NEW BOOKS AND PUBLICATIONS.

A TREATISE ON THE USE OF BELTING FOR THE TRANSMISSION OF POWER. By John H. Cooper. Third edition. Philadelphia: Edward Meeks. Pp. 399. Price $3.50.

This work, from the time of the appearance of the first edition, in 1877, has been looked upon with decided favor by large numbers of users of leather belting, as being eminently practical and covering a wide range of practice. It has numerous illustrations of approved and actual methods of arranging main driving and quarter-twist belts, with rules for calculating the size and driving power of belts, and directions for their care and management. The author also presents liberal quotations covering the views and experience of the best known engineers and managers of machinery, collected through a long series of years.

WOOLEN AND WORSTED CLOTH MANUFACTURE. By Roberts Beaumont. New York: John Wiley & Sons. Pp. 390. Price $2.50.

This book is designed to be a practical treatise for all persons employed in the manipulation of textile fabrics. It treats of the physical structure and clothing properties of the raw materials used in the production of woolen and worsted fabrics, the making of yarns and their preparation for weaving, the manipulation of the loom, designing and coloring, and the operations to which the cloth is submitted after weaving. The author is a lecturer and demonstrator in the textile industries department of the Yorkshire College, Leeds, England, and therefore brings to his task a knowledge of the technical details in one of the foremost manufacturing districts in this specialty in the world.

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 This is for our information, and not for publication.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. H. writes: I have just completed** a small motor, made after the instructions given in your valuable paper, but on a smaller scale. I made the magnets one-half the width and thickness as the one you described, put the same number of layers and convolutions, and wound the magnets with No. 20 covered wire. I applied it to the wires from a dynamo, and found it to work excellently. This is my first attempt at such work. Would you please give me the dimensions of a motor, such as the size of field magnet, length of armature core, size of wire, and the number of convolutions and layers to be wound on each, so that I could make a motor with power enough to propel a small row boat about 18 feet long? A. We are pleased that you have succeeded so well in making your motor. We shall in the near future publish a description of a larger electric motor adapted to your wants.

(2) **J. J. E. writes: I have built a dy**namo according to description given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 161, and it works beautifully both as a dynamo and a motor. As a motor it runs with a small current, and where I run it and magnetized the field magnets, they put the current from 4 arc lamps as used on the streets, and it ran with uncountable speed without heating at all. The first few turns of the drive wheel generates a current. I have made an arc lamp 18 inches by 6 inches, ¼ inch carbons. Can you give me an idea how I can make some electric magnet that will cause the upper carbon to be raised about ¼ inch when the current is turned on, so as to make an arc? A. An axial magnet formed of a few turns of wire heavy enough to carry the entire current, and provided with a hollow cylindrical core or armature, carrying clutch adapted to engage the carbon or the carbon supporting rod, will probably answer your purpose.

(3) **W. C. S. asks: 1. Will the motor** used as a dynamo, wound with 16 and 20 wire, develop as much current as the one in SUPPLEMENT, No. 161, when driven by a half horse power engine? A. Yes. 2. Can the so-called burglar alarm wire wound with two layers of cotton, costing 40 cents a pound, do in place of regular magnet wire to wind it? A. No. The insulation is too thick. 3. Would a better commutator, like that of the eight light dynamo recently described in SCIENTIFIC AMERICAN, increase its efficiency as a dynamo? A. It would undoubtedly be a better commutator to use, but it would not be in accordance with the spirit of the article, which calls for a commutator made with few tools. Such a commutator would not increase its efficiency.

(4) **H. H. W. asks: Will increasing the** amount of wire on the field magnet increase the lighting capacity in number of lamps from dynamo, in No. 600 of the SUPPLEMENT? A. You can increase the capacity of the machine by adding two layers of two parallel No. 18 wire each, or two layers of No. 12, which is the equivalent of two No. 18 wires, and, by increasing the size of the wire on the armature from 20 to 19, and increasing the speed about 25 per cent. This modification will enable you to run about 12 lamps, but at a corresponding increase in the expenditure of power.

(5) **H. A. Z. asks: If an armature can** be made to fit in the field magnets of dynamo described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 161, that will give a stronger current in volts than 6·3, can it be made on same principle as the eight light dynamo armature, and what size wire and number of coils? If soft iron wire or washers would be best for core? A. We cannot advise you to make a drum armature for your small dynamo. You can increase the voltage by reducing the size of the wire upon the armature and field magnet. The reduction of one or two sizes in the wires will make a marked difference in the results.

(6) **D. T. G. writes: I anticipate using** the hand power dynamo for a motor, in a canoe. If I wind it as directed in the article on making a drum armature for it, for motor, how much battery power will it take to run it? A. The hand power machine described in SUPPLEMENT, No. 161, will answer very well as a motor without any alteration, except possibly the reduction of the amount of wire upon the field magnet to about one half its present quantity. A drum armature of a diameter suitable for this machine we think would not be as efficient as an H armature.

