Business and Personal.

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 This is for our information and not for publication.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 reqmre not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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Minerals sent for examination should be distinctly marked or labeled.

(7994) P. B. J. asks: 1. What amount of wire is required, what size, and how is it to be wound to make a permanent magnet? Can I get sufficient power from batteries and induction coil, ½ inch spark, or from a uni-direction machine with 8 inch magnet? A. To magnetize a permanent magnet with a battery, wind a coil of covered wire of any convenient size, No. 14 or No. 16 will do. The inside diameter of the coil must be such that the magnet will slip easily through the coil. If of the horse-shoe form, it is well to make the coil so that the magnet may slide around through the coil for its whole length; otherwise, you can use the coil on each end separately, by breaking the circuit before removing the coil from the magnet. To use the coil, put it upon the magnet to the middle of the magnet and turn on the current. Move the coil along the magnet to one end and then to the other end several times, stopping at last at the middle. Break the circuit, and the magnet will be found magnetized. 2. Is a compound magnet simply several ordinary magnets put one on the other, or must they be insulated? Is the power of said compound magnets the power of all combined, or is it increased as in the induction coil? 2. A compound magnet is made from thin magnets of steel. Each one is carefully magnetized separately as strongly as possible. They are then assembled into one magnet by placing the same poles of all together. Thus the strength is made much greater than that of a single magnet of the same weight. 3. Will a dynamo with a permanent magnet do the same work as one using an electromagnet? I have an eight-foot windmill which pumps water from a well two hundred feet deep; there is plenty of power to spare while pumping, which is not over one-third of the time. Could I connect my mill with a small dynamo which is in turn connected with storage batteries for light? If so, how large must my dynamo be? I would like to burn four 16 candle power lamps. How many cells of battery must I have, their size, etc.? Could I use the unidirection dynamo for this? A. A machine with a permanent magnet will generate a current of electricity as well as one with an electro-magnet. It is not as serviceable. Such machines are not built except in small sizes. A dynamo can be run by a windmill, if a heavy balance wheel is used to equalize the velocity. A countershaft is necessary to give sufficient speed. A small dynamo is usually run at about 1,600 turns per minute. You will probably get eight to ten 16 candle lamps from a horse power. A storage battery will be needed to furnish light when the wind is not blowing. Your little dynamo with permanent magnet will not furnish the current for any number of lamps. Its voltage may not be right for lights. To light your lamps you will require as many cells of storage battery as one-half the voltage of your lamps. Their size will be determined by the number of hours they are to run on one charge. Consult our advertising columns for storage battery. 4. Situated as I am over a hundred miles from a foundry and machine shop, I have been forced to rig up a shop for repairing of all kinds of farm tools; instead of a forge I have two blast or brazing lamps. One of these lamps is rated at 2,600 and the other at 2,000 degrees. I feel positive if I can get the heat boxed up I can melt iron, brass, etc., for casting small pieces for experimental work; can you give me any idea of a furnace in which I can put my crucibles for this purpose? A. The lamps will melt a small crucible of metal. You can inclose the crucible in fire brick with an opening for the blast.

(7995) S. J. P. writes: I want instructions how to make a magic lantern; also a work on concave mirror reflection tricks. Some years since I had a lantern with a mirror in one corner, so that we could remove the lamp and throw a scene on to smoke, but I have forgotten the detail. We could apparently throw a scene through a wall and many curious things do that I have forgotten. Have you a work on anything of the kind? A. We know no book better adapted to your needs than Experimental Science, by G. M. Hopkins, price $4 by mail. It contains all that you ask and much more.

NEW BOOKS, ETC.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

NOVEMBER 27, 1900,

AND EACH BEARING THAT DATE.

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

Acid and making same, cyanmethyl-anthranilic, F. Bender... 662,754
Acid, making phenyl-glycocol-ortho-carboxylic, F. Bender... 662,755
Addressing machine, H. F. Nehr... 662,575
Advertising, etc., novelty for, C. R. Crandall... 662,668
Advertising rack, F. H. Rosher... 662,924
Air brakes, automatic pressure relief mechanism for railway, S. L. Terry... 662,476
Air compressor, hydraulic, F. C. Starke... 662,884
Alarm. See Burglar alarm.
