

TO INVENTORS.

An experience of more than thirty years, and the preparation of not less than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere.

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.

Jarvis Patent Boiler Setting, same principle as the Siemens process for making steel; burns screenings without blower, and all kinds of waste fuel.

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

New York, December 25, 1878. To the patrons of Lubricene: In wishing you the compliments of the season, we believe the most acceptable offering we can make will be lower prices for the coming year.

Wanted.—Partner with \$15,000 to \$25,000, to take one third to one half interest in an established Mill Machinery and Engine Works located in Central Ohio.

Wanted.—A Foreman for an Iron Foundry, experienced in fine machinery castings, with references as to energy and ability. Apply to Lock Box 795, Worcester, Mass.

Nickel Plating.—A white deposit guaranteed by using our material. Condit, Hanson & Van Winkle, Newark, N.J.

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

Empire Gum Core Packing, Soap Stone Packing, Piston Packing; all kinds. Greene, Tweed & Co., 18 Park Place, N. Y.

1,000 2d hand machines for sale. Send stamp for descriptive price list. Forsaith & Co., Manchester, N. H.

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

Hydraulic Elevators for private houses, hotels, and public buildings. Burdon Iron Works, Brooklyn, N. Y.

Galland & Co.'s Improved Hydraulic Elevators. Office 206 Broadway, N. Y., (Evening Post Building, room 22.)

Iron, Brass, and Steel Wire. Needle pointed English Steel Wire, for all purposes. W. Crabb, Newark, N. J.

For Fire or Power Pumps, address the Gould's Manf. Co., Seneca Falls, N. Y., or 15 Park Pl., N. Y. city.

Brush Electric Light.—20 lights from one machine. Latest & best light. Telegraph Supply Co., Cleveland, O.

The Hancock Inspirator received a gold medal at Paris, as being the best boiler feeder ever made, and the Old Colony Railroad (who have twenty-three machines in constant use) have just given it their unqualified indorsement, as the cheapest and most effective feeder ever used on their locomotives.

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.

For the best advertising at lowest prices in Scientific, Mechanical, and other Newspapers, write to E. N. Freshman & Bros., Advertising Agents, 186 W. 4th St., Cin., O.

H. Prentiss & Co., 14 Dey St., N. Y., Manufs. Taps, Dies, Screw Plates, Reamers, etc. Send for list.

Presses, Dies, and Tools for working Sheet Metals, etc. Fruit and other Can Tools. Bliss & Williams, Brooklyn, N. Y., and Paris Exposition, 1878.

Rubber Hose, Suction Hose, Steam Hose, and Linen Hose; all sizes. Greene, Tweed & Co., 18 Park Pl., N. Y.

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 Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, N. Y.

Nickel Plating.—Wenzel's Patent Perforated Carbon Box Anode for holding Grain Nickel. A. C. Wenzel, 114 Center St., New York City.

Bolt Forging Machine & Power Hammers a specialty. Send for circulars. Forsaith & Co., Manchester, N. H.

For Solid Wrought Iron Beams, etc. see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Manufacturers of Improved Goods who desire to build up a lucrative foreign trade, will do well to insert a well displayed advertisement in the SCIENTIFIC AMERICAN Export Edition. This paper has a very large foreign circulation.

Two fine Astronomical Telescopes, 3 in. and 7 in., by first-class English maker, cheap. I. Ramsden, Phila.

Gold Chronometer Watch, by first-class English maker: cost \$260, price \$135; latest patented improvements. I. Ramsden, 21 Christian St., Philadelphia, Pa.

Hand Fire Engines, Lift and Force Pumps, for fire and all other purposes. Address Rumsey & Co., Seneca Falls, N. Y., and 73 Liberty St., N. Y. city, U. S. A.

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

Women's Hospital, 49th St. and 4th Ave., New York, March 6, 1877. H. W. Johns Manufacturing Company, 87 Maiden Lane, New York. Sir:—The Hair Felt Covering, with Asbestos Lining, which you put on the steam pipes and boiler domes of the Women's Hospital, and the Asbestos Cement Felted on the three hot water boilers, are giving great satisfaction, and the result is a great saving of fuel.

