Business and Personal.

The charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(1) C. D. asks: What metal or compound of metals can I use to make small castings as hard (or nearly as hard) as brass. Said metal must melt in a common coal fire. A. Use type metal, which you can procure at a stereotype or type foundry, or can obtain by melting old type.

(2) W. E. S. asks: Is there any kind of a liquid that can be obtained at a drug store that will not evaporate, and which has no sediment, or very little, and will not freeze above 5 or 10 degrees below zero? A. We recommend you to try glycerine, or it is possible that kerosene or coal oil might answer the purpose. The temperature you give is so extremely low that all ordinary liquids will congeal at it. A mixture of glycerine and water might answer your purpose.

(3) W. B. asks how to make sodium amalgam. When heated, the explosions are so violent that some is lost. Also how to make zinc amalgam; cold it will not amalgamate, and hot it explodes. A. The formation of an amalgam of sodium is apt to be accompanied by much violence, unless the mercury is in large excess. Make a strong amalgam in small quantities by heating in a covered vessel, and mix with more mercury. Zinc and mercury will amalgamate without the least difficulty if a little dilute sulphuric acid is added. It needs little or no heat.

(4) J. W. K. asks what size an electro-magnet would need to be to lift or attract a weight of 10 pounds through a space of ¼ inch, and how many Leclanche cells? A. There is no rule for calculating the precise size for given strength of an electro-magnet. Leclanche cells are not good, except for intermittent work. Your magnet should be ten or twelve inches long, with ¾ inch cores, and 5 to 10 Leclanche cells would work it. 2. What effect will mercur have on lead if the lead be immersed in it, or *vice versa*, *i. e.*, will the mercury be affected? A. The lead and mercury will amalgamate, and the mercury will be injured for ordinary uses.

(5) Waco asks: 1. Can you tell me of any combination of minerals or chemicals that on coming in contact with extreme cold would produce heat? Can such a thing be done? A. Theoretically, if the proper junction of a thermo-electric battery were cooled, an electric current will be generated, which current can be made to produce heat. 2. Would an engine using oil for fuel, and requiring only 30 lb. steam to give it the power of the ordinary locomotive "at its best," be of any market value? A. We cannot pronounce upon the value of such an engine without further and fuller details. It is all a question of economy of fuel.

(6) W. F. H. asks: 1. In an electro dynamo machine of the Gramme and Weston and other types, the commutator consists of as many segments as there are wires leading from the armature. Will a commutator consisting of 2 or 4 segments answer just as well, provided opposite ends of the armature wires are connected to opposite egments of commutator, or will there be a diminution in strength of the current? A. Any reduction of commutator leaves will impair the working of the machine, or may even stop it. The wire in the armature must form a full and complete circuit. 2. Have you working plans for a larger machine than the Siemens in SUPPLEMENT No. 161? A. We have not, but expect soon to publish a description of a larger machine.

(7) F. M. C asks: How many pounds of wire is required to make a spark coil to light one gas light? Also how many and what kind of batteries it would be best to use? A. Two or three pounds of No. 16 wire with two Leclanche cells should suffice.

(8) E. M. L. asks for directions for manufacturing a liquid shoe dressing. A. Take of shellac one-half pound, alcohol three quarts. Dissolve, and add of camphor one and a half ounces, lampblack two ounces.

(9) T. P. E. writes: If in fitting a crank and shaft or any other work, you get a loose fit, where you should have it to drive, and you heat the shaft to a low red, and allow it to cool, repeating the operation until the shaft is permanently large enough to make a driving fit, will the quality of the iron be injured thereby? A. The heating and cooling of the end of a shaft many times for the purpose of enlargement to receive a driven-on crank causes considerable change in its molecular structure, and is not considered safe where severe work is required from the crank. For ordinary use or for small shafts, there is no objection, except that it is bad practice.

(10) W. M. R.—For computing the safe working pressure for cylindrical shells of boilers: Divide the assumed tensile strength of the iron or steel of the boiler plate by 4 for safety, and this quotient again by one-half the diameter of the boiler shell or cylinder in inches. Then multiply the last quotient by the thickness of the plate in decimals of an inch, and again this product by 0·60 for single rivet seams, or 0·72 for double rivet seams. For example, assuming 50,000 pounds as the ultimate tensile strength of your iron, and a 50 inch boiler, the figures will be for ¼ inch iron, single riveted seams:

```
4)50,000
25)12,500
      500
      .25
   125.00
      .60
    75.00
```

or a safe working strength of 75 pounds per square inch. The heads should be 50 per cent thicker than the shell, and well braced. For internal square firebox boilers for flat stayed surfaces: Divide tensile strength of iron by 4. Multiply quotient by the least area of stay in decimals of an inch. Divide last product, the number of square inches between 4 contiguous stays. Multiply last quotient by the thickness of the plate in decimals of an inch, for the safe working pressure. For example: The leg sheets of a locomotive type, with stays 5 inches center to center, ⅞ in. stays, $\frac{5}{16}$ in. plates:

```
4) 50,000 lb. t. s.
    12,500
Area of stay.....  .6
Area between stays 25 sq. ft.) 7500.0
                      300
Thickness of plate.....  .31
Lb. per sq. in. safe working press. 93.00
```

The crown sheet stays are more complex, as also the head sheet stays, in this class of boiler. They would require the inspection of a practical engineer in boiler work to make a safer computation. We refer you for further rules and illustrations for strength of boiler work, to Courtney's "Boiler Maker's Ready Reckoner," which we can furnish for $3.60.

