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.

A chance to make from $10 to $20 per day. Agents wanted for the Rapid Bottle Cleaner in every State of the Union. This invention has been patented not only in the United States but in all the important countries of Europe. Terms to active agents very liberal. See page 330, present volume of the SCIENTIFIC AMERICAN. Address Charles Von Derlinden, Rhinebeck, N. Y., or Rapid Bottle Cleaner Co., 267 Broadway, New York.

72″ Indpt. 3 Jaw Chucks, $42; 48″, $36; 24″, $30. *Warranted* best in the world, and sent on trial. Amer. Twist Drill Co., Meredith, N. H.

Vertical Engines, varied capacity. See adv., p. 340.

Surveyors' Mathematical Instruments of the greatest variety and best make, warranted true, at Keuffel & Esser's, New York.

The National Library in Paris, the largest in the world, contains over 2,000,000 volumes. What an army provided with Esterbrook's business and engrossing pens would be required to write out the original manuscripts.

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

Wanted.—A Metal Spinner. To the right man permanent employment and good wages. Address, with references, Empire State Manufacturing Co., Buffalo, N. Y.

Wanted.—Beam Engine, high pressure, cylinder 24 to 26 inches diam., 4 to 5 feet stroke. S. C. Forsaith & Co., 209 Center Street, New York.

The largest retail clothing business in New York and Brooklyn is done by Baldwin, the Clothier.

For Sale.—That valuable Telephone Patent illustrated on page 259. The entire right for the United States, exclusive of the Pacific coast. Address the inventor, John B. Bennett, San Luis Obispo, Cal.

Wanted.—Light Mfg. Business to locate here. Substantial inducements. Best ref. required. A. B. C., Mauch Chunk, Pa.

Wanted.—Double Pitman Open Back Press, new or second hand. Send particulars to Sedgwick & Stuart Mfg. Co., Poughkeepsie, N. Y.

See Bentel, Margedant & Co.'s adv., page 304.

Drop Forgings. Billings & Spencer Co. See adv., p. 341.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

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

50,000 Sawyers wanted. Your full address for Emerson's Hand Book of Saws (free). Over 100 illustrations and pages of valuable information. How to straighten saws, etc. Emerson, Smith & Co., Beaver Falls, Pa.

Eagle Anvils, 10 cents per pound. Fully warranted.

Gould & Eberhardt's Machinists' Tools. See adv., p. 340.

Engines, 10 to 50 H. P., $250 to $500. See adv., p. 340.

Barrel, Key, Hogshead, Stave Mach'y. See adv. p. 341.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 340.

Lehigh Valley Emery and Corundum Wheels and Grinding Machinery of all kinds. Please write for prices, stating sizes of wheels you use, etc. Lehigh Valley Emery Wheel Co., Lehighton, Pa.

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

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 342.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blind Machinery, Send for catalogue to Rowley & Hermance, Williamsport, Pa.

Lathes.—20 inch swing, 8 foot bed, ready June 1. F. C. & A. E. Rowland, New Haven, Conn.

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.

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Ave., Phil. Pa.

The Sweetland Chuck. See illus. adv., p. 342.

Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Soloman's Parallel Vise, Taylor. Stiles & Co., Riegelsville, N. J.

Electric Lights.—Thomson Houston System of the Arc type. Estimates given and contracts made. 631 Arch, Phil.

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

"T. New, 32 John St. New York, has sold and applied over fifty million feet of his Prepared Roofing, the major part being placed upon manufacturing establishments." —SCIENTIFIC AMERICAN.

Agents Wanted.—None but intelligent and energetic need apply. Must furnish good recommendations, or no notice will be taken of applications. Exclusive territory given. Agents are now making from $10 to $15 a day. Address, for terms, The Infallible Coin Scale Co., 267 Broadway, New York city.

Improved Skinner Portable Engines. Erie, Pa.

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

Steel Stamps and Pattern Letters. The best made. J. F. W. 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.

Combination Roll and Rubber Co., 27 Barclay St., N. Y. Wringer Rolls and Moulded Goods Specialties.

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

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

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

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

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss. Brooklyn, N. Y.

4 to 40 H. P. Steam Engines. See adv. p. 285.

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

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.

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 304.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 304.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423. Pottsville, Pa. See p. 305.

Steam Pumps. See adv. Smith, Vaile & Co., p. 306.

Draughtsman's Sensitive Paper. T. H. McCollin, Phila., Pa.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 324.

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) W. H. H. writes: In your SCIENTIFIC AMERICAN SUPPLEMENT, No. 219, you give working diagrams and directions for building canvas canoe. I have partly built one, and would now like some further information in order to finish. What is meant by "deck camber?" A. "Camber" is the rise of the deck in center of width. 2. Upon what and where does the canoeist sit? A. Upon a light board fitted across the boat at the proper height. 3. Is there to be any rest or support for the back? If so, where and how is it to be fastened? A. A light back can be fitted to the seat or not as desired, but it is not usual.