Punching Presses, Drop Hammers, and Dies for working Metals, etc. The Stiles & Parker Press Co., Middletown, Conn.

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

24 x 48 in. Wright's Automatic Engine, with 16 foot band wheel, 30 in. face, for sale. Price low. Atlas Works, Indianapolis, Ind.

Inventors' Models. John Ruthven, Cincinnati, O. The Lawrence Engine is the best. See ad. page 29.

Sheet Metal Presses, Ferracute Co., Bridgeton, N. J. Special Planers for Jointing and Surfacing, Band and Scroll Saws, Universal Wood-workers, etc., manufactured by Bentel, Margedant & Co., Hamilton, Ohio.

Boston Blower Co., Boston, Mass. Blowers, Exhaust Fans, Hot Blast Apparatus. All parts interchangeable; material and workmanship warranted the best. Write for particulars.

Diamond Tools. J. Dickinson, 64 Nassau St., N. Y.

Elevators, Freight and Passenger, Shafting, Pulleys, and Hangers. L. S. Graves & Son, Rochester, N. Y.

Holly System of Water Supply and Fire Protection for Cities and Villages. See advertisement in Scientific American of this week.

Diamond Self-clamp Paper Cutter and Bookbinders' Machinery. Howard Iron Works, Buffalo, N. Y.

Mellen, Williams & Co., 57 Kilby St., Boston, Mass. Wiegand Sectional Steam Boiler. Etna Rocking Gate Bar.

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.

Sir Henry Halford says Vanity Fair Smoking Tobacco has no equal. Received highest award at Paris, 1878.

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

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

The SCIENTIFIC AMERICAN Export Edition is published monthly, about the 15th of each month. Every number comprises most of the plates of the four preceding weekly numbers of the SCIENTIFIC AMERICAN, with other appropriate contents, business announcements, etc. It forms a large and splendid periodical of nearly one hundred quarto pages, each number illustrated with about one hundred engravings. It is a complete record of American progress in the arts.

Notes & Queries

(1) F. H. asks: I. Does painting the trunk or stem of fruit or shade trees with coal tar harm them? A. Daubing the bark with tar will often kill or seriously injure the tree. It is a common practice, however, to bind the lower part of the trunk, from 10 to 12 inches below the surface of the ground to 3 or 4 feet above, with well dried, tarred paper, to prevent the encroachments of mice and insects.

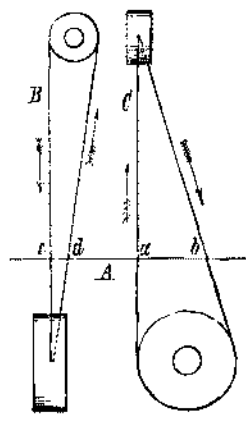
(2) J. R. C. writes: I want to rework stale butter on a large scale, to remove the bad odor and give it a desirable or natural color, if in so doing I will not be under the necessity of using anything injurious to health. A. The following mode of treating rancid butter has been recommended: The butter is first well agitated with hot water, whereby the salt is extracted. On standing it soon separates from the water, when it is again agitated for some time with an equal volume of fresh hot water and a few ounces to the pound of fresh animal charcoal in coarse powder and free from dust. It is freed from charcoal by straining through a fine

cloth while still hot, and from the water by the difference in specific gravity. The butter when cold is well washed with fresh milk to which a little sulphite of lime has been added, and then reworked, salted, and colored with a small quantity of annatto. As the latter is not infrequently adulterated with iron oxide and vermillion, it is well to test it for these before using it in butter.

(3) C. D. asks: 1. What is the significance of the picture, which appears in most almanacs, of a man surrounded by the constellations and signs of the zodiac, and lines drawn from the signs to different members of his body? A. It has no significance now. In the days of astrology the several parts of the human body were thought to be influenced by or under the control of the portions of the zodiac designated by the signs with which the members are connected. This with special reference to life, death, health, and disease. 2. What is the best non-conductor of sound? A. A vacuum.

