

Business and Personal.

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The best results are obtained by the Imp. Eureka Turbine Wheel and Barber's Pat. Pulverizing Mills.

The Baker Blower runs the largest sand blast in the world. Wilbraham Bros., 2318 Frankford Ave., Phila., Pa.

Patent Reports for sale.—1855 to 1871, 46 vols.; 1874 to 1877, 8 vols.; perfect. J. S. Moody, Saco, Me.

For Steam Launches, Engines, Boilers, and Propeller Wheels, address W. J. Sanderson, 21 Church St., Syracuse, N. Y.

Cut Gears for Models, etc. (list free). Models, working machinery, experimental work, tools, etc., to order. D. Gilbert & Son, 212 Chester St., Philadelphia, Pa.

Wanted.—A first-class Machinist or Millwright familiar with hard wood working machinery; one who has had charge of men preferred.

Notice.—To Builders of Stationary and Portable Steam Engines, Machinists' Tools, Sugar Plantation Machinery, Pumps, etc., etc., a situation as superintendent or foreman.

Patent for sale of the easiest, most convenient, and useful Monkey Wrench ever invented. W. D., Box 81, Rockland, Mass.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Magnets, Insulated Wire, etc. Catalogue free. Goodnow & Wightman, 176 Washington St., Boston, Mass.

Inexhaustible Beds of Kaolin or Clay.—Wanted experienced pottery men to take an interest in the white, pink, and yellow kaolin beds.

Forsyth & Co., Manchester, N. H., & 213 Center St., N. Y. Bolt Forging Machines, Power Hammers, Comb'd Hand Fire Eng. & Hose Carriages, New & 2d hand Machinery.

Wright's Patent Steam Engine, with automatic cut-off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

For Solid Wrought Iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

H. Prentiss & Co., 14 Dey St., New York, Manufs. Taps, Dies, Screw Plates, Reamers, etc. Send for list.

The Horton Lathe Chucks; prices reduced 30 per cent. Address The E. Horton & Son Co., Windsor Locks, Conn.

Linen Hose.—Sizes: 1 1/2 in., 20c.; 2 in., 25c.; 2 1/2 in., 30c. per foot, subject to large discount.

Nickel Plating.—A white deposit guaranteed by using our material. Condit, Hanson & Van Winkle, Newark, N. J.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing Metals.

Noise-Quitting Nozzles for Locomotives and Steamboats. 50 different varieties, adapted to every class of engine.

Solid Emery Vulcanite Wheels.—The Solid Original Emery Wheel—other kinds imitations and inferior.

New 8 1/2 foot Boring and Turning Mill for sale cheap. A first class tool. Hilles & Jones, Wilmington, Del.

Wanted.—Responsible party to build and introduce Thomas' Patent Steam Wheel. Monopoly to right party.

Cooper Manufacturing Company, Mt. Vernon, Ohio, Manufs of Stationary, Portable, and Traction Engines.

Holly System of Water Supply and Fire Protection for Cities and Villages. See advertisement in SCIENTIFIC AMERICAN of this week.

Solid and Opening Die Bolt Cutters, Screw Plates, and Taps. The Pratt & Whitney Co., Hartford, Conn.

Electro-Bronzing on Iron. Philadelphia Smelting Company, Philadelphia, Pa.

Having enlarged our capacity to 96 crucibles 100 lb. each, we are prepared to make castings of 4 tons weight.

The New Economizer, the only Agricultural Engine with return flue boiler in use. See adv. of Porter Mfg. Co., page 78.

Walrus Leather, Solid Walrus Wheels; Wood Wheels covered with walrus leather for polishing Greene, Tweed & Co. 18 Park Place, New York.

NEW BOOKS AND PUBLICATIONS.

THE THEORY OF SHIPBUILDING (Theorie des Schiffes). By Victor Lutschaunig. Trieste, Austria: F. H. Schimpff. 1879.

The author of this work is the professor of shipbuilding at the Royal Commercial and Nautical Academy in Trieste, and has arranged the same to conform with the course of lectures he delivers at the above institution.



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. 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.

(1) J. H. asks for the process of bluing steel without heat. A. Mix finely powdered Prussian blue with rather thin shellac varnish; gently heat the steel, and apply the varnish.

