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No. 3 Woodworth Planing, Tonguing, and Grooving Machine for Sale Cheap. Address Wm. M. Hawes Fall River, Mass.

Notes & Queries

F. P. will find directions for writing on glass on p. 203, vol. 33.—S. B. will find directions for dissolving mica on p. 241, vol. 32.—J. A. L., J. O. M., and T. B. will find directions for ebullizing wood on p. 50, vol. 33.—C. R. can calculate the horsepower of his engine by the formula given on p. 33, vol. 33. As to speeds of pulleys, etc., see p. 180, vol. 26.—T. S. should galvanize his castings. See p. 315, vol. 33.—B. B. will find a description of an incubator on p. 277, vol. 32.—A. C. G. should use Indian ink for architectural drawing.—C. P. R. R. will find directions for making rubber stamps on p. 156, vol. 31.—C. H. will find a recipe for a depilatory on p. 183, vol. 34.—M., G. C. M., C. H. L., W. B., H. H., J. L., T. B. C., and many others who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) C. B. W. says: 1. Why is it that there are so many more square inches in the smoke arch of a locomotive than there are in the flues, when the steam exhaust and petticoat pipe are in their places? A. To give the cinders a chance to fall in the smoke box. 2. Would there be the same draft to the locomotive if the arch only had the same square inches in it as there are in the flues when the draft is made by the exhaust steam? A. We think not.

(2) C. W. J. says: 1. My house is in the cottage style, one story high; the main body is 32x14 feet. The roof is a hipped roof, with pediment in front of main roof. The roof is perforated by two terra cotta flues. Would you advise the use of lightning rods? A. Yes. 2. What kind and size rods would insure safety? A. Use iron rods half an inch in diameter, and terminate them in the earth where it is constantly wet. Connect all the rods together at the top of the house and in the earth. Also connect lateral rods at the earth to insure good contact with the ground. 3. The roof around the terra cotta leaks. What kind of cement or plaster would effectually stop the damage and annoyance? A. See p. 183, vol. 33.

(3) H. P. S. asks: 1. What is the hardest metal or composition for rollers, that will not rust or corrode by salt water or dampness? A. The new mixture of metals termed phosphor bronze. See p. 180, vol. 32. 2. What is the hardest and most durable metal to use for rollers, and what is the method of hardening? A. Steel, hardened as described on p. 51, vol. 30. 3. What is the cheapest method of turning or grinding chilled cast iron rollers or boxes? A. See p. 559, vol. II, SCIENTIFIC AMERICAN SUPPLEMENT.

(4) H. P. & S. say: We have one high pressure engine of 14 inches bore and 36 inches stroke, with the ordinary slide valve. It makes 48 revolutions per minute, driving our whole works with 45 lbs. of steam. Every time the engine exhausts, there is a drag to it, and a kind of a sucking noise which we cannot stop. The valve has got about 1/8 inch lead, and takes her steam alike at both ends, and the crank passes her centers easily. The slide valve sets square on its face and perfectly tight; we have tried it, and it will not leak a drop of water. How can we stop this drag on our exhaust? A. There is probably not enough steam lap on the valve to give a free exhaust, in which case the lead may be made 1/4 inch.

(5) J. D. H. says: What is the cause of the long lines found cut in the piston of a steam engine as well as in the cylinder? A. Abrasion or cutting, from grit in the lubricant, bad fitting, or other cause.

(6) A. F. & Co. say: We are running an old fashioned 10x24 inches engine, with steam chest on top of cylinder. It cuts off the steam at 4 inches from the end of stroke, is making 112 revolutions per minute, and drives 2 runs of 4 feet stones, grinding 5 bushels wheat per hour, and driving the necessary machinery. We carry 80 lbs. of steam on a 4 x 12 feet tubular boiler. Intending some time to put in an extra run, can we increase the power of an engine by putting in a longer valve, so as to cut off the steam, say at 3/4 stroke? We have ample room in steam chest and can lengthen stroke of valve both by the eccentric and the rod shaft. A. You would not increase the power by cutting off earlier in the stroke.

(7) M. J. T. asks: What metal is susceptible of the highest polish? A. Steel.

(8) N. E. L. says: 1. What is Mr. Corliss' improvement on the steam engine? A. Corliss connected the governor to cut-off valves placed close to the bore of the cylinder, and thus governed the engine by cutting off the steam earlier or later in the stroke, according as the amount of the load diminished or increased, and by this means effected a saving in fuel. 2. Was he the first man to use steam expansively? A. No. 3. What percentage does the Corliss save by placing the valves near the ends of the cylinders? A. This depends upon the length and size of the ports of which comparison is made. 4. What percentage of fuel ought I to save by an expansion valve? A. It depends upon the degree of expansion used and other circumstances. 5. I am going to take off my plain slide valve, give my eccentric a longer throw, add more lap to the valve, and let steam follow about one third. The engine is a 4 horse portable. We run two lathes, emery wheel, etc. A plain slide valve will give a very distorted action if given lap sufficient to cut off the steam at one third of the stroke as you propose. See p. 373, vol. 31.

(9) J. W. D. E. asks: If 50 lbs. tractive force will be sufficient to draw a certain load

along a level railway track at the rate of 5 miles per hour, what will be the increase of force necessary to draw the same load at an increased speed of 10 miles per hour? A. About 12 lbs. The power required will of course be more than twice as great, since there is an increased resistance to be overcome at a double rate of speed.

(10) H. A. H. says: 1. I have constructed a galvanic battery, but it will not work. I took a two gallon stone jar, and in the jar I put a zinc cylinder; inside of that I put a flower pot (for a porous cup) and inside of the flowerpot I put a piece of copper. I then attached a copper wire to the zinc cylinder, and one to the copper in the flower pot; then I made a solution of sulphate of copper and put it into the flower pot next to the copper, and a solution of common table salt and put it into the jar next to the zinc cylinder; then I connected the two wires at their other extremities, but I get no sign of electricity. Please let me know what is wrong. A. The battery you describe would produce a current, although not a very strong one. 2. Can I make Leyden jars out of glass beer bottles if I cut the necks off? A. Yes, by covering the inside and outside with tin-foil.

(11) W. H. J. asks: Will you please explain how a pair of car wheels get around a curve? A. argues that the inside wheel slips and the outside wheel slides. B. argues that only the inside wheel slips. C. argues that only the outside slides. Who is right? A. It might be possible for either action to occur in certain cases. Generally, on moderate curves, we think C's view is the most correct.

C. W. J. asks: How can I preserve guava and citron?—C. H. T. asks: Can you tell me of some way (other than by grinding or filing) by which the black caused by hardening can be removed from the steel, leaving the steel gray?—C. H. L. asks: How can I make a good flavoring for cigars?—P. S. K. asks: How can I make Belfast ginzer ale?

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On Rambling Notes. By L.
On Disinfectants, etc. By H. J.
On a Point on a Connecting Rod. By W. H. P.
On a Solar Phenomenon. By S. J. W.
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Also inquiries and answers from the following:
V.—E. A. D.—A. J. C.—C. C. R.—C. C.—W. C. F.—J. R. N.—W. W.—J. B. ●

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who makes rain gages? Who sells the improved hydraulic ram, described on p. 259, vol. 31? Who sells ice-making machinery? Who sells propellers suitable for boats 12 feet long? Who sells machines for bending, punching, and rounding band iron? Who sells oilstones? Who sells surface butt hinges, suitable for cupboard doors? Who sells small knife blades? Who sells matches for use in the open air? Who sells folding tents?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

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

September 19, 1876,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city.

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