(2239) C. E. B. asks how to make soap from the soap tree bark. A. Use the powdered bark infused in water. No preparation is needed.

(2240) J. D. J. writes: 1. I have made some ink for reinking typewriter ribbons, as per receipt taken from SCIENTIFIC AMERICAN, and while it works all right apparently at first, it gets too dry in a few days for use; when I put in more castor oil, then it makes it too greasy. The receipt read to take any aniline dye and dissolve it in alcohol, and thicken with castor oil. Can you give me the proper proportions of each? I find my ribbons dry out too soon, and when I add more castor oil, I get it too greasy. A. Try the addition of a little vaseline to your ink. We cannot give absolute proportions. In many cases vaseline is recommended as the body. 2. Will you please tell me what to add that will make it copy in the press? A. For such a copying ink dissolve an aniline color in a little alcohol, and mix with glycerine. 3. Will you give receipt for making first-class writing and copying fluid—black and blue black? A. In general, three volumes of a good ink of desired quality may be mixed with one volume of glycerine. An aniline color may be used as the basis, but will be liable to fade. For a black gall ink macerate 1 pound crushed galls in ¾ gallon of water poured on while boiling. Strain, and add a solution of 5½ ounces of copperas and 3 ounces of gum arabic dissolved in ¼ gallon of water. Add a little oil of cloves as an antiseptic. This gives a plain black ink. To make it blue black, add a strong solution of soluble Prussian blue. Mix either of these with glycerine as described above.

(2241) E. H. S. asks (1) of what and how is plaster of Paris made? A. It is made from gypsum, a natural mineral, a hydrated calcium sulphate ($CaSO_4.2H_2O$). The mineral is ground and heated until part of the water is expelled. 2. Has it any relation to alabaster? A. Alabaster is a variety of gypsum.

(2242) J. C. B. asks: 1. Please inform me of the best way of converting sulphite of lead combined with linseed oil into metallic lead? A. Heat in a crucible with a few iron nails or wire scrap, powdered charcoal and carbonate of soda. 2. And also any book which will treat on this subject. A. Books on assaying, such as Keil's "Assayer's Manual," $3, or on metallurgy, such as Overman's "Metallurgy," $5. 3. Also how to test white lead for the amount of oil contained in it? A. Treat with bisulphide of carbon until oil is all dissolved out, and weigh the residue.

(2243) P. H. G. writes: What is the best known mixture of minerals which, when in a hard form, will ignite when exposed to the air, and burn for any length of time? A. Lead pyrophorus, made by heating tartrate of lead in a glass tube, ignites when exposed to the air. Iodine and phosphorus placed in contact ignite in a few minutes. Finely divided iron mixed with sulphur and moistened may inflame spontaneously. In the first and last of these cases the combustion is flameless.

(2244) A. J. G. asks (1) if there is anything better than shellac for covering the metallic part of a static battery to prevent loss of electricity. A. No. A good quality of shellac is the best substance known for this purpose. 2. Which kind of glass, plate or common, is preferable for making wheels for a static battery? A. For small machines common sheet glass, for large machines plate glass. 3. Would like to know what is meant by burnt plaster, also what sort of material is meant by Greek pitch? A. Calcined plaster of Paris and mineral pitch. 4. Is the static battery known as the Wimshurst machine patented? A. We think not. 5. Of what advantage are the equalizing rods on the Holtz-Toepler battery? A. They neutralize the charge on the plate at the points of contact.

(2245) A. T. O. asks how to prepare Javelle's water. A. Mix 80 parts chloride of lime with 400 parts of water in a covered vessel. Dissolve 100 parts carbonate of potash in 400 parts water (boiling). Pour last solution into first as quickly as possible, and cover. When cold, dilute to 1,000 parts.

