

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line.

Large variety of Patterns, just what a new foundry needs. Vertical Double Engine, 40 H. P. Roots Square Rotary Engine 15 H. P. Combined Punch and Shears.

Chard's Extra Heavy Machinery Oil. Chard's Anti-Corrosive Cylinder Oil. Chard's Patent Lubricant and Gear Grease.

Walrus Leather and Walrus Wheels for all metal polishing. Greene, Tweed & Co., 118 Chambers St., N.Y.

Vacuum Cylinder Oils. See adv., page 173.

The Golden Age—the present—when Esterbrook's Steel Pens, the most popular in use, are within the reach of all.

We have been told that a retail clothing dealer in Chicago has intimated that he is, or has been, connected with Baldwin the Clothier.

Fine Gray Iron Castings to order. A. Winterburn, Foundry, 16 DeWitt St., Albany, N. Y.

Recipes and Information on all Industrial Processes. Park Benjamin's Expert Office, 50 Astor House, N. Y.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsbg., Pa.

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

Our new Stylographic Pen (just patented), having the duplex interchangeable point section, is the very latest improvement.

Skinners & Wood, Erie, Pa., Portable and Stationary Engines, are full of orders, and withdraw their illustrated advertisement.

Sweetland & Co., 126 Union St., New Haven, Conn., manufacture the Sweetland Combination Chuck.

Safety Linen Hose for Hotels, Warehouses, and Factories, as protection from fire. Greene, Tweed & Co., N.Y.

Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr., & Bros., 81 Jefferson St., Philadelphia, Pa.

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y.

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

Stave, Barrel, Keg, and Hogshead Machinery specialty, by E. & B. Holmes, Buffalo, N. Y.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, importers Vienna lime, crocus, etc.

Peck's Patent Drop Press. See adv., page 140.

Presses, Dies, and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn, N. Y.

Hydraulic Jacks, Presses and Pumps. Polishing and Buffing Machinery. Patent Punches, Shears, etc. E. Lyon & Co., 470 Grand St., New York.

Sheet Metal Presses, Ferracute Co., Bridgeton, N. J.

Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 147.

Blake "Lion and Eagle" Imp'd Crusher. See p. 141.

The Lace Cutter illustrated on another page can be purchased from Greene, Tweed & Co., 118 Chambers St., New York, N. Y.

Moulder wanted, to take charge and make fine snap work. Must be temperate. Send photograph and recommendation.

Situation wanted, by Machinist and Tool Maker; 25 years' experience in all branches. Had charge of large machine shop and brass works.

National Institute of Steam and Mechanical Engineering, Bridgeport, Conn. Blast Furnace Construction and Management.

Portable Railroads. Sugar Mills. Horizontal & Beam Steam Engines.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10,000 Gear Wheels, now in use, the superiority of their Castings over all others.

Air Compressors. Clayton Stm. Pump W'ks, Bk'lyn, N. Y. A 4 1/2 in. 2 Jaw Chuck, Independent or Universal, for Brass Finishers.

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

Gear Wheels for Models (list free); experimental and model work, dies and punches, metal cutting, manufacturing, etc.

Improved Steel Castings; stiff and durable; as soft and easily worked as wrought iron.

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

Reed's Sectional Covering for steam surfaces; any one can apply it; can be removed and replaced without injury.

For Yale Mills and Engines, see page 173.



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.

(1) G. A. A. asks: Which is the best pipe to use for heating a room with steam: two rows of one inch pipe or one row of two inch pipe?

(2) O. V. D. asks: 1. How many pounds ought a three-eighths inch bar magnet hold up, like that described in the SUPPLEMENT, No. 142, in the article "How to Make a Working Telephone," Fig. 4, so that I could tell if it was charged powerful enough?

(3) Dr. A. M. C. says: I want to make a sidewalk 10 feet long, 2 3/4 feet wide. What can I use in place of stone or wood, something that is durable and hard?

(4) W. H. D. asks: 1. Will a magnet that will lift a one pound weight make a small machine that will make a small current to show how it works?

(5) J. S. M. inquires as to the best method of preventing woodwork in mills saturated with oils from taking fire in the event of a blaze touching the woodwork.