(11) L. S. B. asks a receipt for making a good fire brick for ordinary stoves, one that can be mixed the same as mortar and put in place to set. A. A good lining for stoves may be made by pulverizing the old brick, or any fire brick, and mixing with a little fresh clay, just enough to make it plastic, with which line the fire plates. Dry out the water before making coal fire. The coal fire will bake and make a solid fire brick lining of your plastic back.

(12) G. F. writes: I have an iron tank in which I wish to keep water for drinking and cooking purposes. What can I do to keep its inner surface from rusting that will not affect the taste of the water? A. Paint the inside of the tank with Prince's metallic paint and boiled linseed oil 2 coats. Allow first coat to dry thoroughly before putting the second on.

(13) W. E. S. asks how to regild gas fixtures that have been soiled by fly specks. A. The cleaning of the lacquer from gas fixtures and redipping and lacquering is an art that requires much care and experience, too much for the occasional work of a plumber. If you wish to make a trial, we can recommend Spons' "Workshop Receipts," which describes the process of cleaning, dipping and lacquering gas fixtures, price $2.00. There is a cheap way of varnishing and bronzing with bronze dust as practiced by the painters, the material for which you may obtain through the paint trade. It is possible that washing with warm soap and water will improve them.

(14) Morrisiana says: Will you kindly inform me how I can make the cellar of my house dry? The floor is concreted and there are windows back and front. Still it is damp, and everything in it gets mouldy. A. The most thorough way to secure a dry cellar is to plaster the exterior of the cellar walls with the best Portland cement. But this in your case, the wall being already built, would be inconvenient. The next best plan is carefully to point up the joints of the wall upon the inside, with Portland cement made of one part cement and two parts sand. Scratch out the old mortar between the joints and substitute cement. Then you may plaster the walls a quarter of an inch thick with same. Use thorough ventilation. Success will depend upon the care and thoroughness with which the job is done.

(15) G. A. asks a receipt for preparing milk to keep a long time. A. Add bicarbonate of soda in the proportion of about six grains to a quart of milk, and then place in sealed bottles.

(16) D. R. D. asks a recipe for making prepared kindling wood, such as is sold in the grocery stores all through the large cities. A. Dip the wood in melted resin. The following composition is sometimes used: 60 parts melted resin and 40 parts tar, in which the wood is dipped for a moment. Or, take a quart of tar and three pounds of resin, melt them, then cool, mix as much sawdust with a little charcoal added as can be worked in. Spread out on a board, and when cold break up into lumps the size of a hickory nut, and you will have enough kindling to last a good while.

(17) J. H. asks how to remove the paper pasted on the inside of the cover of an old book. There is a book plate under it and the cover is calf over board. Inside paper is old ribbed linen strongly pasted on. A. The only way in which the paper can be removed is by covering it with a damp cloth, until it is sufficiently moist, when it can be easily taken off.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted,

November 9, 1886,

AND EACH BEARING THAT DATE.