(7) **J. O'D. writes: I am trying to** make the simple electric motor. I would like to know if the copper wire as used in the telephone will do? A. The wire used in the telephone is too fine for the motor. 2. I would like to know the size of the vulcanite. A. The vulcanite is 2¼ inches in diameter and ⅛ of an inch thick. It need not be exactly of this size. Consult SUPPLEMENT, No. 641.

(8) **C. K. S. asks if the simple electric** motor described in your issue of March 17 would be capable of running a small dynamo of same dimensions, and if this dynamo would be capable of sustaining two 16 candle power 40 volts incandescent lamps. A. The motor is incapable of running a dynamo of sufficient size to sustain two 16 candle power lamps; better use the current employed in driving your motor for running your lamp.

(9) **W. T. asks: Can we decompose** water by a dynamo-electric machine, and how? What quantities in cubic feet of H and O per hour can two horse power engine with a dynamo in favorable circumstances produce? A. Yes. By using iron terminals and immersing them, not touching, in a vessel of caustic soda, oxygen and hydrogen will be evolved, one gas from each pole. It is an expensive way of working. A 2 horse power engine will give about 5 cubic inches of hydrogen and half as much oxygen per second.

(10) **M. F. D. asks: Is Fordham a part** of New York City? A. Yes.

(11) **H. M. P. writes: We have con**structed the electric motor, following as near as possible the instructions given in your paper. Being unable to get 12 coils on the armature, we wound it with 8 coils No. 16. The commutator is made of a brass tube 1 inch long and 1 inch diameter, divided in 8 sections. The battery consists of eight 1 gallon earthenware jars, each jar having 1 plate of zinc and 2 plates of gas carbon cut roughly in shape, and separated from the zinc plates by vertical strips of wood nailed to a horizontal strip that supports the zincs. This battery runs the motor for two or three hours, but does not give power enough for any work. The motor attains a high speed when in the circuit of a small dynamo. How can we increase the efficiency of the motor so that it will run a lathe? Is it necessary to make a new solution every time we use the motor? You say to connect the coils 2 inches parallel. What is meant by this? In taking twice the dimensions of motor, should there be 24 coils on the armature? Is the power of motor increased by adding to the number of coils? How can I mould plates for a battery from gas carbon? A. You would probably secure better results if you were to connect your battery for "quantity," that is, connect all the zincs together for one pole of the battery, and all the carbon plates together for the other pole. It was a mistake to reduce the number of coils—better increase the number than reduce it. To connect coils in parallel is to connect corresponding ends of the coils together, so that the current will pass through both at once, instead of passing through one after the other. If you double the diameter of your armature, you should use 24 or more coils. The power of a motor will be increased by adding to the number of coils, but there must be a corresponding increase in the current. You cannot readily make your own battery plates. You will find it far cheaper and better to purchase them. You will, however, find in recent answers to queries full directions for making battery carbons.

(12) **E. C. B. asks: 1. Should the arma**ture touch the field magnet in the electric motor described in SUPPLEMENT, No. 641? A. No. 2. How can I make the vulcanized fiber disk for the motor? A. You will have to purchase the vulcanized fiber from a dealer in electrical supplies. A disk of hard rubber will answer the same purpose. 3. Would it be practicable to use a storage battery and dynamo run by windmill to run the motor? A. The power of a windmill is too unsteady to run a dynamo direct for charging storage batteries. 4. How could I make the dynamo and storage battery? A. For information on dynamos consult SUPPLEMENT, No. 600. For information on storage batteries, consult SUPPLEMENT, Nos. 346, 416, and 342. 5. How is adhesive tape made, and where can I procure it? A. Adhesive tape is made by covering cotton tape with a varnish formed by dissolving pure rubber in benzole or turpentine, and adding a very small percentage of a fixed oil to prevent it from drying hard. 6. Where can I procure loadstone? A. From any dealer in physical machines or apparatus. 7. How can I temper a steel spring? A. Heat the spring to a cherry red, plunge it in oil; hold the spring over an open fire and heat it evenly from end to end until the oil blazes. A great deal of practice is required to properly temper a spring. In the first place, to secure a proper spring temper, good spring steel is required. The steel must be uniformly heated to a cherry red, and care must be taken to not overheat it. 8. Does an engine take any heat out of steam except what is due to expansion? A. A great deal of heat is lost by conduction through the walls of the cylinder. 9. What is the best form for an account book for a mechanic working by the day? A. Consult any work on bookkeeping. 10. Where can I get rules for figuring on a building? A. Consult "Building Table and Estimate Book," by Brown. Price $1.50. "Builders' Guide and Estimators' Price Book," by Hodgson. Price $2. Or "Architects' and Builders' Pocket Companion and Price Book," by Vodges. Price $1.50. Which we can supply.

(13) **F. McF. asks: 1. Would a motor** made one-half the size of one described in March 17 number be strong enough to work one sewing machine? A. If made one-half the size (linear), it would have but one-quarter the power of the machine as described. We think it advisable to adhere to the present proportions except in the matter of winding the armature. You might fill up the sections of the armature ring with No. 20 wire, about six layers deep. 2. Will four bichromate batteries be sufficient? A. Yes. 3. Is field magnet wound with same kind and size of wire as armature? A. The size of the wire on the field magnet may remain the same. 4. The brushes are connected up by means of flexible cords. Please explain. A. The connections of the brushes are clearly shown in the drawings. The flexible cords are used to permit of turning the disk which carries the brushes.

