

Notes & Queries

D. M. Jr., of N. Y.—The carriage on which the log is placed in a sawmill is generally moved back and forth by means of a rack on the carriage, which gears into a pinion connected with the machinery.

O. H. P. W., of Ark.—We are informed by several practical mechanics that india-rubber belts, when they are run free from friction, are far more durable than leather; but, in case the belt is to rub at the edge, leather alone is suitable.

F. P., of Cal.—The samples of varnished paper, linen and leather, which you have sent us are prepared with oil varnish, which is simply quick-drying linseed oil. You can prepare it by boiling the oil for a few hours cautiously, adding about a pound of sulphate of zinc to the gallon, and an ounce of sulphuric acid. The latter should be added to the oil when cold, and the zinc put in slowly when the oil is heated, as it is liable to foam over. Use the clear oil for varnish, and dry the articles in a warm room. This is a water-proof and very durable varnish—the best which is known for coating balloons to render the cloth air-tight.

I. T. D., of Cal., wants to know what quantity of oil can be distilled from a barrel of resin.

H. P. B., of Mo.—The gum mucilage used for pasting paper is made by dissolving dextrine in water until it attains to the proper consistency. Dextrine is made from baked starch, and is sometimes called "British gum."

I. C., of Ill.—So far as we know, no treatise on the manufacture of fire brick has ever been published in our country.

M. B., of N. H.—The method which you propose for tanning hides, by forming a vacuum in a vessel in which they are contained, and allowing the tanning liquor to flow through their pores by pressure, is not new. It is called "Knowles' process," and is about 12 or 15 years old. It has been tried in England; but not with much success, we understand.

I. D., of Fla.—At present we cannot give you the number of registered steamboats in the United States.

A. P., of N. B.—We are not cognizant of any improvement, such as that mentioned in your letter, having recently been made in the Catalan forge for smelting iron.

C. C., of Vt.—Burnt oil may be removed from the brass-work of an engine by scouring it first with fine emery and oil, then finishing off with rotten-stone.

I. A. H., of Mo.—You will find as full a description of the manufacture of paper in "Ure's Dictionary of Arts" as any work published known to us; but it does not come up to the practice of the present day.

J. M., of Ill.—Gelatin is pure glue. It is made from the tendons and skins of animals. The clippings of parchment, by long-steeping in water, will dissolve and become what is called "size," which is very pure gelatin, and is employed to stiffen white straw hats, &c.

J. S. L., of Mich.—In Vol. VIII., SCIENTIFIC AMERICAN, you will find the practice of artesian well-sinking illustrated and described. We cannot recommend you to a better source for this matter.

S. G. L., of Pa.—We believe it is a very objectionable practice to sprinkle the streets with dilute hydro-chloride acid, even if it could be obtained very cheap. Pure water alone should be used for this purpose, and the dirt should be swept up instantly. Do not advocate any measure that will keep dirty streets in the condition of adhesive mortar.

B., of La.—The Messrs. Winans, who are building the cigar-shaped steamer, will certainly succeed in their main purpose, that is, in settling the question whether that form is better for vessels than those heretofore in use; and thus they will make an important contribution to the science of ship-building. Your views on the subject we consider sound, as you will see by our several articles on the subject in Vol. XIV.

F. A. Y., of N. Y.—If you will write to H. Shlarbaum & Co., 300 Broadway, this city, they will be pleased to give you full information in relation to telescopes. The Illinois coal is (much of it) inferior to that of Ohio. There was a typographical error in our definition of perpetual motion; we wrote it a "mechanical fallacy;" and it got altered into "a popular fallacy," which, of course, made nonsense of it.

I. L., of Mass.—India-rubber bags, capable of containing 20 gallons of gas, are of a size generally used for the compound blow-pipe. Platner's is a good work on blow-pipes; but "Morfit's Chemical Manipulations," published by Lindsay & Blackiston, of Philadelphia, will suit your purpose in a more general way.

F. A. M., of N. Y.—The compression of air into a cylinder, and the absorption of its heat while in that condition, by water, so as to enable it to absorb heat from water afterwards when it is expanded, and thereby freeze it to produce ice, is a well-known process, and not patentable. We do not believe you will be able to manufacture ice profitably by this method.

