

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 This is for our information, and not for publication.

(1) L. Z. asks: 1. Does a lion belong to the cat or dog family? A. The cat family. 2. Why is it necessary to have the pneumatic gun, described in SCIENTIFIC AMERICAN of October 31, 1885, so long in construction, and was there ever any other projectile tried than the one described in the same issue? A. The gun is required to be of considerable length to realize the full expansive force of the air.

(2) J. R. asks if glass is porous? A. According to the usual understanding of the word "porous," glass is not porous.

(3) A. F. H. asks: Is it an essential in a dynamo, substantially after the Siemens pattern, that the armature coil should be wound upon iron? Will not a wood core answer the purpose? A. A current can be generated in an armature without an iron core, but it will be very weak. The iron core seems to be necessary for the production of strong currents.

(4) N. J. asks: 1. What is the temperature kept up in the so-called "flasher" engines (i. e. steam engines without a boiler, where the steam required for each stroke is generated by injecting a small quantity of water into a heated vessel)? If above 350°, how is it that the water does not assume the spheroidal shape? A. The temperature may vary between wide limits. To generate a pressure of 100 pounds to an inch a temperature of 320° Fah. must be maintained. With sufficient heat, the water would assume a spheroidal condition. 2. "Flasher" engines are said to be impracticable, on account of their rapid destruction. In which way does this destruction take place? Is it owing to the rapid succession of high pressure and low pressure in the heated vessel, thus loosening the joints, and tending to tear the vessel, or is it the surface action on the heated brass, where the water spray strikes it? And if so, is the abrasion of the surface of the brass due to the mechanical action or to increased chemical action of the water jet? A. The rapid destruction of such engines is due to the oxidation of the steam generator.

(5) C. E. M. asks for information for making pocket battery for Edison's incandescent light. Explain theory of Holtz electrical machine. A. A battery which will operate a small Edison lamp for a short time, say a half hour or so, may be made by using two elements, each composed of one zinc rod, from 3/4 to 1 1/2 inch in diameter, and two carbon rods such as are used in electric lighting. The zinc must be amalgamated. The solution used is that formed of bichromate of potash, sulphuric acid, and water, which has been so often described in the Notes and Queries. For a description of Holtz electric machine consult SUPPLEMENT, Nos. 278, 279, 282, 701, and 321.

(6) F. J. S. writes: I am using a McIntosh galvanic battery, the hard rubber cups of which have become leaky; is there any way of repairing them? A. Stop the leaks with a cement composed of equal parts of gutta percha, brown pitch, and shellac.

(7) A. J. H. writes: 1. I have for some time been using glass lamp chimneys known as "lead glass," also called fireproof; very often they fly to pieces, especially in cold weather; can you explain the reason why? A. It is due to the unequal expansion caused by heating one part of the chimney more than another, or by the exposure of one part of the chimney to a draught of cold air, causing a sudden contraction of that part. 2. Some claim that it is caused by the friction raised by rubbing them when cleaning them with a cloth, while others hold that it comes from the gas generated by the coal oil that accidentally gets inside. A. We think that the answer to your first query is sufficient explanation.

(8) G. F. asks: 1. Can you refer me to back number, or repeat solution to plate brass or copper, in a bath, without electric current? A. You do not say what metal you desire to use in plating the copper. 2. Can you tell me how to make and apply the black japan or paint on woodwork, like trays, handles, pen holders, and the like. A. You will find full instructions for japanning in SUPPLEMENT, No. 316.

(9) J. F. asks (1) for an ink for hand stamps that will not injure the rubber. A. Mix and dissolve 2 to 4 drachms aniline color, 15 ounces alcohol, 15 ounces glycerine. The solution is poured on the cushion and rubbed in with a brush. 2. How to make a varnish or covering for woodwork, such as the black handles on enameled water pails, and the like. A. 1 ounce nutgall broken into small pieces; put into barely 1/2 pint vinegar, which must be contained in an open vessel, let stand for about 1/2 hour, add 1 ounce steel filings; the vinegar will then commence effervescing; cover up, but not sufficient to exclude all air. The solution must then stand for about 2 1/2 hours, when it will be ready for use. Apply the solution with a brush or piece of rag to the article, then let it stand until dry; if not black enough, coat it until it is, each time of

course letting it remain sufficiently long to dry thoroughly. After the solution is made, keep it in a closely corked bottle.

(10) J. W. W.—The moulds for rubber stamps are made of plaster of Paris. The rubber is pressed into the mould with a small press or clamp, then placed in a small vulcanizing oven heated by steam or a furnace to a temperature from 250° to 275°. We do not know the cost of apparatus.

(11) R. P. M. asks: What is the rule for silvering on glass, such as door knobs and ornaments? I have some glasswork which is hollow, and would like to silver them on the inside only. A. See "How to Silver Glass," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 106. Take silver nitrate 1 ounce, distilled water 1 pint, strong liquor ammonia sufficient quantity, added very gradually, to first precipitate and then redissolve the silver; then add honey, 1/4 ounce. Put sufficient quantity of this solution in the globe, and then place the globe in a saucpan of water; boil it for 10 to 30 minutes, occasionally removing it to see the effect.

(12) D. P. asks the per cent of starch in white and yellow corn, also of potatoes. A. The average quantity is about 53 1/2 per cent in flat yellow American maize and 54 1/2 in the flat white and round yellow varieties. From 66 to 75 per cent of starch is obtained by the manufacturer from the potato.