(14) **G. I. K. asks for the calorific powers** of natural gas and coal gas. A. Natural gas varies greatly in its composition. A fair tabulation would give per 1000 cubic feet:

Natural gas	650,000 foot pounds.
Coal gas	450,000 to 500,000 " "

Water gas is about the same as coal gas. 1 foot pound= $\frac{1}{766}$ pounds avoirdupois of water heated 1 degree Fah.

(15) **A. K. asks: What substance in the** form of a varnish or paint, or similar covering material, will resist the action of hydrofluoric acid? A. Melted beeswax or paraffin may be used as a resistant varnish, or solution of gutta percha in bisulphide of carbon.

(16) **J. W. I. asks for something to put** on posts to keep them from rotting in the ground. We have nothing but spruce and some cottonwood, and find the spruce posts will only stand three or four years, when they rot off at the ground. A. Creosote oil is an effectual preservative. Make a small shallow tank into which pour one or two barrels. Place the ends of the posts in the tank, as many as convenient. Allow them to remain a few hours, then drain off excess of oil and lay by ready for setting. If the posts are of such size that you can burn the portion going into the ground, before creosoting, so as to make on them a coating of charcoal, that is a good protection.

(17) **J. T. asks (1) how to make a fire** bed in a forge that will not crack and get loose. A. Make the fire bed of your forge of pulverized fire brick, which can be done with a hammer. Mix with just enough common clay and water to make the mass stick together, ram the bed slightly with a stick or hammer, let it dry, and build a slow fire at first. 2. What is the best way to temper small flat springs, such as main springs in guns, etc.? A. Small springs as for gun locks should be dipped in salt water edgewise, so that the water will flow through the bend. Use as low a heat as will allow of hardening. Much depends upon the quality of steel used as to heat required. To draw temper, dip the spring in lard oil or linseed oil, and heat over the fire until the oil takes fire, then dip in oil.

(18) **Mrs. F. P. writes, concerning how** to keep jelly from moulding. Grease a soft paper with butter, and place it very carefully on the top of your jelly, buttered side up, and do not leave the least air bubble visible, placing the paper close to the side of the cup all round, then paste another good paper, not too stiff, over the top of cup; you will find your jelly afterward as good as when first put up.

(19) **H. A. S.—Kerosene and petroleum** are used in burners for cooking purposes, and in a small way for generating steam without the steam jet. Steam pressure of 3 or more pounds pressure is needed to make any reliable flame for steaming a boiler. It has been tried without pressure on burners to boilers for house heating, but all such devices have been failures from the fact that they cannot be trusted and are therefore a source of danger. We do not know enough of the particular burner you mention to venture an opinion.

(20) **F. W. J. asks: 1. Will the lines of** vision of a man standing on the equator and a man standing in the temperate zone, both looking in a westerly direction, be converging, diverging, or parallel lines? And if so, why? A. They will be parallel. All horizontal lines at right angles with a meridian are parallel for every degree of latitude. The reason is a geometrical one, derived from the axiom that a meridian of the earth is in a geometrical plane, and all lines at right angles to a plane are parallel. This has no relation to the dip of the horizon, which will make all lines converge from a meridian or other circle.

(21) **L. C. N. asks how to enliven the** cushions on a billiard table. A. The cushions of billiard tables are usually made of rubber, vulcanized; when they become hard by age and use, there is nothing that can be done but renewal.

(22) **P. C. C. asks (1) a receipt for mak**ing chloroform liniment. A. Take 1 ounce each chloroform, ether, spirit of camphor, and laudanum, and ¼ ounce tincture of Cayenne pepper. 2. How to make a blood purifier. Mix ½ ounce sulphite of manganese with 1 pint of water. Take a wineglassful three times a day.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

May 22, 1888,

AND EACH BEARING THAT DATE.

