#### TO INVENTORS.

An experience of more than thirty years, and the preparation of not less than one hundred thousand applications for patents at bome and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. In addition to our facilities for preparing drawings and specifications quickly, the applicant can rest assured that his case will be filed in the Patent Office without delay. Every application, in which the fees have been paid, is sent complete—including the model to the Patent Office the same day the papers are signed at our office, or received by mail, so there is no delay in filing the case, a complaint we often hear from other sources. Another advantage to the inventor in securing bis patent through the scientific American Patent Agency, it insures a special notice of the invention in the SCIENTIFIC AMERICAN, which publication often opens negotiations for the sale of the patent or manufacture of the article. A synopsis of the patent laws in foreign countries may be found on another page, and persons contemplating the securing of patents abroad are invited to write to this office for prices, which have been reduced in accordance with the times, and our perfected facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN.

## Business and Lersonal.

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Valves and Hydrants, warranted to give perfect satisfaction. Chapman Valve Manuf. Co., Boston, Mass.

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H. Prentiss & Company, 14 Dey St., N. Y., Manufs. Taps, Dies, Screw Plates, Reamers, etc. Send for list. Needle Pointed Iron, Brass, and Steel Wire for all purposes. W. Crabb, Newark, N. J.

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Nickel Platers and Manufacturers use Bunnell's New Nickel Solution, warranted to be no infringement upon any patent. Its low cost, easy, rapid action, white and beautiful deposit on iron, brass, copper, etc., commend it as the best working solution yet produced. Materials for solution, which is easily made, together with prices, etc., furnished upon application. J. H. Bunnell, Electrician, 112 Liberty St., New York.

Hydraulic Elevators for private houses, hotels, and public buildings. Burdon Iron Works, Brooklyn, N. Y. Bolt Forging Machine & Power Hammers a specialty. Send for circulars. Forsaith & Co., Manchester, N. H.

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Ophir Mine, Gold Hill, Nevada, Jan. 4, 1879: I have applied H. W. Johns Asbestos Double Air Chamber Covering to our pipes, and it gives perfect satisfaction. I consider it the very best covering introduced on the "Comstock," and I can apply it at less than half the cost of cements or any other material. Yours truly, M. C. Foot, Chief Engineer. Ophir Mining Co., Virginia, Nev., Jan. 6, 1879: Having used these goods, I fully concur in Mr. Foot's opinion. James Brown, Chief Engi. neer. The genuine Asbestos materials are manufactured only by the H.W. Johns Manufacturing Company, 87 Maiden Lane, N. Y. 137 Beware of imitations.

38 in. Swing Lathe. 12 foot bed, triple geared, compound rest, cross feed, \$400. Will exchange for Horizontal Boring Mill. Stiles & Parker Press Company, Middletown, Conn.

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For Sale Cheap.—Second-hand 8 foot Boring and Turning Mil., Lathes, Planers, Drills, Bolt Cutters, etc. Circulars. D. Frisbie & Co., New Haven, Conn

A Proprietary Medicine Business.-Its right, title, trade marks, etc.; five medicines established over 30 years; well known curatives; well authenticated; be sold cheap. For particulars address Medico, care Drugists Circular, 36 Beekman St., New York,

The only economical and practical Gas Engine in the market is the new "Otto" Silent, built by Schleicher. Schumm & Co., Philadelphia, Pa. Send for circular.

For Solid Wrought Iron Beams, etc., see advertise-

Fruit & other can tools. Bliss & Williams, B'klyn, N. Y. in a given time. These are only factors of the calcula-Bl'k's, Mech's, Ma'fs.. address Box 73, Willimantic, Ct. tion. For Sale. -Brown & Sharp Universal Milling Machine;

Send for circulars of Indestructible Boot and Shoe Soles to H. C. Goodrich, 40 Hoyne Ave., Chicago, Il.

Nickel Plating.—A white deposit guaranteed by using our material. Condit, Hanson & Van Winkle, Newark, N.J. 1,000 2d hand machines for sale. Send stamp for descriptive price list. Forsaith & Co. Manchester, N. H.