(2) D. H. asks: What chemical difference is there between red and white arsenic? We use considerable red arsenic; the color makes no difference to us; would prefer white, on the score of economy, if the properties were the same as in the red.

(3) J. P. L. asks how fast it is safe to run a 1/4 inch power punch punching iron 3-32 inch thick, or how many holes ought it to punch per minute. A. It will be determined by the rapidity with which you can move and set the plate and clear the punch.

(4) J. L. P. asks: How many pounds of resisting air pressure would there be to the square foot, going at the rate of 20 miles an hour, at 30, at 40? A. At 20 miles per hour, 2 lb. per square foot; at 30 miles per hour, 4 1/2 lb. per square foot; at 40 miles per hour, 8 lb. per square foot.

(5) B. G. V. writes: I have a Bell telephone here which we sometimes use in connection with an Edison some eighteen miles distant. There is a continual crackling noise during the whole time they are connected.

(6) W. R. writes: I am to put a pump (the cylinder 2 inches in diameter) into a well 100 feet deep. Which should I use, 1 inch or 1 1/4 pipe? A. 1 1/4 inch pipe. 2. Will the additional weight or increase in the size of the column of water make any difference in the working of the pump, provided that it is operated in both cases at the same rate of speed? A. No.

(7) T. L. M. asks: How many pounds weight can be raised with a line 1 1/4 inches in diameter rove through a double and triple block and a snatch? A. For working strain, 1,800 lb. safely; maximum breaking weight, 9,000 lb.

(8) L. F. B. asks if an upright engine should be balanced by the drive wheel so that it will stop with the piston crank in any position. A. Yes, especially if it is run at a high velocity.

(9) D. M. S. writes: I think of building a small steamboat, length 60 feet, 10 feet wide inside of hull, height of cabin about 7 feet at sides. She is to be of sharp build in front.

West in it; and supposing we went up the Missouri River as far as Montana, which would be best: side wheels, stern wheel, or a screw? What size screw propeller should it have? What horse power engine will I need? A. A stern wheel boat, 60 feet by 12 to 14 feet beam, and 3 1/2 feet deep, 2 engines, 8 inch cylinder by 2 1/2 feet stroke. 2. Would it be safe to undertake such a trip with such sized boat as this? A. We think, if properly built, she would be safe for the trip proposed.

(10) W. H. P. writes: I am thinking of building a canoe such as is described by "Paddlefast" in SUPPLEMENT, No. 39, page 618. There are some things about it that I do not understand. 1. Ought the stern post to be perpendicular to the keel (like Fig. 36, page 471, No. 30), or curved like the stern (same fig.)? A. Yes, perpendicular, or nearly so. 2. Would it not be just as well to plank it with 1/4 inch cedar as 1/2 inch? A. 1/4 inch thick would spring under every strain and be likely to leak, and it will not hold fastenings so well as 1/2 inch. 3. Could you beat to windward with full sail (2 sails) and a leeboard? A. Yes, if properly modeled. 4. How fast would the boat probably sail before a fair wind? A. Depends upon spread of sail and force of wind.

(11) W. F. asks which part of a wheel (that is, the outside) turns the fastest when the wheel revolves; if one portion travels through a greater space than another, please state why. A. On the periphery all points have the same speed.

(12) G. M. A. writes: Here, in latitude 40° north, in summer, about June 21, the sun apparently rises in the extreme northeast and sets in extreme northwest, while at noon it is south of us. Please explain. A. The effect is due mainly to the curvature of the earth.

(13) F. J. N. asks how to make a cheap grade of Babbitt metal. A. Melt separately 4 lb. copper, 12 lb. tin, 8 lb. regulus of antimony. Pour the antimony into the tin, then mix with the copper, away from the fire, in a separate pot, and add 12 lb. more tin.

(14) F. C. asks how to bleach straw: the process by sulphur, that by chloride of lime and sulphuric acid, also any other processes with which you may be acquainted. Does the straw require any preparation for the before named processes; and if so, what? Among straw bleachers, what is the cheapest and most speedy method of obtaining a satisfactory result? A. Straw goods are bleached by submitting them to the action of the vapor of burning sulphur—or better, to the vapor of burning bisulphide of carbon.