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

Abacus, Bolton & Tillmeyer 352,218
Acetine blue colors, production of, C. Schraube 352,561
Aerial vessel, M. S. Cole 352,298
Anchor for anchoring vessels, F. D. Montague 352,481
Animals, blanket for, W. B. Logan 352,470
Ant trap, Barnes & Salles 352,289
Anvil, farrier's, C. H. Perkins 352,261
Auger, post hole, Devitt & Sise 352,305
Automatic danger signal, E. E. Phillips 352,263
Awning, A. Ferrel 352,121
Axle arms, making, C. H. Smith 352,492
Axle box, car, H. A. Wendell 352,171
Axle, car, D. C. James 352,411
Baking and roasting pan, J. B. Leach 352,136
Bag catcher, mail, Mack & Ward 352,479
Bag cord case and lock, combined mail, O. B. Young 352,502
Band attachment, waist, L. Friedenrich 352,457
Band cutter and feeder, W. A. Brady 352,112
Barber's chair, F. Heine 352,242
Basket cover, fruit, N. A. Hadden 352,313
Battery, galvanic, J. W. Hoffman 352,324
Battery, galvanic, W. R. Patterson 352,486
Beams, machine for severing the flanges from I, W. H. Graham 352,184
Bearing, step, G. F. Eisenhardt 352,308
Bed bottom, adjustable folding spring, J. L. Meeks 352,480
Beds, bedclothing clamp for, Street & Watters 352,497
Bell and alarm, electric, A. Lungen 352,472
Belting, canvas, M. Gandy 352,460
Bench. See Wash bench.
Bib or apron, W. B. Logan 352,471
Bicycle, T. B. Jeffery 352,190
Bicycles, lantern hanger for, T. B. Jeffery 352,191
Blanket fastening, W. B. Pritchard 352,487
Blotting pad, S. Wales 352,170
Board. See Game board. Ironing board.
Boat. See Turnedo boat.
Bobbins and spools, controlling the unwinding or thread, twine, and cord from, J. Good 352,312
Boiler. See Locomotive boiler. Range boiler. Steam boiler.
Boiler cleaner, Faries & Wilcox 352,235
Bolt. See Expansible bolt. Locking bolt.
Bolting reels, brushing mechanism for, J. W. Crosby 352,223
Boot, felt, D. B. Platt 352,350
Boot or shoe form, J. W. Rogers 352,153
Boot or shoe stretcher, W. Jones 352,134
Boot, rubber, J. L. Tyler, Jr 352,501
Bosom pads, making, T. P. Taylor 352,208
Bottle wrapper, Hine & Reed 352,188
Bottles, machine for wiring the corked necks of, W. C. Van Vliet 352,168
Bottling machines, attachment for, F. B. Thatcher 352,165
Box. See Axle box. Cigar box.
Bracket. See Scaffolding bracket.
Brake. See Car brake. Vehicle brake.
Brake adjuster, automatic, J. B. Burns 352,444
Brick kiln, J. R. Kemp 352,194
Bridges, self-acting safety gate for swing, H. Marcheter 352,251
Bridle and bridle bit, W. H. Sanborn 352,506
Buckle, S. N. Stevens 352,277
Bustle, Rice & Landaker 352,427
Buttons, Beek & Holland 352,291
Button, M. D. Shipman 352,270, 352,363
Buttons, instrument for attaching, W. H. Wood 352,214
Cabinet, J. Longenecker 352,249
Cable grip, G. Muller 352,255
Cable grip, Samuel & Angerer 352,356
Calculator, G. H. Harris 352,408
Can. See Coffee or tea can.
Cannon, revolving pneumatic, W. A. Bartlett 352,110
Cap, I. H. Dinner 352,458
Car brake, J. S. Connelly 352,225
Car coupling, G. S. Gildersleeve 352,239
Car coupling, J. W. Harrell 352,345
Car coupling, M. M. Pittman 352,349
Car coupling, M. M. Requa 352,264
Car coupling link, F. W. Parsons 352,147
Car doors, latch lock for, C. H. White 352,215
Car, dumping, J. H. R. Talley 352,498
Car seat, reversible, J. M. Sauder 352,268
Car starter, G. B. Haines 352,126, 352,127
Carpet tack tool, M. S. Lantz 352,416
Carriage, wheeled, A. Dickinson 352,306
Case. See Piano case. Ribbon case.
Caster, Terrill & Simonson 352,209
Casting compound ingots, mould for, A. J. Lustig 352,476
Casting machine, stereotype, J. E. Caps 352,447
Cattle from goring, device for preventing, J. M. Markham 352,337
Cattle pricker belt, J. M. Markham 352,335
Centering tool, J. N. Waite 352,169
Chair. See Barber's chair.
Cheese knife, J. Buchholz 352,441
Chute, coal distributing, C. M. O'Donovan 352,344
Cigar box, D. E. Powers 352,200
Cigar bunching machines, feeding device for, S. A. Shepard 352,491
Cigar seller, automatic, C. O. Cole 352,397
Clamp. See Floor clamp.
Cleaner. See Boiler cleaner Gun cleaner.
Clock, L. Feuerstein 352,309
Clock, secondary electric, J. F. Hedge, Jr 352,320
Clock striking mechanism, G. W. Burgess 352,180
Closet. See Dry closet.
Coffee or tea can, W. A. Krag 352,195
Collar button and necktie fastener, combined, J. B. Cornish 352,301
Collars to military blouses, making and attaching, J. Judge 352,468
Commode, P. Bardon 352,388
Condiment holder, individual, G. Dowkontt 352,400
Cooking vessel, steam, C. C. Danner 352,230
Corset and skirt supporter, combined, J. Stone 352,163
Cotton picker, S. H. Frist 352,458
Cotton seed reducing and separating machine, D. J. Ames 352,285
Coupling. See Car coupling. Harness coupling. Thill coupling.
Crate, folding, D. E. Evans 352,183
Cuff retainer, A. Bond 352,294
Cultivator, P. S. Kinsworthy 352,413
Cultivator, listed corn, D. Sommer 352,274

