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Barrel, Keg, Hogshead, StaveMach'y. See adv. p. 76. Mineral Lands Prospected, Artesian Wells Bored, by

Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 46. Hercules Lacing and Superior Leather Belting made by Page Belting Co., Concord, N. H. See adv. page 158.

Timber Gaining Machine. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn. Manufacture of Soaps, Candles, Lubricants, and Glyce

rine. Illustrated. Price, \$4.00. E. & F.N. Spon, New York.

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Works. Drinker St., Philadelphia, Pa.

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HINTS TO CORRESPONDENTS.

In this to contribute the second and the s

or in this department, each must take his turn. **Special Written Information** on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of

Minerals sent for examination should be distinctly marked or labeled.

(1) H. R. writes: We are about to lath and plaster a room in basement of store, to be used a laundry. Can you suggest any way to effectually keep the fumes out of the store ? A. Cover the ceiling upon the beams with tarred roofing paper well lapped, then fur and lath, or paint the ceiling after plastering.

(2) E. E. S. asks the cause of an engine knocking or thumping when oil or tallow is put in the cvlinder? A. Possibly the piston rings are loose or have play between the head and follower. The lubrication giving them an easy motion, the inletting of steam at each end would send them alternately against the opposite shoulder.

(3) J. M. H. writes: Why does the iron made now rust so badly and decay, while the iron made many years ago rusts comparatively but little? A. The iron made 40 to 50 years ago in the United States was largely charcoal ircn, and was purer and better than the same grades as made at the present day. Our common iron is filled with slag, and looks coarse and fibrous when rusted to show the grain. There is good iron made now at a price, such as the Swedes, Norway, and on side of shell. Take steam from top of shell. Ausable horse nail iron.

(4) F. H. L. asks: 1. What are the soft scribed in SUPPLEMENT, 161 and how are they to be obtained? Are they malleable iron castings? A. The castings referred to are made from soft gray iron. They place. Malleable iron castings are unsuited to this purto, with several coils, although a number of coils would not considered in this figure. undoubtedly increase the efficiency of the machine. For a small machine, we know of nothing better than that : described in the SUPPLEMENT referred to. Your form of armature would be very good if for a larger machine than that described. 3. Can you suggest a better pliahle insulator than silk coated with shellac varnish? A. We know of no better insulator than silk or shellac, or both, for wire. (5) G. M. L. asks: How can I make an induction coil, such as are used in medical batteries. also what number of the SCIENTIFIC AMERICAN OF SUP-PLEMENT contains descriptions for making different coils? I wish to make a coil that will best operate on a Smee battery. A. To make an induction coil for medical purposes, use a magnetic core formed of a bundle of soft iron wires three-eighths of an inch in diameter and 4 inches long. Wind this with 3 or 4 thicknesses the primary. Wrap the primary coil with 2 or 3 layers

rections for making induction coils.

(6).J. D. L. writes: I wish to make an induction coil that will give an inch spark. Will one 6 inches long and 3 inches in diameter be large enough? The primary coil is 2 layers of No. 18 silk insulated copper wire; how much secondary wire will I need? How large and how many condenser plates will I need? A. We think your coil will be too small to yield a one inch spark. Better follow directions given in SUPPLEMENT, 160; it will cost little, if any, more to make a coil of that size. We cannot without considerable trouble give you detailed information for making a coil to give a spark exactly one inch long.

(7) G. A. C. writes: In the SCIENTIFIC AMERICAN of July 11, 1885, Note 1, there is a recipe for a cement which is proof against even boiling acids. Now, I wish to know if I can make battery cells of India rubber, say 2 in. square by 4 in. high, and cement with the above, so that they will last. If not, will you please inform me of a way to make them? A. By employing a cement made of gutta-percha, pitch, and she lac, equal parts melted together, you will be able to cure the corners of your battery cells together, successfully. We would advise, however, binding the corners with strips of soft rubber, attached by means of the same cement.

(8) G. S. B. asks: 1. Why does the cloudiness of the air and the number of rainy days in the year increase gradually from the equator to the polar regions, while the annual quantity of rainfall de-creases in the same direction? A. Because the atmospheric currents move from the equator toward the poles, carrying moisture, which is precipitated from decreasing temperature, until finally, in the higher latitudes, the clouds near the earth are seen only in light drizzling rains. The fogs of the northern latitudes are mostly produced by the evaporation from the warm sea in contact with or into a cold atmosphere, which condenses the moisture to fog. 2. Why do fogs and clouds reign supreme in the polar regions except during the winter? A. Although there is much fog on the sea in high latitudes, their supremacy is a misnomer, prompted probably by comparison with sunny clim

(9) J. D. C.—The belt has no influence upon the regulating power of the flywheel, whether it runs on the flywheel as a pulley or on a separate pulley. The placing of a belt upon the flywheel as a pulley or on a separate wheel or pulley is entirely a matter of convenience in arranging the transmission of power. The weight of flywheel and pulley on an engine shaft at their radius of gyration is the real measure of their equalizing power, although the belting and shafting of pullcys that are running regularly are an additional aid.

