until cold.

3. Oil of turpentine..... 20 parts.
Yellow wax..... 9 "
Common soap..... 1 "
Boiling water..... 20 "

Dissolve the wax in the oil with the acid of the water bath, and the soap in the water; mix the two solutions in a hot mortar, and stir until cold.—American Druggist.

(7079) C. H. B. writes: Is it a poor plan to connect batteries of different kinds, or of different degrees of exhaustion, together in series, and, if so, what constitutes the objection? A. The principal rules for batteries are these: To obtain the maximum current from a given number of cells the internal resistance must be equal to the external. To obtain high efficiency make the internal resistance as low as possible and concentrate the resistance on the work. It is quite immaterial whether batteries of different kinds be mixed as far as the mere question of mixture is concerned. The efficiency will depend on the efficiency of the component cells and no more. Exhausted cells will by their inferiority reduce the quality of the combination.

(7080) R. C. P. asks how a motor may be transformed into a dynamo. A. No change is necessary, except that motors are less critical in requirement, practically speaking, than dynamos, and as built are apt to make poor dynamos. A thicker core, smaller air gaps, cast iron for field core and laminated armature core should be employed in dynamos.

(7081) R. B. W. asks: How many hours in your judgment would six Mesco dry batteries, largest size, continue to furnish a spark of sufficient size to ignite gas successfully in a two horse vapor stationary engine? And would you recommend the use of dry instead of a wet battery? A. We cannot give any satisfactory answer, but would incline to recommend Leclanche batteries in place of dry batteries.

TO INVENTORS.

An experience of nearly fifty 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

DECEMBER 22, 1896,

AND EACH BEARING THAT DATE.

