

exercised by a steam engine depends upon the resistance opposed to it and not upon the pressure of steam in the boiler.

(17) R. F. M. asks: Is there any formula for calculating the power of the "hydraulic ram," if so, what is it?

(18) H. W. asks how to make a fulminate suitable for coating the inside of a toy so that if it is struck with a pointed instrument it will explode.

(19) J. W. G. asks: 1. What gases escape up the chimney of a furnace burning soft coal?

(20) D. H. writes: I have a steam yacht hull, 32 feet long, 7 feet beam, which draws 3 feet 2 inches.

(21) M. E. J. asks for an inexpensive method of oxygenating water. A physician here advertises to treat patients with it, but I believe the process he employs is not patented.

(22) H. J. H. asks for a good receipt for cleaning gilt frames. I am a constant reader. A. Clean with a soft sponge moistened (not too well) with spirit of wine.

(23) J. F. S. asks: What chemicals can be used (in cold or warm water) to soften yarn, which has become hardened by being worked on a knitting machine, without injuring the color of the yarn?

(24) C. A. C. asks for a receipt for soluble glass for using on decorative pottery. A. Mix well together 2 parts fine sand and 8 parts of carbonate of potash.

(25) F. S. writes: 1. I would like to know how to preserve natural flowers without taking the color out. A. See p. 409 (7), Vol. 40, SCIENTIFIC AMERICAN.

(26) R. A. J. asks: 1. How many primary or simple elements are there in nature? I claim over sixty; a friend of mine says that only four exist, namely, oxygen, nitrogen, hydrogen, and carbon; who is right?

(27) A. C. F. asks (1) how to make a Grenet battery. A. A Grenet battery consists simply of one or two plates of battery carbon and a plate of amalgamated zinc.

(28) H. F. G. asks whether or not the steamers descending the rapids of the St. Lawrence river shut off steam and go by means of the current alone; if so, how do they steer the boat?

(29) C. H. H. asks: 1. Is a good locomotive engineer capable of performing the duties of an engineer on our Western river steamers?

(30) H. D. asks what proportion the grate surface should bear to the heating surface of a steam boiler. A. 1.95 to 1.90

(31) C. B. M. writes: 1. I want to make an electro-magnet of 150 ohms; how much of No. 30 copper magnet wire will be required?

(32) J. A. S. asks: 1. What is the best and cheapest piping for conveying a 5 or 6 inch stream of strong salt water, say a distance of 5 or 6 miles, to avoid rusting and corroding?

(33) W. M. asks: 1. How much will air expand by heating; for example, force into a boiler 40 lb. of air to the square inch, how many lb. to the square inch will it be when the fire is 212° F?

(34) A. J. B. asks: 1. What is the greatest depth from which sunken vessels have been raised, time it took, cost, and by what means raised?

(35) E. W. writes: A friend and myself intend to build a small stern wheel steamboat, and wish you to assist us if it is in your power.

(36) F. DeC. writes: 1. Suppose you have a perfect balance; on one scale you place a cylinder filled with steam, 10 atmospheric pressures; on the other you put a weight equal to this cylinder, so that the equilibrium shall be re-established.

(37) S. G. S. asks for the best way to temper drills for drilling granite rock. A. See directions for tempering mill picks, p. 219, Vol. 39 the same process will apply to your drills.

(38) A. W. P. asks: 1. How much lead should the cut-off valve have on a small engine, 8 horse, cylinder 5x13, cut-off at full stroke, 300 revolutions per minute?

(39) W. asks how to make a good quality of shellac-varnish. A. Take shellac, any quantity, put it in a glass jar or tin vessel, and add alcohol to just cover the shellac.

COMMUNICATIONS RECEIVED.

On the Use of Brimstone in Fastening Iron to Foundations. By F. W. B. On the Classification of the Protista. By H. M. D. On Jupiter's Spot. By J. A. B.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending September 16, 1879, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Albumen from fish spawns making, T. O. Alsing, 219,667. Axles, machine for cutting and screw-threading vehicle, A. L. Lincoln, 219,641.

Belting, F. H. & J. E. Underwood, 219,606. Belting, leather, F. H. Underwood et al., 219,607. Bilge water gauge, J. Sekhoff, 219,702.

TRADE MARKS.

Dental rubber, gold pellets, amalgam, teeth, and cast varnish, L. S. Smith, 7,686. Fever tonic, Meyer Brothers & Co., 7,684.

DESIGNS.

Badge, G. Wolf, 11,420. Bracelet, T. G. Brown, 11,413. Carpet, H. Horan, 11,421.

English Patents Issued to Americans.

From September 5 to September 9, 1879, inclusive. Berth for ships, T. O. L. Schrader, New York city.