Galland & Co.'s improved Hydraulic Elevators. Office 'tion. 206 Broadway, N.Y., (Evening Post Building, room 22.) Brush Electric Light.-20 lights from one machine. Latest & best light. Telegraph Supply Co., Cleveland, O. J. C. Hoadley, Consulting Engineer and Mechanical and Scientific Expert, Lawrence, Mass.

The Lathes, Planers, Drills, and other Tools. new and second-hand, of the Wood & Light Machine Company, Worcester, are to be sold out very low by the George Place Machinery Agency, 121 Chambers St., New York.

Solid Emery Vulcanite Wheels-The Solid Original Emery Wheel - other kinds imitations and inferior. Caution .- Our name is stamped in full on all our best ing Company, 37 and 38 Park Row, N. Y.

Bevins & Co.'s Hydraulic Elevator. Great power simplicity, safety, economy, durability. 94 Liberty St.N.Y.

For Town and Village use, comb'd Hand Fire Engine & Hose Carriage, \$350. Forsaith & Co., Manchester, N. H.

Hydraulic Presses and Jacks, new and second hand, Lathes and Machinery for Polishing and Buffing Metals. E. Lyon & Co., 470 Grand St., N. Y.

Inventors' Models. John Ruthven, Cincinnati, O.

Sheet Metal Presses, Ferracute Co., Bridgeton, N. J. Pulverizing Mills for all hard substances and grinding es. Walker Bros. & Co.,23d & Wood St., Pbila., Pa.

The Lambertville Iron Works, Lambertville, N. J., build superior Engines and Boilers at bottom prices.

Band Saws, \$100; Scroll Saws, \$75; Planers, \$150; Universal Wood Workers and Hand Planers, \$150, and upwards. Bentel, Margedant & Co., Hamilton, Ohio.

Diamond Engineer, J. Dickinson, 64 Nassau St., N. Y. Machine Cut Brass Gear Wheels for Models, etc. (new list). Models, experimental work, and machine wor generally. D. Gilbert & Son, 212 Chester St., Phila, Pa.

The best Friction Clutch Pulley and Friction Hoisting Machinery in the world. D.Frisbie & Co., N. Haven, Ct. AMERICAN. Texas Machinery Depot for any kind of machinery or

special hardware. P. H. Gerhard, Austin, Texas. The only Engine in the market attached to boilerhay ing cold bearings. F. F. & A. B. Landis, Lancaster, Pa. Improved Meat Cutter. Capacity 600 lbs. an hour. Circular and price list, J. W. McFarland & Co., Alliance, O.

Fine Taps and Dies for Jewelers, Dentists, and Machinists, in cases. Pratt & Whitney Co., Hartford, Conn.

Improved Steel Castings; stiff and durable; as soft and easily worked as wrought iron; tensile strength not less than 65,000 lbs. to sq. in. Circulars free. Pittsburg Steel Casting Company, Pittsburg, Pa.

Bead Pulleys that stop the running of loose pulleys and their belts, controlled from any point. Send for catalogue. Taper Sleeve Pulley Works, Erie, Pa.

Correct thing for Holidays, Whist and Dinner Parties, is the Vanity Fair Cigarettes, with your monogram. Vertical & Yacht Engines. N.W.Twiss, New Haven, Ct.

Partner Wanted.—See advertisement on inside page. Best results obtained from Success Turbine Water Wheel. References given. S. M. Smith, York, Pa.

Neophonography—The best and easiest short hand. Only the alphabet to be mastered. 50 cents. Harroun & Bierstadt, 58 Reade Street. New York



(1) W. C. M., J. B. C., and E. F., who ask for books, should address the publishers who advertise in the Scientific American, forcatalogues.

(2) H. R. R. has an engine of the following dimensions: 10 inches cylinder, 18 inches stroke, piston rod 2 inches, crank pin 2 inches, shaft 416 inches diameter, 6 feet long, fly wheel weighs 800 lbs., rim 14 inches wide x 34 thick; engine makes 130 revolutions per minute, and asks what sized fly wheel he may use instead of the present one. A. A wheel of three times the diameter and double the weight of the present one may be used.