A. B. S., of Conn.—A good device for enabling a person to walk on ice is a strap with short steel spikes secured to it, and made capable of buckling on the boot, with the spikes sticking outward on the sole. You can easily make such "ice-creepers," as they are called, for your own use. They are old and well-known, and sometimes used by laborers who are engaged in wheeling loaded burrows up inclined planks.

M. A., of N. Y.—Your plan for extracting stumps by chaining a very strong lever to the root, and then blowing up the end of the lever by means of a short cannon or mortar attached to it, we think, is liable to the objection which you suggest: the force would act so suddenly as probably to break either the chain or lever. Your plan, however, is very novel, and you might make some experiments to satisfy yourself of its practicability; and upon the result of these experiments, apply for a patent or not. If you find it useful, a patent can be obtained for the method.

M. N., of Mich.—You ask, "In a revolving body (the spindle of a lathe, for instance), does the center revolve?" Years ago, we used to be fond of these puzzling abstractions; but as we grow in knowledge, we find so many concrete truths, which it takes the utmost power of our faculties to understand, that we endeavor to keep our mind clear from all such sources of confusion. If a spindle were revolving with mathematical accuracy, there would be a mathematical line (if anybody knows what that is), which would not revolve; but, practically, it is not probable that any mass of matter was ever made to revolve with mathematical precision.

H. L. & Co., of N. Y.—Liquid quartz mixed with the dust of burr stone may answer very well for filling mill stones, but, so far as we know, such an experiment has not yet been tried.

M. L. V., of Pa.—We should be happy to oblige you, but it is an established rule of this office not to suppress the publication of the claims of any patent which is issued at the Patent Office. The list of claims which we publish every week costs us several hundred dollars a year, and they can be implicitly relied upon as being correct and as reporting every patent issued.

J. E. S., of N. J.—We have not a copy of the patent to which you refer, nor the book; therefore we cannot answer your question. A patent would be invalidated if, on trial, it was made to appear that the same device had been printed, published, known or used prior to the invention thereof by the patentee.

R. A., of Conn.—The oil, tallow, resin and beeswax in your composition for hardening steel, all mix together perfectly, and will, no doubt, burn out together. Your grape vine, coming from a seed, is a new variety, as are all seedling fruits, and whether it will be fruitful or not can only be ascertained by experiment. As there is not one chance in ten thousand that the fruit, if produced, would be equal to either of the best two American grapes, the Catawba and the Isabella, it would hardly be worth while to make any extensive efforts to procure the fruit.

R. C., of Texas.—When you consider that the art of observation has been one which the human race has been slowest to learn—that every science has been filled with a multitude of errors, for want of thoroughness or fairness in the investigations—you will not suspect us of discourtesy in distrusting the reliability of the observations which have convinced you that witch hazel will indicate the presence of running water below the surface of the earth. We should believe this readily, if it were proved by sufficient observation.

R. B. M., of Conn.—As you have not given us the entire amount of heating surface in your boiler, we cannot tell you its horse-power. From your general description of its construction, we think it is a very good boiler. If the metal is of the best quality, its thickness being 5-16 of an inch, its diameter 4 feet, it is capable of standing a pressure of 276 lbs. on the square inch, but we would never use over 130 lbs. pressure in the most extreme cases. Allow 9 square feet of direct heating surface for a horse-power in the boiler. We only allow one-half of the tube surface for direct heating, and the whole of the top surface exposed to the fire.

A. F. O., of N. Y.—An immense number of experiments have been made in gunnery in the several civilized countries of the world, especially in France and England, and numerous volumes published on the subject. The size and length of the bore, the size and shape of the shot, and the quality and quantity of the powder, must be proportioned to each other and vary with the size of the gun.

KANSAS, of K. T.—Anthracite coal is not used for making illuminating gas, neither will it make coke.

S. W. R., of Mass.—Your plan of producing motion by inserting one edge of a vertical wheel in a box of quicksilver through a smooth and tightly-packed slit, so as to lift the said edge of the wheel constantly, by the buoyant power of the quicksilver, is a perfect specimen of perpetual motion; that is to say, it will not move at all. A light body, pressed down in a vessel of mercury, is raised to the surface by the falling of a portion of the mercury, as you will perceive on reflection, but if the mercury is so confined that no portion of it can descend, it has no tendency whatever to raise the light body.