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

Acid esters, manufacture of salicylic, C. Kolbe.... 383,306
Adjustable chair and swing, C. Bastian............ 383,206
Angle clamp for the corners of tables, desks, etc., D. J. Brougher.......... 383,167
Axles of sheet metals, making, T. C. Munz........ 383,183
Baking pan, Greene & Hendryx.............. 383,177
Barrel cover attachment, B. F. Field.............. 383,349
Battery. See Secondary battery.
Battery zinc, J. Beattie, Jr.............. 383,271
Bell, automatic, C. M. O'Leary.............. 383,236
Belting, L. Binns.............. 383,208
Belting, machine, C. A. Schieren.............. 383,373
Billiard marker, coin-actuated, E. C. Jones........ 383,228
Boiler. See Steam boiler.
Boiler feeding attachment, M. P. Janney...... ... 383,227
Book index cutting machine, A. Rothe............ 383,252
Books, binding of, A. J. Megee.............. 383,315
Boom for yachts, etc., spinnaker, A. C. Crandall.. 383,172
Boot or shoe, W. F. Kearney.............. 383,303
Boot or shoe trimming machine, C. H. Trask...... 383,331
Boots or shoes, detachable sole plate and spike for, Kingston & McGunnigal 383,133
Boots or shoes, manufacture of heels for, Mitchell & Reynolds, Jr.............. 383,139
Boring bars, automatic feed for, S. A. Brumbaugh.............. 383,210
Bottle stopper, G. S. Chamberlin.............. 383,277
Box. See Journal box. Telegraph call box.
Box sections, machine for cutting, P. Rodideau.. 383,148
Brake. See Car brake. Wagon brake.
Brick machine, J. J. Kulage.............. 383,399
Bridle attachment, A. Geenen.............. 383,176
Bridles, rosette attachment for, J. C. Harpham... 383,122
Buckle, N. Clement.............. 383,102
Buckle, F. C. Hall.............. 383,121
Buckle or clasp, W. Gries.............. 383,230
Bugs, machine for destroying potato, Hooey & Bailey.............. 383,294
Building construction, iron, L. S. Buffington...... 383,170
Burner. See Gas burner.
Bustle, A. White.............. 383,421
Button, W. Starley.............. 383,156
Cable covering machine, C. H. Gersch.............. 383,353
Can. See Oil can.
Car brake, T. H. Burridge.............. 383,387
Car coupling, E. R. Yauger.............. 383,424
Car heater, J. H. Elward.............. 383,115
Car heater, C. E. Struck.............. 383,417
Cars, air heating device for, L. P. Converse........ 383,171
Cars, apparatus for heating railway, W. H. Plumb.............. 383,247
Cars, automatic pipe coupling for railway, W. F. Grassler.............. 383,288
Cars, heating railway, C. Taylor.............. 383,380
Carburetor, J. P. Wilson.............. 383,204
Carpet cleaner and dust conveyer, H. A. Widman, Jr.............. 383,422
Casting mould, T. H. Pasco.............. 383,318
Celluloid surfaces, ornamenting, A. Bensinger.... 383,272
Chain cutter teeth, machine for making blanks for, C. H. Douglas.............. 383,347
Chair. See Adjustable chair. Folding chair. Rattan chair.
Chair, A. D. Marr.............. 383,231
Chalk, crayon, etc., machine for the manufacture of, C. H. Fuchs.............. 383,174
Chuck, drill, H. M. Preston.............. 383,248
Cigar bunching machine, C. Browning.............. 383,342
Cleaner. See Carpet cleaner.
Clutch coupling, G. F. Hutchins.............. 383,297
Clutch, friction, H. C. Crowell.............. 383,104
Cock, stop, S. Hawkridge.............. 383,356
Coffin fastener, Lottridge & Einsfield.............. 383,311
Coffin fastener, W. J. Noble.............. 383,235
Collar pad, horse, L. W. Noyes.............. 383,143
Concentrator, J. J. Droughton.............. 383,284
Cork extractor, H. J. Boggis.............. 383,093
Corn-shuck compressor, R. F. Hageman *et al*...... 383,355
Corset shaping apparatus, Stone & Gardner....... 383,416
Cotton chopping, planting, and cultivating machine, combined, D. W. Pilond.............. 383,146
Cotton cleaning machines, elevator for, R. H. Wiggins.............. 383,264
Cotton gin, D. B. Haselton.............. 383,223
Coupling. See Car coupling. Clutch coupling. Hose coupling. Pipe coupling.
Cultivator, M. Bouse.............. 383,094
Cultivator, Motherwell & Comly.............. 383,186
Cutter. See Sheet metal scroll cutter.
Dental plugger, pneumatic, W. S. Sherman........ 383,152
Dental tool, J. J. R. Patrick.............. 383,367
Derrick, hay, Hooper & Hamblen.............. 383,358
Die. See Screw cutting die.
Display rack, J. A. Fitzgerald.............. 383,117
Doll and phonograph, combined, W. W. Jacques.. 383,299
Door mat, Johnson & Larsson.............. 383,132
Drier. See Fruit drier.
Drill socket, P. Grabler.............. 383,289
Drum, heating, V. D. Urso.............. 383,381
Educational device, J. Dushane.............. 383,389
Electric cables, anti-induction composition for, D. Brooks, Jr.............. 383,096
Electric machine, dynamo, J. W. Easton........... 383,113
Electric machine, dynamo, L. N. P. Poland... 383,320
Electric machines, automatic tightening device for armatures of dynamo, J. W. Easton........ 383,114
Electric wires and cables, covering for, D. Brooks, Jr.............. 383,098

