

Business and Personal.

The Charge for Insertion under this head is \$1 a Line.

Agricultural Implements, Farm Machinery, Seeds, Fertilizers. R. H. Allen & Co., 189 & 191 Water St., N. Y.

Wanted, Foreman—One who thoroughly understands the manufacture of Planing Mill Machinery. Address, with references, M. B. Cochran & Co., Pittsburgh, Pa.

Iron Planer Wanted—2nd hand—in good order, to plane from 3 to 5 feet. State lowest cash price, how long used, and what tools can be had with it. Address White Manufacturing Company, Bridgeport, Conn.

For Sale—One second hand Gear's Planing, Moulding, Carving, and Dovetailing Machine. M. B. Cochran & Co., Pittsburgh, Pa.

F. W. Hopkins, Wilmington, Del., makes Machines for Pulverizing Manure, &c. Satisfaction, \$100.

The manufacturer of Waterproof Leather made of Leather pulp, said to be manufactured in Massachusetts, will please send particulars and price to E. Forum, care of Todd & Co., Lock Box 86, New Orleans, La.

The Best made Match Splint Machine in the U. S. for sale at a bargain. Apply at once. H. M. Underwood, Kenosha, Wis.

"Scientific American," from September, 1846, to December, 1871, for Sale. Address P. O. Box 5620, N. Y.

E. & B. H. asks for a Gas Heater or Cresset, to heat the inside of barrels while being made. Address Box 778, New York City.

Every metal worker should have a Universal Hand Planer. For Catalogue, J. E. Sutterlin M'f'g Co., Duane Street, New York.

Notice—500 Agents wanted. New articles of merit for housekeepers—used every day, or 1500 hundred times a year. G. J. Capewell, Cheshire, Conn.

John W. Hill, Mechanical Engineer, Dayton, Ohio. Drawings, opinions, and advice.

The Mystic Puzzle, or the Yankee's Dream, sent by Mail. Address, with 25 cts., F. & J. Barnes, Rockford, Ill.

Price only three dollars—The Tom Thumb Electric Telegraph. A compact working Telegraph Apparatus, for sending messages, making magnets, the electric light, giving alarms, and various other purposes. Can be put in operation by any lad. Includes battery, key, and wires. Neatly packed and sent to all parts of the world on receipt of price. F. C. Beach & Co., 263 Broadway, New York.

For full description of the most useful and amusing article in the world, for a present, address, with stamp, W. F. & J. Barnes, Rockford, Ill.

Wanted—A practical Machinist, as Superintendent in a large Manufacturing Establishment in Philadelphia. He must have had some experience in all kinds of Iron and Wood Work; be able to design work and direct men. None but a first class man need apply. Address P. O. Box 1769, Philadelphia, stating age, where last employed, reference, and expected salary.

Cast Iron Sinks, Wash Stands, Drain Pipe, and Sewer traps. Send for Price List. Bailey, Farrell & Co., Pittsburgh, Pa.

Engines and Boilers a Specialty—1st class; new patterns; late patents; reduced prices. Plain and Cut-off Horizontal and Vertical Engines; Hoisting Engines; the celebrated Ames' Portable Engines; Boilers of all kinds; Climax Turbine; and the best Saw Mill in the market. Large stock always on hand. Hampson, Whitehill & Co., 38 Cortlandt St., New York. Works at Newburgh, N. Y.

Pratt's Liquid Paint Dryer and White Japan surpasses the English Patent Dryers and Brown Japan in color, quality, and price. Send for descriptive circular to A. W. Pratt & Co., 53 Fulton Street, New York.

Rue's "Little Giant" Injectors, Cheapest and Best Boiler Feeder in the market. W. L. Chase & Co., 93, 95, 97 Liberty Street, New York.

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

Many New England Manufactories have Gas Works, which light them at one fourth the cost of coal gas. For particulars, address Providence Steam and Gas Pipe Co., Providence, R. I.

Hotchkiss Air Spring Forge Hammer, best in the market. Prices low. D. Frisbie & Co., New Haven, Ct.

For Solid Emery Wheels and Machinery, send to the Union Stone Co., Boston, Mass., for circular.

Scale in Steam Boilers.—I will remove and prevent Scale in any Steam Boiler, and make no charge until the work is found satisfactory. George W. Lord, Philadelphia, Pa.

For the best Cotton Cans and Galvanized Fire Pails, address James Hill, Providence, R. I.

For small size Screw Cutting Engine Lathes and Drill Lathes, address Star Tool Co., Providence, R. I.

Mechanical Expert in Patent Cases. T. D. Stetson, 23 Murray St., New York.

For the best Portable Engine in the world, address Baxter Steam Engine Co., 18 Park Place, New York.

