might last three or four hours. 3. Would the same run the simple electric motor described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 641? A. Yes. 4. How long would it run the motor? A. Three or four hours or longer. 5. How many six candle lamps will it run, and for what length of time? A. It would run one six-candle lamp about the same time, etc., as two three-candle lamps.

(10) A. O. writes: When a vessel is making a circle, where does she pivot? Some claim that the bow remains stationary and the stern does all the swinging, while others claim that both bow and stern swing, perhaps not equally—that the pivoting point comes nearer amidships. A. A vessel freely swinging under a previous momentum turns upon her center of gravity. The action of the rudder in turning a vessel under a previous momentum carries the pivoting point forward according to the intensity of its action. If under motion by side wheels, the pivoting point is carried back of the center of gravity by the action of the strong current from the wheels, while a propeller turns on a point far forward of the center, and if confined at the bow will quickly move around the bow as a center.

(11) R. K.—Three to five pounds pressure is sufficient for steam cooking of vegetables where the steam is in contact. Less pressure is often used in this way for light cooking. You can make a strong plank tub, well hooped and stayed in a frame that also holds the cover down, that will stand a half to 1 pound pressure per square inch. As you do not give the required size of the chest or box, we cannot further advise.

(12) F. M. D.—You cannot glue a piece of wood to iron that will stay for any length of time. The expansion and contraction of the wood by variations in the moisture of the atmosphere will soon pull the wood from the iron. The best way is to drill a few holes in the iron plate, and screw the board fast from beneath the iron plate.

(13) A. H. F. asks the horse power of an engine having 2½ inches stroke, diameter of piston being 1½ inches, at 50 pounds pressure, intended for running light canoe. Also necessary size of boiler and propeller. A. At 240 revolutions per minute, your engine will indicate ¼ horse power. You will need a boiler containing 5 square feet heating surface. A vertical tubular or a Shipman boiler is suitable for an atomizing burner. A screw wheel 10 inches in diameter with three blades will be suitable.

(14) M. asks: Is mineral water made of marble dust, acid, sirup, etc., injurious to the stomach? A. It is not generally considered so if not taken in excess. 2. What are the properties of quassia chips? How would you make a decoction of it, using one pound of chips? A. The properties of the quassia are those of the simple bitters, and as a medicine it is adapted to cure of dyspepsia and the debilitated state of the digestive organs which sometimes succeeds acute disease. Its preparations are officinal, and therefore we would refer you to the U. S. Pharmacopœia for their manufacture, as detailed descriptions are there given.

(15) L. B.—Yellow brass varies very much in its composition. A good dipping brass may be made with 6 ounces zinc to 1 pound of copper. A crisp, easily turned brass that takes a bright yellow dip is made with 8 ounces zinc to 1 pound copper. The best brass for fine finish and color should have 4 ounces zinc to 1 pound copper.

(16) J. A. H. asks the component parts of a cement that will mend terra cotta pipe so it will resist moisture. A. We know of nothing better than pure Portland cement. If a stronger and harder cement is required, a little water glass or soluble silica is mixed with the cement and quickly used, as it soon sets.

(17) C. B. A.—Consult Arlot's "Complete Guide for Coach Painters," which we mail for $1.25.

(18) C. R. S. asks: 1. Is tricopherous, as a head wash for dandruff, injurious or not? A. Barry's tricopherous is not injurious, and is composed of castor oil ½ pint, 95 per cent alcohol ½ pint, tincture cantharides ½ ounce, oil of bergamot 2 drachms. Color pink with a little alkanet root. 2. What is a good cure for dandruff or method of cleaning scalp? A. To remove dandruff dissolve a thimbleful of refined borax in a teacupful of water; first brush the head well, then wet a brush and apply the mixture to the head. Do this everyday for a week, then less frequently.

(19) W. D. S. asks a process for cleaning oily waste so that it can be used again. A. We know of no better process than to boil the waste in a solution of sal soda strong enough to take up the oil and convert it into a soap, when the waste can be rinsed in clean water, wrung out, and dried.

(20) G. S. asks: 1. In making the simple electric motor into a dynamo, how many layers deep and how many convolutions of No. 20 cotton-covered wire do I want to use in winding the armature? A. Use 8 layers of No. 20 wire on your armature. 2. How do I want to connect it with the wires of the lamps, and what kind of a lamp do I want to use, and where can I get them? A. Connect the wires with the brushes, as in the case of the motor. Use Edison incandescent lamps of 5 or 6 candle power each. You can procure them from any dealer in electrical supplies. By a little experiment you can readily ascertain the best method of connecting up the lamps. 3. Whatspeed do I want to run the dynamo? A. You will have to determine by experiment. 4. Will the current be dangerous? A. No. 5. Will the field magnet have to be turned smooth in the inside for the armature run in? A. It should be bored out. 6. Can I paint the field magnet? A. Yes. 7. Can I use brass or iron boxes for the shaft instead of Babbitt, as I would like to have set screws to take up the wear? A. Yes.

