

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.

STRUCTURAL DECORATION.—Our new pamphlet, containing illustrations of elegant dwellings and other fine and extensive structures decorated with H. W. Johns' Asbestos Liquid Paints, showing colors and trimmings used, together with samples of thirty-two standard and newest shades of our paints, will be sent free to those who mention the name of the paper in which this offer is made. H. W. Johns Mfg Co., 87 Maiden Lane, New York, sole manufacturers of H. W. Johns' genuine Asbestos roofing, steam packing, millboard sheathing, boiler coverings, etc.

Living Animals and Plants for the Microscope. Specimen package thirty cents. A. D. Balen, Plainfield, N. J.

Manufacturers of Machinery adapted for the manufacture of Sewing Machines please send catalogue, with lowest price list, to J. H. Osborn, 104 Bolivar St., Cleveland, Ohio.

Wanted, by a first-class Decorator, ten years' experience, a situation with an American China Manufacturer, from April 1. F. Bott, 45 Sidbury, Worcester, England.

Wanted an Experienced Draughtsman; must be a practical mechanic. Address Percy B. Beverley, Supt. Lynchburg Iron Co., Lynchburg, Va.

Assays of Ores and all Commercial Products. Send for descriptive circular. New York Assay Laboratory, 40 Broadway, New York.

Patents Sold, Leased. Correspondence solicited. Kochendorfer & Urie, 200 Broadway, New York.

Wanted.—An experienced Mechanical Draughtsman and Pattern Maker. Steady employment in a good place for the right man. Address J. W. P., Box 773, New York. Lightning Screw Plates and Labor-saving Tools, p. 158.

Send name and address to Cragin & Co., Philadelphia, Pa., for Cook Book free.

The Lehigh Valley Emery Wheel Co., Lehigh, Pa., sell a new Stone Plate Grinder, with transverse motion; and an Automatic Planer Knife Grinder, with a cup wheel. Cuts and descriptions sent upon application.

Horizontal Engine, 20 in. cyl. by 48 in. stroke, for sale new. Atlantic Steam Engine Works, Brooklyn, N.Y.

Abbe Bolt Forging Machines and Palmer Power Hammers a specialty. S. C. Forsyth & Co., Manchester, N.H.

The Newark Filtering Co., of Newark, N. J., are filling orders from cities and manufacturers for their "Multifold Filters."

To Stop Leaks in Boiler Tubes, use Quinn's Pat. Ferrules. Address S. M. Co., So. Newmarket, N. H.

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.

Send for Pamphlet of Compilation of Tests of Turbine Water Wheels. Barber, Keiser & Co., Allentown, Pa.

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.

"How to Keep Boilers Clean," and other valuable information for steam users and engineers. Book of sixty-four pages, published by Jas. F. Hotchkiss, 84 John St., New York, mailed free to any address.

Saw Mill Machinery. Stearns Mfg. Co. See p. 156.

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.

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

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

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

List 27.—Description of 3,000 new and second-hand Machines, now ready for distribution. Send stamp for same. S. C. Forsyth & Co., Manchester, N.H., and N.Y. city.

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

Improved Skinner Portable Engines. Erie, Pa.

The Sweetland Chuck. See illus. adv., p. 142.

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

Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p. 157.

Supplee Steam Engine. See adv. p. 157.

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

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 140.

For the Garden and Farm.—A great variety of Seeds and Implements. Send for catalogue. Address R. H. Allen & Co., P. O. Box 376, New York city.

See Bentel, Margendant & Co.'s adv., page 173.

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

Millstone Dressing Diamonds. Simple, effective, and durable. J. Dickinson, 64 Nassau street, New York.

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 174.

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. Peerless Colors for Mortar. French, Richards & Co., 410 Allowhill St., Philadelphia, Pa.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 173. Gould & Eberhardt's Machinists' Tools. See adv., p. 173.

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

The Medart Pat. Wrought Rim Pulley. See adv., p. 173.

For Heavy Punches, etc., see illustrated advertisement of Hillies & Jones, on page 174.

Engines, 10 to 50 H. P., \$250 to \$500. See adv., p. 173.

Barrel, Key, Hoghead, Stave Mach'y. See adv. p. 173.

Blue Process Paper is made by Keuffel & Esser, 12 Fulton St., New York. Send for circular.

Hand and Power Bolt Cutters, Screw Plates, Taps in great variety. The Pratt & Whitney Co., Hartford, Ct.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 173.

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

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.

Catechism of the Locomotive. 625 pages. 250 engravings. Most accurate, complete, and easily understood book on the Locomotive. Price \$2.50. Send for catalogue of railroad books. The Railroad Gazette, 73 B'way, N. Y.