Electric wires, support for, D. Brooks, Jr.......... 383,097
Electrophorus, J. D. Culp.......................... 383,105
Elevator. See Hydraulic elevator.
Elliptic spring, W. A. Sweet....................... 383,329
Engine. See Steam engine. Traction engine.
Eraser, C. Robinson................................ 383,149
Evaporating apparatus, vacuum, H. T. Yaryan.... 383,384
Explosive compound, C. W. Volney.................. 383,420
Extractor. See Cork extractor.
Eyelets, machine for rolling flanged, A. G. Mead.. 383,403
Faucet, self-closing, T. McHugh.................... 383,138
Feed device, automatically adjustable, C. J. Billiog.... 383,145
Fence, C. C. Bargdill.............................. 383,335
Fence, iron, W. H. Coker........................... 383,343
Fence, iron, S. B. Husselman....................... 383,296
Fence, metallic, G. H. Guile....................... 383,222
Ferrule for umbrellas, canes, etc., O. M. Smith.... 383,378
Ferrules, making cant hook, E. Mansfield.......... 383,135
Fifth wheel, W. E. Rothwell........................ 383,323
Fire alarm circuits, fusible coupling for electric, G. G. Smith.... 383,377
Firearm, magazine, J. P. Lee....................... 383,363
Fire escape, T. Brice.............................. 383,340
Fire escape, H. B. Calkins......................... 383,211
Fires in stoves, extinguishing, A. Doetschmann.. 383,283
Flatiron, self-heating, J. B. Curl................. 383,346
Folding chair, J. F. A. Spaet *et al*.............. 383,255
Fruit drier, J. L. Phelps.......................... 383,245
Fur plucking machine, J. W. Sutton................. 383,258
Furnace. See Hot air furnace. Oil furnace. Smoke consuming furnace.
Galvanic battery excitant, T. P. Whittier......... 383,263
Galvanometers, differential expansion device for, Bristol & Geyer.... 383,095
Gas and electric light fixture, combined, S. B. H. Vance.... 383,158, 383,332
Gas burner, Argand, E. Beach.......... 383,337, 383,398
Gas burning torch, J. R. Smith..................... 383,154
Gas generator for locomoties, A. C. Huidekoper.. 383,395
Gate, J. Chandler.................................. 383,213
Generator. See Gas generator.
Goblet holder, E. C. Baker......................... 383,092
Gold plated shells, etc., plate for shaving, J. S. Palmer.... 383,239
Governor, steam engine, J. B. Allfree.............. 383,267
Grader, road, A. Finks............................. 383,350
Grain meter, automatic, J. C. King................. 383,362
Grain separator, G. B. Railey...................... 383,166
Grapes while maturing, envelope for protecting, E. T. Starr.... 383,327
Gripping device, intermittent, M. S. Rexford...... 383,371
Guitar, G. W. Bowers............................... 383,275
Gun, breech-loading, L. P. Diss.................... 383,108
Gun, breech-loading, L. H. Smith................... 383,325
Handle. See Saw handle.
Harness, A. N. Jenkins............................. 383,359
Harness hook, D. W. Brownell....................... 383,341
Harrow, W. E. Jacobs............................... 383,298
Harrow, P. C. King................................. 383,305
Harrow and cultivator, combined revolving, L. S. Evans.... 383,286
Harvester and thrasher, combined, D. C. Matteson.... 383,233
Harvester, cotton, O. T. Bugg...................... 383,099
Harvesters, swatching attachment for, C. N. Owen.... 383,317
Hat starting machine, R. Barrett................... 383,270
Hat stretching machine, W. Simmonds............... 383,254
Heater. See Car heater. Tire heater.
Hog trap, J. R. Gentry............................. 383,218
Holder. See Goblet holder. Lamp shade holder. Pen holder. Pillow sham holder. Twine holder.
Hook. See Harness nook. Snap hook.
Hose coupling, C. Kiefer........................... 383,360
Hose coupling, H. A. Wahlert....................... 383,160
Hot air furnace, H. Callahan....................... 383,100
Hydraulic elevator, W. H. Marsh.................... 383,232
Indicator. See Office indicator. Poison bottle indicator. Station indicator. Street and station indicator.
Ingot or bar for tools, F. W. Seaman.............. 383,192
Injector, W. E. Dodge.............................. 383,109
Inkstand and frame, C. Vehring..................... 383,199
Iron. See Flatiron. Moulder's draw iron. Sad iron.
Iron ores, reducing, G. M. Westman................. 383,201
Ironing table, C. Ostrander........................ 383,189
Jack. See Lifting jack.
Jewelry, manufacture of gold plated wire stock for, J. S. Palmer.... 383,240
Jewelry, preparing hollow stock for the manufacture of, J. S. Palmer.... 383,238
Journal box, J. M. Normand......................... 383,410
Ladder and bench, combined, step, J. W. Peacock.... 383,243
Ladder, extension fire, L. Dederick.......... 383,106, 383,107
Lamp, electric, E. C. Ohmart....................... 383,411
Lamp shade holder and shade, G. E. Stockwell.... 383,415
Lamps, manufacture of incandescent electric, O. A. Moses.... 383,140
Lathe, turning, G. Philion......................... 383,369
Level, spirit, E. A. & C. M. Stratton............. 383,196
Lifting jack, M. Hedges............................ 383,293
Lithographic stones, transferring phototypes to, O. Krebs.... 383,308
Lock. See Nut lock.
Loom for weaving loom harness, F. Eckermann.. 383,215
Loom stopping mechanism, H. Wyman................ 383,163
Mat. See Door mat.
Measure for fitting gloves, hand, A. E. McDonald 383,365
Measuring machine, rattan, Taft & Jones.......... 383,197
Measuring vertical and horizontal distances, instrument for, J. Short.... 383,375