(21) J. J. P. asks: 1. Would the armature of iron wire for the eight-light dynamo be as good as the one built up of iron washers? A. The difference would be slightly in favor of iron rings, if they were made of thin soft iron and separated by rings of tissue paper. The reason of the superiority lies in the fact that an armature core constructed of such rings would have no interspaces. 2. Would it not be better to leave off wooden sleeve and construct armature direct upon the shaft, and hold it in place by the notched end pieces screwed on to thread cut in shaft? A. There is no objection to your method of supporting the armature ring. We do not know that it would have any advantage in the small motor or dynamo.

(22) H. S. C. writes: 1. In the construction of the simple electric motor described in your issue of March 17, we have made the field magnet of Russian iron, as directed, but find trouble in making the strips lie closely together. Will a little space between the strips injure the efficiency of the motor? A. The spaces between the layers of the field magnets should be as small as possible. The spaces between the strips will impair the efficiency of the motor. 2. Also, will the field magnet be affected, if wound with iron wire to keep the strips together? A. We do not think it will materially affect the working of the motor to wind the field magnet with iron wire as you propose. 3. Cannot the armature ring be made of Russian iron like the field magnet? A. An armature core made of iron strips would be more or less affected by induction. 4. Also will you kindly give me a recipe for making asphaltum] varnish? A. Dissolve the asphaltum in turpentine.

(23) B. W. E. writes: We have a fine cut glass cologne decanter in which the stopper is firmly set, and all efforts to remove it have thus far proved fruitless. Can you suggest any way, as it seems a pity to break the decanter? Would also like to ask what results the great Lick telescope would give if used as a terrestrial glass? A. To remove the stopper fasten firmly both ends of a strong cord six feet long, so that it will hang nearly straight and horizontal. Wind it around the neck of the bottle, and keeping it very tight move the bottle back and forth. This will soon heat the neck, and then the stopper will come out. As a terrestrial glass the Lick telescope would doubtless give very remarkable results, owing to its high magnifying powers and large aperture.

(24) R. H. H. asks: Is there any method of computing the best size and length of wire in the secondary coil of an induction coil, the size and length of the wire in primary coil being known? A. There is no regular proportion. Such data are largely empirical, but electricians are approaching the development of reliable formulæ.

(25) C. V. writes: To-day I witnessed a man trying to find a vein of water by the aid of a crotch of alder wood. Every time he struck a vein or pretended to have, the crotch would bend over, and at times would even twist right off. Could you give me any information what causes the stick to bend over? A. The motion of the fingers, hands, or wrists effects the bending. Water has nothing to do with it.

(26) G. L. B. asks how the sulphide of phenyl is prepared, and if it is an article of commerce. A. By dry distillation of sodium benzole sulphonate. It is hardly an article of commerce.

(27) W. L. M. asks for a receipt for printing badges with gold leaf with hot type. A. The ribbon is dusted with resin, gold leaf is spread over it, and the letters are impressed with a hot iron or brass type. The resin melts and causes the leaf to adhere.

(28) W. H. W.—We have little confidence in any receipt for restoring burnt steel. By burning, the relation of the elements and the granulation become changed, and no ordinary application upon the surface will restore the internal structure. Better send it to the scrap heap or use it for some inferior purpose. If you desire to try and restore it, proceed as follows: Bring the steel to a red heat, sprinkle with a mixture of 8 parts red chromate of potassium, 4 parts saltpeter, 4 parts resin, thoroughly pulverized and mixed, and work the steel well under the hammer. For welding cast steel, use 10 parts borax, 3 parts sal ammoniac, 3 parts ferrocyanide potassium, ⅛ part of resin, well pulverized and mixed. Heat to drive off the water of crystallization of the borax, and again pulverize. Heat the steel to red and sprinkle with the mixture, then heat to full yellow and weld.

(29) O. R. asks: 1. What kind of cement would be best for building a pit in which to dissolve bones in sulphuric acid? A. Build the acid pit with trap rock, red sandstone, or very hard burned bricks and Portland cement. Plaster with Portland cement wet with water glass applied quickly, as it soon sets. Then for further acid-proofing apply a coat of paraffine melted to the surface by applying hot irons or a pan of hot coal close to it. If you wish to omit the water glass, an application of a paraffine coat directly upon the Portland cement, and combining it well with the cement by heat, may answer your purpose. 2. Is there any solution that will prevent the effects of sulphuric acid on cotton overalls? A. Rub paraffine all over the surface and melt it in with a hot iron as in ironing.

(30) W. H. P. asks a cheap process for bronzing small iron castings. Have tried shellac, but it went on uneven. A. Brown japan varnish thinned with turpentine to give the desired color makes a smooth and pretty finish for small castings. Tumble the castings in sawdust wet with sulphate of copper solution. Rinse in hot water, dry, and dip in a very thin shellac varnish. The goods should be hot (about 212°) when varnished with shellac. A little gum dragon blood improves the shellac varnish. The great trouble with amateurs comes from the use of too thick varnish.