(3) E. E. H. asks: 1. What kind of pump runs with the least power? A. Pumps made without packing generally give the highest efficiency. 2. Will two pumps of the same size pump enough water to fill a pipe of the size of one of the pump barrels? A. They can be made to do so.

(4) F. W.—For receipts for tempering mill picks, see p. 219 (27) vol. 39.

(5) P. A. D. asks: 1. Why is the outside rail on a curve on the railroad the highest? A. To counteract the centrifugal force of the train as it passes the curve. 2. Do the outside wheels of a railroad car slide any in going around a curve? A. Generally, the inside wheel slips

(6) C. W. G. asks: Is it possible to obtain CO from K<sub>4</sub>FeC<sub>6</sub>N<sub>6</sub>+6H<sub>2</sub>SO<sub>4</sub> without adding the 6 parts H<sub>2</sub>O? A. Yes, but the decomposition is not complete. The gas is usually prepared from the crystallized salt (K, Fe('y, +3H, 0) with eight or ten times its weight of strong oil of vitriol. If the acid is diluted with water, hydrocyanic acid is given off with or instead of carbonous oxide, thus:  $2K_1FeC_8N_8+6H_2SO_4+X\Pi_2O=FeK_2$  $FeCy_6+6HKSO_4+6HCy+XH_2O$ .

(7) R. H. E. writes: I have read that 33:1 cubic feet of steam expended per minute was equal to Address Union Iron Mills, Pittsburgh, Pa., for an actual horse power. Is this so? A. The power of an engine cannot be estimated by the capacity of its Presses, Dies and Tools for working Sheet Metal, etc. cylinder, nor by the number of cubic feet of steam used

(8) "Subscriber" writes: A friend of mine Bement Profiling Machine: first-class 2d hand Machine says that when a river is rising it will either rise till 12 Caoutchouc or kerite, artificial, A. G. Day. 210,411 Tools. E. P. Bullard, 14 Dey St., N. Y. Says that when a river is rising it will either rise till 12 Caoutchouc or kerite, artificial, A. G. Day. 210,412 Capstan, Henthorn & Thayer (r). 8,511 o'clock at noon or 12 o'clock at midnight. I claim that this is not true, excepting when there is a tide which would change at that time. A. We agree with you.

> (9) F. H. asks: What causes hammering in steam pipes, the steam pressure being about the same at all times and the pipes are constantly fed with live steam? A. It is probably due to defective circula-

> (10) X. asks: What is gained by forcing cold feed water into the steam room of a boiler instead of Pumping it into the water space in the usual way? A. There is no gain of efficiency, and, generally, no gain of any kind, although, in some special cases, the circulation might possibly be promoted by this method of

(11) W. A. P. writes: I have in my house two gas lights in different rooms, both 18 inches from the ceiling, one has a globe and the other has not; the one without the globe blacks or spots the plastering, the Standard Belting, Packing, and Hose. Buy that only. one with the globe does not; why is it? A. The globe The best is the cheapest. New York Belting and Pack-probably insures more perfect combustion by directing a uniform current of air over the flame.

(12) E. W. asks for directions for making Driers, paddle for, B. F. Brightman ...... a Leyden jar. A. Take an ordinary candy jar one or two quart, according to size required, coat it inside and outside for about three fourths the distance from the bottom toward the top with thin tin foil. The jar is coated with thick shellac varnish, and the foil is immediately pressed on. The jar should have a wooden cover, through the center of which passes a rod having at its lower end a chain that touches the tin foil at the bottom of the jar, and at its upper end a brass knob.

(13) R. D. McN. asks what will bring out the color on parchment. I have some deeds that got wet, and have faded. A. Moisten the ink with a strong aqueous solution of tannic acid.

(14) R. P. S. asks: How will I obtain a finish or polish on wood lathe work, to imitate guttapercha? A. A small quantity of good Japan black will probably give satisfaction. The wood should be dry, and if possible, warm.