Albumen, purifying, G. Eichelbaum... 662,779
Animal trap, G. F. Jones... 662,624
Auger, hollow, A. A. Wood... 662,683
Automatic brake, J. H. Greenwood... 662,418
Automobile carriages, steering and brake device for, A. Strickland... 662,475
Axle for railway or road vehicles, A. C. Massey... 662,540
Axle lubricator, J. B. Foote... 662,715
Axle sleeve, Damon & Peets... 662,394
Axle, vehicle, J. L. Dolson... 662,777
Back pedaling brake, H. P. Seymour... 662,881
Bale band fastening, wire, P. K. Dederick... 662,558
Bale covering, T. T. Munford... 662,802
Bale covering, metallic, T. T. Munford... 662,801
Bales, mechanism for producing cylindrical cotton, M. Swenson... 662,885
Baling apparatus, cotton, F. L. Dyer... 662,688
Baling apparatus, cotton, M. Swenson... 662,886, 662,888
Baling press core, cylindrical, F. L. Dyer... 662,689
Band cutter and feeder, F. B. Taylor... 662,509
Bandage, suspensory, L. C. Thompson... 662,659
Bar. See Jumping bar.
Basin or fresh air inlet, catch, W. H. Dewar... 662,711
Battery. See Electric battery. Primary battery.
Bearing retainer, ball, W. H. Binns... 662,520
Bed, invalid, W. H. Donaldson... 662,487
Bedclothes holder, C. J. Wade... 662,840
Bedstead, wardrobe, C. H. Tesch... 662,704
Bending mechanism, angle, R. Bates... 662,664
Bicycle brake, W. G. Tassell... 662,563
Bicycle crank hanger, W. H. Fauber... 662,781
Bicycle support and locking device, C. Stride... 662,506
Bin. See Grain bin.
Binder, J. R. Barrett... 662,518
Blocks, machine for forming composite, J. Brower... 662,584
Boiler cleaner, G. W. Dammann... 662,624
Boiler tube cutter, D. E. Davis... 662,833
Boiler water line gage, steam, W. O. Knowlson... 662,598
Bolter, W. L. Burner... 662,666
Book lock, interchangeable adjustable, J. W. Sheppard... 662,700
Bootjack, F. Jaeger... 662,439, 662,440
Bottle closure, J. F. Perry... 662,812
Bottle, non-refillable, R. H. Newsom... 662,806
Bottles, mold for manufacturing pressed and blown, narrow neck, C. E. Blue... 662,759
Bottling machine, C. H. Bogart... 662,760
Box. See Card box. Knockdown box. Paper box.
Box and cover, A. E. Foltz... 662,619
Box fastener, J. J. Noser... 662,461
Brake. See Automatic brake. Back pedaling brake. Bicycle brake. Mechanical brake. Velocipede brake.
Bread cutter, H. B. Bingham... 662,756
Brick press, hydraulic, J. J. Koch... 662,674
Bricks from lime and sand, manufacturing, L. Galecki et al... 662,408
Buckle, S. & A. Bienenzucht... 662,706
Buckle, wedge, L. White... 662,846
Bung hole stave with metal lining, gas proof, F. X. Mayer... 662,490
Burglar alarm, W. H. Holmes... 662,534
Burglar alarm, J. L. Murphy... 662,803
Burglar alarm, electric, H. Rohrdantz... 662,657
Burner. See Hydrocarbon burner.
Butter cutting apparatus, P. H. Peacock... 662,464
Button, glove, C. R. Weidmuller... 662,844
Calcium acetate, obtaining, V. L. & W. R. Emerson... 662,780
Camera plate magazine, Pratt & Copeland... 662,696
Can. See Sheet metal can.
Can, S. M. Okell... 662,544
Can cover, locking milk, Dravo & Miller... 662,778
Can stopper, milk, A. B. Fisher... 662,782
Candlestick, miner's, A. & J. Howard... 662,365
Car coupling, McConway & Kelso... 662,457
Car draught rigging, railway, Schoou & Hansen... 662,698
Car driving mechanism, hand, Hall & Gray... 662,563
Car safety device, street railway, T. Mulholland... 662,465
Car ventilator, A. Rose... 662,879
Carbonator, G. A. Fleshhe et al... 662,407
Carbureter, J. C. Peden... 662,496
Carbureter, R. Wunsche... 662,514
Card box, G. W. Weaver... 662,478
Card clothing, machine for making, L. C. Schneider... 662,469
Card grinding machine, B. S. Roy... 662,742
Card grinding mechanism, S. B. Roy... 662,743
Carding apparatus, wool, H. L. Offermann... 662,733
Carding engine revolving flats, mechanism for stripping teeth of, H. Walsh... 662,581
Carriage washer, overhead, J. B. Burger... 662,592
Case. See File case.