(4) D. V. writes: 1. I have a quantity of chemical writing fluid; have had it two years and it has faded. How can I make it darker? A. You may try the addition of small quantities of tannic acid or extract of nutgalls, and logwood extract. 2. I am in a country place apart from machine shops. How can I draw copper wire No. 22 finer and make my own tools? A. Take a well annealed piece of good tool steel 1/4 inch thick, drill in it several holes of the size of the smallest wire to be drawn, make them all tapering, and enlarge with a reamer so that the holes will vary regularly from the size of No. 22 wire down to that of the smallest wire to be drawn. Harden the plate, polish the holes, reduce the size of the end of the wire, and draw it through the several holes in succession, greasing it before each drawing, and annealing it whenever it becomes stiff. 3. I have made a pair of telephones, mouthpiece as per your engravings, diaphragm of very thin tin. My neighbor wants me to put it up for his use between house and store. Shall I do it, that is, am I infringing on any patent by so doing? A. See "Rights of Investigators" p. 128, volume 39, of the SCIENTIFIC AMERICAN.

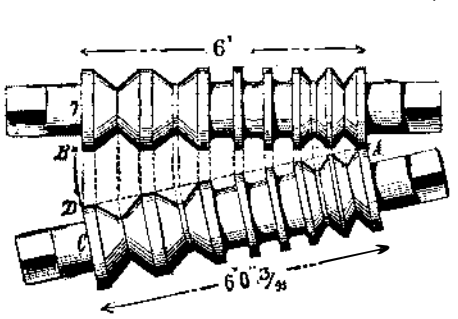
(5) A. W. D. asks how to lay out and cut belt holes for a quarter turn belt, said belt to run from one shaft through floor on to another shaft, at right angles with the first, both supposed to be level. A. To make holes through the floors for the belts, lay out on the floor with chalk line and train two views of the pulley, or by scale on paper as shown in the engraving. B is the belt running in the direction of the arrow on the lower pulley, and C is the belt running in the opposite direction. Drop a plumb line representing the perpendiculars, B and C, and draw diagonals governed by the diameters of the pulleys, marking the distances, a b, and c d, on the floor; now drop a



plumb line from each side of the center of face of upper pulley to the floor, and from the point, c, thus found, lay off the distance, a b, in a line parallel with the upper shaft, and from the point, a, in the distance, c d, parallel with the lower shaft. These points indicate the places where the holes should be cut.

(6) W. C. H., Jr., asks: 1. How far will a telephone line that described in the SCIENTIFIC AMERICAN SUPPLEMENT, No. 142, p. 2260, Fig. 4, carry? A. With a good line, 20 miles. 2. What amount of No. 38 covered wire will give the best results? A. 3/4 ounce. 3. How can I make a cheap and simple electric lamp, one or two burners? A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 149.

(7) J. A. C. writes: The following method of laying off the sweep for a pair of rolling mill rolls may be of interest to your readers, the object being to give the proper proportion of shrinkage to each member of the roll pattern. The exact configuration of the roll when finished is laid off on a piece of flat wood, and if the working part of the roll is 6 feet long, as in the sketch, the shrinkage, being usually 1/4 of an inch to a foot, would amount to 3/4 of an inch in all; this being the case, a pair of trams are set to 6 feet and 3/4 of an inch, and one leg placed at A, and the other at B, and the arc of a circle, B D, described. From the point where this arc intersects a line drawn down from F to C, a



line is drawn to A, making the line, D A, which may represent the edge of the sweep to be made. Similarly with the line, F C, all the other lines which give shape to the roll are brought down until they intersect the line, D A, and on this line are erected the various members of the roll. Now, it follows that if the distance, D A, is the amount of the shrinkage longer than the true length of the finished roll, namely, 6 feet, then every intersection of the line, D A, will be proportionally wider apart on the sweep than on the roll itself; consequently the roll swept up by such a template or sweep will, when cast, be the exact length from each distinctive point to the other, as well as the exact length over all.

(8) C. H. H. asks: 1. How shall I fix a short length—1/4 inch—of platinum wire between the ends of my battery wires? I wish to heat it. A. Wind it two or three times around each wire, or split the ends of the battery wires, and after inserting the platinum, press the ends together. 2. How many 1/2 pint bichromate of potash (bottle) batteries will be necessary to heat such a piece of platinum wire? A. If you use a Grenet battery, and a fine platinum, one cell will answer. 3. How can I insulate a brass ring, so that a current can be sent through it without loss to an electromagnet? A. Glass, sealing wax, rubber, ivory, and hard wood are good insulators. 4. Would it be possible to run a dynamo-electric machine for electric light, by bringing the current from the light back to an engine like Edison's "Harmonic" engine? A. No.