(2246) J. J. F. says: There is a diversity of opinion between our engineers in regard to method of holding a high steady pressure with a hot fire. One holds that if any door should be open, it should be the furnace door, as it causes less contraction, and therefore causes least injury. The other, that the flue doors in brickwork should be opened and furnace doors closed, thereby causing less contraction. A. It is the practice among our best engineers to use the chimney damper, the fire door and the ash pit door, with discrimination as to economy and the best regulation of steam. When the engine is running regularly, the damper should do the whole work of regulation for steam pressure. The fire door should only be used for feeding fuel and the sudden necessity of checking steam generating, when engines are suddenly stopped. The ash pit door is not needed when there is a good damper regulator. If there is no damper, the flue door may be used as a regulator, but is not recommended.

(2247) W. S. H. asks if there is any way to varnish or coat a copper boiler in the kitchen, connected with a range, so as to keep it bright and avoid the weekly scouring and the use of so much "elbow grease"? A. Shellacking or the application of gum sandarac varnish might answer. For all these applications the surface must be absolutely clean.

(2248) J. W. E. asks a cheap preparation for deodorizing coal oil, that could be mixed with turpentine and paint. A. An attempt at deodorizing coal oil may be made by agitating it with concentrated sulphuric acid, leaving bichromate of potash in solution, allowing it to settle and decanting. This mixture cannot be mixed with vegetable or animal oils, and the coal oil must be carefully freed from it, as by washing with water or weak soda solution, before use.

(2249) M. H. asks how lead pipe is run when run in long lengths of say one mile? It is the core which bothers us. A. Lead pipe is made by forcing the lead through a die in the axis of which is supported a mandrel, leaving an annular space through which the lead passes while still hot but congealed. The different charges of lead weld together under the heat and pressure, making the issue of pipe in a continuous length as long as the machine can be run, many miles if necessary.

(2250) C. H. asks: What kind of metal is best to use for a mercury trough, to be used for electrical connections? A. Use iron or copper if you desire to make connections through the containing vessel. Vulcanite answers well where the connections are made through the mercury alone.

(2251) O. F. N. asks: What foreign substance is dissolved in the water or oil into which the heated steel is immersed, in order to prevent said steel from drawing out of shape and breaking? A. There is nothing that can be put in the water that will prevent warping in hardening. The whole secret is in the manner of dipping, which should be such that the cooling should take place all around, or in a plane at right angles to its longer axis. A spindle or long top should be dipped in a vertical position. Cracking is often a mystery, but is more often the result of inattention to the quality of the steel and overheating. No steel should be heated too fast, nor any hotter than is absolutely necessary to harden it. This is a good workman's experience, and his secret, *i. e.*, to know just how hot and how fast to heat every grade of steel and every form of tool.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

May 13, 1890.

AND EACH BEARING THAT DATE.