Cash carrier terminal, pneumatic, F. C. Cutting... 662,771
Ceiling switch, E. A. Lowe... 662,570
Chair. See Folding chair.
Chair seat, M. V. B. Howe... 662,647
Chart, dress, J. B. Plant... 662,817
Chopper. See Cotton chopper.
Chuck, W. Scott... 662,470
Chuck operating device, Kummel & Goodrich... 662,900
Churn, J. W. Wilson... 662,616
Chute closure, J. S. Hickey... 662,672
Cigar cutter, R. F. Bartel... 662,751
Cigarette making machine, Davis & Hendriks... 662,775
Cigar mouthpiece applying machine, J. S. Beeman... 662,389
Circuit controller, automatic, G. H. Whittinghau... 662,480
Circuits, apparatus for interrupting relatively high potential, W. Grunow, Jr... 662,784
Clamp. See Fence clamp.
Clamping device, J. H. Downie... 662,638
Cleaner. See Boiler cleaner. Rotary cutter cleaner. Window cleaner.
Clip for holding rolls or spools, F. A. Brownell... 662,762
Clutch, A. Piton... 662,816
Clutch gearing, reversible friction, R. J. Smith... 662,702
Coal drill, M. Hardsocg... 662,646
Cob pipes, filling interstices of, H. H. Barklage... 662,516
Coin controlled machine, France & Pearsall... 662,897
Cold, producing, H. Geppert... 662,690
Commutator, Priest & Schermerhorn... 662,465
Commutator brush holder, H. Bishop... 662,758
Compound engine, single cylinder, T. Grant... 662,417
Condensing apparatus, J. F. Chase... 662,765
Condiment holder, J. B. Williamson... 662,482
Conveyer, A. C. Clay... 662,709
Conveyer, air, E. L. McGary... 662,574
Conveyer wheel, lubricating, C. W. Hunt... 662,596
Copying cabinet, letter, E. Feige... 662,528
Copying machine, A. Klein... 662,638
Cotton chopper, M. F. Walker... 662,747
Cotton condenser, M. Swenson... 662,887
Cotton press, H. S. Ringi... 662,878
Cotton press, Swenson & Ringl... 662,889
Counting register, Winn & Spalding... 662,899
Coupling. See Car coupling. Pipe coupling.
Crank wheel, F. Benjamin... 662,486
Cream separator, C. H. Knight... 662,873
Cross sleeper, metallic, P. Cazes... 662,764
Cultivator, G. L. Bradley... 662,665
Cultivator, garden, G. W. Chase... 662,593
Current collector, W. Grunow, Jr... 662,423
Current motor, M. Puszkar... 662,737
Curtain roller, B. F. Bell... 662,753
Curtain stretcher, W. A. Mayr... 662,628
Cutter. See Band cutter. Boiler tube cutter. Bread cutter. Cigar cutter. Rotary cutter.
Cutting tool, C. P. Mingst... 662,492
Cycle frame joint, E. G. Wood... 662,848
Damper, stove, J. C. Witcher... 662,661
Dental appliance, D. O. M. Le Cron... 662,593
Dental head rest, V. W. Baker... 662,387
Desk, school, W. B. Cogger... 662,523
Diethyl ether, manufacturing, G. H. Benjamin... 662,585
Distilling and concentrating apparatus, W. L. Rowland... 662,697
Door for show cases, etc., ball bearing, E. A. Wentworth... 662,614
Draw head, C. Gibson... 662,639
Drawing knives, die for shaping carpenters', I. S. Bailey... 662,750
Dredge, R. R. Osgood... 662,462
Drier, A. V. & J. T. Mysore... 662,673
Drying apparatus, M. Leitch... 662,448
Drill. See Coal drill. Grain drill. Ratchet drill.