(13) M. B. S. B. writes: I have a lot of woolen clothing that has become soiled with linseed oil house paint. Please inform me what will remove it. A. Use turpentine, or benzine, and soap. See table on Removal of Stains and Grease Spots, contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158.

(14) W. H. D. writes: I spilt tincture of iron on the edge of a book so that all the leaves are stained a little. Is there any way it can be removed without destroying the book? A. The tincture of iron is soluble in a solution of warm oxalic acid, in dilute hydrochloric acid, and in citric acid. These substances will readily remove the iron, but great care must be taken to avoid injuring or destroying the paper of the leaves.

(15) E. McG. asks what the ingredients of "Ayer's Hair Vigor" are. A. According to Professor Chandler's analysis of this preparation, it contains 289 grains of lead to the fluid ounce. It is therefore probably a perfumed solution of sugar of lead.

(16) W. F.—All of the cotton factories in this and every other country produce cotton waste. All machine shops and all marine, river, and stationary engines, as well as all factories running machinery, use it.

(17) P. D. L. asks a good recipe for walnut stain for pine wood. A. Make a solution of 3 ounces each permanganate of potash and sulphate of manganese, in 5 quarts hot water. Apply several times with a brush or dip small articles. When the proper tinge is obtained, oil or varnish the work.

(18) O. C. P. desires a cure for stammering. A. Reading aloud for several hours daily is often advised, but this fails to prevent stammering in speaking. The latter appears to be a nervous affection, and its abatement depends upon the individual.

(19) R. K. S. asks: Would the inletting of the ocean to the Sahara desert have any influence on the equilibrium of the earth? If not, why? A. Yes. It would change the center of gravity, proportionally, as the relative weight of the water let into the desert would to the whole weight of the earth divided by 2.

(20) H. G.—The piston travels fastest on the first half of its stroke, due to the impulse of the full pressure of the steam. This is not perceptible in engines with heavy flywheels running a large amount of shafting and machinery. It is very perceptible in the motion of the engines of sidewheel steamers.

(21) J. S.—Augers were twisted by hand hot by holding one end in a vise, by the early makers. Now they are made in dies and rollers by machinery, much of which is the subject of patents. The finishing is done with emery wheels and buffs.

(22) W. S. C.—It is generally conceded that a high speed engine requires more lead than a slow speed. There are differences of opinion as to the requirements of the various kinds of engines, and engine builders generally set the lead to suit their own experience.

(23) T. S. W.—Pure, sweet, cold pressed lard oil mixed with ten per cent of Pratt's astral oil makes a good oil for lanterns. We cannot give the mixture sold by the dealers, as every one mixes to suit his trade.

(24) J. S. asks: 1. What amount of horse power would be required to force from the bottom of a well 30 feet deep 200 gallons of water in a minute, and what size pump and pipe would be required? A. Two horse power, including friction of pump. Pump should have 7 inch by 12 inch cylinder, and be worked 100 times a minute for 200 gallons. 2. If a vessel containing 50 gallons of air was placed at a depth of 30 feet under water, what amount of pound weight would it raise to the surface, how long would it be in making the ascent, and what amount of horse power would it produce? A. Fifty gallons of air will lift about 425 pounds in water. If placed at a depth of 30 feet, it must not be subject to compression for the above duty. If placed in an elastic inclosure, it will not lift more than 212 pounds at that depth, but will increase its lifting power by expansion as it rises. The time required to come to the surface might be 5 or more seconds according to the work required, and might produce 1 1/4 horse power.

(25) J. A. H. writes: In replies to correspondents, October 3, 1885, is a recipe for aerated bread. 1. Are the directions there complete, for making this bread? A. Yes. 2. How much water should be used to the soda and acid? A. Sufficient to make a

dough. 3. Should any salt be used? A. No. Carbonate of magnesia and the muriatic acid combine and form salt. 4. Will the muriatic acid found at the stores do to use? A. It is best to buy the article from the druggist.

(26) H. and M. have an argument about potassium. M claims it is a mineral, H says it is a metal. Which is right? A. H is right. Potassium is a metal, possessing curious qualities. It bursts into flame when it touches water. It is silvery in appearance, but quite soft—softer than lead, and much lighter in weight than the latter. Potassium, although in itself soft, is a constituent of certain minerals found in one of the hardest rocks, namely, granite.

(27) S. T. writes: In SCIENTIFIC AMERICAN, of October 17, you state that a sailboat would not move forward if the wind from a bellows on board were directed against her sail. This of course is correct if the bellows were parallel and the sail at right angles with the boat; but supposing the bellows were placed at right angles with a catboat, and directed against a sail held 30 or 35 degrees from the boat, as in sailing across the wind, would not there be a perceptible motion forward on still water? A. The principle of an artificial blast athwartship impinging upon an inclined surface or sail, and thereby imparting motion to the boat, is correct; but the mechanical effort produced in proportion to the power consumed is so small that any practical allusion to such projects savors of the ridiculous. The bellows will do more work if pointed astern and blown against the air or water.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

December 1, 1885,

AND EACH BEARING THAT DATE.