Mining, Wrecking, Pumping, Drainage, or Irrigating Machinery, for sale or rent. See advertisement. Andrews' Patent, inside page.

All Fruit-can Tools, Ferracute, Bridgeton, N. J.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing Metals. E. Lyon, 470 Grand Street, New York.

Brown's Coal-yard Quarry and Contractor's Apparatus for hoisting and conveying materials by iron cable. W. D. Andrews & Bro., 414 Water St., New York.

Deane's Patent Steam Pump—for all purposes—Strictly first class and reliable. Send for circular. W. L. Chase & Co., 95 & 97 Liberty St., New York.

Temples and Oilcans. Draper, Hopedale, Mass.

For Surface Planers, small size, and for Box Corner Grooving Machines, send to A. Davis, Lowell, Mass.

The "Scientific American" Office, New York, is fitted with the Miniature Electric Telegraph. By touching little buttons on the desks of the managers, signals are sent to persons in the various departments of the establishment. Cheap and effective. Splendid for shops, offices, dwellings. Works for any distance. Price \$6, with good Battery. F. C. Beach & Co., 263 Broadway, New York, Makers. Send for free illustrated Catalogue.

For best Presses, Dies, and Fruit Can Tools, Bliss & Williams, cor. of Plymouth and Jay, Brooklyn, N. Y.

Eames Patent Molding Machines, for Metal Castings. Saves fully one third in cost of labor of molding, and secures better work than the ordinary method. For circulars, address P. & F. Corbin, New Britain, Conn.

The Improved Hoadley Cut-off Engine—The Cheapest, Best, and Most Economical steam-power in the United States. Send for circular. W. L. Chase & Co., 95 and 97 Liberty St., New York.

Peck's Patent Drop Press. For circulars, address Milo, Peck & Co., New Haven, Conn.

Small Tools and Gear Wheels for Models. List free. Goodnow & Wightman, 23 Cornhill, Boston, Mass.

Danburg, Wilkes Co., Ga. — Makers of Small Agricultural Engines will please send me Price List and Descriptive Circular. D. B. Cade, Jr.

Magic Lanterns and Stereopticons, all sizes and prices. Views illustrating every subject for Parlor Entertainment and Public Exhibitions—a profitable business for a man of small capital. Catalogues free. McAllister, Man'f'g Optician, 49 Nassau St., New York.

Direct Steel Castings—Solid and Homogeneous. Tensile strength 70 thousand lbs. to the square inch. An invaluable substitute for expensive forgings, or iron Castings requiring great strength. For Circular and Price List, address McHan'ee Steel Co., cor. Evelina and Levant Sts., Philadelphia, Pa.

Salamander Felting—Leading manufacturers pronounce Salamander Felting the only indestructible and best non-conducting covering for hot heated surfaces. A. G. Mills, Manager, 23 Dey St., New York.

Steel Lathes, 14 sizes, and 7 sizes of Steel Clamps. The Best and Cheapest. Send for Circular and Price List to Phila. Hydraulic Works, Evelina St., Phila.

Saw Ye the Saw?—\$1,000 Gold for Sawmill to do same work with no more power Expended. L. B. Cox & Co., 197 Water St., N. Y.

Electric bells for Dwellings, Hotels, &c.—Most reliable and cheapest Hotel Annunciator. Cheap telegraph outfits for learners. Instruments for Private Lines, Gas Lighting Apparatus, etc. J. H. Hessin, Sec., Cleveland, O.

Portable Engines, new and rebuilt 2d hand, a specialty. Engines, Boilers, Pumps, and Machinist's Tools. I. H. Shearman, 45 Cortlandt St., New York.

Spinning Rings of a Superior Quality—Whitinsville Spinning Ring Co., Whitinsville, Mass. Send for sample and price list.

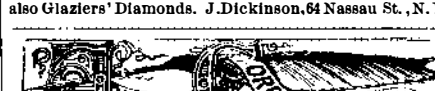
Best Philadelphia Oak Belting & Monitor stitched. C. W. Army, Manufacturer, 301 & 303 Cherry St., Philadelphia, Pa. Send for new circular.

Buy Boul's Paneling, Moulding, and Dove-tailing Machine. Send for circular and sample of work. B. C. Mach'y Co., Battle Creek, Mich., Box 27.

For First Class Steam Boilers, address Lambertville Iron Works, Lambertville, N. J.

Wanted for all Steam Boilers—A great economizer for Fuel. Send for Circular. George E. Parker, Man'f'g light Machine Work and Brass Founder, 117 & 119 Mulberry St., Newark, N. J.

Diamond Carbon, of all sizes and shapes, for drilling rock, sawing stone, and turning emery wheels, also Glaziers' Diamonds. J. Dickinson, 64 Nassau St., N. Y.