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

Acid compound of dimethyl meta-amidophenol, carbonic, Gnehm & Schmid ... 427,565
Acid compound of meta-amidophenol, carbonic, Gnehm & Schmid ... 427,564
Adding machine, W. A. Guzeman ... 427,567
Alarm. See Bilge water alarm.
Ax or wedge for splitting wood, D. E. Blacke ... 427,961
Ax polls, machine for forming, J. U. Hubbard ... 427,689
Axle box, car, W. M. Leckie ... 427,880
Axle boxing, car, W. T. Trissal ... 427,640
Axle lubricator, car, J. R. Hosier ... 427,994
Axle nut, F. D. Bliss ... 427,825
Axle, railway car, Wolfe & Campbell ... 427,816
Axle, vehicle, F. R. Swalley ... 427,636
Automatic sprinkler, A. F. Nagle ... 428,053
Bags, clasp or locking mechanism for travelers', R. D. Tucker ... 427,641
Baker, F. J. Rost ... 427,797
Ball. See Pipe ball.
Barrel lining, A. Zinsser ... 427,721
Basin trap, wash. W. E. Delehanty ... 427,752
Bath. See Vapor face bath.
Battery. See Secondary battery.
Bearing, anti-friction, B. Beaupre ... 427,538
Bearing, anti-friction, L. K. Jewett ... 427,693
Bed and binder therefor, spring, F. J. Maier ... 427,777
Bedstead attachment, E. E. Arnold ... 427,533
Bedstead fastener, T. H. Watson ... 427,645
Beehive, L. V. Hopkins ... 427,993
Belting, woven fabric for machine, J. P. Maddox ... 427,700
Bilge water alarm, J. W. Jones ... 427,873
Block. See Building block. Curbing block. Fuse block.
Board. See Ironing board. Switch board.
Bobbin, S. D. Keene ... 427,877
Bobbin, flanged, Wilson & Greenwood ... 427,719
Boiler setting, steam, W. O. Jones ... 427,694
Boilers or water tanks, apparatus for feeding, J. W. Stevens ... 427,633
Boilers, etc., with lead, lining, G. R. Noble ... 427,892
Bolt pointing and threading machine, A. J. Braun ... 427,732
Bookbinding machine, J. J. Sullivan ... 427,931
Book holder, B. F. Dennis ... 427,558
Bootjack, R. B. Dezell ... 427,675
Boot or shoe tree, H. G. Locke ... 427,698
Boot or shoe welt machine, H. C. Pretty ... 427,610
Boring and mortising machine, O. W. Young ... 427,818
Bottle receptacle and stopper, Hausburg & Henkel ... 427,862
Bottle stopper, F. Henkel ... 427,864
Bottle stopper and fastener, C. G. Imlay ... 427,576
Bottle stopper carrier, H. Blake ... 427,729
Bottle vending machine, E. M. Statler ... 427,806
Bottles, etc., fastening device for, D. N. Martin ... 427,590
Box corners, machine for securing, H. Campbell ... 427,670
Box fastener, J. N. Anderson ... 427,723
Bracelet, J. R. Mathewson ... 427,592, 427,593
Brake. See Car brake.
Brick kiln, J. F. Byers ... 427,550
Brick machine, R. Knickerbocker ... 427,578
Brick machines, automatically adjustable plunger for, A. F. Cramer ... 427,972
Brick machines, hook bar for the mould-delivery devices of, A. F. Cramer ... 427,973
Buckle, A. W. Dalton ... 427,839
Buckle, J. H. Maher ... 427,776
Buckle, J. H. Morris ... 427,886
Building block, J. J. Schillinger ... 427,914
Burner. See Gas burner. Hydrocarbon burner.
Burning trash, bucket for, W. H. Ryer ... 427,800
Burnisher, S. O. Tuerk ... 427,937
Butter jar, D. C. Chadwick ... 428,040
Button, D. D. Mumma ... 427,703
Buttonhole cutter, R. Theis ... 427,639
Button, separable collar, A. Loos ... 427,699
Cable and railway crossing, Weir & Goldsmith ... 428,028
Cable grip, Egan & O'Brien ... 427,756
Calipers, beam, S. H. Bellows ... 427,956
Camera, J. A. Mailloux ... 427,778
Can. See Metal can.
Cannon valve, pneumatic, J. W. Osborne ... 427,895
Car bodies, side bearing for, L. K. Jewett ... 427,692
Car brake, C. W. Powell ... 427,706
Car brake, F. W. Rock ... 427,910
Car coupling, H. C. Buhoup ... 427,737
Car coupling, S. J. Ford ... 427,758
Car coupling, J. B. Granger ... 427,683
Car coupling, A. McDougald ... 427,602
Car coupling, Rigby & Reed ... 427,908
Car coupling, J. A. Ruan ... 427,913
Car drawbar attachment, railway, J. A. Hinson ... 427,990
Car, gondola, T. Watkins ... 427,938
Car heating apparatus, I. Hazelton ... 427,863