Dyeing, etc., apparatus for, R. Brandts... 662,590
Earthenware, adjustable metallic fitting for, R. Borsdorf... 662,890
Egg case filler, W. H. Hansell... 662,424
Electric battery, A. W. Harrison... 662,622
Electric circuits, safety cut-out for, J. Sachs... 662,501
Electric machine brush holder, S. H. Short... 662,630
Electric motor, J. Darling... 662,772
Electric motor controller, Linn & Day... 662,450
Electrical circuits without dangerous arcing, apparatus for rupturing high potential, W. Grunow, Jr... 662,785
Electrical conductor joints, casing for, G. H. Paul... 662,463
Electrical connector, H. Blackman... 662,707
Electrical device, portable, J. S. Mead... 662,491
Electrical impulses, transmission of, F. Bedell... 662,752
Electrical resistance, W. Grunow, Jr... 662,422
Electrically lighting railway carriages, etc., apparatus for, C. Vicarino... 662,580
Elevator. See Mining elevator.
Engine. See Compound engine. Explosive engine. Hydraulic engine. Impact engine. Locomotive engine. Rag engine. Refining engine. Rotary engine.
Engine counterbalance, explosion, H. B. Steele... 662,631
Engines, trip lock for use in starting explosive, P. Swenson... 662,507
Envelop, C. W. Allen... 662,382
Etching apparatus, roli, E. Hett... 662,860
Evaporating apparatus, multiple effect, E. J. Duff... 662,399
Explosive engine, O. F. Good... 662,718
Extension table, J. T. La Turno... 662,446
Fan, etc., E. E. Alexander... 662,485
Fan or pump, centrifugal, S. C. Davidson, 662,395 to 662,397... 662,525
Faucet, water, R. H. W. Schmidt... 662,503
Feed mechanism, G. Kunz... 662,797
Feed regulator, boiler, J. W. Copes... 662,687
Feeder, stock, A. B. Armstrong... 662,384
Fence clamp, wire, R. W. Kirk... 662,648
Fence machine, wire, D. P. Anthony... 662,662
Fertilizing machine, H. C. Ham... 662,532
File case, H. J. Schindler... 662,825
Filtering apparatus, J. J. Brix... 662,556
Finger ring, C. M. Levy... 662,449
Fire alarm, electric, C. L. Haight... 662,719
Fire escape, W. Newburn... 662,875
Fire extinguisher, C. R. Harris... 662,786
Fireproof construction, W. White... 662,634, 662,635
Fireproof floor construction, M. J. O'Meara... 662,808
Fireproof structure, D. Kilpatrick... 662,871
Floor, O. Nagel... 662,458
Floor, sidewalk, etc., P. H. Jackson... 662,597
Fluid-pressure regulator, H. C. Sisco... 662,550
Fly catcher, sticky, G. A. Shaw... 662,603
Folding chair, G. W. Cole... 662,557
Frame. See Picture frame.
Fuel feeding hopper, P. L. Crowe... 662,770
Furnace. See Gas furnace. Hot air furnace. Kiln furnace. Reheating furnace. Smelting furnace.
Furniture, device for interlocking removable parts of, A. Rehm... 662,877
Gage. See Boiler water line gage.
Garment fastening and supporting device, M. F. Loving... 662,539
Gas furnace, W. Swindell... 662,608
Gas generator, acetylene, C. Puddefoot... 662,546
Gas generator, acetylene, P. Schreck... 662,504
Gas generator, acetylene, S. P. Watt... 662,843
Gas into the human body, instrument for injecting, E. Sterne... 662,658
Gas producer, J. O. E. Trotz... 662,609
Gelatin, making, E. R. Edson... 662,402, 662,405
Generator. See Gas generator. Steam generator.