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

Table listing inventions with patent numbers and names of inventors. Includes items like Advertising sign, Air engine, Ash pan and sifter, Augers, Baby jumper, Bag fastener, Bag lock, Baking powder, Bath and wash tub, Battery, Bed bottom, Bed cover fastener, Bed, invalid, Bed, sofa, Bed, spring, Bed, spring, Beehive, Beer, apparatus, Bell, automatic alarm, Belt stretching machine, Bicycle, Billiard tables, Blank feeding mechanism, Boiler, Boiler covering, Boiler furnace, Boiler furnace grate, Boiler furnace, steam, Boiler furnace, steam, R. C. Carpenter, Boiler furnace, steam, M. A. Foster, Boilers, furnace for heating steam, Book rest, adjustable, Boot, J. F. Shaw, Boot, G. Valiant, Boot or shoe nailing machine, Boot or shoe sole, Bottling machine, Bouquet holder, Bracelet clasp, Brake shoe, Brick machine, Brick or tile die, Buckle, R. M. Dillard, Buckle, suspender, D. L. Durand, Buckle, suspender, J. Spruce, Cab, hansom, W. Johnstone, Cabinet, jeweler's, H. Knickmann, Calculator for measurement of logs, tabular, C. Rich, Camera, Can, Car coupling, Car coupling, J. Hira, Car coupling, S. Moorman, Car door, grain, W. McGuire, Car heater, W. C. Baker, Car, railway, J. A. Enos, Car wheel, J. Ferguson, Carbon baking box, W. J. Possons, Carrier, Carriage, W. Lorenz, Cartridges, mould for making compressed powder charges for, E. Rubin, Case, See Ticket case, Cash box system, automatic, J. C. Martin, Caster, J. L. Purple, Caster, R. S. Thompson, Casting mould, metal, W. S. Platt, Centrifugal machine, E. Rothe, Chain link, J. P. Preston, Chain machine, F. P. Hinds, Chains, appendage for ornamental, J. L. Sweet, Chair, See Nursery chair, Chair, Hall & Lane, Chair, A. F. White, Chimney protector, W. Hubbard, Chuck, lathe, G. A. Barnes, Churn, F. L. White, Churning device, F. L. Foushee, Cigar boxes, press board for, C. Lorenz, Cigar bunching machine, Borgfeldt & Schutz, Cigar cutter, W. M. Ducker

Table listing inventions with patent numbers and names of inventors. Includes items like Cigar cutter and perforator, Clasp, Cleaner, Clevis, Clipping machine, Clover huller, Clutch, Metzger & Cooper, Coconut pulp, F. Senn, Coffee roaster, M. J. Clark, Coffin, W. Holdsworth, Collar attachment, horse, G. Van Wagenen, Coloring machine stop motion, F. P. Fitz Simons, Combination wrench, W. S. McKenzie, Connecting rods, stub end for, L. Griscom, Cornet tuning attachment, W. Buckley, Corset shaping machine, T. S. Gilbert, Cotton gin, Nixon & Cress, Cotton picker stem, C. T. Mason, Jr., Cotton press, R. F. Horton, Coupling, See Car coupling, Railway rail coupling, Thill coupling, Coupling bolt, M. Miller, Cuffholder, E. Smith, Cultivator, J. Q. Adams, Cultivator, H. C. Stahl, Cultivator and furrower, wheel, I. Libbey, Cultivator and harrow, D. Walls, Curtain stretcher, L. E. Jaffery, Cupidator for railway cars, Enright & May, Cut-off, automatic, P. Sears, Cut-off for engines, electro magnetic, R. A. Bailey, Cutter, See Cigar cutter, Feed cutter, Hay or straw cutter, Desk, school, J. M. Sauder, Die, See Brick or tile die, Digger, See Potato digger, Disinfecting water closets, W. M. Ernst, Domestic and agricultural boiler, E. Richmond, Domino, F. H. Richards, Dovetailing