Cutter. See Band cutter. Meat cutter. Vegetable and root cutter. Washer or gasket cutter.
Dental plugger, C. Forester.... 352,456
Derrick, J. Le Duke.... 352,333
Die. See Roller swaging die.
Dish basin, D. Lombert.... 352,250
Dish washer, C. B. Saunders.... 352,155
Doll supporter, A. Staples.... 352,161
Door opener, electrical, D. Rousseau.... 352,154
Doors, etc., pneumatic check for, J. B. Edson.... 352,233
Dredge, salt or pepper, R. Wallace.... 352,376
Drill. See Ratchet drill.
Drill and planter, combined, W. H. Halfaker.... 352,315
Dry closet, I. D. Smead.... 352,157
Dryi g apparatus, M. Reuland.... 352,204
Drying brick, earthenware, etc., kiln for, J. R. Kemp.... 352,193
Egg poacher and egg frier, W. H. Silver.... 352,272
Electric device, A. Lungen.... 352,474
Electric wires and instruments, protector for, Mingle & Brown.... 352,342
Electric wires or cables, composition for the manufacture of blocks for containing, J. W. Butler.... 352,445
Electro magnetic and magneto electric machine, R. Eickemeyer.... 352,234
Elevator. See Water elevator.
Engine. See Road engine. Steam engine.
Engine reversing gear, Rutherford & Moore.... 352,498
Engines, operating the valves of hydraulic pumping, J. Moore.... 352,482
Expansible bolt, H. F. Courtney.... 352,226
Extractor. See Stump extractor.
Eyeglass frame, J. H. Gilbert.... 352,426
Fabrics, machine for measuring and winding, C. H. Lyon.... 352,478
Fabrics, machine for pressing, G. W. Miller.... 352,253
Faucet, beer, C. B. Locke.... 352,140
Fence, W. H. Dungan.... 352,454
Fence, barbed, J. L. Riter.... 352,428
Fence binder, wire, W. C. Gohlson.... 352,406
Fence machine, J. H. Beaver.... 352,111
Fence machine, wire, G. W. Homsher.... 352,505
Fence making machine, B. A. Welds.... 352,212
Fence, metallic picket, E. F. McCarron.... 352,339
Fence, wire, J. H. Dougherty.... 352,232
Fender. See Fire fender.
Fertilizer distributer, J. J. Snyder, Jr.... 352,158
Filter, W. Piercy.... 352,347
Firearm, breech-loading, T. G. Bennett.... 352,292
Fire escape, L. J. Gott.... 352,463
Fire escape, S. I. Trask.... 352,211
Fire extinguishing apparatus, H. C. Johnson.... 352,192
Fire tedder, folding, D. J. Daley.... 352,302
Flexible material, forming articles of, Kleinert & Squires.... 352,330
Floor clamp, C. F. Dearth.... 352,120
Flour sifter safe, S. E. Norton.... 353,313
Flower beds, garden paths, etc., movable artificial border for, W. M. Oungst.... 352,146
Flower pot, S. L. Hunter.... 352,247
Flower pot machine, E. Weisner.... 352,173
Forging plant, W. Hainsworth.... 352,314
Forgings, die for making rolled, G. F. Simonds.... 352,365
Frame. See Eyeglass frame.
Fumigator, J. Watson.... 352,282
Furnace. See Locomotive furnace. Steam boiler furnace.
Furnace grate, W. Haslam.... 352,318
Furnaces by compressed air, working, C. Otto.... 352,423
Gauge. See Level, plumb, and angle gauge.
Game board, I. A. Bush.... 352,116
Garment supporter, Jensen & Johnson.... 352,325
Garment, under, F. B. Brown.... 352,393
Gas engine speeder, C. E. Skinner.... 352,308
Gas lighter, electrical, A. Lungen.... 352,473
Gas regulator, volumetric, M. G. Wilder.... 352,174
Gas to gas burners, device for cutting off the flow of, J. W. Birch.... 352,391
Gate. See Railway gate. Wagon end gate.
Gate, I. Lantz.... 352,417
Gelatine from the heads of fishes, obtaining, B. Robinson.... 352,151
Generator. See Steam generator.
Gloves and other articles, fastening for, S. W. Shorey.... 352,271
Grading machine, road, R. Long.... 352,198
Grain binders, tension device for, G. W. B. Smith 352,429
Grain cradle, W. B. Smith.... 352,372
Grate, J. Christie.... 352,223
Grinding mill, J. R. Kinley.... 352,135
Gun cleaner, H. W. Gary.... 352,405
Halter, M. N. Smith.... 352,371
Hame attachment, F. A. Thompson.... 352,432
Harness coupling, F. M. Boring.... 352,219
Harrow, M. C. Theisen.... 352,279
Harrow, L. A. Wesburn.... [illegible]
Harrow, A. M. Word.... 352,284
Harrow and pulverizer, Brewer & Corsbie.... 352,440
Harrow, disk, G. R. Thompson.... 352,210
Harrow, sulky, J. P. Hoffman.... 352,244
Hasp lock, J. H. Speed.... 352,206
Hay rake, horse, A. E. Roberts.... 352,205
Head rest, adjustable, W. H. Robertson.... 352,354
Heater. See Water heater.
Holder. See Individual condiment holder. Shaft holder.
Hook. See Whiffletree hook.
Hook, W. Webster.... 352,381
Hoop shaving machine, W. A. Stone.... 352,496
Hopper, feed, C. L. Butterfield.... 352,446
Horses, device for stopping, C. C. Harris.... 35 ,241
Hydrant, Bardo & Ford.... 352,288
Hydraulic motor, A. B. Crowell.... 352,229
Inking pad, B. B. Hill.... 352,323
Insulator, electric, H. D. Winton.... 352,436, 352,437
Ironing board, L. M. Darrow.... 352,182
Ironing board, J. Matthias.... 352,338
Jars, cover for, A. W. Brightwell.... 352,392
Journal and bearing, C. H. Fisher.... 352,103
Key. See Watch pendant key.
Kiln. See Brick kiln.
Knife. See Cheese knife.
Knitting machines, needle cylinder for circular, Davidson & Clay.... 352,399
Lace and embroidery stand, M. C. Cohen.... 352,396
Lamp, E. J. McKown.... 352,252
Lamp and chandelier, candle, S. Clarke.... 352,296
Lamp, car, M. Hicks.... 352,243
Lead, manufacturing white, W. E. Harris.... 352,316
Leather, uniting pieces of, P. J. Fitzgerald.... 352,504
Leather while being scalloped, apparatus for holding, A. Schmied.... 352,359
Level, plumb, and angle gauge, W. R. St. Clair.... 352,276
Lever button, E. B. Crocker.... 352,452
Liniment, O. W. Storer.... 352,278
Liquids, in vacuo, producing currents of, J. Young.... 352,287
Lock. See Hasp lock. Permutation lock. Rowlock. Wagon seat lock.
Locking bolt, G. Conlon.... 352,398
Locomotive boiler, J. E. Wootten.... 352,215
Locomotive furnace, J. R. Alexander.... 352,217