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Ave., Phil. Pa. 4 to 40 H. P. Steam Engines. See adv. p. 174.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 173. Totten & Co., Pittsburg.



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) E. E. asks: What are the proportions of aluminum and silver for an aluminum and silver alloy? A. An alloy of 100 parts of aluminum and 5 of silver can be worked like pure aluminum, but is harder and susceptible of a beautiful polish. An alloy of 100 parts of silver and 6 of aluminum is nearly as hard as ordinary silver, but has the advantage over it of containing no metal of a poisonous nature or which can effect a discoloration of the silver.

(2) A. S. M. asks: 1. In passing a current of electricity through the primary of an induction coil, what direction through the induced current take in the secondary coil? Will it be from the inner to the outer coil, or vice versa? A. When the current is sent through the primary the secondary current will be in one direction; and when the primary circuit is broken, the secondary current will take the opposite direction. 2. In winding the magnetic coils for telephones, is it possible to so wind them as to produce opposing currents and thus counteract or neutralize the effect of the current, and if so, what is the proper way to wind them to produce a continuous current? A. Yes, they may be wound so as to produce a magnetic effect, by winding two parallel wires with their inner ends connected together as in a rheostat. If the wire is wound like the thread on an ordinary spool of cotton, it will work properly; but there is nothing in a telephone capable of producing a continuous current. 3. Should the magnetic poles in a pair of telephone receivers be of the same sign and the coils wound alike, or should they be of opposite sign and the coils wound in opposite direction, and what direction should the coil be wound for each sign? A. It makes no appreciable difference, since the current commonly employed in telephones is alternating in its character. It is well to have all of the spools of about the same resistance.

(3) D. A. R. writes: I have constructed a dynamo-electrical machine from the drawing contained in SUPPLEMENT No. 161, and which is shown on the first page. I cannot get any current from it at all. Everything looks all right as compared with the drawings, which I have studied a great deal, and yet I cannot find the difficulty. I connected a small battery, to see if my coils were all right. I found the current passed through, but upon starting the machine the current did not gain any, in fact grew weaker. My armature fits quite close in the magnets—probably a very thin sheet of paper could not be passed between them. The armature is wound with one piece of No. 18 cotton covered copper wire, and the ends soldered on to the section of copper ferrule on the commutator, and the copper springs are made with seven tongues in order to give them a softer bearing on the commutator; in fact, everything looks right, though I do not quite understand how the current passes through the commutator and armature. As the machine is constructed it seems to me the current must be somewhat mixed up there. I did not wrap any cloth around the armature before winding. I used brass in every case mentioned, and when brass was not mentioned I used iron. If you can give me any light upon the subject it will greatly oblige one of your many readers. A. As several of our correspondents have

written us that they have succeeded in making operative machines after the directions given in THE SUPPLEMENT, we are obliged to conclude that you have made some mistake. You may have short circuited your magnet wire, or the wire on your armature, or you may have made some mistake in your connections, or in the position of your commutator. It is possible your armature is made of hard iron, or it may be that the wire on the bulb magnet is wound so as to make both poles of the same name. Compare your machine with the drawings in THE SUPPLEMENT, and see if it is in all respects according to the instructions given.

(4) D. D. N. writes: I wish to shorten my needle in surveyor's compass about one one-hundredth of an inch. Will grinding, filing, or wetting the end affect or injure the magnetic strength? A. Somewhat. 2. Can stems of chimneys made of plank be painted so as not to catch fire? A. No.

(5) F. H. says: in making rollers for my printing presses I made them by adding sugar and molasses to the mixture. I tore the rollers in getting them out of the moulds. I tried to remelt them over a water bath, also over the fire in a pan by adding a little water to the rollers after cutting them up in small pieces, but could not get them to melt. Can they be remelted, and if so, will you kindly inform me how? A. Cut fine, add a small quantity of glycerine, and continue the heat for some time. See that the moulds are well oiled.

NEW BOOKS AND PUBLICATIONS.

FIFTY YEARS OF SCIENCE. By Sir John Lubbock. London: Macmillan & Co. 8vo, cloth. pp. 90. 75 cents.

A library edition of the notable presidential address of Sir John Lubbock at the York meeting of the British Association.

THE STUDY OF TRANCE, MUSCLE READING, AND ALLIED NERVOUS PHENOMENA IN EUROPE AND AMERICA; WITH A LETTER ON THE MORAL CHARACTER OF TRANCE SUBJECTS, AND A DEFENSE OF DR. CHARCOT. By George M. Beard, A.M., M.D., New York.