(6) G. E. writes: 1. I have bought some woollen underclothing which are so much filled with sulphur that they are very unpleasant to wear.

(7) R. P. asks if there is any indelible preparation for stenciling on unplanned lumber, such as posts, etc., in black or other colors?

(8) J. G. asks what are the plates on which photographic pictures commonly called tintypes are taken coated with?

(9) P. T. asks how to take stains made by Payson's indelible ink out of linen?

(10) E. H. writes: 1. Referring to your description of Blake's transmitter, on p. 274, vol. 41, SCIENTIFIC AMERICAN, how is the brass button filled with carbon?

(11) W. S. H. asks: Can you give a simple test for oxygen water; that is, water supposed to contain an extra amount of oxygen—all it will take up?

(12) E. T. S., St. Clair, Mich., says: In your issue of August 14, G. G., in the article, "Evolution of Ideas," speaks of the "golden cut."

(13) F. P. S. asks: 1. Can paper be made to have the same strength and elasticity as leather? Can it be moulded into a form 6x2x1 inches, and so treated that it will have the same qualities as leather?

(14) C. W. H. writes: I wish to learn how to mix shellac in liquid form, to be used in shellacking a cedar boat; that is, how much alcohol to a certain amount of shellac should be used, and how it should be applied so as to obtain a thin hard coating that will wear well.

(15) F. E. T. asks: What is nickel silver jewelry? I wish to get some of the metal, but find none advertised.

(16) C. T. F. writes: I observe in your journal of July 31, p. 69, an article pertaining to the value

of swamp muck. Please inform me how nitrogen is manufactured from swamp muck?

(17) M. F. P. writes: I would like to get the details of lacquering brass goods, such as lamps, springs, etc., to keep them bright and prevent them from tarnishing.

(18) J. J. M. asks (1) if a dynamo-electric machine will run of itself, or if a battery is applied to it.

(19) C. E. W. writes: I have both copper and brass moulds for small articles, but meet with failure in the metals not running sharp in the small lines.

(20) G. M. B. asks: 1. How is nitroglycerine made. A. Nitroglycerine is prepared by bringing glycerine drop by drop into a cooled mixture of very strong nitric and sulphuric acids.

(21) H. B. C. writes: Will you please inform me the best way to cut carnelian and moss agates? A. Some specimens may be readily cut by means of a thin rotating iron disk charged with emery and water.

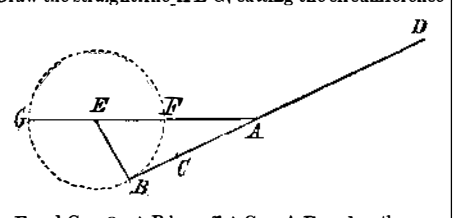
(22) E. F. L. asks how to cut and finish carnelians and agates. I have a United States dental lathe. A. See reply to H. B. C. above.

(23) C. & W. write: 1. We are putting in a sixty horse power locomotive pattern boiler. Shell 60 inches in diameter.

(24) W. E. F. writes: In your SCIENTIFIC AMERICAN and the SUPPLEMENT you speak of preserving iron in water and ships' bottoms by the application of creosote.

(25) H. A. C. writes: A diploma on parchment was, as I thought, greatly injured by dropping writing ink near and adjoining the printing on the side of the diploma.

(26) E. Y. D. writes: I have a sun dial made in Germany for 48° 15' latitude, and I want to know if I get correct time with it in latitude 38° 50'; if



The first proportion by composition gives: AG + AB : AG : AB + AF : AB Since AG = AD and AB = FG we have BD : AD :: AD : AB.

not, why? And how much difference will there be at 12 o'clock noon? A. We should infer yours to be a horizontal sun dial, and will give correct time only in latitude for which it was made, save when sun in meridian; because the gnomon or style by which the shadow is cast must be placed parallel with the polar axis of the earth, and the base upon which the shadow is cast parallel with the horizon, both of which cannot be done when a change of latitude is made. If the style of your dial is set truly in the meridian of your place, and depressed to correspond with your latitude, it will give you 6 o'clock A.M. and 6 o'clock P.M., also the exact sun or true time, at noon.