Loom for cross weaving, Oldham & Dixon.... 352,258
Loom shuttle box operating mechanism, Lorey & Braun.... 352,419
Looms for weaving double pile fabrics, lay or going part of power, J. F. & G. Priestley.... 352,425
Looms, stop motion for, Meyer & Kohler.... 352,340
Masher, vegetable, N. Johnson.... 352,132
Match machine, B. T. Steber.... 352,162
Meat cutter, H. J. Landolt.... 352,414
Medicine, manufacturing a confection to contain, G. C. Huttemeyer.... 352,466
Metal plates of precious metals, manufacturing compound, A. J. Lustig.... 352,475
Metal rolling dies, making, G. F. Simonds.... 352,367
Metal, soldering tubes of plated, A. J. Lustig.... 352,477
Metals, prepartion for cleaning and polishing, H. A. Arndt.... 352,438
Metallic shank machine, C. T. Stetson.... 352,495
Mill. See Grinding mill.
Moulding, J. & L. Schram.... 352,360
Monument, A. H. Miller.... 352,423
Mordanting, B. Finkelstein.... 352,236
Motor. See Hydraulic motor.
Music leaf turner, W. H. Fesler.... 352,310
Nail machine, wire, W. Taylor.... 352,164
Necktie fastener, B. J. Higgins.... 352,130
Necktie fastener, J. Ballou.... 352,109
Numbering device, H. Lee.... 352,137
Obstetrical instrument, F. Hullhorst.... 352,245
Oil, etc., upon fibrous substances, apparatus for distributing, Benn & Firth.... 352,390
Oiler, telelain or shaft, O. H. Warren.... 352,434
Orange sizer and bin, J. S. McKenzie.... 352,421
Organ, cabinet, J. Hessler.... 352,128
Organ pedal, adjustable, J. T. Rowe.... 352,267
Organs, socket oard for reed, J. Hessler.... 352,129
Packing, piston, T. Tripp.... 352,166
Pad. See Blotting pad. Inking pad.
Painting and whitewashing machine, C. P. Lancaster.... 352,332
Pan. See Baking and roasting pan.
Paper bags, apparatus for making satchel bottom, J. N. Chadsey.... 352,118
Paper box machine, W. S. Davis.... 352,304
Paperhanger's roller, W. P. Pope.... 352,351
Paper making, dandy roll for use in, C. Smith.... 352,493
Pencil sharpener, E. B. Dunn.... 352,456
Pendulum, compensation, J. Gerhardt.... 352,461
Permutation padlock, N. Speicher.... 352,373
Piano case, upright, H. Toaspern.... 352,289
Pianos, music rack for, J. F. Conover.... 352,300
Pianos, tuning pin for, J. W. Carnes.... 352,395
Picker. See Cotton picker.
Picture cord, wire, G. C. Tate, Jr.... 352,499
Pipe joints, cement for, C. W. Collins.... 352,449
Piston, balance, J. P. Benoit.... 352,293
Planing machine, W. H. Doane.... 352,307
Planter and chopper, cotton, L. P. Pitts.... 352,149
Planter, combined corn and cotton, J. G. Davis.... 352,303
Planter, corn, J. Locher.... 352,418
Planter, corn and seed, C. C. Henderson.... 352,186
Planters, check row corn, H. M. Reesor.... 352,202
Plow, gang, F. F. Landis.... 352,196
Plow irons, machine for setting and adjusting, E. J. Sawyer.... 352,156
Plow, sulky, J. S. Trimble.... 352,281
Poke, animal, A. W. Bishop.... 352,175
Polishing machines, roll for, F. W. Coy.... 352,227
Portfolio, C. Scherer.... 352,358