machine, L. P. Garcin, Dowel pins, machine for making, C. J. Robinson, Drawing roll, N. L. Randall, Drier, See Fruit drier, Drill, See Grain drill, Ratchet drill, Drying apparatus, platen for, A. S. Nichols, Earring, G. M. Hathaway, Egg beater, G. H. Thomas, Electric machine, dynamo, H. Muller, Electric machine regulator, dynamo, W. H. Schlesinger, Electric machines, armature for dynamo, C. T. Jackson, Electric signaling apparatus, J. P. Tirrell, Electrical conductors, contact device for suspended, C. J. Van Depoele, Electrical indicator, C. H. Pond, Electrodes for secondary batteries, manufacturing, E. Jones, Electroplating, apparatus for, H. R. Boissier, Elevator, See Hydraulic elevator, Elevator belts, slat attaching device for, D. Maxwell, Elevator safety catch, H. Albert, Elevator safety device, W. W. Jackson, Elevator stop, automatic, J. S. Ashton, Eng gate, wagon, H. H. Turner, Engine, See Air engine, Traction engine, Envelope, J. N. Williams, Envelopes, machine, blade picker for, F. H. Deakards, Evaporating saline or saccharine liquids, system of inclined troughs with inclosed steam pipes for, C. N. Waite, Extractor, See Nail extractor, Eyeglass spring and nose guard, G. W. Wells, Face protector, E. T. Stover, Faucet, fluid discharge and vent, W. S. F. Dillon, Feed cutter, H. G. Shippis, Feed cutter, M. R. Vinson, Feed trough, G. Laning, Feed water heater, D. Lee, Feeding hogs, device for, H. Sloan, Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt, Fence, J. Du Bois, Fence building machine, W. N. Parrish, Fibrous material from wood for surgical and other purposes, manufacture of, J. Odella, File, H. G. Piffard, Filter, W. Neracher, Filtering liquids, apparatus for, M. M. Monsanto, Fire escape, J. R. Fuller, Fire escape, P. H. Montague, Fire escape, C. S. Watson, Fire escape ladder, A. Rose, Fire extinguishers, automatic sprinkler for, A. M. Granger, Fireproofing and other preservative purposes, composition for, A. J. Martin, Fishing rods, reel holder and fastening for, F. D. Divine, Flue cleaner, L. Duennisch, Folding apparatus, L. C. Crowell, Folding machine, L. C. Crowell, Fruit drier, A. J. Dodge, Fruit drier, J. C. Gunn, Fruit drier, M. Reynolds, Jr., Fur seal and other skins, removing stony hairs from, A. Paterson, Furnace, See Boiler furnace, Furnace, J. A. Price, Furnace, W. Westlake, Gauge, See Railway track gauge, Game apparatus, G. Marzari, Garment supporter, W. H. Frost, Gas, apparatus for making illuminating, F. Egner, Gas conveying apparatus, T. A. & A. A. Connolly, Gas lighter, electric, J. Geary, Gas mains, detecting and carrying off leakage from, G. Westinghouse, Jr., Gas mains, detecting and closing leaks in, G. Westinghouse, Jr., Gas regulator and cut-off, J. P. Reinecke, Gate, See Railway gate, Gate, Austin & Chamberlain, Gate, J. H. Lamoureux, Gate, D. Spell, Generator, See Steam generator, Glass tile and making the same, J. Haley, Glove or mitten, felt, W. P. Hyatt, Gold separator, S. C. Oliphant, Grading machine, road, J. D. Adams, Grain binder, D. N. Green, Grain binder cord holder, J. O. Jackman, Grain drill, seed sower, fertilizer distributor, and roller, combined, T. R. Crane, Grain separator, H. Bailey, Grapping or holding device, M. T. Wyatt