Mechanical movement, Moehsing & Pfluger....... 383,407
Metal bars, reticulated or open work of, T. Robinson.... 383,250
Metallic blanks, apparatus for tapering, C. Nobs.. 383,142
Meter. See Grain meter.
Middlings purifier, Weiss & Fraenkel.............. 383,262
Mill. See Paint mill.
Mould. See Casting mould.
Moulder's draw iron, G. A. White................... 383,203
Motor. See Steam or other motor.
Nut lock, O. L. Castle............................. 383,212
Nut lock, H. B. Baker.............................. 383,268
Nut lock, Neiman & Melhorn......................... 383,366
Nut lock, A. J. Wylie.............................. 383,162
Oar and oar lock, G. K. Pheatt..................... 383,241
Office indicator, R. R. Gareau...................... 383,393
Oil can, J. Rau.................................... 383,370
Oil furnace, A. A. Harwood......................... 383,123
Orange grading device, A. Ayer..................... 383,205
Ordnance, breech-loading, C. Rostel................ 383,372
Oven attachment, C. E. Hollingsworth.............. 383,127
Packing, piston, M. J. Russell..................... 383,253
Packing pulverulent substances, machine for, C. J. Mattison.... 383,136
Pad. See Collar pad.
Paint mill, A. J. Gaston........................... 383,352
Pan. See Baking pan.
Pen holder, perforated, F. M. Libby................ 383,185
Pencils, eraser holder for, J. Hoffman............. 383,357
Piano mover, W. S. Reynolds........................ 383,190
Pillow sham holder and lifter, D. C. King......... 383,304
Pipe coupling and check valve or chamber, combined, W. T. Messinger.... 383,428
Pipes, joint for cement lined, E. H. Phipps...... 383,413
Plane, bench, T. H. B. Millsap..................... 383,234
Plastic material, box of, M. Gardner.............. 383,175
Plated wire stock, plate for the manufacture of, J. S. Palmer.... 383,241
Plow, drill, C. Herren............................. 383,224
Plow point, I. J. Martin........................... 383,402
Plow, sulky, N. Lampman............................ 383,309
Poison bottle indicator, J. C. Higgins............ 383,394
Power. See Water power.
Power mechanism, W. A. Howard...................... 383,295
Pressure regulator, A. G. Hohenstein.............. 383,225
Pressure regulator and safety valve, automatic, A. G. Hohenstein.... 383,226
Pressure regulator, fluid, W. B. Mason............ 383,426
Pressure regulator, self-acting or automatic, E. A. McLaughlin.... 383,314
Pump, spraying, A. Weaber.......................... 383,261
Punch, belt, H. L. T. Overbey...................... 383,237
Punching and shearing machine, Weber & Schneider.... 383,200
Rack. See Display rack.
Rail or bar bender, M. H. Brown.................... 383,168
Railway switch stand and signal, N. W. Boyd...... 383,209
Railway tracks, steel tie for, M. Fitzgerald...... 383,118
Railways, safety catch for cable, C. Vogel....... 383,159
Railways, three-throw switch for, F. S. Washburn.... 383,382
Rattan chair, knockdown, B. J. Buckman........... 383,169
Refrigerating and ice making by the use of ammonia, apparatus for, R. F. Roswald.... 383,261
Regulator. See Pressure regulator.
Rheostat, F. J. Crouch............................. 383,345
Ribbon spool, Necker & Gifford..................... 383,141
Rice hulling machine, E. C. Engelberg............. 383,285
Roofing, water and fireproof composite, W. Chadd.... 383,101
Rope transmission, slack take-up for, W. H. Dodge.... 383,282
Rubber or its compounds into hardened rubber, composition for converting India, W. B. McGarvey.... 383,137
Sad iron, W. Milfeil............................... 383,404
Sad iron, T. H. Patterson........................... 383,319
Sash and frame, window, C. Kruesi................. 383,134
Sash balance, J. H. Corsbie........................ 383,280
Sash balance, T. G. Russell........................ 383,414
Saw gummer, J. P. & N. Romer....................... 383,191
Saw handle, G. E. Siebler.......................... 383,376
Saw machine, upright, G. Philion................... 383,246
Saw tooth, inserted, F. W. Cook.................... 383,103
Sawing machine, power feed, G. B. Durkee......... 383,112
Screen. See Window screen.
Screw cutting die and stock, P. Grabler.......... 383,354
Seaming machine, can, G. W. Lore.................. 383,400
Secondary battery, L. Epstein...................... 383,216
Secondary battery, S. Russell...................... 383,150
Secondary battery, J. S. Sellon.................... 383,193
Seed, machine for delinting cotton, A. Seibert.... 383,374
Separator. See Grain separator.
Sewing machine, C. E. Tibbles...................... 383,419
Sewing machine buttonhole attachment, H. J. Williams.... 383,423
Shafts, means for securing pulleys on, W. H. Dodge.... 383,281
Sheet metal bending machine, G. R. Everson...... 383,391
Sheet metal blanks, machine for making, C. W. Judson.... 383,302
Sheet metal folder, G. R. Everson.................. 383,390
Sheet metal scroll cutter, Kittridge & Adriance.. 383,398
Shoes, machine for treeing, Copeland & Crisp..... 383,279
Sifter, ash, J. E. Crosby.......................... 383,173
Sifter, ash, M. Lynch.............................. 383,312
Sifter, coal, F. H. Perry........................... 383,412
Singletree, J. R. Freeland......................... 383,351
Siphon for starting the flow of liquids, M. Siersdorfer.... 383,153
Sleigh, W. S. Marble............................... 383,401
Sleigh knee, H. P. Titus........................... 383,259
Smoke consuming furnace, J. D. Lee................ 383,310