(15) L. B. R.-For solution of the wagon wheel problem, see p. 394 of last vol. of Scientific

(16) J. C. G. writes: I am building a steamer 30 feet long, 6 feet beam; my engines are a double 3 x 4. Have I power enough to propel such a boat 8 miles an hour? Do I get the same effective force in fresh water as I would in salt? A. The engines are of sufficient size. In fresh water, the immersed section is a little greater than in salt water.

(17) J. E. W. says: 1. Can an ice yacht. ssel, or any other object, sail faster than the wind? A. A first class ice boat running on smooth ice, managed by an experienced captain, will travel sixty miles an hour, the velocity of the wind that drives the boat being only fifteen miles an hour. For explanation, with engraving of boat see Scientific American Supplement No. 61. 2. If so is not the cause greater than the effect or is not the created greater than the creator? A. These queries are a little mixed. 3. The above questions were discussed before the Wilmington, N. C., Library Association, and were left for your decision in your journal. A. Your association should take the Scientific Ameri-CAN, in which hundreds of interesting practical questions are presented, with information promotive of intelligent discussion.

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

### COMMUNICATIONS RECEIVED.

The Editor of the Scientific American acknowledges with much pleasure the receipt of original papers and contributions on the following subjects: Human Knowledge. By G. V

On Telephones and Sounders. By J. E. N.

[OFFICIAL.

# INDEX OF INVENTIONS

FOR WHICH
Letters Patent of the United States were

Granted in the Week Ending December 3, 1878,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired. and remit to Munn & Co., 37 Park Row, New York city.

 

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Spintong ring, etc., J. Birkenhead.   2	10,468 10,400 10,484 10,484 10,472 10,516 10,472 10,437 10,444 10,584 10,511 10,511 10,515 10,555 10,555 10,555 10,483 10,555 10,483
Spintong ring, etc., J. Birkenhead.   2	10,468 10,400 10,484 10,479 10,516 :0,472 10,457 10,444 10,494 10,584 10,440 10,551 10,555 10,585
Spinning ring, etc., J. Birkenhead.  2 spittoon, dental, G. W. Archer.  2 spring, bed, L. Wildermuth.  2 spring, wagon bolster, H. J. Gage.  2 stamp drier, J. F. Seymour.  2 stamp, hand, E. Gumbs.  2 stave dresser. A. M. Benson.  2 stave dresser. A. M. Benson.  2 stove back lining, C. W. Warner.  2 stove back lining, C. W. Warner.  2 stove pipe elbow, W. Redett.  2 stove draught deflector, T. B. Way.  2 clove draught deflector, T. B. Way.  2 clove draught deflector, T. B. Way.  2 clove constitute, J. Felter.  2 ank, service, J. Foley.  