Grater, culinary, H. Horowitz..... 331,709
 Grinding mill, H. H. Coles..... 331,683
 Guard. See Pew guard.
 Gun carriage, C. T. M. V. De Bange..... 331,618
 Halter, H. Wood..... 331,670
 Hand bag frames, handle cap fastening for, L. B. Praher..... 331,651
 Handle. See Sash lift handle.
 Handle for buckets, etc., J. Ringen..... 331,447
 Hanger. See Lamp hanger.
 Harness rack, D. J. Smith..... 331,565
 Harness ring, Cato & Spaulding..... 331,477
 Harrow, G. G. Seeger..... 331,740
 Harrow, A. Wilcox..... 331,353
 Harrow and cultivator, wheel, I. J. Hunt..... 331,399
 Harvesting and husking machine, corn, J. G. Stowe..... 331,459
 Hat brims, machine for setting the folded or curled edges of, R. Eickemeyer..... 331,286
 Hay or straw cutter, T. Tatnall..... 331,343
 Hay rake revolving sulky, S. B. Collins..... 331,478
 Headlight, locomotive, G. M. D. Riley..... 331,654
 Heater. See Car heater. Feed water heater.
 Heel machine, A. J. Lanzeller..... 331,412
 Heel nailing machine, F. F. Raymond, 2d..... 331,441
 Heeling jack, G. N. Burgess, Jr..... 331,476
 Hinges, manufacture of, E. Lucas..... 331,416
 Holder. See Bouquet holder. Cuff holder. Music holder. Paper bag holder. Ribbon holder. Towel holder.
 Hook. See Whiffletree hook.
 Horses, apparatus for checking and controlling runaway, W. O. Walley..... 331,350
 Horseshoe, F. B. Gardner..... 331,628
 Horseshoe machine, D. J. Farmer..... 331,623, 331,624
 Horseshoe swaging machine, D. J. Farmer, 331,625, 331,626
 Hose, rubber, A. Bruegger, Jr..... 331,374
 Hosiery, device for exhibiting, J. A. Kessel..... 331,717
 Huller. See Clover huller.
 Hydraulic elevator, N. C. Bassett..... 331,273
 Ice, refrigerating, etc., mode of and apparatus for making, A. G. Southby..... 331,457
 Indicator. See Electrical indicator.
 Jack. See Heeling jack. Lifting jack. Shoemaker's jack.
 Journal bearing, R. W. Hardie..... 331,497
 Journal bearing, J. G. Marquardt..... 331,311
 Key ring, G. W. Hutchins..... 331,301
 Kitchen cabinet, E. G. Burgett..... 331,611
 Knife sharpener, F. J. Reinhold..... 331,545
 Knitting machine, W. D. Huse..... 331,402, 331,400
 Ladder, folding, D. P. Sharp..... 331,560
 Ladder, wheel step, A. Conine..... 331,685
 Lamp burner, E. A. Dobbins..... 331,351
 Lamp, electric, G. C. Pyle..... 331,327
 Lamp hanger, D. McMahon..... 331,521
 Lamps, carbonizing filaments for incandescent electric, E. P. Thompson..... 331,663
 Last, W. T. Martin..... 331,313
 Lathing, fireproof, L. & W. H. Lane..... 331,643
 Lead, apparatus for feeding white, M. Forst..... 331,698
 Leather washer, T. Gingsras..... 331,293
 Letter box, alarm, H. Roeske..... 331,735
 Leveling instrument, T. J. Barron..... 331,604
 Leveling instruments and transits, attachment for, F. Parson..... 331,433
 Levers, device for operating a set of, H. D. Gause..... 331,629
 Lifter. See Transom lifter.
 Lifting jack, A. C. Long..... 331,415
 Lifting jack, E. Suckow..... 331,460
 Load binder, L. B. Melins..... 331,421
 Lock. See Bag lock. Mail bag lock. Trunk lock.
 Lock and latch combined, J. A. F. Anderson..... 331,671
 Locomotives, apparatus for supplying natural gas to, J. H. Katz..... 331,716
 Loom let-off mechanism, J. A. Bergan..... 331,274
 Looms, anchor shuttle box motion for, C. Strobel..... 331,741
 Magneto call box, J. F. Kettell..... 331,718
 Mail bag, D. P. Brophy..... 331,472
 Mail bag lock, D. P. Brophy..... 331,474
 Mailbags, machine for riveting staples to, R. Brass..... 331,373
 Mandrel, S. P. M. Tasker..... 331,570, 331,578
 Mandrel, roller, S. P. M. Tasker..... 331,573
 Manure distributor, J. E. Person..... 331,540
 Mechanical movement, G. D. Ferris..... 331,695
 Metal rolls, machine for grooving, C. B. & W. H. Campbell..... 331,613
 Meter. See Piston meter.
 Milking apparatus, cow, J. P. Martin..... 331,513
 Mill. See Grinding mill. Oatmeal and grain reduction mill. Windmill.
 Mould. See Casting mould.
 Moulding machine, sand, Schlickeysen & Breslau..... 331,553
 Mole trap, W. R. Eddington..... 331,483
 Mop, floor, G. A. Keene..... 331,641
 Music, back for sheet, G. C. Scott..... 331,555
 Music holder, sheet, G. C. Scott..... 331,554
 Musical instrument, mechanical, M. Gally..... 331,747
 Nail extractor, T. M. Brintnall..... 331,678
 Neckwear, E. D. Smith..... 331,566
 Necktie, C. E. Page..... 331,535
 Necktie and collar fastener, R. S. Coffey..... 331,279
 Needles, wire, etc., straightening, G. M. Eames..... 331,386
 Nursery chair, W. Holden..... 331,748
 Oatmeal and grain reduction mill, W. Hutchison & Mason..... 331,702
 Opera chair, J. M. Sauder..... 331,551
 Packing, cylinder piston, G. B. Simonds..... 331,454
 Packing ring, spring piston, V. F. Stetzer..... 331,458
 Pad. See Saddle pad.
 Paint, mixed, H. C. Dorr..... 331,383
 Pan. See Ash pan.
 Paper bag holder, E. T. Martin..... 331,512
 Paper bag machine, Lorenz & Honies..... 331,721 to 331,723
 Paper box, folding, I. Tahl..... 331,568
 Paring machine, peach, L. H. Scott..... 331,451
 Paste, apparatus for making, O. Nichols..... 331,647
 Paste, making, O. Nichols..... 331,648
 Pen wiper and holder, I. W. Allyn..... 331,270
 Pencil, J. Hoffman..... 331,358
 Pew guard, M. E. O'Connor..... 331,533
 Photographic camera, G. B. Brainerd..... 331,677
 Photographic camera, G. H. Ripley..... 331,448
 Photographic camera shutter, W. C. Hadden..... 331,494
 Photographic dry plates, shipping case for, J. H. Durham..... 331,385
 Photographs, apparatus for developing and washing, H. F. Witmer..... 331,668
 Pipe. See Tobacco pipe.
 Piston meter for fluids, H. M. Bartlett..... 331,605
 Plaiting machine, F. Panse..... 331,432
 Planing machine, F. S. Belter..... 331,606
 Planing machine, G. V. Orton..... 331,730
 Planing machines, variable feed motion for, J. Roberts..... 331,449