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

Air ship, E. J. St. Croix..... 573,549
Alarm. See Bicycle alarm. Speed indicating alarm.
Amalgamator, Storer & Martin..... 573,834
Animal trap, S. Cedzo..... 573,761
Automatic brake, W. Pendley..... 573,791
Awning, W. Bennett..... 573,639
Axles, locking device for extensible, S. F. Welch 573,836
Bag. See Dressing bag.
Bait guard, W. R. Dales..... 573,572
Bath tub, invalid's, M. O. Ruffner..... 573,625
Battery. See Electric battery.
Bell, bicycle, D. Kohn..... 573,668
Belt, H. B. Ireys..... 573,515
Bicycle, J. Gillespie..... 573,779
Bicycle alarm, Swearingen & Lemen..... 573,555
Bicycle carrier, H. D. Cahill..... 573,502
Bicycle crank hanger bearing, E. Aze..... 573,634
Bicycle frames, joint for members of, W. A. Penfield..... 573,695
Bicycle handle bar, whistling, A. H. Koehler..... 573,666
Bicycle or other vehicle coupling, E. S. Keeler... 573,469
Bicycle stand, portable, E. L. Peisar..... 573,482
Bicycle supporting stand, J. L. Benton..... 573,511
Blower, rotary, S. B. Minnich..... 573,609
Blower, steam, H. E. Parson..... 573,480
Boiler. See Range boiler.
Boiler tube or flue, J. R. De Remer..... 573,646
Bolting machine sieves, cleaner for, W. J. Lough 573,674
Bottle, F. H. Bultman..... 573,760
Bottle, M. Rosenstock..... 573,484
Bottle, R. E. Thurman..... 573,495
Bottle, J. V. Van Name..... 573,557
Bottle and stopper, L. J. A. Fernandez..... 573,773
Bottle, antirefilling, T. Folks..... 573,775
Bottle closure, W. P. Mayes..... 573,518
Bottle filling and corking apparatus, J. C. Pennington..... 573,792
Bottle labeling machine, Kohl & Paulus..... 573,667
Bottle, non-refillable, A. G. Canada..... 573,566
Bottle stopper, C. K. Fuchs..... 573,589
Bottle stopper and fastener, C. K. Fuchs..... 573,588
Bottle valve stopper, J. W. Simons..... 573,490
Box. See Hat box.
Box, Z. A. Barrett..... 573,753
Box, C. M. Green..... 573,782
Braiding machine, H. Janssen..... 573,598
Brake. See Automatic brake. Car brake. Car safety brake. Fluid pressure brake. Wagon brake.
Brake rigging slack adjuster, D. C. O'Kain..... 573,613
Brake shoe, J. McLachlan..... 573,523
Branning machine, Daellenbach & Phillips..... 573,450
Breast strap slide, H. D. Warner..... 573,559
Brick kiln, Coates & Hancock..... 573,445
Brick mould, sectional, J. M. Ervin..... 573,455
Brick pressing apparatus, Hughes & Gill..... 573,514
Brush, A. Schuck..... 573,711
Buckets, tongs, etc., discharging mechanism for, H. Sawyer..... 573,708
Buffing or polishing appliance, H. A. Webster.... 573,735
Buffing or polishing device, H. A. Webster..... 573,734
Buildings with each other and with the foundations, means for rigidly connecting parts of, C. Delahunt..... 573,452
Bung, H. Rosenthal..... 573,624
Button for gloves, fastening, J. Steinberger..... 573,550
Buttou, separable, E. Pringle..... 573,532, 573,533
Calculating device, S. N. Dodd..... 573,506
Can opener, C. S. Hopper..... 573,465
Cant hook, lumberman's, J. M. Ellis..... 573,644
Cape, E. Rice..... 573,618
Car brake, B. F. Jackson..... 573,663
Car coupling, R. C. Simmons..... 573,546
Car door, sliding, S. Schallenberger..... 573,486
Car fender, D. O. Beckwith..... 573,638
Car safety brake, street, B. L. Kilgour..... 573,516
Car wheel grinding mechanism, H. A. Pedrick... 573,694
Car wheel, railway, J. J. A. Miller..... 573,519
Carbonating device, J. W. Seavolt..... 573,712
Card holder, coin controlled playing, Coupal & Gray..... 573,810
Cards, wire rod for jacquard, Cleary & Miller..... 573,813
Carousel, G. A. Dentzel..... 573,577
Carpet sweeper, I. E. Stump..... 573,554
Case. See Ticket case.
Cash register, H. Pottin..... 573,699
Cash register and indicator, G. L. Barnes..... 573,435
Centrifugal apparatus, E. G. N. Salenius..... 573,707
Chain making machine, W. A. Reid..... 573,537
Chloroform and apparatus therefor, making, O. Porsch..... 573,483
Cigar branding device, Walsh & Todd..... 573,730
Cigarette machine, J. A. Bonsack..... 573,640