(10) V. W.-The eyebrows may be darkened permanently by the use of a silver hair dye, which can be obtained from any druggist. The dealers in ladies' hair, etc., will also furnish you with suitable preparation to use. For coarse skin, etc., we can only recommend you to consult with some competent physician

(11) C. S. asks how to waterproof the tackle and rigging of vessels. A. Either of the followingcan be used: 1. India rubber in small pieces 1 ounce, boiled oil 1 pint; dissolve by heat, then add 1 pint hot boiled oil, stir well, and cool. 2. Melt in 1 pint boiled oil 2 ounces each of beeswax and yellow resin. These solutions should be used when warm

(12) E. W. writes: I have a small engine, 2 inches bore by $3\frac{1}{2}$ inches stroke. What size boiler is necessary, and how is the best way to make? A. Your engine will give you a half horse power with 75 pounds steam. You will require a boiler having 10 square feet of heating surface; a cylinder of three-sixteenths inch iron, 16 inches diameter, well riveted, 2 feet long, with 20 tubes 1 inch, heads 34 inch. Set vertical on an iron furnace lined with firebrick, such as used in stoves, with a sheet iron cap on top of boiler and stove pipe to chimney. Water gauge and gauge cock

(13) F. W. G. asks: 1. What amount of weight would borts or black diamonds (when set in drill Bung, barrel, H. Roemhildt...... iron castings to be used for the electric machine de- bits) hold up without crushing? Suppose the bit stood on rock, and the pressure was downward, from weight of drill rods upon the bit. A. The borts will not crush when the drill rods stand upon them in the are better for the purpose than malleable iron. You can drill hole or on ordinary stone, always provided that probably secure such castings in foundries in your own care is used in letting the rods and bit down, so as not to hammer the borts out of their sockets; also pose unless thoroughly annealed. 2. Is an armature not to turn the bit when great weight is on it, which wound with several coils much superior to that wound may also tear the borts out of their setting. 2. At with one, and would it increase the power of the ma- what speed are diamond drills generally rotated when chine described in SUPPLEMENT, 161? If so, what num- boring ordinary rock? A. The speed of the periphery ber of coils would give the best results, and how would of diamond drill should be from 50 to 75 feet per you construct the armature? Would it not be best to minute. 3. What amount of twisting or torsion strain Car coupling, G. M. Veteto...... 337,05 use a number of pieces of Norway sheet iron about one would 3 inch lap-welded gas pipe stand if made from sixteenth cut in spur wheel form, and all fastened to-good iron? A. The torsional strength of 3 inch gas gether and keyed on the axis, for the core? A. It would pipe is 4 tons at 1 foot from center. Its safe working Cs be difficult to construct an armature of the size referred strain is one-quarter of this. The coupling joint is ' Ca

backward into it, and thus produces irritation and nausea. Bilious vomiting is not a cause of biliousness as the term is used; it is the result of it.

> (17) J. C. S. asks the materials used in the manufacture of a paint sold under one of the special trade marks used by paint combinations which the trade has on sale. A. We cannot be expected to know their ingredients, nor to state their eculiarities in these columns, if we did know them. We do not consider any of them equal to pure white lead and oil. The spurious whites made to imitate white lead mostly have baryta for their base, mixed with cheap white earths for bulk. Je consider them dear to use, cheap to sell.

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

F. B.-The specimen is pyrite, or sulphate of iron It has no value.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted.

March 2, 1886,

AND EACH BEARING THAT DATE

[See note at end of list about copies of these patents.] Aerial navigation, ship for, L. A. Beardsley...... 336,98

Alarm. See Electric leak alarm. Amalgamator, J. Wilkins 396,97

 Bedclothes holder, F. P. Sargent.
 337,200

 Bed, folding, Horn & Hopf.
 337,155

 Bedstead, cabinet, Cochrane & Kirk.
 336,983

Belt reel. D. B. Kuhn...... 337,00 Binder for papers, temporary, E. J., Shipman..... \$36,95 Blotting pad and memorandum book, combined, H. C. Whitney..... : 387,10 Board. See Siding and roofing board. Washboard. Boat. See Fisherman's minnow boat. Boiler. See Steam boiler. Bolt holder and pipe wrench, combined, A. W. .. \$36,98 Becker Book cover and removable leaf, combined, E. W. Boot or shoe sole, E. S. Harris...... 337,0 Boots or shoes, machine for making box toes and Bricks, etc., drying shed for, O. McCoy...... 337,1 Burner. See Gas burner. Lamp burner. Buttons, making, F. A. Smith, Jr..... 336,9

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8	Cigars, machine for stamping, L. Grathwol 33 Clamp. See Floor clamp.	
n '	Clasp for poultry, game, etc., suspension, Schuss-	
11	ler, Jr., & Fredericks	7,019 6 890
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1	Electric machines, armature for dynamo, F.	6,962
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(14) A member of the House of Representatives, U. S., asks the materials, quantities, and manner of making the starch by which laundries put Ca the fine polish on shirt bosoms, etc. A. This information is given in answer to query 7 in Scientific AMERICAN for December 12, 1885, and has frequently been published by us.

(15) J. P. P.-It is extremely doubtful if Ca you can rip 11/2 pine and hard wood with a 6 or 8 inch Ca saw with any speed or comfort. You will find it hard work to cut half through by foot power. You can rabbet with a wide saw or a wabble saw. We can recommend "Art Furniture Designs," 4to, \$3.00; East-Ca lake's "Hints on Household Taste," 8vo, \$3.00, which Ca we can furnish.

(16) E. R. B. asks: Does the bile ever Ca of writing paper, or place it in a suitable thin spool; enter the stomach? If so, does it remain long enough to che wind on the spool 4 layers of No. 18 magnet wire for be a cause of biliousness? A. The hepatic duct, which | Cl conveys the bile from the liver, opens, not into the Cł of writing paper, and upon this wind 8 or 10 layers of stomach, but into the intestine, at a distance of some

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