Planter and fertilizer distributor, combined seed, Zeigler & Autley..... 331,600
 Planter, potato, Christenson & Timmers..... 331,278
 Plow, Kinard & Maddox..... 331,410
 Plow beam, compound, H. H. Summer..... 331,342
 Plow, gang, D. M. Johnston..... 331,503
 Plow harrow attachment, V. Wood..... 331,358
 Polishing composition, H. L. Haas..... 331,632
 Post driver, J. G. Stigers..... 331,740
 Potato digger, S. W. Kelchner..... 331,505
 Potato digger, H. H. Lovejoy..... 331,724
 Potato digger and bean harvester, C. Peets..... 331,321
 Powder. See Baking powder.
 Power presses, automatic trip gear for, M. M. Wilson..... 331,665
 Power. See Water power.
 Press. See Cotton press.
 Printing paper bag tubes, type form for, A. J. Boynton..... 331,372
 Privy sink, P. Cassidy..... 331,682
 Propeller for steamboats, buoyant, W. Hall..... 331,496
 Protector. See Chimney protector. Face protector.
 Pulp from woody matter, manufacture of, Pietet & Brelaz..... 331,323
 Pulp straining machine with vertical screen plates, R. Kron..... 331,304
 Pulverizer, soil, J. B. Okey..... 331,318
 Pulverizing machine, etc., dust guard for, R. D. Gates..... 331,393
 Pump, J. H. Rook..... 331,734
 Pump, hydraulic, J. H. Hubbell..... 331,711
 Pump piston, air, J. A. Woodbury et al..... 331,380
 Pumps, valve case for mercurial air, A. L. Reinmann..... 331,546
 Pyroxyline with its solvents in the manufacture of solid compounds, compounding, J. W. Hyatt..... 331,713
 Rack. See Harness rack.
 Railway and car hanger, suspension, J. A. Enos..... 331,387
 Railway frog, F. C. Weir..... 331,594
 Railway gate, Riggin & Gummerson..... 331,333
 Railway rail coupling, H. C. Burkhead..... 331,612
 Railway switch, A. J. Moxham..... 331,525, 331,526
 Railway track gauge and level, combined, D. H. Rhodes..... 331,329
 Railway track inspector, automatic, P. C. Compton..... 331,684
 Rake. See Hay rake.
 Ratchet drill, A. A. Strom..... 331,341
 Refrigerator, F. Hainsworth..... 331,296
 Refrigerator, Nehrich & Neubecker..... 331,530
 Refrigerator, H. Von Rom..... 331,349
 Regulator. See Electric machine regulator. Gas regulator. Windmill regulator.
 Rein support, T. Desjardins..... 331,479
 Ribbon holder, Coburn & Van Fleet..... 331,616
 Ring. See Earring. Harness ring. Key ring.
 Roaster. See Coffee roaster.
 Rock drill core breaker and puller, F. D. Parker..... 331,319
 Rock drilling machine, C. F. Peebles..... 331,435
 Rolling mill overfeed regulator, W. W. McCallip..... 331,516
 Roof cleat, tin, W. C. Rockwell..... 331,655
 Ruler, M. Dittenhoefer..... 331,481
 Saccharine compounds, manufacture of, C. Fahrborg (r)..... 10,667
 Saddle, harness, R. W. Cahoon..... 331,681
 Saddle pad, harness, H. Leibe..... 331,509
 Safe attachment, C. Diebold..... 331,480
 Safe bolt work, device for operating, E. W. Fowler..... 331,390
 Sash balance, J. Weber..... 331,592
 Sash fastener, M. Bourke..... 331,370
 Sash holder, C. A. Sprague..... 331,660
 Sash lift handle, W. F. Smith..... 331,316
 Saw feed, gang, Watson & Hubbell..... 331,590
 Sawmill dog, Delaney & Bond..... 331,619
 Sawmill, portable, J. N. Richey..... 331,653
 Scaffold clamp, T. N. Subers..... 331,742
 Scale, linear or other, C. A. L. Totten..... 331,345
 School seat, J. M. Sauder..... 331,550
 Seal, metallic, C. J. Pond..... 331,439
 Seal press, portable, J. W. Allen..... 331,601
 Seaming machine, roof double, J. H. Wahrenhurst..... 331,586
 Seat. See School seat.
 Secondary battery, E. Jones..... 331,407
 Seeder, roller, and harrow, combined, Walker & Barlow..... 331,588
 Separator. See Gold separator. Grain separator.
 Sewing in a spiral or helical path, machine for, R. Binns..... 331,607
 Sewing machine motor, J. T. Winburn..... 331,666
 Sewing machine shuttle, V. J. Mayo..... 331,314
 Sewing machine waxing device, B. F. Landis..... 331,306
 Shafts, device for locking collars and rings to, C. Meese..... 331,522
 Sheet delivery apparatus, counting mechanism for, L. C. Crowell..... 331,282
 Sheet metal can, T. G. F. Dolby..... 331,482
 Ships' logs, rotator for, J. & G. H. Bliss..... 331,269
 Shoemaker's jack, J. B. Litchman..... 331,414
 Siding rest, J. McDonald..... 331,519
 Sifter, T. F. Timby..... 331,344
 Sign for cars, traveling, G. M. Traylor..... 331,346
 Skate, roller, G. P. Bosworth..... 331,470
 Skate, roller, J. H. Fenton..... 331,391
 Skate, roller, Johnson & Nuebling..... 331,302
 Sled runner, V. D. Johnson..... 331,303
 Sleigh knee, J. Parkhill..... 331,537
 Sower, seed, F. Reyner..... 331,547
 Spinning mule, E. A. Baldwin..... 331,372, 331,368
 Spoke socket, J. H. Webb..... 331,591
 Spring. See Eyeglass spring. Vehicle spring.
 Stamp, marking, F. M. Bulkley..... 331,475
 Steam boiler, A. O. Frick..... 331,488
 Steam boiler, T. G. Hall..... 331,495
 Steam engine, A. Reis..... 331,442
 Steam generator, W. H. Page..... 331,431
 Steering boats, etc., apparatus for, W. Haynes..... 331,499
 Steno-typograph, A. Beyerlen..... 331,275
 Stereotype or matrix making machine, J. J. Poak..... 331,438
 Stock releasing device, M. W. Hanley..... 331,396
 Stone sawing machines, machine for feeding sand and water to, D. Shortleeve..... 331,562
 Stop motion, automatic safety, A. C. & A. F. Dumke..... 331,680
 Stove, coal, S. H. Fales..... 331,622
 Stove, heating, W. C. Smith..... 331,455
 Stovepipe attachment, C. J. Hamilton..... 331,637
 Stoves, sliding top for oil, J. Milne..... 331,516
 Straw carrier, Grater & Seibel..... 331,703
 Submerged bodies, closing spaces between, C. SooySmith..... 331,653
 Supporter. See Garment supporter.
 Telegraph apparatus, municipal, J. C. Wilson..... 331,556
 Telephone, W. C. Lockwood..... 331,309
 Temperature regulation, system of, W. S. Johnson..... 331,406
 Threshing machine band cutter and feeder, C. Paridy..... 331,536