(31) W. S. R. asks what kind of small appliances to get to melt brass in small quantity, say one pound or half pound quantities, for making small castings, and what is the best substance to use for moulds for making small, fine castings. A. You will need a black lead crucible of a size to hold the half pound or pound of metal, and a small pair of jeweler's tongs to handle the crucible. Any cylinder stove with a good chimney draught will answer the purpose of a furnace. Set the crucible about 4 in. above the grate, and fill up around with coal (stove size). Let the fire burn up for a few minutes and feed in the brass in small pieces, or such as will drop into the crucible, with the tongs. Place a large piece of charcoal over the crucible, give the fire its best draught, and the metal will soon melt. Mould your work in fine moulding sand, such as used by brass founders. You can obtain what you need at a foundry. If possible, go to a brass foundry and inspect the operation of moulding and casting before making the trial. To post you in all the particulars, get the "Brass Founder's Manual," by Graham, which we can mail to you for $1.00.

(32) T. J. V.—For a good and lasting roof paint, that will not run in summer or crack in winter, take equal parts by measure of any two earth colors, as pulverized slate, pulverized mica schist, or any of the cheap dry paints commonly used for painting barns and fences, to suit your taste as to color, and add half the bulk of the two kinds of paint in pulverized resin. Thoroughly mix and add an equal bulk of pure coal tar, which you may obtain through the paint trade. Boil and stir until the resin is thoroughly melted and the whole mixed to a uniform fluid mass. The quantity of coal tar may be varied to facilitate application with a brush.

(33) Dr. H. S. asks for the definition of the word myoma. A. Myoma is a term applied by Professor Virchow to a variety of sarcoma (or flesh tumor) which is mixed with striped muscular fiber. It is very fatal if not promptly excised.

(34) C. H. S.— One of the fundamental propositions of geometry proves that the areas of polygons increase with the number of their sides for given perimeters. Hence a circle, which is a polygon of an infinite number of sides, has the greatest possible area within its perimeter. Your scheme of raising water to a height of 200 feet with compressed air is not practicable. It will take 90 pounds pressure, or 13 cubic feet of air compressed to 1 cubic foot, to sustain the column. It will then take an equal bulk of compressed air to lift a given bulk of water without friction. The compression of the air to so great a pressure is the stumbling block to this kind of work. For table of compression of air, see SCIENTIFIC AMERICAN SUPPLEMENT, No. 279, and for the theory of compression, SCIENTIFIC AMERICAN SUPPLEMENT, No. 323, both most interesting and valuable papers.

(35) H. S.—The plant was so decayed and mouldy when it arrived as to render recognition impossible.

(36) C. H. E. asks a receipt for making a cold tinning solution for brightening articles made of tinned wire that have become dimmed. A. For this process the articles must be thoroughly cleaned by boiling in alkali, washing, or sand scrubbing, then immersing in a tin bath, which may be made with 10 ounces dry tin salt (chloride of tin), 10 ounces alum, 7 ounces cream of tartar, 20 gallons of water, or in proportion for smaller quantities. A strip of pure tin (block tin) should be attached to the articles when immersed. Articles to remain in bath from 1 to 8 hours, according to thickness of tinning required. Wood or stoneware should be used for holding the solution. You can obtain the chloride of tin through the drug trade.

(37) A. C. B.—The mathematical center of revolution or axis is an imaginary line through all revolving bodies. It is not necessarily endowed with motion. The material or physical properties of all material bodies in revolution move on a mathematical center; even the molecule on the center turns.

(38) C. W. G. asks how to convert malleable casting into steel before being annealed or after annealed. A. Malleable castings pass through the condition of a steel casting during the annealing process. By arresting this process before it is finished, the metal will be found to have some of the properties of steel. The annealed castings may also be recarbonized by cementation.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

July 3, 1888,

AND EACH BEARING THAT DATE.