2 chrasher, band cutter, M. W. Freeman.  2 clove cosubstitute, J. P. R. James.  2 clove prambulator, S. W. Adams.  2 crimmings, shaping dress, G. Simon.  2 alve grinder, J. H. Phelan.  2 vapor burner, J. Bowers.  2 rehicle, J. C. Russell.  2 relocipede, J. B. Root.  2 relocipede. J. B. Root.	10,468 10,400 10,484 10,479 10,516 10,472 10,457 10,457 10,444 10,584 10,434 10,515 10,555 10,555 10,555 10,486 10,555 10,488 10,448 10,570 10,488 10,448 10,570 10,488 10,448 10,568
Spinning ring, etc., J. Birkenhead.  2 spittoon, dental, G. W. Archer.  2 spring, bed, L. Wildermuth.  2 spring, wagon bolster, H. J. Gage.  2 stamp drier, J. F. Seymour.  2 stamp, hand, E. Gumbs.  2 stave dresser. A. M. Benson.  2 stave dresser. A. M. Benson.  2 stove back lining, C. W. Warner.  2 stove back lining, C. W. Warner.  2 stove draught deflector, T. B. Way.  2 stove draught deflector, T. B. Way.  2 chark, service, J. Foley.  2 chrasher, band cutter, M. W. Freeman.  2 choseco substitute, J. P. R. James.  2 coy perambulator, S. W. Adams.  2 crimmings, shaping dress, G. Simon.  2 valve grinder, J. H. Phelan.  2 vapor burner, J. Bowers.  2 vehicle, J. C. Russell.  2 cleocipede. J. B. Root.  2 vise, standing bench, J. K. B. Solomon.  2 vises standing bench, J. K. B. Solomon.	10,468 10,400 10,484 10,479 10,516 :0,472 10,457 10,457 10,454 10,434 10,440 10,551 10,555 10,434 10,430 10,555 10,438 10,570 10,438 10,430 10,570 10,438
Spining ring, etc., J. Birkenhead.   2	10,468 104.40 104.79 10,516 10,60 10
Spinning ring, etc., J. Birkenhead.  2 spittoon, dental, G. W. Archer.  2 spring, bed, L. Wildermuth.  2 spring, wagon bolster, H. J. Gage.  2 stamp drier, J. F. Seymour.  2 stamp, hand, E. Gumbs.  2 stave dresser, A. M. Benson.  2 stave dresser, A. M. Benson.  2 stave dresser, A. M. Benson.  2 stove back lining, C. W. Warner.  2 stove back lining, C. W. Warner.  2 stove draught deflector, T. B. Way.  2 chose draught deflector, T. B. Way.  2 chrasher, band cutter, M. W. Freeman.  2 chrasher, band cutter, M. W. Freeman.  2 choseco substitute, J. P. R. James.  2 coy perambulator, S. W. Adams.  2 crimmings, shaping dress, G. Simon.  2 valve grinder, J. H. Phelan.  2 vapor burner, J. Bowers.  2 vehicle, J. C. Russell.  2 velicle, J. C. Russell.  2 velicle, J. B. Root.  2 vise, standing bench, J. K. B. Solomon.  2 valen arized compounds, manufacture, A. G. Day.  2 veli packers, anchor for oil, L. Stewart.  2 veli packers, anchor for oil, L. Stewart.	10,468 10,401 10,454 10,459 10,516 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458
Spining ring, etc., J. Birkenhead.   2	10,468 10,401 10,454 10,459 10,516 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,457 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458 10,458