Clamp. See Saw clamp. Woodworker's clamp.
Cleaning or polishing implement, N. A. Petry.... 573,697
Clock bell, S. A. Galpin..... 573,778
Cloth finishing machines, adjustable means for instrumentalities in, M. La Fountain, Jr..... 573,669
Cloth laying machine, B. L. Cox..... 573,448
Clothes drier and fire escape, combined, J. R. Lomas..... 573,673
Clutch, friction, H. McLeod..... 573,689
Coffee pot, C. H. Chase..... 573,440
Combing machine, W. Whalley et al..... 573,740
Confectionery machine, S. J. Hicks..... 573,463
Core press, M. P. Coleman..... 573,643
Corkscrew knife, C. H. Muller..... 573,475
Corn husker, J. Willmann..... 573,561
Corn husking machine, J. J. Woodman..... 573,500
Cornice machine, G. Henderson..... 573,655
Corset stiffener, J. S. Crotty..... 573,570
Coupling. See Car coupling. Tire coupling.
Crate, A. Stratton..... 573,718
Crate, folding, W. J. Aicklen..... 573,804
Crate, folding shipping, J. H. Pollard..... 573,529
Crematory, odorless, C. W. Lent..... 573,605
Cultivator, J. M. Robinson..... 573,704
Cupola furnace, J. B. Magill..... 573,825
Cutter. See Potato cutter.
Cycle stand and mud guard, combined, Schwarz & Luxeder..... 573,542
Dead centers, device for overcoming, Tyrrell & Holford..... 573,801
Detergent compounds, making, T. C. Burgis..... 573,438
Dial for recording apparatus, F. G. Lougee..... 573,606
Diamond polishing dop, E. & E. Loesser..... 573,672
Digger. See Potato digger.
Display box cover, G. M. Hudson..... 573,661
Display rack, J. M. Taylor..... 573,835
Door closer, check and holder, C. J. Wagener.... 573,497
Drawer for holding documents, etc., T. G. Knight..... 573,665
Drawer support, sliding, F. Hamilton..... 573,461
Dredging machine, C. H. Olson..... 573,832
Dressing bag, W. F. Williams..... 573,742
Drier. See Clothes drier. Hair drier.
Drill tetrapod, A. E. W. Meissner..... 573,608
Drilling machine, W. Bynon..... 573,808
Dust collector, E. B. Whitmore..... 573,837
Dust pan, A. C. Gerow..... 573,460
Dyeing apparatus, J. Berger..... 573,755
Easel attachment, G. A. Robbins..... 573,703
Electric battery, A. E. Stephenson..... 573,493
Electric elevator, P. W. Leffler..... 573,820
Electric engine, I. T. Dyer..... 573,581
Electric floor push, H. C. Thomson..... 573,723
Electric heater, H. L. Tyler..... 573,629
Electric heater regulator, A. D. Lagrelle..... 573,670
Electric light support, E. J. Fulghum..... 573,817
Electric switch, W. & H. Boardman..... 573,807
Electrical connecting cord, C. H. McEvoy..... 573,612
Electrical energy, system for generating and distributing, C. M. Green..... 573,647
Electrical resistance device, D. C. Voss..... 573,558
Elevator. See Electric elevator.
Elevator, C. R. Pratt..... 573,531
Elevator mechanism, J. H. Clark..... 573,909
End gate, Pierce & Warner..... 573,794
Engine. See Electric engine. Gas engine. Gas or vapor engine. Paper pulping engine. Traction engine.
Evaporator, fruit, A. Lehmann..... 573,787
Excavator, Phillips & Stebinger..... 573,698
Exhaust apparatus, J. Y. Smith..... 573,547
Fan attachment for rocking chairs, etc., Schurmann & Brophy..... 573,541
Fans, etc., means for operating, A. Flores et al.. 573,774
Fastener or clasp for articles of apparel, Mixer & Lewis..... 573,829
Fastening device, W. S. Bechtold..... 573,754
Fastening device, W. Munro..... 573,685
Fence, A. Keeler..... 573,468
Fence guard, S. Crowell..... 573,571
Fence machine, wire, G. S. & R. Anderson..... 573,632
Fence making machine, R. Dial..... 573,815
Fence post, H. L. Ferris..... 573,508
Fence post, E. W. Wood..... 573,748
Fence post or columnar pillar, Fry & Johnson.... 573,777
Fence, wire, D. H. McPherson..... 573,831
Fender. See Car fender.
Fifth wheel, vehicle, F. L. Thomas..... 573,722
File, paper, C. M. Carnahan..... 573,569
Filter or oil extractor, H. A. Collins..... 573,766
Firearm sight, C. G. Thunen..... 573,725
Fireproof buildings, construction of, P. McCabe 573,476
Fireproof studding, P. M. Bruner..... 573,839
Fluid pressure brake, H. S. Park..... 573,790