(1) C. C. asks: Is there any way to render silicate of soda insoluble, so as to resist the action of rain water? A. There is no known method for this.

(2) C. L. W. asks: What will neutralize the effect of nitric acid upon clothing? A. Aqua ammonia, if promptly applied.

Will two electro-magnets (the two unlike poles being opposite) attract each other with more force than one electro-magnet will attract a piece of iron with? A. No, if the other conditions are the same.

(3) C. D. asks: How am I to proceed to electroplate in iron? A. Use the protosulphate or neutral chloride of iron, with an iron electrode.

(4) T. B. C. asks: 1. Has a steam boiler ever been constructed so as to be heated by electricity? A. No. 2. My idea is to have coils of platinum wire traversing the boiler and attached to batteries of sufficient power to generate the heat. Is this practicable? Can sufficient heat be generated? A. Your idea is totally impracticable.

(5) W. M. asks: Can you tell me why the English telegraphs are run on the open circuit and the American on the closed circuit, and which is the most economical? A. The original telegraph in England was the Cooke and Wheatstone's needle telegraph, which was worked by reversals of the poles and necessitated the use of the open circuit, with batteries at each station. When the Morse came into use, they still adhered to the open circuit feature. In this country, the open circuit plan has been used quite extensively, and is still employed to work the duplex and quadruplex systems. The open circuit plan is the most economical.

(6) W. F. W. asks: How can I become a good practical architect? A. The best way is to serve a regular novitiate in the office of an architect of good standing, in which you will become acquainted with the requirements of the profession, and have access to his library.

(7) M. B. asks: 1. What would be the width of the torrid zone if the axis of the earth were inclined 30° instead of 23½°? A. Sixty degrees. The sun's greatest declination is 23° 27' 25", and is diminishing ¼ second annually. 2. We are situated at about 40° north latitude. As the sun never gets farther north than the Tropic of Cancer, why is it that the sun appears to rise north of us in the summer? A. At the summer solstice, in latitude 40°, the ecliptic meets the N. E. by E. horizon.

(8) C. H. A. asks: 1. How is the sphericity of the earth proved by the appearance of clouds on the horizon? A. Lines of true level are curved, and differ from straight sight lines of apparent level one eighth of an inch in a sight of one eighth of a mile. 2. How can it be shown by canal level? A. The dip of the horizon at sea when the height of the eye is three feet is 1' 42"; when the eye is elevated 17 feet, it is 4' 3".

(9) B. D. R. asks: 1. How many times does the strongest magnifying glass now known magnify? A. 100,000 diameters. 2. Could such a glass be used as ordinary eye glasses or spectacles? A. You can wear a pair of magnifying spectacles of about 3 inches focus. The microscope brings the object nearer to the eye than ten inches, its normal focal distance. A pin hole in a card, or a larger aperture holding a drop of Canada balsam, or a spherule melted from glass thread, illustrates this.

(10) H. M. asks: When the air is perfectly dry and clear, is sound propagated farther than when moisture exists in the air? A. Yes.

(11) A. B. asks: 1. Is there any difference in the kind of electricity obtained from an electrical

shocking machine, operated by a battery, and one composed of magnets which are turned by a crank? A. None. 2. Do they use a common glass plate or cylinder electrical machine for medical purposes? A. No. 3. Is a galvanic battery without any machine for shocking ever employed? I never could feel anything by simply using a battery. A. Yes; in some hospitals it is exclusively used. A battery of 100 Daniell's cells is employed. You would have got a shock if you had used a battery of a sufficient number of cells. 3. How is it that I feel a shock when I put the wires on the shocking machine, but not when I simply hold the wires from the battery without connecting with the machine? A. Because the passing of the current of low tension through the primary coil induces electricity of high tension in the secondary coil, from which you obtain the shock.

(12) S. E. S. asks: If I start from the equator and travel in a northeasterly direction, shall I finally arrive at the point from which I started? I think that if I kept any course except due east or west, I should finally reach one of the poles. A. You are right. In shaping a course, the middle latitude between two places is used to look for the difference of longitude, departure, course, and distance in the tables.

Where is the Puerco River? A. In New Mexico. It flows into the Rio Grande.

(13) E. W. asks: If I make a mark, at 1 o'clock by a correct watch, on a floor, where the shadow of the corner of a house falls, shall I have a standard to keep the watch correct by? A. The sun is right April 15, June 14, September 1, and December 24. Make a noon mark in the meridian and apply the equation of time from the Nautical Almanac.

(14) C. D. asks: How is asphalt pavement made? A. It is composed of broken stones, sand, and gravel, cemented together by tar, pitch, or bitumen.

How much pressure per inch is it safe to use in a boiler of two feet diameter, and 1-16 inch thick? A. About 25 lbs.