Pot. See Flower pot.
Press. See Printing press.
Pressure regulator and cut-off, Westinghouse, Jr., & Moore.... 352,382
Printers' forms, lock-up for, W. Lloyd.... 352,248
Printing machines, sheet delivery apparatus for, G. P. Fenner.... 352,402
Printing oil cloths, etc., machine for, F. O. Getchell.... 352,123
Printing press, M. Gally.... 352,237
Projectiles, accelerating, J. W. Graydon.... 352,125
Propelling wheel, M. S. Cole.... 352,299
Pulverizing machine, Fuller & Hayes.... 352,459
Rack. See Whip rack.
Rail braces, manufacture of, C. Alkins.... 352,286
Railway brakes, system of motors for electric, C. J. Van Depoele.... 352,167
Railway curves, etc., rail for, L. Brigham.... 352,113
Railway, electric, E. E. Ries.... 352,265
Railway gate, F. Marble, Jr.... 352,334
Railway signal, D. C. James.... 352,412
Rake. See Hay rake.
Range boiler, J. Tucker.... 352,375
Ratchet drill, M. Rothfuss.... 352,266
Regulator. See Gas regulator. Pressure regulator.
Revolver, H. Goodman.... 352,185
[illegible].... 352,500
Road engine, W. Applegarth.... 352,3
Road engines, axle joint for, H. Bushnell.... 352,220
Rock, machine for raising phosphate, D. J. Gilchrist.... 352,311
Roll, dandy, J. R. Ogden.... 352,484
Roller swaging die, G. F. Simonds.... 352,366
Roofing retainer, Owen & Lichtenberger.... 352,424
Rowlock, E. J. Kerns.... 352,329
Salt or condiment, compound table, J. M. Hughes 352,465
Sash balance, Lang & Talbot.... 352,415
Sash fastener, R. M. Hutchinson.... 352,189
Sash fastener, F. L. Rosentreter.... 352,355
Saw filing implement, P. A. Potter.... 352,352
Saw, fire wood drag, B. F. Shinn.... 352,269
Saw setting device, J. B. Sylvester.... 352,207
Scaffolding bracket, S. Martin.... 352,420
Scraper, corn and cotton, W. H. Adams.... 352,107
Scraper, road, J. M. Orput.... 352,345
Scrapers, attachment for road, C. G. Jones.... 352,133
Screw, jack, O. Seely.... 352,362
Seat. See Car seat.
Seed and fertilizer distributer, E. T. Camp.... 352,117
Selecting device, J. E. Munson.... 352,143
Sewing machines, feed mechanism for, De Beaumont & Snellenburg.... 352,231
Shaft holder, G. J. Spenneberg.... 352,494
Shearing table, sheep, C. B. & J. B. Phelps.... 352,262
Shears, die for making, I. Harris.... 352,409
Shirt and lacing, combined, A. Hepner.... 352,321
Shoe, rubber, W. A. Macleod.... 352,199
Shovel. See Wooden shovel.
Shovel, H. C. Cole.... 352,224
Shutter fastener and shutter bower, combined, Barnes & Cunningham.... 352,439
Signal. See Automatic danger signal. Railway signal.
Slates, etc., machine for making muffling strips for, C. Nelson.... 352,145
Sleigh and car iage, combined, W. H. Crane.... 352,450
Spark arrester, O. T. Owings.... 352,485
Spark arrester, W. T. Reed.... 352,353
Spindle support, E. J. Carroll.... 352,222
Spinning machines, band tightener for, W. T. Carroll.... 352,221
Stand. See Lace and embroidering stand.
Steam boiler, T. Main.... 352,142