Folding machine, Kloninger & Button..... 575,603
Fork. See Hay fork.
Fruit cleaning machine, C. Duckworth..... 573,769
Frying pans, etc., lid for, R. A. Morgan..... 573,680
Fumigator, W. M. Luther..... 573,675
Furnace. See Cupola furnace.
Furnace air heating apparatus, W. Stubblebine.. 573,799
Furnace for iron working, W. Heckert..... 573,590
Gage, O. Forbush..... 573,457
Garbage, process of and apparatus for treating, I. M. Simonin..... 573,714
Garment fastener, H. Kerngood..... 573,470
Gas burners, solution for illuminant mantles for Bunsen, W. & L. Hooker..... 573,513
Gas engine, J. Charter, Jr..... 573,762
Gas or vapor engine, G. S. Tiffany..... 573,628
Gate. See End gate.
Gearing, F. H. Richards..... 573,620
Generator. See Steam generator.
Glove, J. Comrie..... 573,447
Grade delineator, O. F. Sonne..... 573,717
Grain separator, R. W. Rossiter..... 573,706
Grate, front, F. O. Farwell..... 573,816
Gravity motor, J. N. Ericsson..... 573,583
Hair drier, R. P. & H. L. Bowdoin..... 573,457
Hair pins, apparatus for manufacturing, G. Rehfuss et al..... 573,536
Handle, F. C. Rockwell..... 573,796
Harrow, J. P. De Moss, Jr..... 573,505
Hat box or trunk, M. Lyons..... 573,789
Hat or cap, M. Panoff..... 573,614
Hat securing apparatus, Standfield & Brew..... 573,492
Hay fork, D. A. Shank..... 573,709
Hay press, C. E. Jones..... 573,785
Heater. See Electric heater.
Heater, J. E. Dame..... 573,451
Hinge, blind, J. H. Shull..... 573,544
Hinge, spring, E. P. Sedgwick..... 573,713
Hoist, etc., J. W. Martin..... 573,678
Hook. See Cant hook.
Horse cleaner, P. M. Donahoo..... 573,579
Horseshoe, A. J. Clark..... 573,503
Horseshoe nail blanks, machine for feeding, W. P. Whitmarsh..... 573,560
Hydraulic press, Schlimp & Charouzek..... 573,710
Ice cream mould and disher, H. G. Morris..... 573,681
Incandescent lights, annular liquid combustible burner for, G. Ditmar..... 573,578
Inhaler mask, Orr & Chapman..... 573,691
Insect destroyer, W. H. Freeman..... 573,587
Insect trap, Daughtrey & Cowart..... 573,814
Ironing table, R. W. Schulte..... 573,539
Jack. See Screw jack.
Jacquard mechanism, F. H. Richards...573,621 to 573,623
Jar closure, F. H. Palmer..... 573,693
Journal bearing, P. J. Westphal..... 573,738
Key operated mechanism, F. H. Richards..... 573,619
Kiln. See Brick kiln.
Knife. See Corkscrew knife.
Knit fabric for mattresses, G. F. Sumner..... 573,720
Knitting machine, F. A. Nye..... 573,527
Knitting machine, rib, L. N. D. Williams..... 573,743
Lamp, electric arc, E. P. Hopkins..... 573,464
Lamp, electric arc, J. A. Mosher..... 573,830
Lamp, electric arc, E. H. A. H. Von Nollendorf 573,526
Lamp, electric arc, P. F. H. Queisser..... 573,617
Lamp, switch and signal, C. Bergener..... 573,501
Last or tree, E. C. Colver..... 573,644
Lathe, multiple spindle, C. P. Topping..... 573,726
Laths and partitions, support for wire, F. J. Hearnshaw..... 573,512
Latrine, Wills & Jordan..... 573,744
Level and plumb, spirit, W. M. Morton..... 573,682
Lifter. See Wagon body lifter.
Lightning and water conductor, combined, L. Adams..... 573,750
Liquid separators, dirt arrester for, T. H. Springer..... 573,833
Loom, needle, J. E. Martin..... 573,827
Loom shuttle box motion, O. W. Schaum..... 573,488
Loom stopping mechanism, F. M. J. Grenier..... 573,648
Looms, salvage producing device for, W. Simpson..... 573,715
Lubricator, A. L. Hochholzer et al..... 573,657
Magnetic separation, process of and machine for, Sanders & Thompson..... 573,485
Mail marking machine, J. S. Hansen..... 573,652, 573,653
Match machine, W. W. Abbott..... 573,802
Meat tenderer, H. C. Hubbell..... 573,660
Metal separator, electric, Whitacre & Wolfe..... 573,741
Metal shavings, machine for producing, J. G. Ulmann..... 573,728
Metals or alloys, introducing chrome into, Placet & Bonnet..... 573,615
Mining and dredging, ejector for, W. Muir..... 573,611
Mirror, A. C. Estabrook..... 573,770
Mould. See Brick mould. Ice cream mould.