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Whiffletree iron, C. H. Palmer, Jr.         210.554           Whiffletree plate, B. S. Porter.         210.557	Indicator for steam engines, etc. H. Tabor.         210,64           Indicator, office, J. S. Duffle         210,76           Indicator, station, F. C. D. McKay         210,79
TRADE MARKS.  Axes and hatchets, W. H. Crossman & Brother 6,854	Iron, cleaned and planished, W. D. Wood. 210,73 Knitting machine needle, G. H. & H. Adams. 210,85 Ladder, J. E. Richard 210,63
Beer, ale, and porter, Schramm & Schnabel	Lampblack apparatus, J. M. Cornell
Healing compound, B. W. Dyer	Lantern, H. Nahe       210.62         Lantern and lamp, Ewing & Bill       210,60         Last, F. A. Beach       210,74
Medical preparation, A. J. Seymour	Leather, etc., artificial, R. E. Ball
Prepared chocolate, E. Guittard	Lifting jack, Platt & Orwig.       210,70         Liquid measure, J. J. Roberts       210,83         Lock, J. Sargent       210,80
Roasted coffees, ground spices, pepper and mustard, E. Guittard	Lock, seal, Smith & Vowles
Skirts and corsets, Detroit Skirt and Corset Co 6,855  DESIGNS,	Loom for weaving leno, etc., T. Aldred
Bedsteads, J. Dawson	Meat tenderer, C. K. Whittier
Cooking stoves, Vedder & Heister 10,945 Covers for Bibles, F. M. Dillie 10,948	Mower, lawn, J. Lusher
Crocheted jacket, J. Holmes         10.937           Handkerchief border, J. Grimshaw         10 944           Running gear for baby carriages, A. Shoeninger         10,938	Mower, lawn, W. D. Ayers
Slcds, A. Shoeninger	Nitro-cellulose manufacture, J. W. Hyatt 210,61 Oatmeal machine, J. F. Byers
FOR THE WEEK ENDING DECEMBER 10, 1878.	Ore washer, F. A. Huntington         210,60           Organ, reed, H. W. Smith (r)         8,51           Overalls, G. Schollian         210,71
Advertising merchandise car, A. H. Burhans	Paddlewheel, G. L. Elliott
Axle, car, N. Jones	Paper board manufacture, J. F. Sheeder
Axle, car, O. D. Spalding	Paper to take copies, F. Hawke       210,69         Pea and bean huller, J. M. Turner       210,72         Photographic studio, E. C. Thompson       210,64
Barrel hoop stretcher, D. Stallard, Jr.       210,815         Barrel vent, W. Thomas       210,821         Bed bottom, C. J. Clements       210,752	Piano action, Schwander & Herrburger       210,63         Piano key, J. W. Hyatt       210,78
Bedstead, folding, J. T. Hatfield	Piano stool, J. Briggs       210,59         Pitman connection, A. Tornquist       210,64         Plaiting machine, E. S. Harding       210,60
Bee hive, E. Arlstrong       210,592         Blind, window, H. M. Ambler       210,691         Bluing package, H. Sawyer       210,808	Planter, corn, C. E. Coe
Book cover protector, L. D. Reynolds         210,711           Book stitcher, A. A. Johnson         210,782	Plow, J. Urie, Sr.         210,72           Pocketbook frame, R. Debacher         210,75           Press, baling, Squires & Kaiser         210,72
Boot, H. E. Van Benschoten       210,824         Boot sole edge trimmer, J. D. Westgate       210,829         Boot jack, J. Martin       210,795	Printing press, plate, W. S. Appleton
Bracket, adjustable, J. C. Lake	Pump valve, E. Hawkes         210,69           Pumps, piston for oil well, J. B. Potter         210,71
Bridge, truss, S. Conklin       210,754         Buttons, etc., of vegetable ivory, W. J. Lewis       210,617         Candlestick, L. Leonard       210,790	Pyrites, treating burnt, J. Mason         210,61           Rall chair, J. R. Neff         210,70           Rail fastener, F. B. Freudenberg         210,77
Car coupling, M. Burpee	Railway crossing, E. Shelton
Car sealer, W. S. Brewster	Railway rail manufacture, B. C. Lauth
Carriage clip die, M. Hine       210 694         Centrifugal machine, Bell & Goldsack, Jr       210,657         Cereal drier, F. A. Luckenbach       210,793	Railway permanent way, C. Wood
Chair, adjustable, G. Wilson       210,733         Chairs, etc., covering for, J. H. Travis (r)       8.519	Rake, Lawn, J. Weichhart       210,65         Roofing, Sheet metal, W. G. Hyndman       210,61         Sawing machine, scroll, J. H. Hopkins       210,60
Chatelaine, G. D. Stevens       210,816         Cheese cloth cutter, O. C. Harris       210,778         Churn, G. R. Nebinger       210,800	Saws, hanging gang, C. Lamb       210,78         Scraper, road, P. B. Thaxton       210,72         Screw threads in sheet metal, King & Dougherty 210,78