Steam boiler furnace, A. R. Jones.... 352,327
Steam boilers, electric safety attachment for, R. Reichling.... 352,203
Steam boilers, etc., tube sheet for, H. Warden.... 352,308
Steam engine, G. E. Rider.... 352,150
Steam generator, Hayes & Bonnell.... 352,319
Steam generators, heating water in, F. G. Wheeler.... 352,283
Steam muffler, R. Solano.... 352,273
Steam trap, J. H. Banks.... 352,387
Steering ships, apparatus for, J. A. Tilden.... 352,374
Stirrup, safety, A. R. Parkison.... 352,259
Stoves, cooking attachment for heating, M. Ruggles.... 352,488
Street sweeper, E. G. Rock.... 352,152
Stump extractor, F. R. Smith.... 352,370
Supporter. See Corset and skirt supporter. Door supporter. Garment supporter.
Surface condenser, H. Warden.... 352,378
Suspenders, F. M. Piper.... 352,348
Swing, O. L. Sprague.... 352,430
Switch. See Three-throw switch.
Table. See Shearing table.
Table leg fastening, H. A. Kaufhold.... 352,328
Table slide fastening, T. G. Bugbee.... 352,114
Tag attaching device, M. L. Howell.... 352,410
Tags, machine for manufacturi g pin, S. E. Mower.... 352,254
Tap, beer, H. Nadorff.... 352,144
Telegraph sounder, C. D. Haskins.... 352,317
Telegraph system, printing, J. C. Wilson.... 352,435
Telephone transmitter, J. W. Bonta.... 352,176 to 352,179
Telephone transmitter, W. H. Collins.... 352,119
Thermostat, G. F. Bulen.... 352,442
Thill coupling, J. A. Kranz.... 352,469
Thrashing machine, G. L. Pittman.... 352,148
Three-throw switch, E. J. Remillon.... 352,426
Tile making machine, drain, R. J. Carson.... 352,448
Timber, preserving, H. Aitken.... 352,216
Timepieces, electric alarm for, F. Glasgow.... 352,407
Tire, J. G. Hess.... 352,187
Tire upsetter, N. D. Stanley.... 352,431
Tongue support, W. L. Landon.... 352,197
Torpedo boat, submarine, C. D. Goubet.... 352,124
Toy, J. Fallows.... 352,401
Traction engines, pinion wheel for, E. Samuel.... 352,357
Traction wheel, R. R. Moore.... [illegible]
Trap. See Ant trap. Steam trap.
Trousers or overalls, W. Cohlman.... 352,297
Tubes, roller for forming tapered, E. Wiesner.... 352,172
Type writing machine, C. Spiro.... 352,160
Valve gear, automatic, F. A. Gardner.... 352,238
Vegetable and root cutter, I. P. Cribb.... 352,451
Vehicle brake, C. A. Burr.... 352,115
Vehicle wheel, J. Macphail.... 352,141
Velocipede, T. Zanger.... 352,503
Velocipedes, luggage carrier for, J. A. Lamplugh. 352,331
Veneering machine, A. C. Johnson.... 352,131
Vessels, centerboard for, A. L. Shears.... 352,490
Vessels, device for closing openings in the hulls of, J. Speirs.... 352,275
Vise heads, manufacture of, J. C. Herman.... 352,322
Wagon end gate, J. A. Reed.... 352,201
Wagon seat lock, D. D. Whitney.... 352,384
Wagon train, self-propelling, J. B. Osborne.... 352,346
Warming apparatus, portable, A. E. Bailey.... 352,386
Warping machine, compression roller for wire, O. S. Lee.... 352,138
Wash bench, folding, Sly & Wood.... 352,369
Washer. See Dish washer.
Washer or gasket cutter, J. Leuenberger.... 352,129
Washing machine, P. Bulger.... 352,413
Watch pendant key, D. Nettekoven.... 352,257
Watch, stop, A. O. Jennings.... 352,326
Watches, safety attachment for, D. Nettekoven.... 352,256
Water conductor, rain, W. D. Bates.... 352,290
Water distribution, system of, G. B. Bassett.... 352,389
Water elevator, G. W. Campbell.... 352,394
Water heater, feed, G. Green.... 352,464
Water heater, feed, A. F. Ward.... 352,377
Water heater, feed, H. Warden.... 352,379
Weaner, calf, J. M. Markham.... 352,336
Wheel. See Propelling wheel. Traction wheel. Vehicle wheel.
Whiffletree hook, A. A. Brackbill.... 352,295
Whip rack, L. D. Jones.... 352,467
Windmill, F. A. Baker.... 352,108
Window, M. B. Burk.... 352,181
Wire box fastening, twisted and flattened, C. F. Hunt.... 352,246
Wire strapping, fastening for, R. F. Spangenberg. 352,159
Wire stretcher, Ferris & Helm.... 352,122
Wires, apparatus for moulding perforated blocks for containing electric, J. W. Butler.... 352,504
Wooden shovel, H. Middleton.... 352,341
Wrench, J. M. & W. H. Parsons.... [illegible]260
Wrench, A. D. Ward.... 352,433
Yoke attachment, safety neck, G. F. Shulnburg.... 352,364