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

Aluminum chloride, obtaining, C. A. Faure..... 385,345
Animal releasing device, W. N. Howden..... 385,471
Animal trap, G. J. McMillan..... 385,421
Auger handle, H. Naylor..... 385,475
Automatic lubricator, T. Nopper..... 385,369
Axle collar press, A. Paterson..... 385,371
Baling press, A. Jarrard..... 385,355
Barrow, hand, J. P. Friend..... 385,609
Basket, folding, Kelly & Freeman..... 385,633
Bath. See Photographic bath.
Battery. See Secondary battery. Secondary or storage electric battery.
Batteries, porous cup for galvanic, A. K. Eaton... 385,844
Beam, composite, H. C. Hodges..... 385,624
Beehive, R. C. Smith..... 385,685
Bell, door or alarm, F. Sanderson..... 385,574
Bell ringer, steam, G. B. Snow..... 385,590
Belt, medicated electric, C. U. Hoke..... 385,556
Belting, T. Gingras..... 385,613
Belting, machine, G. F. Page..... 385,632
Bicycles and other vehicles, alarm for, F. M. Demarest..... 385,547
Billiard table, W. P. Flint..... 385,346
Binder, temporary, F. W. Barrett..... 385,339
Bird cages, cuttle bone and food holder for, J. V. Wemple..... 385,650
Blanket case, W. G. Northup..... 385,422
Blind slat and operating rod, F. W. Wright..... 385,659
Blinds, hanging and operating Venetian, F. W. Wright..... 385,654
Boat detaching apparatus, H. E. Foster..... 385,608
Bobbin, C. Hardy..... 385,667
Boiler. See Steam boiler.
Boiler furnace, steam, J. F. Clark..... 385,444
Boiler furnace, steam, J. T. & J. H. Ellis..... 385,509
Bomb lance, Luscomb & Corey..... 385,416
Book, bank account, W. Thomson..... 385,648
Book, letter copying, H. M. Underwood..... 385,433
Book support, J. B. Cline..... 385,445
Boot or shoe last, W. R. Chase..... 385,502
Boot or shoe sole, J. Booth..... 385,402
Boot or shoe stretcher, J. Donovan..... 385,508
Box. See Journal box. Knockdown box. Paper box.
Bracket. See Lamp bracket.
Braiding machine, J. McCahey..... 385,364
Brake. See Velocipede brake.
Brake shoe, P. Brownley..... 385,659
Brick cutting and sanding machine, P. G. Zouck.. 385,398
Brick machine, W. L. Gregg..... 385,614
Brick, manufacturing, W. L. Gregg..... 385,615
Brick mould, J. Grant..... 385,552
Buckle, J. Cain..... 385,591
Buckle, D. L. Smith..... 385,578
Buckle, E. H. Wheeler..... 385,651
Buckle, double loop, J. C. Hackett..... 385,618
Burner. See Gas burner.
Cabinet for holding account slips, J. R. Coddington..... 385,341
Can. See Oiling can.
Can nozzle, oil, E. A. Deverall..... 385,447
Candy machine, G. Tschinkel..... 385,487
Car coupling, M. W. Brown..... 385,658
Car coupling, S. Byrne..... 385,500
Car coupling, C. R. Cook..... 385,505
Car coupling, S. E. Davidson..... 385,598
Car bell strap, J. Armand..... 385,337
Car heater, railway, A. R. Thompson..... 385,534
Car motor, street, J. Kahn..... 385,651
Car, safety express, S. Workman..... 385,396
Cars, treasure vault for railway, Olsson & Storey.. 385,640
Carburetor, J. Stubbers..... 385,485
Carpet fastener, T. D. Hammond..... 385,554
Carpet stretcher, S. S. Pearl..... 385,372
Carriage top, E. B. Goelet..... 385,454
Carrier. See Egg carrier. Surgeon's suture carrier.
Cartridge, accelerating, Ewbank & Everdell..... 385,603
Cartridge loader, A. S. Gibson..... 385,611
Case. See Blanket case. Watch case.
Cash delivery device, S. E. Fish..... 385,665
Casting bells, mould for, G. Campbell..... 385,443
Chains and links, electrically welding, E. Thomson..... 385,385
Chair. See Dental operating chair.
Checkrein loops or bars, attachment for, H. Lowe..... 385,463
Chimney protector, W. Van Gaasbeek..... 385,489
Chuck, lathe, F. Muller..... 385,474
Churn, W. B. Grimes..... 385,617
Churn dasher, T. H. Hanlin..... 385,351
Clamp. See Sewing machine clamp.
Clamp for hoops or bands, J. W. Callahan..... 385,501
Cleaner. See Lamp chimney cleaner.
Clip. See Music clip.
Clock, advertising, A. V. Strait..... 385,430
Closet. See Water closet.
Clothes line, J. S. Wailes..... 385,686
Coal, etc., apparatus for winning, T. Archer, Jr... 385,655
Coffer dam, A. Kirk..... 385,858
Combing machine, wool, H. Wyman..... 385,690
Commode, W. R. Wythe..... 385,495
Copying press, J. P. Johnson..... 385,356
Corset, J. Koon..... 385,559
Cotton waste picker and lapper, combined, W. H. Goldsmith..... 385,455
Coupling. See Car coupling. Thill coupling.
Crossheads, adjustable tapered wrist pin for, T. L. Russell..... 385,526
Cuff supporter, M. N. Nixon..... 385,681
Culinary utensil, C. F. Whitney..... 385,688
Cultivator, W. S. Templin..... 385,646
Cultivator, wheat and corn, W. H. Horn..... 385,670
Cut-out, C. D. Wright..... 385,494
Cutter bar keeper, adjustable, Crist & Alexander. 385,446
Demijohn, covered, G. W. Banker..... 385,438
Dental operating chair, W. D. Mayfield..... 385,468
Die. See Relief die.
Display frame, merchant's, G. E. Fuller..... 385,411
Distillation, alcoholic, W. L. Horne..... 385,625
Distillation of liquids and gases, rectifying column for the, W. E. Colwell..... 385,504
Door, S. V. Merriman..... 385,566
Door check, J. A. Bachman..... 385,400
Door check, W. D. Dunlap..... 385,599
Door fastener, sliding, H. A. Gehret..... 385,550
Door mat, H. E. Laughlin..... 385,561
Dress shield former, Smith, Jr., & Williamson..... 385,645
Drum, heating, W. M. Burns..... 385,499
Dust conveyer, N. A. Broska..... 385,590
Dyeing, J. C. Pennington..... 385,426
Easel, W. H. Van Wart..... 385,536
Egg carrier, A. L. Ellis..... 385,450
Egg case fastener, W. M. Castlio..... 385,593
Electric machine, dynamo, A. Harding..... 385,458
Electric meter, E. Thomson..... 385,647
Electric motor and dynamo machine, O. Lugo..... 385,675
Electric switch, E. F. Bergman..... 385,539
Engine, C. C. Worthington..... 385,397
Envelope machine, A. A. Rheutan..... 385,524, 385,525
Excavating and pipe laying machine, W. Watson. 385,435
Extractor. See See Stump extractor.
Fabric. See Knit fabric.
Farm gate, C. P. Howe..... 385,626
Feed water regulator, W. Thompson..... 385,387
Fence, D. B. Matlock..... 385,466, 385,467
Fence, portable, A. Shrader..... 385,531
Fence post, stub, J. Mahon..... 385,418
File, bank check, F. A. Jacob *et al*..... 385,415
Filter, C. Birkery..... 385,440
Firearms, charge indicator for breech-loading, D. M. Lefever..... 385,360
Fire engine lighter, P. R. Martin..... 385,419
Fire escape, S. Leivy..... 385,361
Fire extinguisher, chemical, W. H. Cummings.... 385,661
Fire extinguishers, syringe for hand, A. L. Pitney..... 385,477
Fireplaces, apparatus for preventing smoking in, A. Gassis..... 385,610
Frame. See Display frame.
Furnace. See Boiler furnace. Smelting furnace.
Furnace, Herrman & Cohen..... 385,623