Cigar machine, R. Roberts       210,632         Clasp, F. B. Brown       210,665         Clock, calendar, T. H. Mott       210,704	Scythe snath fastener, J. Simpson
Clock dial, S. E. Root	Sheet metal vessels, J. Chaumont       210,75         Ships, loading and unloading, H. P. Tothammer       210,64         Shoe, F. M. Hoyt       210,69
Clocks, lock work for, J. Connor       210,755         Clotbes line fastener, J. P. Boesen       210,658         Coffee mill, J. C. Dell       210,676	Shoe or garment fastening, L. Magniez 210,70 Shovel, fire, S. Whitnum 210,73
Coffee separator, H. B. Stevens.         210.817           Coin tray cover, J. F. Miller.         21°,621	Show box, T. Haviland
Cooking apparatus, feed, A. Knox         210,614           Cotton condenser, J. T. Donovan         210,678           Crane, traveling, W. H. Elliot         210,601	Spark arrester, D. Wiser
Crank bandle, W. B. Coates.       210,669         Cream raiser, S. S. Weldon       210,729         Cultivator, M. Smith       210,718	Spring for tilting chairs, H. Howson
Cup and saucer holder, T. Haviland	Spring, vehicle, W. F. Whitney (r)
Door holder, O. Dorsey         210,764           Draught apparatus, artificial, J. B. Andrews         210,740           Drill, grain, Smith & Thomas         210,719	Staple holder, W. J. Brown, Jr
Drop light, H. Iden         210,781           Drum, heating, W. L. Phillips         210,627	Stocking, A. Selby       210,81         Stocking supporter, F. B. Brown       210,66         Stove door knob, W. Cunliff       210,67
Elevator safety attachment, R. H. Hill       210,693         End gate wagon, G. S. Cryne       210,756         Excavator support, H. T. Stock       210,724	Stove grate dumper, A. J. Redway         210,80           Street sweeper, C. W. Cunningham         210,67           Sugar mixing apparatus, D. Edwards         210,76
Fan and caster, J. S. Letord.       210,791         Feather renovator, D. Eddy       210,788         Feather Personal Properties       210,782	Sulky, trotting, W. J. Hamill
Fence, Davis & Beermann       210,757         Fence, iron, J. H. Van Dorn       210,825, 210,826         Fence post, L. Turner       210,648	Table, folding, W. Thomas       210,82         Telephone, speaking, E. Gray       210,77         Thrashing machine, L. Bronson       210,74
Fifth wheel coupling, W. Lehmann	Tobacco pipe, G. Castleden         210,59           Tongs, pipe, O. B. Lay         210,69
File, W. Millspaugh	Truck, car, J. G. Tait
Firearm, revolving, A. L. Sweet       210 725         Fire escape, E. L. Burnham       210,596         Fluting iron, J. Neill       210,801	Trunk, E. Semple (r).       8,52         Type writer, H. & F. Anderson       210,73         Umbrella runner, O. M. Smith       210,81
Fly wheel, J. W. Robertson	Valve, check and safety, T. Duffy 210,76 Valves for barrels, kegs, etc., J. Byrne 210,66
Fruit picker, W. W. Rodgers	Vehicle coupling, S. W. Baldwin     210.74       Vehicle dash rail, F. J. Derrig     210.60       Vehicle shifting rail, E. Miller     210.60
Furnace movable fire bar, A. E. Wackernie 210,827 Gas light extinguisher, Brand & King 210,663	Ventilator, E. G. Sternberg
Gas regulator, J. L. Chapman       210,750         Gate, R. J. Booth       210,660         Gate, A. G. Rockfellow (r)       8,515	Vocal engine, T. A. Edison         210,76           Wagon cover, reversible, J. Boyle         210,66           Wagon rack, L. Talcott         210,82
Gate, farm, S. C. Shoup       210,640         Gate fastener, R. J. Booth       210,659         Gate, iron, S. Rogers       210,805	Wagon, road, C. W. Saladee
Gate valve, E Allt	Water closet, urinal, T. G. Knight
Glove, S. Goge       210,775         Grain binder, J. F. Steward       210,723         Hame fastener, J. Frank       210,603	Wheel, car, I. H. Congdon
Harrow, A. F. French       210,682         Harrow, S. C. Matteson       210,702	Windmill, W. Forbes       210,77         Windmill motor, I. H. Palmer       210,80
Harvester, corn, Stewart & Jones       210,818         Hat block, elastic, R. Eickemeyer       210,771         Hat body stretcher, R. Eickemeyer       210,770	Woodworker, universal, Doane & Bugbee, 210, 761, 210,762, 210,76
Hide and skin dresser, J. W. McDonald 210,797 Heating and cooling apparatus, E. Maw 210,796	TRADE WARES
Hinge, H. E. Griffin       210,686         Hinge, spring, I. S. Davis       210,758         Hoisting block universal joint, C. W. Hunt       210,608	Ale, H. & G. Simonds
Horseshoe and pad, G. C. Shaw	and spuff, Marburg Brothers 6.87