DESIGNS.

Broom holder, whisk, J. H. Flinn.... 16,978
Fruit, inside wrapper for dried, F. S. Johnson.... 16,979
Mat, A. Spadone.... 16,982
Match box, A. H. Wirz.... 16,983
Rug, E. J. Lawrence.... 16,981
Saddle tree, J. Bevan.... 16,976, 16,978
Sash pulleys, housing for, G. Kuhn.... 16,980

TRADE MARKS.

Colors for glass painting, and a powder in the nature of flock, called "plushette," R. H. Bragdon.... 13,790
Fireplaces and open grates, W. H. Jackson & Co.... 13,791
Flour, wheat, Columbia Mill Company.... 13,796
Hog products, G. Fowler & Co.... 13,787
Hosiery, M. Posnansky.... 13,793
Liquid veterinary lotion, R. Ord.... 13,794
Lotion for the face and hands, Stewart Healing Powder Company.... 13,797
Medicinal invigorating tonic, H. M. Rowell.... 13,786
Medicines, kidney and liver cure, O. Peck.... 13,785
Razors, scissors, and pocket knives, McCoy & Sanders.... 13,789
Stoves, ranges, and furnaces, cooking, Co-operative Foundry Company.... 13,792
Tablets, dyspepsia, Z. T. Trout.... 13,788
Violin, banjo, and guitar strings, H. C. Barnes.... 13,795

A printed copy of the specification and drawing of any patent in the foregoing list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired, and remit to Munn & Co., 361 Broadway, New York. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications, not being printed, must be copied by hand.

Canadian Patents may now be obtained by the inventors for any of the inventions named in the foregoing list, at a cost of $40 each. For full instruction 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.

ICE-BOATS — THEIR CONSTRUCTION and management. With working drawings, details and directions in full. Four engravings, showing mode of construction. Views of the two fastest ice-sailing boats used on the Hudson river in winter. By H. A. Horsfall, M.E. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, 1. The same number also contains the rules and regulations for the formation of ice-boat clubs, the sailing and management of ice-boats. Price 10 cents.

ARTESIAN WELLS.—BY T. C. CHAMberlain.—Principle of artesian wells. Essential features. The water-bearing beds. The confining beds. Inclination of the beds. Adva tages of low inclination of the strata. Surface condition of the porous bed. Rain-fall. Irrigation by artesian wells. Escape of water at lower levels than the well. Conditions relating to the well. Height of flow. Detection of flow. Effect of time on flow. Character of the water. Limits in depth. Art of sinking wells. Record of drillings. Areas of favorable, doubtful, and adverse probabilities. Illustrated with 31 engravings. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 542, 543 and 544. Price 10 cents. To be had at this office and from all newsdealers.

CONCRETE.—BY JOHN SLATER, B.A. —A paper on the means to be adopted in order to render buildings stable, and on the use of concrete as a material for that purpose. Early use of concrete as a building material. Value of concrete. Materials of which concrete is composed. Cement concrete. London concrete. Artificial stones. Concrete buildings. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 539. Price 10 cents. To be had at this office and from all newsdealers.

FUNGI INDUCING DECAY IN TIMBER. By P. H. Dudley.—The dry rot of timber and the cause of it. List of fungi that aid in the decomposition of wood. Destruction of ties and bridge timbers. Wet rot. Fungi special to each kind of tree. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 538. Price 10 cents. To be had at this office and from all newsdealers.

DIETETIC DELUSIONS.—A PAPER by Dr. R. M. Hodges, pointing out some of the popular delusions in regard to the quantity of food to be eaten, and when it is to be taken, and showing the true way of regulating such matters so as to prevent deleterious consequences. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 539. Price 10 cents. To be had at this office and from all newsdealers.

CLOUDS, THEIR FORMS AND Heights.—An interesting account of an important series of measurements and observations upon the heights and measurements of clouds made at Upsal by Ekholm and Hagstran.—The forms of clouds. Apparatus for measuring the heights of clouds. Results of measurements. With 5 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 537. Price 10 cents. To be had at this office and from all newsdealers.

PERFECT
NEWSPAPER FILE

The Koch Patent File, for preserving newspapers, magazines, and pamphlets, has been recently improved and price reduced. Subscribers to the SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT can be supplied for the low price of $1.50 by mail, or $1.25 at the office of this paper. Heavy board sides; inscription "SCIENTIFIC AMERICAN," in gilt. Necessary for every one who wishes to preserve the paper.
Address
MUNN & CO.,
Publishers SCIENTIFIC AMERICAN.

SOLID EMERY WHEELS.—BY T. D. Paret.—Early forms of emery wheels and their defects. Vulcanite wheels. The tanite wheels. Testing of tanite wheels at Stroudsburg. Best working speeds for emery wheels. Bursting of emery wheels. Tests for emery wheels. Comparative merits of American and English emery wheels. With 2 engravings. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 538. Price 10 cents. To be had at this office and from all newsdealers.

PHOSPHATE MINES OF CANADA.—By Beau Mont.—An interesting paper describing the various mines of apatite or "phosphate" of Canada.—Geography and geology of the phosphate districts. How phosphate has been formed. The various mines and their products. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 537. Price 10 cents. To be had at this office and from all newsdealers.