

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.

OFFICE OF H. K. & F. B. THURBER & Co.,
West Broadway, Reade, and Hudson Sts.,
New York, March 15, 1882.

H. W. Johns Mfg. Co., New York:

DEAR SIR: After an experience of over five months with your pure Asbestos Packing in use as a piston packing, I am free to say I am agreeably surprised at the result, for after being in constant use that length of time it shows little or no signs of wear, holds steam and water perfectly, does not "blow out," and I find requires less oil than any other packing I have ever used. I shall continue to use it in all the engines under my charge.

Yours truly, CHAS. D. DOUBLEDAY, Chief Engineer.

Drop Forgings of Iron or Steel. See adv., page 188.

Patent Key Seat Cutter. See last or next issue.

Latest and best books on Steam Engineering. Send stamp for catalogue. F. Keppy, Bridgeport, Conn.

Steel Stamps and Pattern Letters. The best made. J. F. W. Dorman, 21 German St., Baltimore. Catalogue free.

Portable Hoists; double the power and one fourth the cost of any others. L. Hoffman & Co., 229 River St., Cleveland, O.

Patents Sold, Leased. Correspondence solicited. In-close stamp. Koebenderfer & Urie, 200 Broadway, N.Y.

Heavy Trimmed Walrus Leather, by the Hide or in Wheels, for Polishing Metal. Greene, Tweed & Co., N.Y.

Wanted 100 tons of Casting, in pieces weighing from 3 lb. to 300 lb. each. Any one prepared to do this will find a good and constant customer. H., Box 773, New York.

The New System of Bee Keeping.—Every one who has a farm or garden can keep bees on my plan with good profit. Illustrated circular of full particulars free. Address Mrs. Lizzie E. Cotton, West Gorham, Me.

Cheapest and best Hoists. 229 River St., Cleveland, O.

Blake's Belt Straps. The strongest and best fastening for rubber and leather belts. Greene, Tweed & Co., N.Y.

Now Ready. Catalogue of Electrical Books; also general catalogue. E. & F. N. Spon, 446 Broome St., N.Y.

Send name and address to Cragin & Co., Philadelphia, Pa., for Cook Book free.

Abbe Bolt Forging Machines and Palmer Power Hammers a specialty. S. C. Forsaith & Co., Manchester, N.H.

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N.Y. For Power & Economy, Alcott's Turbine, Mt. Holly, N.J.

Combination Roll and Rubber Co., 27 Barclay St., N.Y. Wringer Rolls and Moulded Goods Specialties.

Send for Pamphlet of Compilation of Tests of Turbine Water Wheels. Barber, Keiser & Co., Allentown, Pa. Presses & Dies (fruit cans) Ayar Mach. Wks., Salem, N.J.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock, 80 to 88 Market St., Chicago, Ill.

Wood Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O.

"How to Keep Boilers Clean," and other valuable information for steam users and engineers. Book of sixty-four pages, published by Jas. F. Hotchkiss, 84 John St., New York, mailed free to any address.

Saw Mill Machinery. Stearns Mfg. Co. See p. 156.

Supplement Catalogue.—Persons in pursuit of information on any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N.J.

List 27.—Description of 3,000 new and second-hand Machines, now ready for distribution. Send stamp for same. S. C. Forsaith & Co., Manchester, N.H., and N.Y. city.

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N.Y.

Improved Skinner Portable Engines. Erie, Pa.

Supplee Steam Engine. See adv. p. 157.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 173.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 173.

4 to 40 H. P. Steam Engines. See adv. p. 174.

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv. p. 174.

The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

Ball's Variable Cut-off Engine. See adv., page 188.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'f'rs, 23d St., above Race, Phila., Pa.

For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N.Y.

Paragon School Desk Extension Slides. See adv. p. 199.

Brass & Copper in sheets, wire & blanks. See ad. p. 189.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Machine Diamonds. J. Dickinson, 64 Nassau St., N.Y.

Draughtsman's Sensitive Paper. T. H. McCollin, Phila., Pa.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N.Y. See illus. adv. p. 189.

Wm. Sellers & Co., Phila., have introduced a new injector, worked by a single motion of a lever.

Granville Hydraulic Elevator Co., 1193 B'way, N.Y. For Mill Mach'y & Mill Furnishing, see illus. adv. p. 188.