Car, motor, G. M. & J. A. Brill ... 427,966
Car motor, pneumatic, H. Taylor ... 427,809
Car, petroleum, Hill & Bender ... 427,867
Car, stock, G. D. Burton ... 427,968
Cars, anti-friction support for, L. K. Jewett ... 427,691
Cars, running board for freight, S. L. Mott ... 427,598
Cars, switch operating device for railway, J. Kelly ... 427,577
Cars, train pipe for railway, J. F. McElroy ... 428,016
Cars, trolley arm for electric, W. F. Harriman ... 427,569
Carbon brush for motors, L. Daft ... 427,674
Carbureting apparatus, G. H. Burrows ... 427,832
Card setting machines, back bend apparatus for, R. Ashworth ... 427,950
Carpet cleaning machine, W. Bowman ... 427,827
Carpet fabric, Axminster or Moquette, W. C. Sanford ... 428,022
Carpet stretcher and tacker, J. Blakeslee ... 427,544
Carriage, jump seat, J. F. Goodrich ... 427,856
Carrier. See Cash carrier.
Cart, dumping, C. Gibbs ... 427,851
Cart, road, H. J. Miller ... 428,014
Cart, road, T. S. Watrous ... 427,939
Cartridge extractor, ring, P. Mauser ... 427,587
Case. See Jeweler's case.
Cash carrier, D. Brown ... 428,039
Cash indicating and check printing machine, W. Koch ... 428,003
Caster socket and corner brace, combined, C. F. Blandon *et al* ... 427,662
Castings, machine for making, F. N. Cline ... 427,837
Centering and countersinking machine, G. Wagner ... 427,811
Centrifugal liquid separator, C. D. Shepard ... 427,804
Chain attachment, watch, R. Bresch ... 427,664
Chain link, elastic, E. Ongley ... 427,605
Chair. See Folding chair. Hammock chair. Opera chair.
Chair and sofa bed, B. Morvay ... 427,567
China firing kiln, F. A. Wilke ... 427,941
Chlorine compounds from natural gas, obtaining, T. F. Colin ... 427,744
Chopper. See Cotton chopper.
Chopping machine, F. J. Melounek ... 427,594
Chuck and bit, combined, J. A. Aiken ... 427,821
Clamp. See Hose band clamp. Rope clamp.
Clamp collar, R. H. Richards, Jr ... 428,058
Clasp. See Pocketbook clasp.
Clasp, C. La Dow ... 428,006
Cleaner. See Hemp cleaner. Pipe or flue cleaner. Window cleaner.
Clevis, plow, I. T. McIntyre ... 427,603
Clock system, electro-pneumatic, C. A. Mayrhofer ... 427,781
Closet. See Sanitary closet.
Clothes line prop, S. V. D. Wack ... 427,642
Clothes, safety apparatus for hanging, J. A. McMahon ... 427,890
Clutch for holding disks, T. Suchland ... 427,930
Clutch, W. D. Ewart ... 427,563
Clutch, friction, S. P. Watt ... 427,646
Coal or dredge bucket, C. Eibee ... 427,960
Coffee or tea pot, C. Halstead ... 427,568
Coffin, E. Grueninger ... 427,760
Coffin, T. McGovern ... 427,889
Collar, E. Robinson ... 427,909
Collar, metallic, A. Muir ... 427,887
Collar or cuff blanks, machine for cutting, G. E. Hills ... 427,572
Combination lock, A. Siekmann ... 427,922
Commutator brush, E. H. Bowen ... 428,038
Copying press pad, A. Schorno ... 427,802
Cork puller, S. T. Jull ... 428,000
Corkscrew, safety alarm, C. J. Bailey ... 427,656
Corset, J. J. Boylan ... 427,828
Corset, C. A. Tierney ... 427,924
Cotton chopper, F. Green ... 427,566
Coupling. See Car coupling. Thill coupling.
Crushing mill, F. A. Huntington ... 427,690
Cultivator, J. Blakeley ... 427,543
Cultivator, W. W. & F. M. Mullen ... 427,888
Cultivator, shovel, yielding, A. Lindgren ... 428,010
Curbing block street, S. A. Webb ... 427,648
Curbstone, I. L. Landis ... 428,007
Curling iron, S. Reid ... 427,907
Current apparatus, alternating, E. & F. W. Heymann ... 427,571
Current motor, alternating, M. Von Dolivo-Dobrowolsky ... 427,978
Cutter. See Buttonhole cutter. Fodder cutter.
Darkroom, portable, G. Bausch ... 428,036
Dental disk mandrel, J. Pugh ... 428,019
Dental engine hand piece, W. R. Marsh ... 427,780
Detector. See Ground detector.
Disintegrating machine, J. W. Hyatt ... 427,687
Displaying receptacle, F. S. Gifford ... 427,982
Doll, R. Steiner ... 427,927
Door, J. H. Murray ... 427,599
Door closer, thermal, W. R. Patterson ... 427,899