Moulding machine, S. Groves..... 573,783
Motor. See Gravity motor.
Mowing apparatus, hay, T. J. Morey..... 573,679
Music folder and turner, M. L. W. Zingerman... 573,749
Necktie, A. J. Keck..... 573,467
Necktie fastener, W. W. Waterbury..... 573,733
Nippers, J. L. Sours..... 573,548
Nozzle, Swift & Stewart..... 573,721
Nut lock, E. W. Edwards..... 573,840
Nut lock, W. H. Fossett..... 573,776
Nut lock, O. P. Swanson..... 573,800
Ore jigging machine, W. Hooper..... 573,594
Package tie, J. Pusey..... 573,700
Padlock, permutation, G. L. Baker..... 573,805
Paper grooving machine, Robinson & Smith..... 573,705
Paper holder and advertising device, combined toilet, W. Fisher..... 573,586
Paper making machines, suction roll for, F. E. Allen..... 573,752
Paper pulping engine, E. D. Speer..... 573,627
Paper, toilet, E. Jerome..... 573,599, 573,600
Penholder, V. E. Minich..... 573,520
Penholder, W. B. Perry..... 573,696
Pencil sharpener, T. Waring..... 573,731
Photographic printing frame, Moore & McLaughlin..... 573,521
Photographic shutter, automatic, P. L. Wilkerson..... 573,499
Piano attachment, J. H. Moyer..... 573,474
Pipe. See Tobacco pipe.
Pipe patch, N. E. Smith..... 573,491
Pitcher, molasses, S. P. Brown..... 573,759
Pitching apparatus, M. Guethler..... 573,818
Plow attachment, J. N. Cocks..... 573,504
Plow, reversible, E. J. Lotze..... 573,824
Post. See Fence post.
Post winder and wire fastener, C. L. Etheridge.. 573,771
Potato cutter, L. Sternberg..... 573,551
Potato digger, G. W. M. Shearer..... 573,798
Powder mixing device, O. Millard..... 573,473
Power transmitting device, C. F. Dinkle..... 573,768
Press. See Core press. Hay press. Hydraulic press.
Printing from collotype or albertype plates, machine for, W. S. Huson..... 573,506
Printing machine, J. G. Hoyt..... 573,585
Printing plate inking machine, J. P. Stevens..... 573,552
Printing surfaces, producing celluloid rollers with, H. Ziegler-Reinacher..... 573,564
Propeller, F. Wittram..... 573,562
Propelling mechanism, boat, J. H. McDonald.... 573,522
Pulley block, friction, E. R. Wethered..... 573,739
Pump for raising and measuring liquids, E. Capitaine..... 573,641
Pump power attachment, Newman & Johnson.... 573,525
Pump, wheel, I. T. Dyer..... 573,580
Rack. See Display rack.
Radiator drainage valve, W. P. & R. P. Thompson..... 573,556
Railway brake equalizing device, J. A. Markley... 573,677
Railway crossing, W. C. Wood..... 573,747
Railway, electric, P. W. Leffler..... 573,819
Railway, etc., electric, P. W. Leffler..... 573,821, 573,822
Railway rail fish plate and coupling, C. M. Chunn 573,442
Railway switch, D. H. McClelland..... 573,477
Railway switch safety appliance, J. C. Stuart..... 573,494
Railway track cleaner, G. E. Turner..... 573,842
Railway trains, electric signal operating device for, G. F. & F. K. Singer..... 573,716
Railways, apparatus for increasing adhesion of driving wheels of motor vehicles for, W. Feldmann..... 573,772
Railways, apparatus for preventing collisions on electric, B. C. Tilghman, Jr..... 573,496
Railways, etc., automatic system of distribution and control for electric, W. H. Cooley..... 573,545
Rake tooth, C. E. Peabody..... 573,481
Range boiler, R. M. Wilson..... 573,746
Ratchet wrench, E. T. Warn..... 573,732
Recording apparatus, A. G. H. Oehms..... 573,478
Register. See Cash register.
Regulator. See Speed regulator.
Revolver safety device, D. B. & J. H. Wesson.... 573,736
Roadway, A. Bliss..... 573,757
Rock drilling machine, hand power, R. P. Elmore 573,454
Rolls, apparatus for dressing or polishing, R. G. Pilkington..... 573,523
Rubber shoe, W. B. Kinsley..... 573,664
Ruling machine, slate, E. F. H. Westenfeld..... 573,843
Sampling machine, C. C. Moore, Jr..... 573,610
Sash fastener, W. A. Gammell..... 573,509
Sash fastener, W. H. Stow..... 573,553
Sash fastener and support, J. B. Cahoon..... 573,439
Sash, window, J. H. Shull..... 573,545
Saw, F. S. Bradley..... 573,812

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