Gloves, etc, fastening for, E. Maynz... 662,676
Gold from magnetic sands, apparatus for separating, E. Gates... 662,409
Governor cushion, engine, T. D. Millea... 662,572
Governor, gas engine, A. A. Lazier... 662,730
Grader, road, C. A. Rapp... 662,680
Grain bin, J. Macdonald... 662,452
Grain cutting machinery, finger guard for, S. K. Dennis... 662,637
Grain drill, J. W. Rhodes... 662,823
Grain separator, C. L. Ring... 662,500
Grain sorting machine, J. Mayer... 662,454
Grain unloading device, A. J. Frerking... 662,529
Grate bar, T. W. Heintzelman... 662,623
Grate raising or lowering apparatus, P. L. Crowe... 662,769
Grate raising or lowering mechanism, P. L. Crowe... 662,767
Grinder, mower knife, R. G. Kennedy... 662,793
Grinding and polishing device, I. M. Rose... 662,629
Grinding mill, W. J. Bussinger... 662,696
Grinding, polishing, or buffing machine, J. Koenig... 662,536
Gun, machine, Bowman & Hughes... 662,761
Gyroscope electric top, E. Ziehl... 662,494
Hame and trace connector, C. Averitt... 662,555
Handle. See Tool handle.
Hanger. See Trousers hanger.
Harrow, G. G. Fligor... 662,670
Harrow, W. P. Smith... 662,605
Hat fastener, J. Warner... 662,511
Hat pouncing machine, C. H. Reid... 662,821, 662,822
Hat sweat band, F. E. Halbert... 662,645
Hay and stock rack, combination, D. M. Cox... 662,766
Headlight, J. J. Shipley... 662,744
Heater. See Water tank heater.
Hinge, safe, H. D. Hibbard... 662,434
Honeycomb foundations, apparatus for manufacturing, E. B. Weed... 662,682
Hook. See Lacing hook. Whiffletree hook.
Hook and eye, N. McMahon... 662,677
Horses from cribbing, device for preventing, A. & C. Thompson... 662,745
Hot air furnace, Soderlund & Lonnbeck... 662,383
Hub, wheel, C. Heart... 662,721
Hydraulic engine, C. H. Peck et al... 662,678
Hydrocarbon burner, A. A. Arnott... 662,385
Impact engine, B. B. Carter... 662,763
Impact tool, T. H. Phillips... 662,815
Incandescent mantle, E. Pikhart... 662,734
Indoxyl derivatives and making same, A. Stock... 662,703
Injector, H. T. Nice... 662,459, 662,460
Ink ribbon mechanism, S. A. Neidich... 662,805
Insect destroyer, B. F. Brown... 662,391
Insulated support for electric conductors, C. C. Blake... 662,587
Insulating composition, C. Jung... 662,444
Intra-uterine battery, J. G. L. Gaedeke... 662,716
Invalid lifting device, C. B. Ulrich... 662,477
Iron or steel, hardening, L. Schiecke... 662,502
Jack. See Bootjack.
Jar closure, M. Birney... 662,757
Joint. See Cycle frame joint. Pipe joint. Rail joint.
Jumping bar, T. F. Peak... 662,810
Kiln furnace, L. Vinez... 662,633
Knockdown box, E. Raschle... 662,739
Lacing hook, shoe, H. H. Eaton (reissue)... 11,874
Ladder, H. Ovenden... 662,545
Lamp, acetylene gas, S. P. Watt... 662,842
Lamp attachment, arc, E. B. Jones... 662,727
Lamp burner, F. T. Williams... 662,582 to 662,584
Lamp burner, oil, J. Sharples... 662,826
Lamp for Welsbach or other incandescent lights, antivibration, Slinack & Sanderson... 662,831
Lamp socket, incandescent, E. P. Warner... 662,510
Lantern, collapsible, C. H. Stonebridge... 662,474
Latch, cupboard, G. W Sigley... 662,681
Latch, gate, W. B. Shumaker... 662,604
Lead refining and desilvering apparatus, S. Tredinnick... 662,836
Lightning arrester for safety cut-outs for electric circuits, J. Sachs... 662,466
Liquid cooling apparatus, W. C. Huckins... 662,438
Liquids with gases, apparatus for charging, G. L. Reenstierna... 662,499
Liquids with ozone, etc., apparatus for treating, I. Van den Broek... 662,509
Lock. See Book lock. Sash lock.
Lock plate, A. H. Wood... 662,847
Locking device released by recoil, safety, L. L. Hepburn... 662,427
Locking mechanism, safe or vault, H. D. Hibbard... 662,435
Locomotive engine, compound, W. M. Smith... 662,578
Log loading device, A. Davis... 662,669
Loom, filling supply, O. Janelle... 662,441
Loom, needle, W. V. Gee... 662,717
Loom shuttle actuating mechanism, B. S. Roy... 662,741
Lubricating system, pneumatic, Vandresar & Pilling... 662,838
Lubricator. See Axle lubricator.