Door hanger, W. Cronk ... 427,838
Dress form, T. W. Hobday ... 427,991
Dress shield, P. P. Guillaume ... 427,985
Drill. See Grain drill.
Drills, apparatus for testing and straightening, O. Smalley, Jr ... 427,805
Drums, oven attachment for, W. H. Ryer ... 427,799
Drums, water heating attachment for, W. H. Ryer ... 427,798
Dyeing hides, apparatus for, J. Kristen ... 427,697
Dynamite, P. Germain ... 427,679
Electric cable terminal, J. A. Hanagin ... 428,046
Electric currents, producing alternating, M. S. Conly ... 428,042
Electric cut-out, automatic, E. M. Bentley ... 427,724
Electric generator, pyromagneto, N. Tesla ... 428,057
Electric heater, B. C. Howard ... 427,574
Electric indicator, F. A. Lane ... 427,879
Electric light bulb, incandescent, T. B. Atterbury ... 427,951
Electric meter, S. C. C. Currie ... 427,748
Electric prod pole, J. M. Burton ... 427,549
Electric signal, J. Haas, Jr ... 427,762
Electrical converter, S. Z. De Ferranti ... 427,751
Electrical distribution, system of, L. Bell ... 427,541
Electro matrix machine, G. A. Goodson ... 427,681
Electrode, secondary battery, J. F. McLaughlin ... 427,785
Electrodes, composition for supports for secondary battery, W. F. Smith ... 427,710
Elevator. See Water elevator.
Engine. See Rotary engine. Wind engine.
Explosive mixer, W. R. Quinan ... 427,707
Extractor. See Cartridge extractor. Stump extractor.
Fasteners, making corrugated, F. W. Starr ... 427,632
Felley polishing machine, P. Kettenring ... 427,695
Felt by electricity, shrinking and fulling, Taylor & Hard ... 428,026
Fence, P. Lightner ... 427,773
Fence post bottom, I. V. Wolf ... 427,815
Filing cabinet, paper, M. R. Jewell ... 427,998
Filter, C. G. Purdy ... 427,906
Filter press, B. Remmers ... 427,794
Fire alarm regulator, Spike & McLeod ... 427,711
Firearm, H. M. Caldwell ... 427,833
Fireplace heater, T. B. Jackson ... 427,767
Fish line float, G. T. Bond ... 427,730
Fodder cutter, R. B. Killin ... 427,769
Folding chair, A. B. Albert ... 428,032
Folding chair, W. B. Botsford ... 427,964
Folding table and step ladder, combined, L. Tobey ... 427,935
Food compound or condiment, M. B. Manwaring ... 427,779
Frogs, guard rails, and switches, foot guard for, E. S. Mahoney ... 427,884
Fruit grader, W. C. Hamilton ... 427,687
Funnel, adjustable, J. Jones ... 427,874
Furnace. See Glass furnace.
Fuse block, C. F. Brush ... 427,518
Fuse plug, W. A. Anthony ... 427,823
Gaining machine, J. W. Baker ... 428,034
Gas, apparatus for the manufacture of, W. M. Cosh ... 427,747
Gas burner for heating or cooking, G. E. Wright ... 427,651
Gas regulator, C. G. Dyott ... 427,979
Gate, A. M. Spaulding ... 427,926
Gate, L. W. Webb ... 427,647
Generator. See Electric generator.
Glass furnace, J. B. Archer ... 427,654
Glass leer, window, J. H. Lubbers ... 427,882
Governor, steam engine, C. J. Rinderknecht ... 427,615
Grain binder twine holder, D. Gabel ... 427,844
Grain drill, G. W. Kirkpatrick ... 428,002
Grinding machine, W. Porteous ... 427,904
Ground detector, C. H. Macloskie ... 428,050
Guard. See Railway cattle guard.
Gun and operating mechanism, pneumatic, R. J. Gatling ... 427,848
Gun and torpedo boat, pneumatic, R. J. Gatling ... 427,847
Gun sight, aligned circular, P. Kottlors ... 428,004
Hame, M. V. Nichols ... 427,891
Hame fastener, E. Morgenroth ... 427,596
Hammer, E. Gartze ... 427,678
Hammock chair, L. L. Pearson ... 427,800
Hanger. See Paper bag hanger.
Harness, A. J. Smith ... 427,630
Harrow and cultivator, double side, M. B. Gooing ... 428,045
Harrow, disk, A. J. Glass ... 427,854
Harrow, disk, S. J. Glass ... 427,855
Harrow, listing, Boyer & Bentley ... 427,731
Hat bodies, machine for pinning out, A. T. Clason ... 427,554
Hat sweats, attaching reed lining to, J. S. Hosmer ... 427,995
Hats, machine for rounding and planing the curled edges of, C. H. Reid ... 427,793
Hatchway gates, device for operating elevator, F. O. Kittredge ... 427,770