Gaiter, congress, L. J. Loud ... 385,518
Gas burner, S. Henry ... 385,669
Gate. See Farm gate.
Gate, L. G. Knowles ... 385,517
Gate, W. H. Ringle ... 385,479
Generator. See Steam generator.
Glycerine from spent soap lyes, recovering, E. K. Mitting ... 385,367
Governor, J. W. Thompson ... 385,535
Grain adjuster for binders, H. O. Roberts ... 385,375
Grain separator and grader, E. N. Pugh ... 385,427
Grain or hay stacker, D. McRae ... 385,470
Grain separator, E. C. Manning ... 385,563
Gravel fountain spring, G. W. Goad, Sr ... 385,349
Grinding machine, G. A. Hadley ... 385,666
Guard. See Pie guard.
Halter, C. C. Cook ... 385,544
Hammer, power, H. J. Bierhart ... 385,540
Handle. See Auger handle.
Harmonica holder, W. E. Mullhollan ... 385,473
Harrow and pulverizer, combined, J. F. Stark ... 385,382
Harvester, corn, W. H. Karicofe ... 385,632
Harvesters, folding platform for, S. F. Voorhees ... 385,537
Hat wire, F. D. Fry ... 385,410
Hay rake, horse, A. F. Fairchild ... 385,604
Headwear, lady's, A. Schultz ... 385,643
Heat collecting and diffusing apparatus, T. Pickup ... 385,571
Heater. See Car heater.
Heating system, central station, Abbot & Knaak ... 385,399
Hoisting and moving earth, apparatus for, J. Ryan ... 385,527
Holder. See Harmonica holder. Lamp holder. Lamp shade or globe holder. Sash holder.
Hook. See Snap hook.
Horse detacher, W. B. Walker ... 385,490
Horse power, A. R. Vary ... 385,392
Hub attaching device, E. Partridge ... 385,641
Hydraulic step, F. G. Hesse ... 385,460
Insecticide, M. Ongerth ... 385,423
Insulated conductor, C. C. Sibley ... 385,576
Iron. See Sad iron.
Journal box, W. K. Christie ... 385,503
Kilns, ventilating grate for open air, C. M. Snyder ... 385,581
Knapsack, H. Blanchard ... 385,657
Knapsacks, etc., frame for carrying, A. Sohner ... 385,429
Knit fabric, L. E. Salisbury ... 385,481
Knockdown box or package, A. L. Ellis ... 385,451
Lamp bracket, A. Thurber ... 385,436
Lamp, carbureting gas, A. Kitson ... 385,673
Lamp chimney cleaner, E. W. Benway ... 385,439
Lamp holder, E. F. Pierce ... 385,522
Lamp, magnesium, T. Weisser ... 385,393
Lamp, regenerative gas, E. Stein ... 385,383
Lamp shade or globe holder, Gleason & Gennert ... 385,453
Lamp socket, electric, Adams & Morrell ... 385,436
Lamp, standard, W. A. Penfield ... 385,569
Lamps, suspension arm for electric, J. J. Wood ... 385,493
Last, H. G. Locke ... 385,362
Last standard, B. C. Kaskell ... 385,514
Lasting maching, J. Q. A. Houghton ... 385,557
Lathing, machine for making metallic, A. Ekstrom ... 385,663
Lathing, machine for slitting metallic sheets for metallic, J. R. Branden ... 385,405
Leather, apparatus for the manufacture of, W. Schweickhardt ... 385,644
Leather turning machine, Q. W. Booth ... 385,497
Level, spirit, J. C. Hutton ... 385,516
Levels, reflector for spirit, L. Crouse ... 385,597
Lock. See Navigation lock. Nut lock.
Loom shedding mechanism, H. Wyman ... 385,691
Loom shuttle binder, H. Bardsley ... 385,338
Lubricator. See Automatic lubricator.
Lubricator, W. H. Farrell ... 385,605
Mat. See Door mat.
Mechanical movement, J. F. Schoettes ... 385,377
Metal galvanizing apparatus, R. Grey ... 385,616
Metal hardening device, J. G. Folsom ... 385,347
Meter. See Electric meter.
Mill. See Paint mill. Roller mill. Rolling mill.
Miners' car checks or labels, fastening for, H. Corrigan ... 385,407
Mould. See Brick mould.
Mop wringer, H. L. Ennes ... 385,601
Motion, device for converting, R. Brotherton, Jr. ... 385,406
Motor. See Car motor. Electric motor.
Motor, Bailey & Leibersperger ... 385,583
Mowing machine, I. T. Jaques ... 385,354
Music clip and bow guide, combined, W. H. Pike ... 385,642
Nails, making cut, R. H. Plass ... 385,373
Navigation lock, A. Kirk ... 385,359
Necktie fastening, D. Isakovitz ... 385,629
Nozzle, B. Wright ... 385,653
Nut lock, R. W. Burton ... 385,442
Oiling can, J. W. MacDonald ... 385,417
Operating table and desk, surgeon's combined, E. L. Cowles ... 385,545
Ores and other materials, machine for reducing, G. Conkling ... 385,596