Thill coupling, D. E. Kempster..... 331,642
 Ticket case, W. E. Elam..... 331,484, 331,485
 Tie section between walls, joists, etc., W. F. Higgins..... 331,500
 Tire and setter therefor, vehicle, A. Heusser..... 331,704
 Tobacco pipe, A. & C. Tappe..... 331,569
 Tobacco plant setter, J. W. Hawkins..... 331,498
 Tobacco steaming apparatus, S. G. Flinton..... 331,696
 Tongue, pipe, H. F. W. Sohst..... 331,456
 Tool, combination, M. Bourke..... 331,371
 Towel holder, D. H. Murphy..... 331,728
 Trace carrier, J. S. Dick..... 331,620
 Traction engine, D. W. Webster..... 331,593
 Transom lifter, A. English..... 331,289
 Trap. See Mole trap.
 Tricycle gear, A. C. Latta..... 331,644
 Tricycle shaft fastening device, D. H. Rice..... 331,330
 Trimmer. See Weir trimmer.
 Trough. See Feed trough.
 Truck for elevated cars, J. A. Enos..... 331,389
 Trunk, G. H. Wells..... 331,351
 Trunk lock, Mix & Cowles..... 331,427
 Trunk lock, plate, and socket, F. W. Mix..... 331,426
 Tub. See Bath and wash tub.
 Tubes, apparatus for centering and inserting disks in the ends of, C. W. Nason..... 331,529
 Tubes, closing the ends of metal, C. W. Nason..... 331,528
 Tubes from hollow ingots, machine for making, S. P. M. Tasker..... 331,571, 331,572, 331,579 to 331,584
 Tubes from hollow ingots, machine for making taper, S. P. M. Tasker..... 331,574 to 331,577
 Tubes, machine for welding plugs in the ends of, C. W. Nason..... 331,527
 Tunneling and sinking shafts, C. SooySmith..... 331,656
 Tunnels, building, C. SooySmith..... 331,657
 Twist drills, manufacturing, G. R. Stetson..... 331,739
 Type writing machine, C. Spiro..... 331,337
 Type writing machines, platen shifting attachment for, C. S. Southworth..... 331,659
 Valve gearing, G. M. Pelton..... 331,436
 Valve, slide, D. O. Ladd..... 331,506
 Vegetable and meat slicer, T. M. Knapp..... 331,411
 Vehicle platform gear, Cunningham & Barnes..... 331,688
 Vehicle reach, Mack & Hanson..... 331,310
 Vehicle running gear, J. M. Bouck..... 331,471
 Vehicle shifting top, A. H. Winchell..... 331,067
 Vehicle, spring, C. W. Saladee..... 331,334
 Vehicle spring, J. D. Owen..... 331,430
 Vehicle spring, J. Wolf..... 331,669
 Vehicle, two-wheeled, J. P. Calnan..... 331,375
 Vehicle, two-wheeled, A. Hofmann..... 331,705
 Velocimeter, R. J. McCarty..... 331,517
 Velocipede, C. E. Buell..... 331,276
 Velocipede, A. W. McClure..... 331,518
 Velocipede brace, shaft, etc., D. H. Rice..... 331,331
 Vise, saw, A. J. Tyler..... 331,745
 Walls and ceilings of buildings, material for the decoration of the interior, J. M. Baker..... 331,469
 Washer. See Leather washer.
 Washing machine, B. A. Allison..... 331,602
 Washing machine, D. L. Bates..... 331,675
 Washing machine, Hall & Lane..... 331,633
 Watch, stop, H. A. Lugin..... 331,417
 Water, apparatus for checking the waste of, E. E. Furney..... 331,490
 Water closet, W. Bunting, Jr..... 331,610
 Water closet valve, W. Scott..... 331,556 to 331,558
 Waterpower, M. J. Erskine..... 331,694
 Waterproof fabrics, making, T. Hawley..... 331,283
 Web threading apparatus, L. C. Crowell..... 331,283
 Weighing apparatus, W. F. Irvine..... 331,640
 Well rig, artisan, A. T. Hyde..... 331,714
 Weir trimmer, C. A. Squire..... 331,338
 Wheel. See Car wheel. Wind wheel.
 Wheelbarrow, D. J. Huckins..... 331,712
 Whiffletree hook, C. G. Jacobus..... 331,715
 Wind wheel, W. G. Read..... 331,543
 Windmill, A. C. Ellsworth..... 331,288
 Windmill regulator, H. R. Adams..... 331,364
 Windmill regulator, pumping, H. R. Adams..... 331,363
 Window, hanging, J. R. Whitney..... 331,466
 Wire drawing apparatus, S. H. Byrne..... 331,650
 Wire stretcher, E. S. Mullinax..... 331,727
 Wrench. See Combination wrench.
 Wrench, F. Farrar..... 331,627
 Yoke adjuster, neck, J. R. Dalton..... 331,377
 Yoke, neck, D. W. Clarke..... 331,376
 Yoke, ox, W. H. Gibbens..... 331,631