Upright Self-feeding Hand Drilling Machine. Excellent construction. Pratt & Whitney Co., Hartford, Conn.

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N.Y. Wm. Sellers & Co.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) E. E. asks: Of what is gasoline made, such as is used in street lamps and gasoline stoves? A. Gasoline is one of the first products obtained when petroleum is submitted to distillation and the vapors passed through tubes chilled by surrounding water. These products are as follows:

	Limits of gravity.	Average gravity.	Specific gravity.	Boiling point.
1 Gases uncondensed.....	115° to 105°	110°	600	32°
2 Cymogene.....	105° to 95°	100°	625	65°
3 Rhigogene.....	95° to 80°	87°	664	120°
4 Gasoline.....	80° to 65°	73°	700	175°
5 Naphtha (refined).....	65° to 60°	63°	750	250°
6 Benzine.....	60° to 38°	46°	807	340°
7 Kerosene, or burning oil.....	38° to 25°	30°	885	425°
8 Lubricating oil (common).....				
9 Paraffine.....				

(2) B. F. S. writes: Please state the formula for making glue (which is not sweet) that will dissolve without the aid of heat, as in the so-called mouth glue. A. Try the following: soak good white glue in a little cold water over night, then dissolve it by aid of heat (over a water bath) in a sufficient quantity of strong acetic acid. It does not gelatinize on cooling.

(3) C. G. S. asks: 1. What can I do or apply to polished steel, either tempered or draw the temper, and have it to maintain its brightness or high polish? A. The only way to preserve the brightness of finished steel is to protect the surface of the metal from the action of moist air. The best way to do this is to coat it with a film of some transparent lacquer and harden the latter by heat. 2. What can be applied to gold alloys and silver as a preventive of discoloring? A. The only resource is lacquer. 3. Do you know of any villages that offer large inducements to receive manufacturing enterprises? A. No. 4. Can steel springs be soldered, both ends to meet as broken, and be used for the same purpose as before? A. This cannot be done satisfactorily.

(4) W. H. M. writes: 1. I am thinking of obtaining power to run my printing press from a steam power 40 rods away. Can I use a cable made of annealed steel wire (same as used on self-binders) twisted into a rope, say five or six strand, to advantage? Will it not rust out in a short time if not coated? A. You can convey the power by a wire rope, but do not use annealed iron; use either fine iron or steel wire unannealed. 2. Is there not something that it can be coated with, say, asphaltum paint, or something of the kind? A. Coating occasionally with linseed oil and ocher, or coal tar, or asphaltum paints, will protect it. 3. What size of wheel should it run over to give and receive the power? A. The larger your pulleys, the longer the rope will wear. They should be at least three feet in diameter.

(5) C. C. C. writes: I would be very glad to have an opinion from your valuable paper (which is an authority in our family) on the healthfulness of that most common article of diet in every household, raised bread. 1. Is it a myth, or is there some truth in the often expressed saying, that "freshly raised bread is unwholesome?" If it is, I am sure your paper can give us a scientific explanation of it. A. Raised bread is not unwholesome if properly baked. If underdone the yeast is not all killed; the live cells set up fermentation in the stomach and give rise to dyspeptic troubles. 2. Why are hot soda biscuits said to be unwholesome? Are they more or less so than hot raised biscuits? Has the "heat" anything to do with it in either case, or is it only the freshness? A. Hot soda biscuits may be unwholesome when an excess of soda is used, or when the biscuit is underdone. In the latter case the doughy mass is swallowed in lumps which the gastric juice cannot easily penetrate, and digestion is seriously retarded. If baked until firm (so that it cannot be compacted like dough) hot bread is not unwholesome. The heat is not injurious; neither is the "freshness." 3. Why do we not hear the same cry against that modern breadstuff hot "Graham gems," made from simple flour and water, beaten well and dropped into highly heated iron moulds, which, when made properly, are a worthy rival in lightness and deliciousness of even the lightest of fine flour raised or soda biscuit? A. Because of an unreasonable prejudice in favor of Graham flour, which may be, and often is, exceedingly unwholesome.

(6) J. N. H. asks: 1. Can a locomotive push any more cars up a grade of 100 feet to a mile than it can pull up? A. We think not, though it may occur that, with some peculiar arrangement of engine, which would throw more weight on the drivers, when on an incline and pushing. 2. Will it require any more power to force an inch square stream of water in the bottom of a tank 100 feet deep and overflow at the top,

than it will to force the same up a pipe to the same height? A. Theoretically, no. 3. Can a 10 inch bore by 12 inch stroke engine do as much work, and as economically, as a 10x20? If not, what is the reason? A. No, as the losses by waste spaces, radiation, etc., are greater in proportion in the small engine.