Ore concentrating apparatus, G. F. Gould ... 385,551
Ore jigger, Hodgson & Safford ... 385,515
Paint mill, J. Briggs ... 385,441
Paper box, folding, D. J. Rex ... 385,478
Paper vessels, machine for forming, A. J. Grinnell ... 385,553
Patterns for garments, making, F. X. Ledoux ... 385,637
Pens, packing and guard for stylographic, R. H. Disney ... 385,448
Photographic bath, mechanical, H. Ford ... 385,507
Photographic cameras, finder for, W. Harkness ... 385,513
Photographic shutter, F. M. Spaulding ... 385,483
Piano, F. G. Smith ... 385,380
Pie guard, pastry, L. Lucas ... 385,683
Pigs' feet, machine for cleaning, W. Archdeacon ... 385,336
Pipe wrench, B. F. Chappell ... 385,595
Pipes by electricity, joining, E. Thomson ... 385,384
Pipes, device for removing water from gas and other, J. F. Shay ... 385,378
Planter, D. M. Parry ... 385,568
Planter, E. Tyden ... 385,583
Planter, hand, S. Hackett ... 385,511
Plow point, W. E. Sefton ... 385,529
Plows, machinery for operating steam, G. W. Morris ... 385,520
Pocketbooks, satchels, etc., frame for, L. Messer ... 385,639
Post. See Fence post.
Powder duster, L. W. Grasnick ... 385,456
Power. See Horse power.
Press. See Axle collar press. Baling press. Copying press.
Press, G. B. Boomer ... 385,541
Printing machine, D. Carlaw ... 385,592
Protector. See Chimney protector.
Pulverizer, clay, J. & H. M. Creager ... 385,342
Punch, J. J. Walton ... 385,687
Pyrotechnic signal, G. A. Mannie ... 385,562
Radiator, hot water, C. S. West ... 385,384
Radiator, hot water and steam, C. W. Newton ... 385,679
Rail frog, spring, W. A. Chapman ... 385,594
Rails, switch rails, or frogs, fastening block for guard, Moore & Paulus ... 385,472
Railway cross tie, D. Y. Wilson ... 385,492
Railway, electric, R. M. Hunter ... 385,672
Railway power and lighting appliance, electric, I. W. Heysinger ... 385,413
Railway rails, device for securing wire to, Stitzel & Weinedel ... 385,484
Railway signal, A. F. Martel ... 385,677
Railways, current collector for series electric, S. H. Short ... 385,379
Railway, metallic tie or sleeper for, R. T. White ... 385,395
Rake. See Hay rake.
Ratchet drill stock, W. Coppage ... 385,660
Razor, safety, F. R. & O. Kampfe ... 385,462
Razor, safety, H. B. Leach ... 385,636
Regulator. See Feed water regulator.
Relasting machine, W. E. Sargent ... 385,396
Relief die and making the same, G. F. & J. W. McIndoe ... 385,519
Roadways, composition for, L. N. Beauchemin ... 385,496
Roller mill, J. D. Mawhood ... 385,420
Rolling mill guide, J. W. Walsh ... 385,434
Rolling mill, metal working, S. W. Baldwin ... 385,437
Roofing, metal, A. A. Cushman ... 385,408
Rowing apparatus, R. Masay ... 385,465
Ruler, parallel, B. F. Hardaway ... 385,512
Sad iron, Michels, & Klemmer ... 385,365
Sash fastener, A. R. Dickinson ... 385,548
Sash fastener, F. A. Henninger ... 385,668
Sash fastener, H. A. Holt ... 385,461
Sash, hinged window, W. L. Silbereisen ... 385,575
Sash holder, Meyers & Wittel ... 385,368
Sawmill carriage, D. C. Prescott ... 385,523
Saw, tree felling, W. A. Van Benthuysen ... 385,488
Sawing machine, G. McCormick ... 385,469
Scales, price indicator for weighing, C. P. Lancaster ... 385,635
Screwdrivers, bits, etc., brace for, G. W. Huber ... 385,414
Secondary battery, F. King ... 385,558
Secondary or storage electric battery, S. L. Trippe ... 385,390
Separator. See Grain separator.
Sewing machine clamp, buttonhole, W. Wallick ... 385,585
Sewing machine tucking guide, A. Laubscher ... 385,560
Shaft, vehicle, G. F. McGill ... 385,564
Shafts, device for imparting end motion to, S. Tompkins ... 385,649
Shearing and punching machine, C. C. Echols ... 385,662
Shelves, etc., support for, J. Seyster ... 385,538
Ship for submarine observation, R. F. S. Belisle ... 385,656
Ships, etc., leak stopper for, J. Richardson ... 385,572
Shutter worker, W. H. Hendrick ... 385,459
Signal. See Pyrotechnic signal. Railway signal. Switch signal.
Signal circuit, test, C. E. Scribner ... 385,482
Signal transmitter, electric, W. C. Thompson ... 385,388
Skylights, conservatories, etc., bar for, G. Haves ... 385,352