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

W. N. W.—Galena—lead sulphide, a rich lead ore. It probably carries a little silver—worth assaying.

COMMUNICATIONS RECEIVED.

- On the Motion of the planets. By A. K.
On a New Theory of Planetary Movement. By J. H. S.
On the Declination of the Magnetic Needle. By J. L. R.
No Current in Magnets. By W. B. F., M.D.
On Protecting Oil Tanks from Lightning. By W.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending August 17, 1880.

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 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. 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.

Table listing various inventions such as 'Advertising, automatic device for', 'Aging liquors, apparatus for', 'Air brake for railway trains', etc., with corresponding page numbers.

Table listing various inventions such as 'Gas, apparatus for the purification of coal', 'Klönne', 'Gas burner, J. F. Barker', etc., with corresponding page numbers.

Table listing various inventions such as 'Station indicator, J. L. Ferguson', 'Steam and hot air pipes, covering for', 'Steam boiler attachment', etc., with corresponding page numbers.

DESIGNS.

Table listing designs such as 'Carpet, D. McNair', 'Carpet, T. J. Stearns', 'Coffin plate, W. M. Smith', etc., with corresponding page numbers.

TRADE MARKS.

Table listing trade marks such as 'Backing, harness, T. C. Pritz', 'Brushes such as have brushing surfaces of bristles', etc., with corresponding page numbers.

English Patents Issued to Americans.

Table listing English patents issued to Americans such as 'Axle box, S. A. Bemis, Springfield, Mo.', 'Biscuit, app. for spreading jam upon', etc., with corresponding page numbers.

Advertisements.

Inside Page, each insertion... 25 cents a line. Back Page, each insertion... \$1.00 a line. Engagements may be made... as the letter press. Advertisements must be received at publication office early as Thursday morning to appear in next issue.

Advertisement for 'THE BREATH, LIPS, TEETH, AND MOUTH, and the Physical Signs derivable therefrom' by G. V. Moore, M.D. Includes an illustration of a human head in profile.

Advertisement for 'PERFECT NEWSPAPER FILE' by Munn & Co., Publishers Scientific American. Includes an illustration of a newspaper file.

Advertisement for 'PERFECTED STYLOGRAPHIC PEN' by Munn & Co., Publishers Scientific American. Includes an illustration of a stylographic pen.

Advertisement for 'TOOLS for Machinists, Carpenters, Amateurs, Jewellers, Model Makers, Blacksmiths, etc.' by T. Tallman & McFadden, 607 Market St., Philadelphia, Pa.

THE ORIGIN OF FALLING MOTION.—By Charles Morris. An interesting study of the form of energy which creates motion. Its origin in the moving bodies themselves as real motion, existing previously in some other form and converted as needed into the form of mass motion. The various modifications of motive energies which exist as constituent forces of all matter. Electrical, magnetic, chemical, cohesive, and temperate energies; their specialized and generalized forms. Heat force. Gravitational energy. Transformation of heat motion in falling bodies. Loss of mass motion followed by increase of temperature. Interesting deductions made from applying the ideas herein given to the proposed Long Water Elevators, which could be substituted not a creator of motion, but its influence only directive. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 240. Price 10 cents. To be had at this office and from all newsdealers.

FREE TO ALL!

Wishing to introduce our great Literary and Family Journal, The Fireside at Home (a mammoth 8-page, 40-column illustrated paper, size of N. Y. Ledger, devoted to literature, useful knowledge, amusement, and everything to delight and instruct the whole family) into thousands of new homes where its name is not yet known, we will send it, Free for Three Months to all who send Ten Cents (in silver or postage stamps) to pay postage and help pay the cost of this advertisement. The regular price is \$4.00 per year, but we are willing to give the paper away for three months and lose its cost, in order to introduce it to new readers. By taking advantage of this offer you will secure all the brilliant holiday issues and enlarged numbers soon to be published, and an amount of valuable and attractive reading matter for the approaching Long Winter Evenings, which could be secured in no other way for four times the amount. Send at once, and if you can conscientiously say, after your subscription has expired, that you have not received double the value of the ten cents—yes, and more—we will make you a present of an \$8.00 bill. Address: F. H. LIPTON, Publisher, 27 Park Place, New York.