Snap hook, J. M. Basinger.......................... 383,336
Soldering cylindrical cans machine for, J. S. Johnstone.... 383,301
Sole machine, E. S. Abbott......................... 383,266
Spring. See Elliptic spring. Vehicle spring.
Square, bevel, protractor, and level, combined, W. Palmer, Jr.... 383,242
Stain for brickwork, S. Tullar..................... 383,330
Stamp, rubber, E. Reynolds......................... 383,321
Stand. See Railway switch stand. Type case stand.
Station indicator, J. C. Ludwig.................... 383,230
Staves, jointing machine for barrel, W. Ritter.... 383,249
Steam boiler, C. P. Marshall....................... 383,364
Steam engine, F. M. Rites.......................... 383,322
Steam or other motor, Moehring & Pfluger......... 383,405
Stereotype plates, machine for planing, L. Goss.. 383,221
Stopper. See Bottle stopper.
Stove, cooking, J. Strupp.......................... 383,418
Stove, gas, M. J. O'Rielly......................... 383,316
Stove, heating, M. Peckham......................... 383,144
Stoves, dust flue for, J. A. Buckwalter.......... 383,386
Stoves, oven for cooking, J. Rau................... 383,147
Strainer, milk, G. W. Knapp........................ 383,307
Street and station indicator, S. M. Friede....... 383,392
Stringed instruments, tail piece for, S. M. Burson 383,276
Stump puller, Tichenor & Walker.................... 383,198
Sweat pad fastener, J. S. Cusson................... 383,388
Syringe, B. F. Sutton.............................. 383,257
Table. See Ironing table. Trimming table.
Table, G. Wolz..................................... 383,333
Tack heading machine, strip, G. W. Copeland..... 383,278
Tank, N. Sorensen.................................. 383,194
Tanning hides, composition of matter for, Snow & Howard.... 383,379
Target, flying, F. Erb, Jr......................... 383,343
Teaching fractions and percentage, device for, L. W. Johnson.... 383,300
Telegraph call box, district, J. B. Gill......... 383,220
Telephone conveyer, S. R. Ballard.................. 383,269
Telephone, mechanical, G. F. Shaver............... 383,324
Testing machine, A. V. Abbott...................... 383,365
Theatrical appliance, J. T. Kilham................ 383,361
Timber hangers, machine for making, C. H. Williams.... 383,265
Tinning copper sheets, machine for, D. Evans.... 383,116
Tire heater, J. O. Sperbeck........................ 383,195
Tongue support, L. W., Jr., & R. E. L. Leavell.... 383,183
Traction engine, D. B. James....................... 383,179
Tramway, electrical, H. T. Blake.................. 383,273
Tramway, electrical, Blake & Sterling............. 383,274
Trap. See Hog trap.
Trimming table, S. W. Patterson.................... 383,368
Trough. See Water trough.
Truck, car, L. K. Jewett.................. 383,180, 383,181
Truck, car, W. Youmans.......................... 383,164
Truck wheel, hand, M. J. Cummings................. 383,214
Tube expander, J. Duffy............................ 383,111
Tug, hame, G. Schmidt.............................. 383,151
Twine guide and cutter, L. Goodyear............... 383,120
Twine holder, A. B. Tomlin......................... 383,157
Type case stand, W. P. Harmony..................... 383,292
Type writing machine, M. Weiss..................... 383,383
Umbrella, A. S. Hubbell............................ 383,128
Valve for steam or other engines, Moehring & Pfluger.... 383,406
Valve gear, Moehring & Pfluger..................... 383,408
Valve, governor, W. B. Mason....................... 383,427
Valve, pop safety, A. Hattersley.................. 383,125
Valve, steam engine, J. D. Fiske.................. 383,287
Vehicle running gear, T. C. Munz.................. 383,409
Vehicle spring, C. M. Blydenburgh................. 383,339
Vehicle, two-wheeled, G. Beebe..................... 383,297
Vehicle, two-wheeled, H. W. Jones.................. 383,229
Vehicle wheel, T. B. Jeffery.............. 383,129, 383,130
Velocipede, G. Illston............................. 383,396
Velocipede, T. B. Jeffery.......................... 383,131
Ventilating wheel, E. Fox.......................... 383,217
Ventilator, J. W. McKinnon......................... 383,313
Vise, Armstrong & Vandegrift....................... 383,165
Wagon, G. S. Conwell............................... 383,344
Wagon brake, R. J. Mitchell........................ 383,187
Walls, finish for plastered, T. Jones............. 383,397
Warming apparatus and stove, house, J. Fries.... 383,119
Warp for pattern making, C. H. Landenberger.... 383,182
Washing machine, J. C. Drake....................... 383,110
Washing machine, O. F. Glidden.................... 383,426
Watch case pendant, H. Gerber...................... 383,219
Watch, repeating, H. O. Stauffer.................. 383,256
Watch, striking, J. Walzer......................... 383,260
Watches, machine for making pendants for, A. Stalnacke.... 383,326
Water, electrical apparatus for purifying, A. R. Leeds.... 383,184
Water power, A. Gustlin............................ 383,291
Watering trough for cattle, W. E. Haskins........ 383,124
Weigher, automatic grain, J. Henry................ 383,126
Wheel. See Fifth wheel. Truck wheel. Vehicle wheel. Ventilating wheel.
Window screen, H. Speer............................ 383,155
Wire, making, W. A. Sweet.......................... 383,328
Wire screen, etc., D. Wesemann.................... 383,161
Wire splicing machine, W. L. Haag................. 383,178
Wrench, J. D. Abbott............................... 383,334
Zinc ores, reducing, G. M. Westman................ 383,202