(7) O. M. W. asks: 1. Will a vertical boiler 6 inches diameter and 12 inches high, 1 flue through the center, be large enough to run an engine 1 inch bore and 2 inch stroke? A. No; make it 18 inches to 24 inches high. 2. How much steam per square inch must I carry in the boiler to make the engine work one thirty-second horse power, and how thick must the boiler plates be—either of brass or copper? A. About 45 pounds per square inch. You cannot make it much less than one-eighth inch thick, and make good work. This will be sufficient for strength, 3. Will it make any difference if the steam ports are round or square? State size, round or square. A. One-fourth of an inch or five-sixteenths of an inch diameter. 4. Will this engine run a small lathe (lathe 3 inches swing)? A. Yes. 5. Will a one-fourth inch safety valve be large enough for a vertical boiler, one flue through the center, outside diameter 6 x 12 inches? A. Make your safety valve not less than half inch diameter.

(8) W. E. G. writes: 1. I am trying to master all the rules pertaining to engineering as laid down by Haswell. In hydraulics I find a rule to compute the volume of water discharged from a pipe, viz.,

$$39.27 \sqrt{h} \frac{d^5}{l} = V \text{ in cubic feet per second. I would}$$

like to know where the factor 39.27 comes from and what it is? A. The multiplier 39.27 is the product of 50, the constant of velocity in feet per second x 0.7854, the area of a circle of unity, diameter 0.7854x50=39.2700. 2. What is the general meaning of wire drawn, as sometimes applied to steam? A. Wire drawn is an expression used to signify drawing steam, air, or other fluid, through an opening reduced in area from the general area of the pipe, as in partially closing the throttle valve of an engine.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

J. F. J.—It is very common mineral—iron pyrites—composed of iron and sulphur.—E. I. S.—The clay contains too much ferruginous silicious matter to be of much value.—E. P. M.—(U. S. C.) It is kaolin of very fair quality. If properly "washed" it could be used to advantage in the manufacture of white ware and enamels, etc.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were

Granted in the Week Ending

March 7, 1882.

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed 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., 261 Broadway, corner of Warren Street, New York city. 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.

Aeriform fluids, apparatus for mixing, J. F. Barker	254,589
Alarm, See Burglar alarm. Fire alarm.	
Amalgamator, A. McKellar	254,675
Anvil, cutter and punch attachment for, G. T. Childs	254,532
Axle cleaner and wrench, combined, C. H. Hamilton	254,643
Axle, vehicle, C. Cook	254,466
Axle, vehicle, Deisher & Adam	254,625
Baking plate, pie, C. T. Hurd	254,770
Ball. See Toy ball.	
Barrel bushing, T. J. Loftus	254,687
Basket, J. Hibbard	254,479
Battery. See Galvanic battery.	
Bed bottom, spring, Hood & Fox	254,652
Bed bottom, spring, T. B. Laycock	254,663
Bed, folding, C. M. Morrison	254,678
Bed, folding cabinet, J. Fournier, Jr.	254,632
Bed, iron, A. Hebert	254,548
Bedstead, J. Monzel	254,777
Bedstead, Pitt & Dunks	254,690
Bedstead, wardrobe, A. Ortlieb	254,501
Belt, straw conveyor, A. J. Park, Jr.	254,636
Billiard cue cutter, P. Ryan	254,703
Billiard table, R. Herman	254,549
Bit. See Bridle bit.	
Bleaching and washing linen, etc., composition for, Levy & Alexandre	254,487
Block. See Building block. Saw mill head block.	
Blower, air, O. C. Davis	254,538
Boiler. See Locomotive boiler.	
Boiler cleaner, A. Rogers	254,698
Bolt beading machine, H. J. Johnson	254,484
Boneblack kilns, etc., automatic discharging apparatus for, A. A. Goubert	254,474
Boot and shoe lasting machine, Copeland & Brock	254,617
Boot or shoe, S. C. Dizer	254,626
Boots and shoes, lasting and uniting the upper and soles of, E. Bertrand	254,594
Bottle stopper, C. Beecher	254,528
Bottle stopper, dose cup, J. H. Zeilin	254,760
Bottles, jars, etc., stopper for, G. A. Smyth	254,718
Box. See Packing box.	
Bran flouring machine, W. Warren	254,784
Brewing, Percy & Wells	254,575
Brick machine, W. & A. B. Woodward	254,525
Bridge, draw, Edwards & Kelly	254,627
Bridle bit, E. Little	254,663
Broiler, H. H. Sheldon	254,709
Broom hanger, J. Rath	254,692
Brush machine, wire, J. E. & C. E. Howard	254,655
Bag catching machine, potato, F. O. Casey	254,459
Building block, foundation, M. R. Marks	254,489
Burglar alarm, electric, H. C. Roome	254,699
Burner. See Vapor burner. Vapor retort burner.	
Calamine, Hecht & Davis	254,647
Can. See Cream can.	