Magnetic separation, E. Gates... 662,410
Magnetic separator, E. Gates... 662,411 to 662,414
Mallet, G. B. Goddard... 662,691
Malting drum, J. F. Dornfeld... 662,398
Mandrel, J. & W. R. Thomas... 662,835
Manties, manufacture of, O. Wiederhold... 662,481
Matches, manufacturing, A. Pfister... 662,814
Measure, computing, C. E. & J. G. Harrington... 662,533
Measure, dress cutting, V. H. Goff... 662,620
Mechanical brake, J. H. Greenwood... 662,531
Medicines, device for measuring and administering, W. O. Bloom... 662,588
Metal bearing plate, von Lipowska & von Geldern-Egmond zu Arcen... 662,567
Metal shells, device for cutting tubular C. S. Morse... 662,542
Metal surfaces by means of fluid pressure, uniting, C. Huber... 662,791
Metal wool, making, F. W. Buhne... 662,392
Mill. See Grinding mill.
Mining elevator, R. Lee... 662,731
Moistening device, H. B. Dalton... 662,892
Mold. See Ring mold. Rmg casting mold.
Mortising machine, W. Black... 662,390
Motion transmitter, J. C. Walker... 662,611
Motor. See Current motor. Electric motor.
Mowing machine attachment, D. M. Jennings et al... 662,442
Nailing machine, hand, E. F. Grandy... 662,898
Napping machine, R. C. Borchers... 662,589
Nut lock, Peer & Protzman... 662,811
Oil and glue, extracting, E. R. Edson... 662,406
Oil, extracting, E. R. Edson... 662,404
Oven, bake, Marshall & Faulds... 662,874
Paper, apparatus for applying paste to wall, R. B. Stanley... 662,806
Paper box, J. Floyd... 662,560
Paper holder, roll, T. C. Phillips... 662,576
Paper making machine, V. G. Hazard... 662,426
Pen, fountain, S. Kraus... 662,796
Pencil sharpener, C. F. Hess... 662,788
Pew partition, J. J. Dillon... 662,526
Photographic mounts, producing, P. J. Stuparich 662,579
Piano bridge, J. H. Butler... 662,521
Pianoforte, L. Gassard... 662,763
Picture exhibitor, E. A. Reeves... 662,820
Picture frame, L. B. Prahar... 662,736
Picture holder, E. Young... 662,483
Pipe. See Tobacco pipe.
Pipe coupling, stoneware, H. B. Camp... 662,618
Pipe joint, W. Shuey... 662,828
Pipe securing device, F. Berardi... 662,586
Piston stroke regulator, R. H. Yale... 662,515
Planter drive wheel and marker, corn, L. J. Lindsay... 662,626
Planter, lister corn, M. T. Harding... 662,621
Planter, seed, E. B. Dixon... 662,776
Plaster and cement for brickwork, wall, W. S. Griswold... 662,643
Plastic substances, sanitary dispenser for J. F. C. Luhan... 662,627
Plow attachment, E. H. Bartels... 662,663
Plow, cultivating, C. Wells... 662,613
Plow, riding disk, Westervelt & Clapp... 662,845
Pneumatic dispatch tube apparatus, carrier for, A. W. Pearsall... 662,801
Pneumatic tool, Leineweber & Leininger... 662,675
Post holder, J. M. Hibbard... 662,436
Press. See Brick press. Cotton press. Printing press.
Press, E. Hett... 662,863, 662,866, 662,869, 662,870
Press feed regulator device, G. A. Lowry... 662,451
Primary battery, reversible, L. W. Pulleu... 662,679
Printing, E. Hett... 662,857
Printing and making printing forms, E. Hett... 662,853
Printing cylinder, E. Hett... 662,859
Printing cylinders, casting, E. Hett... 662,856
Printing cylinders, machine for casting, E. Hett. 662,858
Printing form and press, E. Hett... 662,865, 662,867, 662,868
Printing machine, W. Scott... 662,699
Printing press, E. Hett... 662,854, 662,855, 662,861
Printing press, etc., E. Hett... 662,862
Printing press delivery mechanism, S. G. Goss... 662,530
Printing press inking roll truck, J. H. Schussler... 662,880
Printing, etc., producing surfaces for, E. Hett... 662,852
Printing surfaces, machine for making, E. Hett... 662,864
Projectile, ordnance, H. S. Maxim... 662,798
Propeller, boat, S. H. Butterworth... 662,522
Pulley, clutch, W. W. Dixon... 662,894
Pulley, expansible, J. Florence... 662,851
Pump, double-acting force, I. Hoagland... 662,437
Pump, oil, Bradford & Gordon... 662,617
Rack. See Advertising rack. Hay and stock rack.