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ngines, etc. H. Tabor Duffle	210,643 210,765	C
C. D. McKay	210,798 210,795	E
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J. M. Cornellr & Man	210,672 210,809	-
	210,624 210,602	В
l, R. E. Ball	210,744 210,655	C
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Roberts	210,631 210,807	8
o, etc., T. Aldred	210,641 210,670 210,736	V
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	210,652 210,709	
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ure, J. F. Sheeder	210,714 210,679	1
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W. G. Hyndman	210,613 210,607	1
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t metal, King & Dougherty , J. Simpson	210,716	
c., Galloway & Larsen	210,683 210,751 210,647	
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H. Bartlett	210,828 210,656	
rs, H. Howson	210,712 210,779 210,785	
Whitney (r)	8,517 210,610	: <b>11</b>
es & Eastlake Brown, Jr	210,661 210,748	v
Berchtold	210,745 210,810	
B. Brown Cunliff	210,666 210,673	
A. J. Redway	210,804	
Hamilltudsay	210,769 210,687 210,792	I
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. Bronsoneden	210,747 210,598	
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G. Chalender	210,749 8.520	1:
Anderson	8,52 <sub>1</sub> 210,739	
M. Smith	210,813 210,766 210,668	A
gs, etc., J. Byrne	210,743 210,600	
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W. Serrelldison	210,811 210,767	I
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T. G. Knight	210,720	
or oil, P. H. Melvin agdon	210,671	
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210, 761, 210,762, J. Goodrich		
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	American.
33 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Cologne water, Wexford Company. 6,869 Cutlery, G. Wostenholm & Son 6,870 Hosiery and knit goods, Jesson & Hanifen 6,874 Plug chewing tobacco, H. M. Cuchran 6,873 Print butter, A. E. Phillips 6,875 Teas, Griffin & Co. 6,871  DESIGNS.  Breastpins, H. S. Somes 10,960 Brooch, S. C. Howard 10,358 Combined glass vessels, F. C. Winship 10,364 Font of printing types, T. MacKellar 10,955 Group of statuary, J. Rogers 10,946 to 10,952 Shoes, Kenz & Kraft 10,953 Stoves, Vedder & Ritchie 10,953 Woven borders for towels, R. T. Webb 10,981, 10,983 Woven fabrics, R. T. Webb 10,981, 10,983 Woven fabrics, R. T. Webb 10,982, 10,964  English Patents Issued to Americans. From December 20 to December 27, inclusive. Book binding.—E. S. Boynton, Bridgeport, Conn. Boxes for tooth powder.—M. Bernheim, N. Y. city. Electric lighting apparatus —J. B. Fuller, N. Y. city. Paper press.—J. W. Jones, Harrisburg, Pa. Printing plates.—D. Slote, N. Y. city.
	Printing press.—P. H. Whiteet al., Philadelphia, Pa Sewing machines.—J. H. House, Bridgeport, Conn. Wood, preserving.—T. A. Dowling et al., N. Y. city.  The Scientific American Export Edition.
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5   2 1 1 5	ufacturing Announcements of Leading Houses. In connection with these Announcements many of the
5	This is by far the most satisfactory and superior Export Journal ever brought before the public.  Terms for Export Edition, FIVE DOLLARS A YEAR, sent prepaid to any part of the world. Single copies, 50 cents. For sale at this office. To be had at all News and Book Stores throughout the country.  NOW READY.
7 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	THE SCIENTIFIC AMERICAN EXPORT EDITION FOR JANUARY, 1879, WITH ONE HUNDRED AND TEN ILLUSTRATIONS.  GENERAL TABLE OF CONTENTS Of the SCIENTIFIC AMERICAN Export Edition for January, 1879.
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