Heater. See Electric heater. Fireplace heater.
Heating buildings, device for, J. E. Stuart ... 427,634
Heel nailing machine, W. J. Fahnley ... 428,044
Hemp brake, J. J. Hawkins ... 427,764
Hemp cleaner, J. J. Hawkins ... 427,763
Hoisting and conveying machines, automatic dumping bucket for, A. E. Brown ... 427,830
Holdback, vehicle, J. H. Ormsby ... 427,894
Holder. See Book holder. Grain binder twine holder. Paper bag holder. Reel holder. Rein holder. Whetstone holder.
Hominy mill, J. Warrington ... 427,644
Horseshoe, J. Curtin ... 427,976
Hose band clamp, H. B. Sherman ... 427,709
Hose, etc., compound fabric for, B. L. Stowe ... 427,929
Hydrocarbon burner, J. Adams ... 427,819, 427,820, 427,946
Hydrocarbon burner, More & Rogers ... 427,595
Hydrocarbon burner, A. Noteman ... 427,893
Hydroquinone, obtaining permanent, K. Scholz ... 427,620
Ice cream freezer, A. L. Platt ... 427,901
Ice machine and method of operating same, Hildrup, Jr., & Butler ... 427,765
Incrustation preventive, J. W. Mitchell ... 428,015
Indicator. See Electric indicator. Speed indicator. Station indicator.
Ink well bracket, W. Lumley ... 427,883
Iron. See Curling iron.
Ironing board and support, A. M. Bennett ... 427,542
Jack. See Boot jack. Lifting jack.
Jar. See Slop jar.
Jeweler's case, C. F. D. Springfels ... 427,631
Jeweler's use, making ingots for, H. T. Smith ... 427,924
Journal, anti-friction bearing roller, B. Beaupre ... 427,539
Kiln. See Brick kiln. China firing kiln.
Knitting machine, circular, Martin & Gee ... 428,052
Knitting machine stopping mechanism, J. T. Ashworth ... 427,534
Lacing hooks with pyroxyline material, die for covering shoe, T. B. Benwell ... 427,958
Ladder and fire escape, extension, L. D. Knowles ... 427,771
Ladder, extension, V. Holmqvist ... 427,992
Lamp, G. Rose ... 427,912
Lamp, arc, P. Lange ... 428,008
Lamp, central draught, J. Jauch ... 427,870
Lamp shade, extensible, W. S. Berg ... 427,961
Lantern, G. P. Hobbs ... 428,047
Lantern for electric arc lights, G. W. Gwynn ... 427,986
Latch, door, D. S. Swarbrig ... 427,808
Lathe attachment, R. H. Hurlbut ... 427,869
Lathe for turning buttons, D. B. Shantz ... 427,919, 427,920
Lathe tool, W. Parteous ... 427,902
Lathing, metallic, G. Hayes ... 427,988, 427,989
Lead, making white, A. Orr ... 428,017
Leather skiving machine, F. L. Kuhn ... 427,579
Ledger, check, H. T. Leslie ... 428,009
Lever, reversing, F. M. Dwelley ... 427,560
Lifting, jack, F. D. Wallace ... 428,027
Lightning arrester, L. Bell ... 427,540
Lightning arrester, automatic, C. M. Griffin ... 427,984
Liquid holding vessel, S. R. Mace ... 428,013
Liquid releaser, automatic, K. F. Peterson ... 427,607, 427,608
Lock. See Combination lock. Pocketbook snap lock.
Lock, C. E. Hennies ... 427,865
Locomotive smoke and steam discharge, Cram & Roberts ... 427,673
Lubricator, E. Huber ... 427,575
Magnet, electro, F. J. Patten ... 427,606
Mail bag staple, F. W. Smith ... 427,923
Mail pouch, B. Edgar ... 427,676
Match safe, G. W. Baker ... 427,824
Matrix machine, C. L. Travis ... 427,717
Measuring and registering electric energy, S. C. C. Currie ... 427,749
Medicine, antiseptic lotion, J. Alson ... 428,033
Metal can, box, or other receptacle, G. A. Waeber (r) ... 11,07[illegible]
Metals, treating, H. K. Jones ... 427,769
Metallurgical apparatus, W. H. Masser ... 427,701
Meter. See Electric meter.
Mill. See Crushing mill. Hominy mill. Windmill.
Mining machine, coal, W. Job ... 427,871
Moulding machinery, B. F. Rittenhouse ... 427,708
Monkey wrench, H. B. Cary ... 427,672
Mop wringer, F. J. Wood ... 427,817
Motion, apparatus for the transmission of rotary, A. H. Hamon ... 427,987
Motor. See Current motor.
Mowing and reaping machines, pitman holder for, G. H. Bartlett ... 427,536
Mowing machine, Gray & Estep ... 427,857
Mowing machine, J. A. Peer ... 428,018
Mowing machine frame, G. H. Bartlett ... 427,537