ENLARGED COLLODION TRANSFERS.

By Geo. Dawson, M.D. An explanation of the whole mode of procedure in making transfers. The paper is so clearly and succinctly stated that any one who knows how to take a good negative will be able, by reading the author's directions, to secure an enlarged positive, and as perfect as the character of the negative will permit. The optical apparatus, the chemicals, the development, the printing, the collodion, and the collodion transfer, are all contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 243. Price 10 cents. To be had at this office and from all newsdealers. The same number contains articles on 'Some Experiments with Asphalt for Photographic Purposes'; 'Photo-plates, the Woodburytype, Old and New'; and 'A New Developer.'

Advertisement for 'ELEVATORS HAND POWER AND HYDRAULIC FREIGHT & PASSENGER SHAFING PULLEYS & HANGERS' by S. Graves & Son, Rochester, N.Y.

TO FOUNDERS AND MACHINISTS.—FOR SALE, A Patent Right. Address ISAAC H. WRIGHT, No. 132 East Monument St., Baltimore, Md.

The National Institute of Steam Engineering, Bridgeport, Conn., can furnish Nov. 1 a number of sober, reliable, and trustworthy Engineers (graduates of this institution), who are good mechanical draughtsmen, can do steam and gas fitting and plumbing, are judicious and economical in the use of fuel, and who can erect, operate, and maintain in running order and repair, with the greatest attainable economy, any steam machinery or steam boilers that are used. Applications received now.

ON VIRULENT DISEASES, AND ESPECIALLY ON THE Disease commonly called Chicken Cholera.—By M. Pasteur. An important paper in which are given the author's certain new facts which throw an unexpected light on the problems raised by the study of virulent diseases; these facts having been ascertained by a recent careful investigation of the fearful poultry disease known as "Chicken Cholera," and the results of which investigation are herein given in detail. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 242. Price 10 cents. To be had at this office and from all newsdealers.

FLEUSS' DIVING APPARATUS.—BY B. W. Richardson. An interesting lecture delivered before the Society of Arts, in which is reviewed the history of diving, and the attempts that have been made by men of science to live under water; with a description of Fleuss' new diving dress, which enables the wearer to do steam and gas fitting and plumbing, are judicious and economical in the use of fuel, and who can erect, operate, and maintain in running order and repair, with the greatest attainable economy, any steam machinery or steam boilers that are used. Applications received now.

LIQUID FUELS FOR STEAM ENGINES. The opinion of an expert as to the economic value of naphtha as a substitute for coal in the production of heat and the generation of motive power. The recent experiments on the Long Island Railroad with naphtha fuel, and their results. Claims of the inventor of the Holland hydrocarbon retort. The modus operandi of the apparatus, and a criticism of the inventor's claims. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 238. Price 10 cents. To be had at this office and from all newsdealers.

Advertisement for 'LIGHT & SLACK BARREL MACHINERY' by John Greenwood & Co., Rochester, N.Y.

NAVIGATION OF THE AIR.—BY FRED. W. Breary, Hon. Sec. to the Aeronautical Society of Great Britain. A review of what has thus far been accomplished toward a solution of the problem of aerial locomotion; the errors of former experimenters pointed out; and the present and future aspect of the question considered. The direction in which future experiments should be made in order that success may be attained. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 241. Price 10 cents. To be had at this office and from all newsdealers.

PLATTSMOUTH BRIDGE OVER THE MISSOURI.—Details of construction of new bridge now in process of building across the Missouri River, below the city of Plattsmouth, Nebraska. Length of bridge, 3,000 feet; east approach, 2 miles long; west approach, 1 mile; permanent bridge of 2 through spans, 400 ft. each, 3 deck spans, 200 ft. each, and 1500 foot iron viaduct. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 239. Price 10 cents. To be had at this office and from all newsdealers.

INDIAN CORN.—BY LOUISA REED Stowell. A microscopic examination of Indian Corn, showing its structure of kernels, structure of starch grains, etc., and accompanied by a concise description of this valuable grain, giving its chemical composition, its properties as a nutrient, and the various forms under which it appears in market. Illustrated with six figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 237. Price 10 cents. To be had at this office and from all newsdealers.