(9) G. H. I. asks: Would heat or sound pass through a vacuum, that is, assuming a perfect vacuum? A. Heat would, sound would not.

(10) E. O. C.—For a definition of sound see p. 347, vol. 29, reply to F. H. P.

(11) M. A. G. asks: 1. What is the meaning of the word anthracite? A. Literally a burning coal stone. 2. Is anthracite coal found in any other place but Pennsylvania? A. Anthracite is found in Pennsylvania, Rhode Island, and South Wales. It is used for the production of iron chiefly in Pennsylvania, Scotland, and Wales. 3. Where was iron first made with anthracite coal, and who was patentee of the process? A. In 1838 and 1839 Thomas made the first experiment on melting iron with anthracite in Pittsville, Pa.

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

C. E. B.—It is a shale containing much iron sulphide and a little organic matter.—C. A. R.—No. 1 contains hornblende and tourmaline. No. 2 was not received.—C. & H.—It is a dolerite or trap rock, of little value.—S. L. C.—It is an impure chrysocolla—a silicate of copper. It contains about 9.5 per cent of copper—no silver or gold.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT 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: On United States Postal Service. By H. A. S.

OFFICIAL

INDEX OF INVENTIONS

FOR WHICH Letters Patent of the United States were Granted in the Week Ending November 12, 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.

Table listing various inventions and their patent numbers, including Alarm register, Animal poke, Auger bits, Axes, Bag holder, Bale tie, Barrel stove, Barrel, etc., counter swinger, Bird cage, Boiler covering, Boiler, steam, T. C. Joy, Boiler, steam, L. Knight, Boilers, gauge cock for steam, H. R. Morse, Boot and shoe heel, J. Tingley, Boot and shoe sole trimmer and finisher, I. Adams, Boot and shoe, pulling off, Peckham & McKittrick, Boot and shoe heel stiffener, former, J. R. Moffitt, Bottle stopper fastener, J. Bryan, Bracelet, spring, Young & Keer, Bricks and tiles, manufacture of, M. Polettl, Bridle bit, W. S. Mitchell, Brush block borer, A. Nawadny, Buckles to straps, securing, C. W. White (r), Cabinet, kitchen, W. H. Stewart, Car coupling, H. H. Potter, Cars, heating, W. C. Baker, Car platform, railway, P. Hien, Cartridge weigher, M. McBride, Casting cranks, E. A. L. Roberts, Casting stove leg attachments, H. H. Huntley, Cement, etc., for walls, etc., E. Meyer, Centrifugal machine, D. M. Weston (r), Chain machine, Fitzpatrick & Schmeller (r), Chair and treadle power, J. B. Underwood, Chair, rocking, A. A. Halladay, Churn, McBrayer & Thomas, Churn and washing machine, G. B. Richards, Cloaks, stand for showing, P. H. O'Hara, Clock dial, H. J. & W. D. Davies, Clothes line stretcher, W. T. Keefer, Cook, gauge, E. B. Kunkle, Coffee, cocoa, etc., drier, S. Beaven, Coin holder, O. S. Harmon, Copy holder, H. A. Peabody, Crocheter for making looped fabrics, C. Young, Cultivator, G. W. Staver, Curtain roller, Nesbitt & Anderson, Desk, school, E. Kimball, Dish, fruit vendors, G. O. Cole, Drills, gearing for grain, C. Perrin, Engine, steam, C. H. Burton, Engine, wind, J. Cook, Engine, wind, D. C. Walling, Faucet hole bushing, S. R. Thompson (r), Fence, P. Lane, Fencing strip, T. V. Allis, Filter, reversible, E. C. Houghton, Filtering apparatus, L. A. Enzinger, Firearm, breech-loading, J. Rupertus, Fire escape, A. Ochsner, Fire escape, D. Ottinger, Fire extinguisher, automatic, J. A. Miller, Jr.