(2) W. A. S. writes: I wish to know how I can melt rubber or dissolve it for the purpose of making rubber stamps. A. See "How to Make Rubber Stamps," SUPPLEMENT, No. 83. Pure gum caoutchouc (rubber mixed by kneading while soft) softened by ovening or steaming with about six per cent of floured sulphur is employed. Ordinary vulcanized rubber cannot be softened or melted so as to be used for such purposes.

(3) E. E. & C. C. O. asks what the best plan is for excavating a well through moderately soft rock. We have been digging a well, and have struck a soft yellow limestone, which is too hard to work with the pick, and ordinary blasting powder will do no good in it, as it seems to lose its force without lifting any stone. How would giant powder do? A. Giant powder would be more effective than ordinary blasting powder. It is now generally preferred to remove such rock by one of the forms of iron borers. See our advertising columns.

(4) W. H. R. asks: 1. What kind of prussiate of potash, red or yellow, is used for case hardening? If both, which is the best, and the best way to use it? A. Yellow, common prussiate of potash of commerce. 2. Can what is called German steel be hardened throughout like cast steel? A. Not in the usual way, but may by some special means. 3. Will you please name some good work on engineering, surveying, and leveling for a beginner? A. We do not know of any one book that would be sufficient. There are many elementary works that you could study with advantage. Write the book dealers who advertise in our columns.

(5) F. A. S. asks: What is the largest locomotive in the world; where was it built; where is it used; and what is the weight? A. The heaviest of the usual classes of locomotives is 55 to 60 tons. Experimental engines have, we think, been made as heavy as about 80 tons. We believe the heaviest have been made for the Philadelphia and Reading Road for the coal trains.

(6) J. L. M. asks: 1. How many sewing machines will a horse power run, large size, such as they use in shirt and overall factories, running at a speed of 1,300 per minute, Wheeler & Wilson? A. The average use of machines will require one-thirtieth to one-fortieth of a horse power. 2. How much is a horse power worth, to let? A. It differs in different localities according to cost of fuel, rents, etc.

(7) J. E. H. wishes to know what quantity of water will pass through a quarter inch jet per minute, under a pressure of 40 pounds, 60 pounds, and 80 pounds? A. Theoretically a quarter inch jet under 40 pounds pressure will deliver 9·2 gallons; 60 pounds pressure, 11·1 gallons; and 80 pounds pressure, 13·2 gallons per minute; but from these quantities a deduction must be made for friction, if the jet nozzle is attached to a long pipe. 2. Does the quantity vary in proportion to the diameter of the jets? A. For different size of jets the delivery is nearly as the area, not the diameter.

(8) N. C. S. asks if a chimney will draw any better if it be round than if it be square, or any other shape but round? A. The friction for a given capacity is less in a round chimney than any other form.

(9) F. G. B. writes: I have been greatly interested in the published report of Mr. Lawson's experiment with steam boilers, and while I long ago accepted the theory advanced by your paper, and since practically proved by that gentleman, I am not convinced that the results would not be identical if the cylinder were dispensed with and the immense volume of steam discharged directly against the atmosphere. My idea is simply that the large gate valve, suddenly opened, presents an area of escape corresponding to a break in the boiler shell; and that a boiler having the conditions of pressure and heat demanded in these experiments may be exploded by a sudden opening of sufficient area, whether in the shell or the large pipe connected therewith, without the intervention of a cylinder. Very high pressure and a very large outlet seem, however, to be imperative to produce an explosion. A slowly working valve and a properly proportioned steam pipe would seem to be the best safeguard where an extraordinary working pressure is necessary. M. Lawson's invention, however, may prove an ample preventive. A. The result would probably be the same, though the outlet to the cold cylinder may act to make it more instantaneous.

(10) C. M. asks: Are articles of oleomargarine and golden sirup (composed in part of glucose) unwholesome as articles of food? A. Oleomargarine and glucose (when pure) are not unwholesome. 2. I have a bath room, 6x8 feet, 7 feet high, which I propose to warm to a temperature of 70° Fah. Will there be any economy of gas by using a gas stove or other radiator over a good Bunsen burner consuming the same amount of gas and air as the stove? If yes, in what way? A. A large radiating gas stove is preferable to the burner for heating purposes. Consult some recently published elementary treatise on heat.

(11) F. D. T. writes: Some time ago quite a lengthy article appeared in the SCIENTIFIC AMERICAN about superheated steam. I would like to ask if, in using a small boiler with a small amount of water in it, hot water could not be pumped in as fast as used and steam made and superheated to 300 to 400 pounds pressure without risk of explosion. Will the same fire that heats steam to 212°, in an ordinary boiler, raise it higher (and if so, how much), if the steam was in a separate boiler with no water in it. What would be the result if, in using a small amount of water, the pump should cease to act and the boiler become entirely dry? Would there be danger of explosion, providing the safety valve was in good working order? I understand that very small boilers can be made to resist a pressure of 500 to 600 pounds. A. You cannot safely superheat steam except by special arrangement, say in a separate vessel from the boiler, or something equivalent to it. Producing steam by injecting the necessary quantity of water on to hot metal, has been frequently tried, is attended with no advantage, and is not safe except in very careful and competent hands.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

May 9, 1882,

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 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, 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.

Abrading surfaces, revivifying, J. Renshaw 257,612
Adding machine, W. C. Snelling 257,775
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