Sled, coasting, J. D. Wilson ... 385,652
Smelting furnace, O. B. Peck ... 385,424
Snap hook, E. A. & D. L. Smith ... 385,579
Speaking and signal apparatus, combined, J. E. Kelly ... 385,357
Spoke socket, J. T. Gormly ... 385,412
Spooling machines, etc., bobbin supporting spindle for, J. F. Nichols ... 385,680
Spring. See Vehicle bolster spring.
Spring jack switch, C. E. Scribner ... 385,528
Stamp, hand, J. S. Trimble ... 385,432
Stave shaping and gauging machine, F. Myers ... 385,678
Steam boiler, J. A. Eno ... 385,510
Steam generator, O. B. Peck ... 385,425
Stone and ore crushing and pulverizing machine, F. B. & A. H. Meech ... 385,638
Stove, car, M. F. Helmer ... 385,555
Stove, car, W. P. Wheeler ... 385,491
Stove, safety car, J. S. Roblin ... 385,428
Stoves, oven for gasoline, gas, or coil oil, A. Geisel ... 385,348
Strainer, milk, A. Thomson ... 385,582
Strap. See Car bell strap.
Straw stacker, A. Lammedee ... 385,634
Street washer, non-freezing, C. G. Ette ... 385,602
Stump extractor, A. C. Hall ... 385,457
Stump extractor and log mover, Burke & Krueger ... 385,340
Supporter. See Cuff supporter.
Surgeon's splint, W. H. De Camp ... 385,507
Surgeon's suture carrier, J. T. Woods ... 385,586
Switch. See Electric switch. Spring jack switch.
Switch signal, A. F. Martel ... 385,363
Table. See Billiard table. Operating table.
Tap with detachable cutters, A. M. Burritt ... 385,543
Targets, projectile receiver for, O. H. Decumbus ... 385,546
Telephone transmitter, J. Emmner, Jr ... 385,664
Thill coupling, G. C. Bostwick ... 385,589
Thill coupling, P. A. Reidy ... 385,374
Thrasher and steam engine, combined, E. Howland ... 385,627
Tie. See Railway cross tie.
Tile, A. Diedrich ... 385,343
Tire setting and cooling machine, J. H. Williams ... 385,538
Tires, apparatus for heating wagon, J. F. Walker ... 385,584
Tobacco pouches, manufacture of, J. G. Ingram ... 385,628
Tongs, culinary spring, G. Brinton ... 385,498
Toy vehicles, axle for, L. Frank ... 385,452
Trap. See Animal trap.
Trees, device for fumigating, L. H. Titus ... 385,389
Tripod head, C. D. Oatman ... 385,567
Truck, locomotive, A. C. Packer ... 385,476
Truck, traction, G. H. Edwards ... 385,449
Trunk, W. J. Boynton ... 385,404
Truss, B. F. Atkinson ... 385,587
Truss, O. M. Robinson ... 385,573
Type writer, electro-mechanical, J. F. McLaughlin ... 385,565
Type writing machines, ink ribbon for, Underwood & Brookes ... 385,391
Underwaist, E. W. Philbrook ... 385,570
Valve, H. S. Park ... 385,521
Valve and valve gear, E. F. Spaulding ... 385,533
Valve mechanism for oscillating engines, W. B. Coulter ... 385,506
Valve, regulating, M. O. Haldeman ... 385,619
Valve rods, disconnecting device for, T. C. Dill ... 385,549
Valve, slide, W. J. Thomas ... 385,431
Vehicle bolster spring, Jackson & Harvey ... 385,630
Velocipede, C. F. Hadley ... 385,350
Velocipede, H. B. Hart ... 385,620
Velocipede brake, Overman & Hadley ... 385,370
Velocipede saddle, L. Boudreau ... 385,403
Velocipede saddle, W. L. Fish ... 385,606
Vending apparatus, D. W. Shiek ... 385,575
Veterinary surgical instrument, J. Hilton ... 385,353
Walking beam saddle, D. H. Bumpus ... 385,542
Washer. See Street washer. Wide range yielding washer.
Washing machine, H. T. Henderson ... 385,622
Watch case, C. K. Giles ... 385,612
Water closet, A. Elmendorf ... 385,409
Waterproof composition for floors, walls, etc., C. V. Mittge ... 385,471
Weighing grain, machine for, Solon & McMahon ... 385,532
Welding machine, direct-electric, E. Thomson ... 385,386
Well boring machine, hydraulic, G. W. Durbrow ... 385,600
Wheel. See Wind wheel.
Wheelbarrow, C. D. Spalding ... 385,381
Wide range yielding washer, H. A. Harvey ... 385,621
Wind wheel, W. W. Lockwood ... 385,674
Winding quills and bobbins, machine for, V. Royle ... 385,480
Windmill, F. Boccard ... 385,401
Windmill, J. S. Marshall ... 385,676
Wire spooling machine, W. H. Sawyer ... 385,684
Wrench. See Pipe wrench.
Wrench, R. L. Mabrey ... 385,464
Wrench, J. P. Mitchell ... 385,366
Wringer. See Mop wringer.