(15) J. M. W. asks (1) how sugar is made from corn. A. The starch is separated from the mashed meal by a process of washing. Good corn yields about 25 lb. of starch per bushel of corn. The starch is boiled with dilute sulphuric acid, which gradually converts it into glucose or starch sugar.

(16) Z. C. M. writes: I wish to make a composition for making the ornaments on stove patterns. I have tried camphor, whitening, and sulphate of potash, but did not succeed. I have seen the kind they use, and it smells very strongly of camphor; to use it they simply steam it, and press it into the mould.

(17) R. M. writes: I would like a book on poisons and their antidotes; can you recommend one? A. You may consult "Horsely on Poisons." 2. What can I put in my water barrels to purify the water? It has to stand a few days stagnant until it is used.

(18) H. R. L. asks: 1. Can you recommend a standard work on butter and cheese making, and the breeding and selection of profitable stock? A. Willard's "Practical Butter Book," Willard's "Practical Dairy Husbandry," and "Youatt and Martin on Cattle." 2. Can you give an antiseptic to prevent milk from souring within a reasonable time without impairing it for family use? A. The double borate of potassium and sodium has been recommended for this purpose.

(19) C. H. G. asks: What preparation of varnish or shellac will do to put on a celluloid comb and brush which I have painted in water colors? I want something to give a glaze to the decoration, and that will not injure the celluloid, at the same time to make the painting durable and handsome, as the set is a very fine one. A. The ordinary purple amber or picture varnish will doubtless answer your purpose admirably.

(20) G. W. asks: 1. What form of carbon other than simple powdered charcoal is best for a water filter? A. Crushed willow charcoal, well and recently burned, is preferable. 2. Can a carbon filter be cleaned or renewed without taking apart, that is, by reversing the current of water through it? A. Yes, in a measure, but it is better to renew the charge. 3. How long can iron scraps be used in a filter before requiring renewal? A. The iron should be replaced when it becomes badly oxidized. 4. Does the carbon (animal or vegetable) remove organic matter from water? A. The carbon alone cannot be depended on to remove all of the organic matters, especially if the filtration is permitted to proceed rapidly.

(21) M. H. T. asks: 1. What is the best metal for a pan for galvanizing? A. Cast iron is generally employed. 2. Does a cast iron pan make more cross than a wrought? How would cast steel do? A. The difference is slightly in favor of wrought iron.

(22) R. B. R. asks: Would it be wrong in any way or dangerous to run a lightning rod vertically through the center of a chimney smoke flue, and embed the ground end under bottom of chimney in lieu of running it along the angles of roofs and siding outside? Flue is 30 feet high and 20 inches by 8 inches section. Also, would it, if proper, be necessary to connect stove pipes, registers, or other iron or metal attachments? A. The object of arranging the rod on the roof angles is to afford conduction in case the lightning strikes at the roof. You can safely run the rod down the chimney as you propose, and also connect stove pipes and iron work therewith.

A. The object of arranging the rod on the roof angles is to afford conduction in case the lightning strikes at the roof. You can safely run the rod down the chimney as you propose, and also connect stove pipes and iron work therewith. But remember that no lightning rod can be considered as a protection unless its bottom end connects with a large extent of conducting material placed underground. For example, if there is a metallic water pipe or gas pipe, connect the bottom of the rod to it by soldered joint. If there are no such pipes, then extend your rod, say fifty feet, underground, in a trench leading away from your house; and carefully embed the rod in coal dust or charcoal, placed in the trench. The deeper you can conveniently make the trench the better. Coal dust, hard or soft, or charcoal, all are good conductors of electricity.

(23) L. K., Jr. writes: The water that we are using to supply the boilers of our engine is very hard and produces a very thick scale of lime which is very hard to remove with a pick. About a day before stopping to clean boilers we have used about one pound of refined catechu by putting it in the heater and pumping it into the boilers with the feed water; it is effectual in loosening all the scale, and there is very little labor in cleaning boilers. Will it be injurious to their use to continue the use of the same? A. Used in moderation no injury will result. Catechu or cutch is very frequently used for this purpose.

COMMUNICATIONS RECEIVED.

What is Light? By Dr. G. Boiler Explosion. By A. O. G. On the Steam Engine. By J. N. W. S. D.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending July 29, 1879, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Table listing inventions and their patent numbers, including items like 'Air and ventilating structures', 'Air compressor', 'Alloy for journal bearings', etc.