Can opener, A. W. Lyman	254,488
Cane juice, sirup, etc., with sulphuric acid, etc., bleaching, A. G. Fell	254,471
Cane mill and process of extracting saccharine substances, G. W. Soule	254,575
Car coupling, G. Cade	254,609
Car coupling, D. Fettes	254,472
Car coupling, L. T. Gose	254,766
Car coupling, T. C. Ryan	254,702
Car coupling, C. P. Willson	254,754
Car door, grain, A. E. Pepper	254,689
Car door, grain, J. H. Wickes	254,752
Carding engines, condensing cylinder for, J. Greaves (r)	10,054
Carriage top, Butterworth & Bolles	254,608
Carriage top joint, G. Asher	254,447
Carrier. See Egg carrier. Hay carrier.	
Cartridge capping and uncapping implement, A. Worden	254,757
Case. See Watch case.	
Casting car wheels, mould for, L. W. Washburn	254,521
Chain, neck or bracelet, D. S. Spaulding	254,512
Chain, pitch, A. H. Wallis	254,739
Chisel, mortising, G. R. Valentine	254,733
Chroming fabrics, T. Simpson	254,713
Churn, G. N. Cleveland	254,614
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Cleaner. See Axle cleaner. Boiler cleaner. Grain cleaner. Steam boiler cleaner.	
Clip. See Yoke clip.	
Clothes rack, D. A. Epperson	254,470
Coat hanger, W. B. Bisbee	254,451
Coffee roaster, C. Abele	254,582
Coffee roaster, E. A. Hartsell	254,547
Collar pad, J. N. Nesson	254,499
Collyrium, A. Templeton	254,724
Combining machine, A. Smith	254,714
Connecting rod, H. See	254,707
Cooking vessel, A. W. Obermann	254,500
Corn husking implement, J. Nixon	254,682
Corset, J. Hilborn	254,680
Corset, C. H. Williams	254,786
Cotton gin attachment, Thames & Riley	254,725
Cotton press, G. E. Judson	254,774
Cotton scraper, J. L. Farnsworth	254,629
Coupling. See Car coupling. Drill rod coupling.	
Cravat fastening, G. E. Poland	254,503
Cream can, H. B. Scoville	254,706
Cultivator, J. W. Bunch	254,606
Cultivator, W. A. Knowlton	254,556
Cultivator, G. Martin	254,776
Cut-off valve gear for steam engines, J. James	254,483
Cutter. See Billiard cue cutter.	
Cutter head for wood-working machines, J. C. Tunnell	254,732
Dish, covered, E. A. Parker	254,687
Doffer rings for card setting machines, joining, J. J. Hoey	254,651
Door hanger, C. W. Bullard	254,605
Door strip, C. E. Rice	254,694
Draught regulator, H. Bisson	254,595
Drawers and other garments, Stiefel & Juhn	254,782
Drawers, men's, I. Schmeer	254,506
Dredge dipper, R. R. Osgood	254,563
Drier. See Fruit drier.	
Drill. See Grain drill.	
Drill rod coupling, E. E. Hardy	254,477
Dyeing colors on textile fabrics, T. & R. Holliday	254,550
Egg and sugar beater, C. Deis	254,540
Egg carrier, N. F. Tipton	254,517
Electric light regulator, J. H. Guest	254,546
Electric meter, C. V. Boys	254,597
Elevator. See Freight elevator. Hoist elevator.	
Engine. See Rotary steam engine.	
Evaporator. See Register evaporator. Steam heat evaporator. Sugar evaporator.	
Extractor. See Stump extractor.	
Fanning mill, Edly & Levan	254,469
Faucet, G. A. Naumann	254,680
Faucet attachment, W. W. Sweeney	254,577
Fence, barbed wire, Watkins & Scutt (r)	10,063
Fence, portable, W. H. Randall	254,504
Fence post, C. Kinney	254,662
Fence wire stretcher, G. Arrowsmith	254,587
Fencing machine for making barbed wire, Thompson & Farrell	254,516
Ferrule, wire, H. O. Lotbrop	254,559
Fiber, apparatus for determining the nitration of cellular, White & Whitcomb	254,751
Fiber disintegrated from cotton stalks, F. Wheaton	254,746
Fiber from the cotton plant and manufacture of articles therefrom, separation of, F. Wheaton	254,749
Filter, J. Grant	254,475
Filter, J. P. McPherson	254,491
Filter stand, H. B. Tiffany	254,726
Fire alarm, automatic, I. Kitsee	254,553
Firearm, breech-loading, J. Nemetz	254,681
Firearm, breech-loading, J. Tonks	254,727
Firearms, magazine for, H. Borchardt	254,453
Fire extinguisher, E. Jones (r)	10,051
Fire extinguisher for railway cars, automatic, F. A. White	254,785
Fire extinguishing compound, M. Mathes	254,560
Flour, manufacture of whole wheat, W. Warren	254,742
Flue, boiler, H. L. Trout	254,731
Forage by storage in silos, preserving, C. H. Roberts	254,695
Frame. See Picture frame.	
Freight elevator and conveyer, T. Keith	254,661
Frog, uniting and separating, H. McDonald	254,673
Fruit drier, Woodruff, Wheeler & Pearson	254,524
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Galvanic battery, A. Michaud	254,476
Gas for heating and illuminating purposes, process of and apparatus for manufacturing, At-trill & Farmer (r)	10,066