Rag engine, E. A. Jones... 662,726
Rail joint, J. S. Patten... 662,809
Railway crossing signal, N. Ratchford... 662,497, 662,498
Railway, electric, W. Grunow, Jr... 662,419 to 662 421
Railway rail splice joint, W. B. Doddridge... 662,712
Railway signaling, S. D. Strohm... 662,838
Railway tie, E. Davis... 662,774
Railway tie, metallic, J. S. Warley... 662,841
Range, combined gas and coal, H. R. Sheppard... 662,827
Ratchet drill, C. B. Groff... 662,644
Refining engine, C. E. Torrance... 662,746
Refrigerating article, J. Miskolczy... 662,541
Register. See Counting register.
Registering apparatus, Lambert & Aronson... 662,694
Regulator. See Feed regulator. Fluid pressure regulator. Piston stroke regulator. Speed regulator, Water regulator.
Reheating furnace for steel ingots, J. O. E. Trotz 662,610
Rendering apparatus, E. R. Edson... 662,403
Ring. See Finger ring.
Ring casting mold, W. H. Ford... 662,561
Ring mold, W. H. Ford... 662,562
Roll relieving device, C. Kuhlewind... 662,445
Rotary cutter cleaner, J. F. Arthur... 662,749
Rotary cylinder steam engine, G. O. Sanderson... 662,467
Rotary engine, V. & G. Sandahl... 662,547
Ruler, T. C. Bassett... 662,388
Saddle, riding, F. O. Hicks... 662,566
Safe, H. D. Hibbard... 662,428, 662,429, 662,432
Safe door interlocking device, Hollar & Corry... 662,789
Safe or vault plate, H. D. Hibbard... 662,431
Safe or vault plate fastening, H. D. Hibbard... 662,433
Sash holder, O. F. Helfritz... 662,722
Sash lock, S. C. Martin... 662,571
Saw set, W. Mathews... 662,453
Sawing machine, W. Hansmann... 662 720
Scraper, G. E. Richardson... 662,740
Screen. See Window screen.
Seal, car, T. White... 662,615
Seeding machine, C. McLeod... 662,653
Semaphore operating mechanism, J. Shoecraft... 662,549
Separator. See Cream separator. Grain separator. Magnetic separator. Slitch separator.
Separator and amalgamator, I. P. Clarke... 662,685
Sewing machine feeding mechanism, S. A. West. 662,479
Sewing machine looper mechanism, A. Spear... 662,832
Sewing machine presser-foot mechanism, A. Steward... 662,505
Sewing machine shuttle mechanism, Alley & Winkley... 662,383
Shears, etc., combined separating spring and locking device for, W. Scheerer... 662,468
Sheet metal can, C. Leffler... 662,447
Sheet metal, manufacture of, R. G. Wood... 662,513
Shingle jointer, J. Randall... 662,818
Shoe form, C. B. Kosters... 662,729
Shoe form, W. L. C. Niles... 662,807
Shoe stretcher, C. B. Kosters... 662,728
Shoestring fastener, S. Beach... 662,519
Shrimps, obtaining extract of, Arendt & Honicke 662,849
Signal. See Railway crossing signal.
Signal disk, E. M. Klein... 662,872
Silicium, manufacturing metallic, B. Scheid... 662,548
Skirt, H. J. Feuchtwanger... 662,714
Smelting furnace, electric, H. Koller... 662,537
Sole trimming machine, L. Goddu... 662,415
Spark and dust arrester for cars, M. Stanley... 662,551
Speculum, J. Sklar... 662,830
Speed changing mechanism, C. C. Cleverdon... 662,710
Speed controlling mechanism, S. Messerer... 662,455
Speed regulator, W. K. Lord... 662,568, 662,569
Spring. See Vehicle spring.

(Continued on page 365)