Mucilage or paste distributer, M. J. Palson 427,897
Multiple switch board, C. E. Scribner 427,917
Multiple switch board test circuit, C. E. Scribner, 427,623, 427,624
Multiple switch board test system, C. E. Scribner. 427,621
Music rack, D. L. Rice 427,614
Musical instrument bead, J. Bohmann 427,862
Nail plate feeder, R. Hersey 427,866
Non-conducting covering, J. L. Stillman 427,928
Nut lock, E R. Procter 427,611
Nut lock, J. G. Wenninger 427,718
Oar or paddle, submerged folding, Dice & Houck. 427,842
Opera chair, H. J. Harwood 427,570
Ore concentrator, S. L. Burke 427,551
Oven, revolving self-basting, J. W. Carpenter 427,671
Package, safety, S. Wales 427,643
Padlock, E E Dunn 427,754
Padlock, J. Ede 427,755
Padlock, F. Egge 427,843
Paint, etc., implement for removing, H. A. Gillis. 427,759
Paper bag hanger, W. B. Lawrence 427,583
Paper bag holder, W. B. Shafer 427,918
Paper bags, etc., mechanism for bundling, A. C. Getten 427,849
Paper basket, J. F. Donley 427,753
Paper making machine, S. Wilmot 427,943
Paper tubes, machine for making, E. D. McCracken 427,705
Pen attachment, fountain, L. Bernhard 427,959
Perfume ejector, coin-operated, F. W. Brooks 427,967
Piano, Davidson & Sigmund 427,840
Piano action, upright, Bunce & Benedict 427,667
Piano transposing keyboard, I. Boos 427,826
Pipe ball, S. J. Adams 427,722
Pipe or flue cleaner, Booz & Vandegrift 427,963
Pipe or tubing, J. C. Bayles 427,659
Pipe section, J. C. Bayles 427,658
Pipes, die for manufacturing earthenware, A. R. English 427,562
Planing machine, wood, C. Hammelmann 427,860
Plant protector, H. T. Shepherd 427,921
Planter, hand corn, J. M. Segur 427,625
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Puller. See Cork puller.
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