DESIGNS.

Bottle, nursing, A. Geyer ... 18,420
Cigar lighter and cutter stand, J. Kaufmann ... 18,421
Glove, C. P. Button ... 18,417
Padlock case, J. J. Tower ... 18,436
Register front, hot air, E. Shenton ... 18,435
Rug, J. Pegel ... 18,431 to 18,433
Rug, A. Weiss ... 18,437 to 18,439
Stove, heating, King & Wilkinson ... 18,422
Trimming, dress, A. V. Schoonmaker ... 18,434
Upholstery fabric, G. A. Crisson ... 18,418, 18,419
Walls, surface ornamentation of, F. Koskul, 18,423 to 18,430

TRADE MARKS.

Alloy for jewelry, J. Muhr ... 15,658
Baking powder, H. W. Mott ... 15,657
Bells, electric, J. F. Wollensak ... 15,664
Butter in prints, S. T. Edel, Sr ... 15,652
Chocolate, C. Alden's, H. L. Pierce ... 15,660
Corsets, W. I. Allen ... 15,649
Extracts or sirups for making a beverage, Coffin & Wood Chemical Company ... 15,650
Goods, dress, R. B. MacLea & Co. ... 15,655
Medical sompounds, certain named, W. B. Riker & Son ... 15,661
Needles, H. Milward & Sons ... 15,656
Porter, ale, stout, lager beer, and soda and mineral waters, W. F. Hollwedel ... 15,654
Razors, Son Brothers & Co. ... 15,663
Remedy for dyspepsia, liver complaint, and consumption, J. L. Connelly ... 15,651
Shoe dressing, liquid, R. F. S. Heath ... 15,653
Skates, C. L. Peirce ... 15,653
Transom lifters, J. F. Wollensak ... 15,665
Whisky, M. Shaughnessy & Co ... 15,662

A printed copy of the specification and drawing of any patent in the foregoing list will be furnished from this office for 25 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York.

Canadian Patents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are simple, at a cost of $40 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.

Advertisements.

Inside Page, each insertion - - - 75 cents a line.
Back Page, each insertion - - - $1.00 a line.

The above are charges per agate line—about eight words per line. This notice shows the width of the line, and is set in agate type. Engravings may head advertisements at the same rate per agate line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.