(15) B. F. asks: What is the highest temperature at which water will readily condense steam? A. At any temperature less than that of the steam, if enough water be circulated through the condenser.

(16) S. H. D. says: If you put a thermometer in an open vessel of water heated to the boiling point, it will indicate 212°. If it is in a boiler or other closed vessel, will it indicate more than 212°, provided you have heating surface enough, as in a boiler furnace? A. It can be made to give much higher indications, if the water is confined so that it can be converted into steam of greater pressure than that of the atmosphere.

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

D. W. D.—It is impure brown sesquioxide of iron.—E. M. M.—Your specimen is graphite.—J. N.—It is iron pyrites.—M. S. W.—It is sulphuret of zinc, traversed by a thin seam of pyrites.—C. I.—It is gypsum.—J. W.—It is clay, with a small percentage of oxide of iron. It would make an inferior paint.—V. W. S.—It is a very difficult thing to answer such questions as yours, when a piece of something looking like dirt and of hardly the size of a three cent piece is sent. A piece of reasonable size should be sent, with some suitable explanations. The present so-called specimen is black and green sealing wax, mixed up with nitrate of baryta.—A reader sends two specimens, in an unlabeled paste-board box. No. 1 is a silvery looking mineral, in fan-like needles, with a greasy feeling like soapstone. It is pyrophyllite, so called because when heated it swells out to many times its original bulk, forming small leaves. It is a silicate of alumina containing water. No. 2 is quartz sand mixed up with pebbles of brown oxide of iron. Some of the latter, of a cubical shape, have arisen from the alteration of the yellow sulphide of iron to the brown oxide.

J. A. C. says, in reference to an article on spontaneous combustion in hay: Some persons distribute salt plentifully throughout their hay when they pack it away, in order to make it more palatable to the stock. Cannot the salt be also suggested as a preventive of spontaneous combustion?—S. W. asks: Is the wood of the Bois d'Arc or Osage orange tree ever used in ornamental work?—T. McI. asks: Are there any wire swing bridges?—H. R. E. asks: How are dies, for making type, cut?—G. E. asks: How do pocketbook makers make the creases in the leather of pocket books and what kind of tool is used?

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On Ventilation. By C. A. W.
On Hydraulic Brakes. By W. M. H.
On the Phylloxera. By L. W. G.
On Dynamite. By H. C. R.
On Life Insurance. By B. F. R.
On a Hole through the Earth. By B. C.
On a Flying Machine. By L. M.
On the SCIENTIFIC AMERICAN. By E. G. F.
On Sun Spots and Comets. By J. W. F.
On Strange Forces in Nature. By G. W. R.
On Lacing Belts. By J. W. S.
On Cribbing in Horses. By B.
On Tempering Steel Tools. By T. D. L.
On a Cut Worm. By A. G. C.
On Phosphor Bronze. By J. A. B.

Also enquiries and answers from the following: W. P. F.—C. E. M.—H. M. H.—S. D. G. N.—B.—R. H. F.—L. B. B.—G. E. W.—C. J. B.—W. H. H.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor de-

clines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of enquiries analogous to the following are sent: "Where can the three cylinder engine be obtained? Whose is the best book-paging machine? Where can bookbinders' finishing tools be bought?" All such personal enquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

OFFICIAL INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week ending November 17, 1874, AND EACH BEARING THAT DATE.

(Those marked (r) are reissued patents.)

Table listing various inventions and their patent numbers, including items like Addressing machine, Alarm signal, Alphabet board, Ash leach, Bale tie, Barrel valve apparatus, Barrels, Basket bottom, Bed, Bell, Bill, Billiard table piano, Binder, Bird cage, Blind, Boiler attachment, Boom, Boot, Bottle covers, Bracelet, Brazelet rings, Brick machine, Bridge, Brush, Bung and vent valve, Burner, Cam slide, Can tops, Car axle box, Car axle lubricator, Car coupling, Car stove, Car trucks, Cars, Car bolster plate, Carbon black, Carpet stretcher, Centering device, Chair and lounge, Chair bottom, Clamp book, Cooler, Cop tube, Corn shelling machine, Cotton, Cotton Jack, Crane, Cryptography, Cultivator, Cultivator, hand, Currycomb, Dental plugger, Distilling apparatus, Dovetails, Dryer, Drying apparatus, Elevator, Engine, Engines, Engine valve motion, Excavator valve, Explosive compound, Eyeletting machine, Far register, Fire brick, Fire extinguisher, Fire kindler, Flower stand, Fruit dryer, Fruit jelly, Fuel, Furnace, Furnace for steam boilers, Furnace, hot air, Furnace hydrocarbon burner, Garter, Gas retort, Grinding colters, Gun barrel machine, Gun or pistol, Harrow, Harvester rake, Harvester sheaf dropper, He rest.