

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.

Mr. J. W. Arnold, Garrison, Benton Co., Iowa, has purchased the entire patent of Cokely's Washing Machine, which was illustrated in the SCIENTIFIC AMERICAN of May 6, 1882, page 274. The illustration clearly represents the invention, and anyone can see the many advantages possessed by this over all other washing machines. Many of the features are entirely novel. It is convenient, easily managed, easily operated, and readily and cheaply constructed. A paying thing to make or sell. For territory, either county or State rights, address as above.

A Great Bargain.—We have thoroughly examined the Evans Twenty-six Shot Breech-loading Rifle, and do not hesitate to say that, without exception, it is one of the best constructed, simplest, and most perfect breech-loading rifles for the price we have ever seen. Owing to the failure of the Evans Rifle Co., Messrs. E. G. Riceout & Co. have bought a large quantity of these rifles at a price so low that they can be offered at the nominal figure of Fifteen Dollars, which is about one-half the cost of manufacture. Our business experience with Messrs. E. G. Riceout & Co. has been most satisfactory, so that we do not hesitate to place their advertisement before our readers, knowing all will be fairly and honorably dealt with.—Chicago Express.

- American Fruit Drier. Free Pamphlet. See ad., p. 142.
Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'Frs, 23d St., above Race, Phila., Pa.
Peck's Patent Drop Press. See adv., page 141.
For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.
Paragon School Desk Extension Slides. See adv. p. 141.
Drop Forgings. Billings & Spencer Co. See adv., p. 141.
Brass & Copper in sheets, wire & blanks. See ad. p. 141.
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. Circular and price list free.
The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Duageon, 24 Columbia St., New York.
Millstone Dressing Diamonds. Simple, effective, and durable. J. Dickinson, 64 Nassau street, New York.
Blind Wires and Borers. B.C. Davis, Binghamton, N.Y.
Eagle Anvils, 10 cents per pound. Fully warranted.
Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 141.
Lathes, Planers, Drills, with modern improvements. The Pratt & Whitney Co., Hartford, Conn.
C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 142.
Knives for Wood working Machinery, Bookbinders, and Paper Mills. Taylor, Stiles & Co., Riegelsville, N. J.
The Sweetland Chuck. See illus. adv., p. 126.
Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p. 125.
Lightning Screw Plates, Labor-saving Tools. p. 126.
Engines, 10 to 50 horse power, complete, with governor, \$250 to \$550. Satisfaction guaranteed. Six hundred in use. For circular address Heald & Morris (Drawer 98), Baldwinville, N. Y.
Mr. T. D. Locking, care U. S. Consul, Panama, U. S. Colombia, will sell the whole or a portion of his patent for umbrellas, illustrated on p. 82, this volume.
Air Pumps for High Pressure, Hand, or Steam Power, at low prices. C. Beseler, 218 Center Street, New York.
Draughtsman's Sensitive Paper. T.H. McCollin, Phila., Pa.
For Mill Mach'y & Mill Furnishing, see illus. adv. p. 108.
See New American File Co.'s Advertisement, p. 110.
Steam Pumps. See adv. Smith, Vaile & Co., p. 109.
Books for Engineers. Catalogues free. E. & F. N. Spon, 44 Murray Street, New York.
Bostwick's Giant Ringing Saw Machine, adv., page 93.
Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 92.
Small articles in sheet or cast brass made on contract. Send models for estimates to H. C. Goodrich, 66 to 72 Ogden Place, Chicago, Ill.
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.
"Abbe" Bolt Forging Machines and "Palmer" Power Hammers a specialty. Forsaith & Co., Manchester, N.H.
List 28, describing 3,600 new and second-hand Machines, now ready for distribution. Send stamp for same. S.C. Forsaith & Co., Manchester, N.H., and N.Y. city.
Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. Complete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.
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 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.
Wood-Working Machinery of Improved Design and Workmanship. Corliesman, Egan & Co., Cincinnati, O.
Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.
Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, 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.

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) "Objective" writes: I have a couple of good objectives which are blurred by the crystallization of the balsam or cement between the crown and flint sections. I don't know exactly what the cement may be; its color now is a pale straw, iridescent in reflected light. How can I separate and clean? A. The Canada balsam that is used for cementing the glasses of your objectives has shrunk. This sometimes occurs when glasses are cemented with balsam that is too thin. As the glasses are probably burished in, it is a serious matter to take them out and reset them centrally unless you have the proper tools and are expert at that kind of work. If they are American objectives, write to the makers, they are the only proper persons to reset the glasses. Probably any good optician can reset the glasses for you. If you desire to try the job yourself, remove the lenses from the cell, put them in water at the atmospheric temperature, bring the water to a boil; then while the lenses are still hot separate them if you can. If you find this impossible, soak them in benzole or turpentine until they can be separated. Then clean the lenses thoroughly with turpentine first, then with alcohol. Finally, warm the lenses, put on each a drop of thick Canada balsam and press them together firmly. Wipe off the surplus balsam and tie a string around the lenses, or clamp them together in some other way, and allow the balsam to set before replacing the lenses in the cell.

