

Business and Personal.

The Charge for Insert on under the 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.

For Sale.—Engine and boiler. Steam cylinder, 10 x 20; boiler, 22 feet long, 4 feet diameter; two flues, 12 inches diameter. Also one steam rendering tank, 10 feet long, 5 feet diameter; of three-eighths iron. One open square iron tank, 7 x 4 1/2 x 4 feet high; three-eighths iron. All at very low prices. Farmers' Fertilizer Company, 61 W. Water Street, Syracuse, N. Y.

Wanted.—Liberal inducements and facilities for locating large iron works. Address Iron, Manchester, N. H.

In writing it is well to remember the rule that the up strokes should be curves and the down strokes straight. The Esterbrook's pens will be found adapted for either operation.

Schools open.—Send for Catalogue of Drawing Materials. Kenfel & Esser, New York.

Engine for Sale.—A first-class 14 x 30 slide valve engine, with flywheel and band wheels and Huntoon governor complete. In perfect running order, and can be seen running. Address Engine, Box 653, New York Post Office.

Woodworking Mach'y. Bentel, Margedant & Co., see p. 230.

25' Lathes of the best design. G. A. Ohl & Co., East Newark, N. J.

Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions, Sunday schools, colleges, and home entertainment. 116 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., New York.

50,000 Emerson's Hand Book of Saws. New Edition. Free. Address Emerson, Smith & Co., Beaver Falls, Pa.

Copies Wanted.—London Engineering, issues January 2d, 9th, 16th, 23d, and March 5th, 1882; also September 30th, 1881. 50 cents each is offered. Address B. R. Western, No. 8 Broad Street, New York.

Cope & Maxwell Mfg Co's Pump adv., page 220.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 34 Columbia St., New York.

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

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 220.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 222. Gould & Eberhardt's Machinists' Tools. See adv., p. 221.

Empire Gum Core Packing, Soapstone Packing, and all kinds of Rubber Packing. Greene, Tweed & Co.

Barrel, Key, Hoghead, Stave Mach'y. See adv. p. 222.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 220.

Red Jacket Adjustable Force Pump. See adv., p. 220.

Vertical Engines, varied capacity. See adv., p. 221.

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

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 220.

For best low price Planer and Match, and latest improved Sash, Door, and Blind Machinery, send for catalogue to Rowley & Jermaine, Williamsport, Pa.

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

The Porter-Allen High Speed Steam Engine. South-west Foundry & Mach. Co., 450 Washington Ave., Phil. Pa.

Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p. 222 4 to 40 H. P. Steam Engines. See adv. p. 220.

Baxter's Adjustable Wrenches fit peculiar corners where no other wrench will answer. Greene, Tweed & Co., New York.

Collection of Ornaments—A book containing over 1,000 different designs, such as Crests, Coats of Arms, Vignettes, Scrolls, Corners, etc., will be mailed free on receipt of \$1. Address Palm & Fechteler, 6 West 14th Street, New York.

For Sale.—New Planer, 27" by 24", with 6 1/2 ft. table with 18" Planer Chuck; weight, 5,000 lb.; price, \$700. New Crank Planer, 18" x 15", with 1" stroke; a good tool; \$350. S. M. York, Cleveland, O.

The Sweetland Chuck. See illus. adv., p. 190.

Steam Pumps. See adv. Smith, Vaile & Co., p. 188.

Knives for Woodworking Machinery Bookbinders, and Paper Mills. Taylor, Stiles & Co., Riegelsville, N. J.

Send stamp to Morse Yellow Dock Root Sirup Co., Providence, R. I., for descriptive circular and sets of elegant Advertising Cards.

Drop Forgings. Billings & Spencer Co. See adv., p. 205.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 205.

Lightning Screw Plates, Labor-saving Tools. p. 206.

Engines, 10 to 50 horse power, complete, with governor. \$250 to \$550. Satisfaction guaranteed. Six hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinville, N. Y.

Air Pumps for High Pressure, Hand, or Steam Power, at low prices. C. Beseler, 213 Center Street, New York.

Improved Skinner Portable Engines. Erie, Pa.

Combination Roll and Rubber Co., 68 Warren street, N. Y. Wringer Rolls and Moulded Goods Specialties.

Pure Water furnished Cities, Paper Mills, Laundries, Steam Boilers, etc., by the Multifold System of the Newark Filtering Co., 177 Commerce St., Newark, N. J.

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

First Class Engine Lathes, 20 inch swing, 8 foot bed, now ready. F. C. & A. E. Rowland, New Haven, Conn.

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3083, New York city.

Jas. F. Hotchkiss, 84 John St., N. Y.: Send me your book entitled "How to Keep Boilers Clean," containing useful information for steam users & engineers. (Send a dime by postal or letter; mention this paper.)

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

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.

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

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other (an) Tools. E. W. Biss, Brooklyn, N. Y.

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.

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

Presses & Dies (fruit cans) Ayar Mach. Wks., Salem, N. J.

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

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) G. A. C. sends formulae for solders for nickel. They are the result of practical experience and may be recommended. The solders are more malleable than those recommended in SCIENTIFIC AMERICAN, August 12, but not so white. They are: For fine or high grade nickel, 3 parts yellow brass, 1 part coin silver. For low grade nickel, 15 parts yellow brass, 5 parts coin silver, 4 parts zinc (pure or plate zinc). Melt the brass and silver with borax for a flux, and the zinc in small pieces, stir with an iron rod, pour in a slab mould, and cool slowly, when it can be rolled thin for cutting.