Advertisements.
 Inside Page, each insertion --- 75 cents a line.
 Back Page, each insertion --- \$1.00 a line.
 (About eight words to a line.)
 Engravings may head advertisements at the same rate per line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

GET THE BEST AND CHEAPEST

J. A. FAY & CO.,
 (Cincinnati, Ohio, U. S. A.)
 Exclusive Agents and Importers for the United States of the
CELEBRATED PERIN BAND SAW BLADES,
 Warranted superior to all others in quality, finish, uniformity of temper, and general durability. One Perin saw outwears three ordinary saws.
 Manufacturers of Planing Machines and other Patent Wood Working Machinery.

TOWNES' MANUAL OF CHEMISTRY.
 Embracing WATTS' PHYSICAL and INORGANIC CHEMISTRY.
 A new American from the Twelfth English Edition, 1,050 pp., leather, \$3.50. Will be sent, postpaid, by MUNN & CO. on receipt of price.

Remington Standard Type-Writer

 Purchasers permitted to return by Express C. O. D. for full purchase price at any time within thirty days, thus giving an opportunity for comparison with other machines.

Wyckoff, Seamans & Benedict,
 339 Broadway New York.

ADVERTISERS can learn the cost of any proposed line of Advertising at GEO. P. ROWELL & CO.'S NEWSPAPER Advertising Bureau, 10 Spruce St., New York. Send 10 cents for a 100-page pamphlet.

WEST BRANCH BOILER WORKS
 STEAM BOILERS OF ALL KINDS
 STACKS, JAMES, STEAM PIPES, PUMPS,
 ALL MADE OF WELDED STEEL
 AND ENGINE SUPPLIES, ETC.

WATCHMAKERS. Before buying, see the
 Whitcomb Lath and the Webster Foot Wheel, made by the AMERICAN WATCH TOOL CO., Waltham, Mass. CATALOGUES FREE.

CARDS Sample book and full outfit and lovely Xmas Card for 2c. stamp. Card Works, Northford, Ct.

QUEEN LUBRICANT. For Drilling, Punching, Milling, &c. J. B. & J. M. Cornell say: "It gives good satisfaction as a substitute for oil at far less cost." Price 3/4 cts. per gallon. EUREKA MFG. CO., 423 and 425 W. 35th St., N. Y.

VAN DUZEN'S
 Mechanical Boiler Cleaner.
 Takes out all mud and scale forming properties from the water of Steam Boilers, keeping it clean and free from all impurities. Send for circular. Manufactured by
IE. W. VAN DUZEN,
 CINCINNATI, O.

Every Man His Own Printer
 Type setting, etc., easy by printed directions. For business or home use or money making. For old or young. Send 2 stamps for catalogue of presses, type, cards, paper, etc., to factory.
KELSEY & CO.,
 Meriden, Conn.

ASPHALTUM. — A COMPREHENSIVE
 paper, treating of its geological origin, mode of preparation for industrial purposes, and most important applications. Bitumen, Chemical Composition, and Physical Properties. Geographical distribution. Geological origin. Formation of Asphaltum. Bituminous mastic. Uses and applications of Crude Asphaltum. Mode of preparation for sidewalks and pavements. Applications of Bituminous Mastic or Cement. Asphalt as a preservative against fire. Illustrated with engravings, showing the probable formation of asphaltum in soft limestone strata; the construction of pavements from crude asphalt at Paris, and the mode of making sidewalks. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 277. Price 10 cents. To be had at this office and from a newsdealer.

OUR ODOMETER attached to a wagon gives the miles traveled from 1/2 cent to 1/10, and repeats the size of the tires. Price \$3. Only one ever made out of tin. It wheels. No springs. A new principle in mechanics that would be well for every inventor to study, as there are hundreds of places in which it can be used. Right of our reasonable. Will be mailed free for \$4. If mention Sci. Am. Send for catalogue of our interesting inventions. A few good men were to handle our goods.
 McDERMOTT & CO., 100, 2nd & LaSalle Ave., Chicago, Ill.

TIMBER GAINING MACHINE.
 Special Machinery for Car Work and the latest improved Wood Working Machinery of all kinds.
C. B. ROGERS & CO.,
 Kenosha, Conn.
 100 Liberty Street, New York.

"THE ELECTRICAL REVIEW,"
 An illustrated weekly journal, is the acknowledged leader in the world of electrical science. Edited with care, its editorial opinion is reliable, its news columns bright and instructive. \$3.00 per year; single copies, 10 cents.
 29 PARK ROW, NEW YORK.
 Best advertising medium in the electrical field.

AMERICAN STEAM BOILER INSURANCE CO.,
 45 William Street, New York.
 Write for Special Blanket Form No. 98; gives complete protection to property, and pays \$5,000 for a life and \$50 weekly for six months for injury.

Edco System
 Of Arc and Incandescent Lighting.
 Electric Light and Power.
 Motors, Dynamos, Lamps, and Batteries in all varieties.
 Electro-Dynamic Co., 224 Carter St., Philadelphia.
 W. W. Griscom, Consulting Electrical Engineer.