This privately printed pamphlet is sufficiently described on the title page as above. It is largely a defense of the author's "concentration" theory of trance and of the correctness of his interpretation of the facts of "mind reading," or, more correctly, muscle reading.

THE SECRET OF WINGS. By George B. Starkweather. Washington: H. W. Beadle & Co. 50 cents.

Mr. Starkweather is an acute observer and a caustic critic. His pamphlet is decidedly entertaining; but as a practical contribution to the promised art of aerial navigation it might be more valuable if it gave an explicit statement of how, in the author's opinion, the "secret of wings" is to be applied in a flying machine.

[OFFICIAL.]

INDEX OF INVENTIONS

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

February 28, 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. Adjustable wrench, W. R. Godfrey. 254,210 Alarm. See Burglar alarm. Anchor support, E. Robbins. 254,160 Anchor supporter, E. Robbins. 254,161 Anvil, hand, W. H. Brown. 254,195 Ash safe and sifter, combined portable, M. J. Cook. 254,116 Assorting machine, S. M. Park. 254,234 Auger bit, Wood & Morris. 254,184 Auger, hollow, F. S. Dellenbaugh. 254,286 Axle box, car, Soper & Slade. 254,171 Bag fastener, C. W. Kurtz. 254,440 Bagasse furnace, M. J. L. Marie. 254,351 Bale and box hook, H. A. Dirkes. 254,289 Ballot receptacle and satchel, combined, O. Wells. 254,416 Barb holding device, T. W. Eaton. 254,292 Barrel, W. B. McCormick. 254,228 Barrel, folding, A. Barksdale. 254,259 Basket, W. Phipps. 254,236 Basket, cotton, G. W. Starr. 254,401 Bed and wardrobe, combined folding, J. B. Horne. 254,320 Bed bottom, elastic, J. H. Lerow. 254,344 Bed bottom, spring, A. F. Perofoy. 254,372 Bed, elastic water, E. J. Bone. 254,265 Bed, folding, Novak & Strobel. 254,363 Bed, folding cot, J. I. Spencer. 254,244 Bed, invalid, J. D. Mott, Jr. 254,149 Bed, spring, C. S. Colgrove. 254,277 Bedstead hook, J. J. Kennedy. 254,325 Bedstead, invalid, H. D. Snyder. 254,170 Beer cooler, P. J. Darcy. 254,420 Belt fastener, J. Shuster. 254,167 Bill and file holder, Shankland & Brooks. 254,359 Bird cage perch, J. Bagot. 254,254 Bit. See Auger bit. Bleaching cotton in the form of cops, E. Rusch. 254,386 Blind slat adjuster, Phillips & Greene. 254,235 Board. See Electrical switch board. Boiler cleaner and circulating apparatus, T. Crane. 254,118 Boiler furnace, J. Elliott (r). 10,044 Boiler tubes, apparatus for drawing and replacing, Denney & Johnson. 254,287 Boilers, sediment collector for, D. Hanna. 254,307 Bolt cutter, stay, C. V. Rote. 254,163 Book protector, O. F. Slocott. 254,168 Boot and shoe exhibitor, W. W. Yokom. 254,423 Boots and shoes, manufacture of, A. Nichols. 254,361

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Mott. 254,148 Car wheel, N. Washburn. 254,250 Carbureting gas or air, device for, D. M. Small. 254,243 Carding machine creel frame, M. A. Furbush. 254,301 Cariole, G. Bungarz. 254,196 Carpet sweeper, C. L. Travis. 254,410 Carriage bow iron, J. B. Platt. 254,367 Carriage, hand, M. Webster. 254,181 Cart, dumping, J. H. Crittenden. 254,282 Case. See Ticket case. Casting metals, mould for, J. L. Lewis. 254,346 Chair. See Commode chair. Opera chair. Reclining chair. Cheese turner, A. Engi. 254,294 Cheese vat, A. Slaughter (r). 10,046 Chest. See Mail chest. Churn, reciprocating, H. T. Davis. 254,121 Cleaner. See Boiler cleaner. Clew thimbles, machine for bending, S. Vanstone. 254,249 Clip. See Hame clip. Clothes pounder, L. A. Faulkner. 254,296 Clothes sprinkler, J. Knoche. 254,222 Clutch, friction, L. D. Dana. 254,283 Clutch, friction, R. R. Osgood. 254,233 Coffee mill, R. L. Webb. 254,414 Collar for dogs, etc., Ricker & Lewis. 254,156 Collar horse, M. R. Dowlin. 254,290 Commode chair, T. 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