(2) T. F. P. asks what kind of an attachment to put on a common turning lathe for turning round balls? A. As you do not state the kind of balls—wood or metal is not stated—we give the process for turning wooden balls and billiard balls. First, turn by a template or gauge or by caliper, as nearly spherical as possible. Then make a chuck of wood and fasten it to the mandrel in any way the most convenient. Turn out the chuck hollow so that the ball will enter nearly half a hemisphere. Chuck the ball at right angles to the position that it was first turned in. Turn off the outside or projecting part true by nearly obliterating the lines of the first turning, then rechunk and turn the other hemisphere. If great nicety is required, as in billiard balls, you will have to continue the chucking in several other positions and turn very carefully with curved tools. A little chalk in the chuck will help the ball to stick. If you have difficulty in holding the ball in, you may put a small false center against the ball made of iron, with a thin piece of leather waxed upon it to prevent scratching. If this is done nicely you may do the work without chucking the ball so deep. 2. What should be the diameter of an iron shaft 40 feet long to transmit twenty-five horse power? A. As you do not give the speed and weight of pulleys to be carried by this shaft, it can only be answered approximately. A shaft of 2 1/2 inches diameter, with bearings 12 feet apart, running at 100 revolutions or over, with pulleys distributed along the line, would do the work. With less speed, or the whole power delivered at the end of the shaft, 40 feet from the source of power, then a 2 3/4 or 3 inch shaft is recommended, according to nature or requirements of machinery driven, whether steady or intermittent.

(3) G. W. A. asks: How much would it decrease the friction on a flat-bearing (engine crosshead) 6 inches by 8 inches, if I were to plane it so it would have a bearing of about 2 inches on each side? A. None. The bearing surface would wear away much more rapidly. The best practice is to have a very large surface.

(4) W. C. Y. writes: I wish to build an engine; are the following proportions so far correct? Diameter, 2 inches, length 3 1/2 inches, thickness of cylinder 3/8 inch, steam ports 1/4 x 3/4, exhaust 1/4 x 3/4, distance between ports 1/4 inch. If not correct, please inform me what the proportions should be, and also give me the proper diameter for piston-rod and width of piston for above engine, and what distance the piston should be from the cylinder heads when the shaft is at a dead center? What size boiler and how thick ought I to have for 200 pounds pressure? A. 1/4 inch thick is sufficient for cylinder, make steam and exhaust openings 1 1/2 inch length. Work piston within 1/8 inch of heads. Make

piston-rod 3/8 inch diameter. We cannot inform you about boiler, without knowing the number of revolutions per minute you intend to work.

(5) W. B. asks for recipe for cheap black paint for iron. A. A good cheap black paint or varnish for iron work is prepared as follows: Clear (solid) wood tar, 10 pounds; lamp black or mineral black, 1 1/2 pounds; oil of turpentine, 5 1/2 quarts. The tar is first heated in a large iron pot to boiling (or nearly so) and the heat is continued for about four hours. The pot is then removed from fire out of doors, and while still warm (not hot) the turpentine mixed with the black is stirred in. If the varnish is too thick to dry quickly, add more turpentine. Benzine can be used instead of turpentine, but the results are not so good. Asphaltum is preferable to the cheap tar.

(6) Referring to the dynamo-electric machine described in SUPPLEMENT, No. 161, A. C. D. asks: 1. Could not the magnets be cast together and then omit putting the brass plate under them; if not, what is the reason for using brass to connect them instead of iron? A. Iron would close the magnetic circuit, so that the magnet would have very little effect on the armature. 2. Could not the armature be made of soft wrought iron as well as cast? A. It might be made of wrought iron if homogeneous metal could be obtained. 3. Is there no substitute for the vulcanite cylinder used in the commutator; if so, what is one that is more easily procured? A. Hard wood or bone may be used. 4. What is cotton factory cloth? A. It is ordinary white cotton cloth.

(7) R. L. McL. asks: 1. Would there be much loss by evaporation in keeping kerosene in a closely made and painted barrel, in a perfectly dry cellar? A. If the barrels are well painted the loss will be very slight. 2. Can you tell me what causes the sputtering heard in the receiver of a telephone? Sometimes I find it almost impossible to understand what is said. A. It is due to the influence of induction from the earth or from neighboring wire. Atmospheric electricity also sometimes causes it. 3. Please give me a receipt for nickel plating? A. You will find receipts and directions for nickel plating in SUPPLEMENT, No. 310.

(8) A. T. S. asks: What progress, if any, has been made toward photography in natural colors; and are there any complete theories or processes extant for its accomplishment? A. See "Photography in Natural Colors," in SUPPLEMENTS, Nos. 175 and 216. We know of no other late comprehensive treatise on the subject.

(9) W. T. writes: Please state in the columns of the SCIENTIFIC AMERICAN what a mogul engine is? Some say they are ten-wheelers with six drivers, and others say they are ten-wheelers with eight drivers. Which is correct? And, if neither, what is? A. Eight-wheelers with six drivers. Ten-wheelers with eight drivers are called "consolidation engines." There are ten-wheelers with six drivers and a four-wheel truck.

(10) H. W. B. asks: Will you please describe some good and cheap method by which I can filter water for a laboratory? A. See answer to W. H. K., page 75 (11), current volume.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending August 8, 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.
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