(2) S. K. H. asks: 1. Is there any preparation which can be applied to horses and cattle, as well as to men, that will effectually keep away flies and mosquitoes? A. Some one of the mixtures containing oil of pennyroyal might answer. 2. How long will one application be effective? A. Until its presence ceases to be perceptible by its odor. 3. How can the preparation be procured or made? A. See SCIENTIFIC AMERICAN, August 5, 1882.

(3) J. R. S. writes: 1. I am about to build a boat 19 feet long, 3 feet 10 inches broad and 8 inches depth in center. Are my proportions right for a screw wheel yacht for speed? A. We think 20 inches or 21 inches better depth, and if 3 feet longer, would be better for speed. 2. What size engine and boiler, also wheel, are required to run it from 8 to 10 miles per hour? A. 4 inches diameter of cylinder by 4 inches stroke; boiler with about 110 feet heating surface. 3. About what will such a boiler cost? A. It will depend upon the kind of boiler you use, probably \$300 to \$220; propeller 20 inches to 24 inches diameter, and 36 inches or 38 inches pitch. 4. Will such a boat have to be inspected? It is to be run only on a small river. A. Yes.

(4) J. F. L. asks: Can a locomotive pull more than its own weight? Example: If a 70 ton engine had 70 tons of solid matter in one cart attached to it, could it draw it? If so, could it pull it more easily than if it were put into 7 cars of 10 tons each, the engine not to use any substance to assist it, the track to be straight and level? A. Yes, the friction and resistances of air, etc., are less to one car than to a larger number. The pull of a locomotive is not the dead weight of the load, but merely the resistance due to friction, resistance of air, etc. See "How much will a Locomotive Pull," in SUPPLEMENT 184.

(5) B. A. L. asks: 1. Is there anything that is really straight, or is it possible to draw a true straight line? A. Depends upon what is meant by "really straight," and "true straight line." A mathematical straight line is not a "thing." A conventional straight line is a mark which more or less exactly covers the shortest distance between two points. The imperfection of our means for describing such a line makes it practically impossible to attain absolute straightness. 2. Can a true circle be made? If these are impossibilities how is it demonstrated? A. A circle practically "true" can be made. An absolute "true" circle cannot be made. 3. What means were used in showing that the earth itself exerted attractions on bodies, such as drawing a plumb line from the vertical? A. Every falling body proves it. 4. What influence has the moon over the weather? A. The moon's influence upon the weather is so exceedingly slight that its amount is not determinable. 5. If none, how is it that the so-called wet and dry moons very frequently and mostly come out as predicted? A. Weather predictions based on the moon's changes "do not mostly come out as predicted."

(6) E. M. C. writes: 1. I am erecting a factory in which I shall have occasion to convey steam for both power and heat (boiling) considerable distances and in considerable quantities. Boiler pressure will be about 80 pounds. Would there be any advantage either in economy or otherwise in superheating the steam? A. By superheating you would lose less pressure by the traverse of the pipe, and have higher temperature for boiling. 2. What is the best material and mode of protecting the pipes, many of which will traverse open air intervals, where the thickness of the covering may be carried to any desirable extent without inconvenience? A. Hair, felt, asbestos, and mineral wool are all good if not exposed to moisture. 3. Can you refer me to any work in which the qualities and employment of superheated steam are comprehensively treated in a practical manner? A. This information is scattered through various works on steam and the steam engine.

(7) D. H. R. asks how to make good black or red indelible ink; red is preferable. A. See "Inks," in SUPPLEMENT, No. 157.

(8) C. B. J. asks: Please describe a cheap solution for rendering wood waterproof and fireproof. A. "Preservation of Wood," in SUPPLEMENT, No. 272.

(9) C. C. R. writes: I am building a three-cylinder engine to take steam at one end only of each cylinder. The cylinders are 2 1/2 inch bore, with 4-inch stroke, with a boiler pressure of 75 pounds; engine to run 400 revolutions. How can I figure out the power of said engine? A. You can calculate the engine as a single cylinder, taking steam at both ends, and then add 50 per cent to the result for the third cylinder. But the loss by friction and radiation will be greater in the three cylinders than in one cylinder giving out the same power.

(10) G. M. writes: A and B have a controversy concerning a hollow brick wall built to exclude the heat of summer. A claims that the inclosed air space should be entirely cut off from the external air and no circulation allowed. B claims that the circulation should be as free as possible. Which is right? What is the best way to build such a wall? A. B is right. Build the wall double, with an occasional "header," to tie the walls together, but not to be so tied as that difference of expansion and contraction shall crack the walls.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending September 12, 1882, AND EACH BEARING THAT DATE.

Table listing inventions with patent numbers and dates. Includes items like Agricultural boiler and feed steamer, Alarm, Amalgamating and separating gold, etc.

Table listing inventions with patent numbers and dates. Includes items like Calipers, beam, J. A. Reece, Can. See Cracker can, Fruit can, Milk can, Sheet metal can, Cans of fruit, cooling, T. Shaw, etc.