TRADE MARKS.

Belting, leather, W. S. Nott Company.............. 15,510
Cocoa and chocolate, preparation of, Bensdorp & Co.... 15,479
Colors of all shades and tints, mortar, Ricketson Mineral Paint Works.... 15,513
Copper, refined, Orford Copper Company........... 15,511
Corsets, C. A. Griswold.................. 15,493, 15,494
Corsets and other white underwear, Rosenthal, Fleischer & Co.... 15,515
Cotton and woolen fabrics, woven, Chia and Japan Trading Company.... 15,484
Cotton fabrics of all kinds, Lancaster Mills...... 15,505
Dentifrices, J. C. Moore........................... 15,506
Hose, rubber, Harper & Reynolds Company.......... 15,496
Knit wearing apparel, Lackawana Mills............ 15,501
Medical compounds for curing skin diseases, B. Jaffe & Darmstaedter.... 15,478
Medical powders, C. F. Cleaveland................. 15,485
Medicine, expectorant, W. H. Riker................ 15,514
Nails, horse, Livingston Nail Co.................. 15,502
Oil, illuminating and lubricating, Kosmic Oil Co.. 15,500
Oysters, fruits, and vegetables in contradistinction to canned or preserved goods, fresh, C. H. Pearson & Co.... 15,512
Perfumery, Doussan French Perfumery Company. 15,487
Pills, liniment, tonic, cough sirup and female regulator, D. R. Fly & Co.... 15,489
Plaster composition for architectural purposes, Adamant Manufacturing Company.... 15,476
Potato flour and potato starch and all potato starch products, including dextrine, Norddeutsche Kartoffel mehl Fabrik.... 15,509
Radiators, Williams & Tompkins.................... 15,520
Ribbons, Johnson, Cowdin & Co............ 15,498, 15,499
Rubber boots, shoes, umbrellas, and conducting hose, Dunlap, Lawton & Hall.... 15,488
Salve, A. Berthold....................... 15,480, 15,481
Shirt bosoms, J. Schloss................. 15,517, 15,518
Shirts, V. H. Rothschild & Co..................... 15,516
Soap, hard, Butler Brothers........................ 15,483
Soap, harness, J. M. Gwinnell..................... 15,495
Soap, toilet, Maine Balsam Fir Co................. 15,503
Soaps, cosmetics, hair oils, and perfumes, perfumed, W. S. Thomson.... 15,519
Stains from mortars and cements, S. Bowen's Sons.... 15,482
Starch, blue, and other laundry preparations, J. Ascough.... 15,477
Tableware, metal, Holmes & Edwards Silver Company.... 15,490
Tin plates and terne plates, Merchant & Co....... 15,504
Tobacco, smoking and chewing, Gradle & Strotz... 15,492
Toilet application for the skin, L. H. Gordon.... 15,491
Tooth powder or preparation, Horsey Manufacturing Co.... 15,497
Underwear, cotton, A Cohen........................ 15,486
Yarns, worsted, woolen, and silk, Nonantum Worsted Company.... 15,508
Yarns, worsted, woolen, silk, and cotton, Nonantum Worsted Company.... 15,507

DESIGNS.

Brush case, air, C. L. Burdick..................... 18,329
Button back, S. Cottle............................. 18,331
Costume, lady's, J. Sheils......................... 18,346
Costume, Miss', M. B. Kent......................... 18,335
Cuff, shirt, D. O'Brien............................ 18,348
Door trimming, G. J. Wells......................... 18,351
Fabric, C. B. Smith...................... 18,347 to 18,350
Hame attachment, J. S. Schott..................... 18,345
Oil cloth, C. T. & V. E. Meyer........... 18,336 to 18,342
Organ stop knob, M. Clark.......................... 18,330
Skirt, walking, L. Roys............................ 18,344
Stove, cooking, J. L. Gobeille............ 18,332, 18,334
Stove, heating, J. L. Gobeille.................... 18,333

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.