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Hay carrier, J. E. Porter.....	254,691
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Lamp, electric, J. H. Guest.....	254,641
Lamp, electric incandescent, E. A. Scribner.....	254,750
Lamp for lighting railway carriages, Shalls & Thomas.....	254,708
Lamp regulator, electric, Brewer & Waterhouse.....	254,762
Lamp shade holder, E. H. Götthberg.....	254,636
Lamps, carbon for electric, H. S. Maxim.....	254,672
Lamps, rheostat for electric, P. H. Fox.....	254,764
Lamps, etc., lighting apparatus for, S. Russell.....	254,701
Lathe for turning irregular forms, W. S. Huntington.....	254,480
Lathe head, E. T. Starr.....	254,719
Lead traps, machine for making, J. Robertson.....	254,697
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Life preserver, B. J. Willard.....	254,590
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Nailing machine nail feed attachment, F. Rochow.....	254,570
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Oman bellows, mechanism for working, J. Wagner.....	254,738
Organs, pneumatic chest for pipe, P. Odenbrett.....	254,562
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Packing band, J. Z. Gifford.....	254,635
Packing box, folding, A. P. Nash.....	254,679
Packing, oil well, J. A. Heydrick.....	254,649
Packing steam, C. M. Van Tine.....	254,736
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Paper and other boxes, C. Beiser.....	254,592
Paper hanging machine, R. H. Miner.....	254,494
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Permutation lock, F. S. Bulwin.....	254,450
Picture frame, Zinn & Edwards.....	254,761
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Plane, variable bench, A. Fales.....	254,542
Planter check rower, corn, C. E. Sweeney.....	254,515
Planter, seed, J. W. Bunch.....	254,607
Planters, check row attachment for corn, C. E. Sweeney.....	254,514
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Plow, A. G. Christman.....	254,533
Plow, J. George.....	254,634
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Power. See Horse power.	
Press. See Cotton press. Hay press. Sealing press.	
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Rack. See Clothes rack.	
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Rake, O. Bergstrom.....	254,593
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Rein holder, Grannis & Thomson.....	254,545
Roaster. See Coffee roaster.	
Rod. See Connecting rod.	
Roller. See Saw mill log roller.	
Rolling mill, W. Wenstrom.....	254,745
Rope clamp, J. Gates.....	254,473
Rotary steam engine, Wade & Wardell.....	254,737
Rubber for erasive purposes, preparing vulcanized, H. T. Cushman.....	254,622
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