L. de F., of Conn.—The best glue is of a bright, deep yellow color. Marine cement is made by dissolving india-rubber in naphtha, and adding to it powdered shellac until it is of the proper thickness. It is always applied hot, and is very adhesive under water. Fine shreds of india-rubber dissolved in warm copal varnish, also make a waterproof cement for wood and leather. Take glue, 12 ounces, and water sufficient to dissolve it; then add 3 ounces of resin and melt them altogether, after which add 4 parts of turpentine. This should be done in a water bath, or in a carpenter's common glue-pot; it makes a waterproof glue.

J. C., of N. J.—We think that your article is too speculative for our columns.

J. W. K., of Miss.—We should like to publish your communication on account of the good nature and fairness with which you argue, as it shows the very spirit in which we like to carry on discussions; but we think our readers have had enough of the subject of water wheels running faster by night than by day, unless some further experiments should be made, in which case we should be pleased to receive an account of them.

STUDENT, of N. Y.—We advise you to get some clear-headed teacher of astronomy to explain to you what is meant by a sidereal year, and by the precession of the equinoxes, before you endeavor to reason from the former that the latter is a "superfluity in science."

J. L., of Md.—You state that your ice-house is sunk 14 feet in the ground, has a solid stone wall, and is lined inside to keep the ice from the stones; that you cannot keep ice through the summer, and you wish to know if a layer of charcoal, placed on the bottom of your pit, would answer as a non-conductor to prevent the ice thawing. Our best ice-houses here are built above ground, with durable walls, either of brick or stone; but wood is as good as either. The space between the walls is generally packed with straw or coarse sawdust, as a good non-conductor. In your case, we would prefer to use dry sawdust in the pit of the floor, rather than charcoal dust; but, owing to the character of your ice-house, if it has also a southern exposure, you will always find it difficult to preserve the ice during the entire summer.

Money Received

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, Dec. 31, 1859:—

E. H., of N. Y., \$35; N. S., of N. Y., \$30; J. G. C., of Ill., \$36; H. K., of —, \$15; J. C. R., of Vt., \$25; J. D. B., of Vt., \$35; A. B. J., of Ind., \$25; E. A. G., of Conn., \$118; G. W., of N. Y., \$55; W. McC., of N. Y., \$35; J. B. S., of Pa., \$10; H. W. P., of N. Y., \$30; W. G. G., of Mass., \$30; J. J. P., of Ind., \$30; G. P. T., of Maine, \$20; G. G., of C. W., \$30; B. D. E., of Ohio, \$25; G. L. B., of Mich., \$30; W. S. K., of Conn., \$30; A. F., of N. J., \$30; I. Van B., of N. Y., \$30; B. & W., of Pa., \$25; H. M., of Ohio, \$30; H. W. P., of N. Y., \$60; A. J. V., of Mo., \$30; J. Y., of N. C., \$25; R. & G. E. T., of Ohio, \$25; T. D., of N. J., \$30; I. N., of —, \$25; M. B., of N. Y., \$100; A. G., of N. Y., \$30; S. R., of N. J., \$30; H. W. H., of Miss., \$25; E. C. B., of Ala., \$30; E. P. & J. N. F., of N. Y., \$30; C. & E., of Conn., \$30; C. H. E., of Vt., \$30; W. I. T., of Cal., \$15; E. B., of Conn., \$25; J. M. H., of N. Y., \$50; B. L. F., of Pa., \$25; C. M. P., of N. J., \$30; H. V., of Mass., \$100; R. & S., of Ohio, \$30.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 31, 1859:—

G. M., of Vt.; J. C. R., of Vt.; E. A. G., of Conn. (3 cases); C. H., of La.; E. B., of Conn.; R. & G. E. T., of Ohio; C. B. W., of N. Y.; B. & W., of Pa.; W. S. K., of Conn.; J. K., of N. J.; W. V. McC., of N. Y.; A. B., of N. Y.; D. W., of France; R. M., of France; B. D. E., of Ohio; J. W. L., of N. Y.; R. A. H., of N. Y.; A. G., of N. Y.; J. Y., of N. C.; A. B. J., of Ind.; J. D. B., of Vt.; B. L. F., of Pa.; S. F. Van C., of Cal.

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