Business and Personal.

Charge for Insertion under this head is One Dollar a Line. If the Notices exceed Four Lines, One Dollar and a Half per Line will be charged.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address correspondents by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 1·00 a line, under the head of "Business and Personal."

All reference to back numbers must be by volume and page.

PAINTING WHITEWASHED WALLS.—In answer to question No. 4, January 28th, I will say: If the cracks be in the plastering, and the wash be sound around the cracks, plaster of Paris is the best thing to fill them with, as it hardens quickly, does not shrink, and leaves the surface on a plane with the wall. If the plaster of Paris set before it can be worked, wet it with vinegar. The stronger the acid, the slower it will set. If cracks be filled with putty, and the wall be painted in gloss color, the streaks of putty are very apt to be flat (no gloss), and if painted in flat color, the streaks are quite sure to have a gloss. These streaks, of course, will spoil the beauty of the work, but do not affect its durability. When filled with plaster of Paris the reversion of gloss never appears, if done as I shall direct. If the cracks be only in the wash, the latter is loosening from the wall; and if it has not begun to scale, it soon will, and all attempts to fasten it on and paint it, will be total loss. If it be loose enough to scrape off, scrape the wall, taking care not to gouge into the original wall. If not loose enough, let it alone until it is. If the wash be thin, solid, and even, it can be painted to look and wear well. When the surface is lumpy, rub the lumps off with a sandstone, or a brick. After a wall has been prepared, as in either of above cases, or if a wall that has never been washed is to be painted, size it with two coats of glue size (3 ounces glue to one gallon water). Be sure the glue is all dissolved before using any of it. Let the first coat dry before the second coat is put on. When the second coat is dry, paint as follows: Mix the first coat of paint in the proportion of 1 gallon raw linseed oil to 15 pounds white lead, ground in oil, and 1 gill of dryer. Second coat: 1 gallon raw linseed oil, 25 pounds white lead ground in oil, and ½ gill dryer. (The lead should be the best.) Then finish either in gloss or flat color, the same as if it were wood work, with one good coat of priming on. Shade all the coats of paint, as near as you can, to the color you wish to finish in. Mix the third and fourth coats the same as the first, that is, about the same thickness for a gloss finish, and a little thinner for a flat finish.—E. H. G., of Ohio.

DECOMPOSING WATER BY ELECTRICITY, AND USING THE GASES AS A MOTIVE POWER.—Pumping water into a reservoir, and letting it run out to drive a wheel, would be nothing to the above application of electricity. The cost of a magneto-electric engine, or of a battery sufficiently powerful to decompose water in large quantities, would be one difficulty, and the certainty of blowing the engine out of the windows when the hydrogen and oxygen were fired, would be another. We advise our correspondent to read up in elementary chemistry and physics.

A CONSTANT BATTERY.—A correspondent uses a zinc and carbon battery and complains that it runs down in a few hours. His sulphuric acid may have been too strong, and thus dissolved the zinc, or the nitric acid may have been too weak. By coating the zinc well with mercury, and using weak sulphuric acid, and substituting a solution of bichromate of potash for the nitric acid, he ought to be able to keep up action long enough to satisfy anybody. Such a thing as a constant battery that never requires looking after, and will run forever, does not exist, and will probably be invented in the same year as the perpetual motion.

WIRE OF SOLDER.—Take a ladle and bore a few holes in the bottom in a line with one another, say six holes, about the size you want your wire. When you get ready to pour, have a strip of smooth iron or steel (a saw blade being very good), have your pierced ladle in your left hand, having previously heated it in the melted metal; then dip up some metal with an ordinary ladle with your right hand, and pour it through the pierced ladle, at the same time moving the two along the strip of iron, and a few inches above it. After you get the hang of it you can make very pretty wire, smaller or larger as you move fast or slow.—H. W. S., of Ohio.

POTATOES AS A REMEDY FOR INCRUSTATION IN BOILERS.—Let H. A. H. put into his boiler a peck of washed potatoes, boil with pressure ten hours, and then blow off. Repeat the process as often as necessary. Better use 25 pounds of potatoes than blow up the boiler, or stop to chisel off the scale. I answer for only lime deposits. I removed such an incrustation three sixteenths of an inch thick from a leg of a portable boiler by the use of potatoes in the manner directed.—C. E. G., of Conn.

GEARING CIRCULAR SAW.—E. O. T. wants to know if he can run a circular saw 400 revolutions per minute with gears direct from engine shaft to the arbors. I answer from experience—no. There are many practical difficulties that need not be specified in this answer.—C. E. G., of Conn.

T. J. W., of N. J.—Your method of boring curved cylinders is not practicable. It is not possible by any means known to us to bend a mandrel in a true circle, and if it were, a long mandrel so bent would spring out of truth from a very slight cause.

J. G., of Nebraska.—An answer to your question would involve a metaphysical discussion foreign to the scope of our paper.

D. E., of N. C.—Oils are deodorized, on a large scale, by oil of vitriol and super-heated steam. If they be sufficiently liquid, they can be passed through bone black. Permanganate of potash could also be tried.

A. P. L., of Ill.—It requires great skill to fill a mercurial barometer; the way to do it is described in most works on Natural Philosophy.

J. H., of Ill.—The best paint for a smoke stack, is asphaltum from the gas works.

BLUEING SMALL STEEL ARTICLES.—Let J. W. K. give the pieces a bright fine polish, and lay them in a sheet-iron pan, with some slacked lime. Set the pan over a forge, or in any place where he can regulate the heat, and watch them carefully until they have the right color. If the steel be good, they will take on a bright vivid blue.—B. N. B.

J. L. I., of N. Y.—In computing the effective horse power of a steam engine, no allowance is made for loss by transmission through the crank other than that consumed by friction. Theoretically, the friction expressed in horse power is found by multiplying the weight in pounds of the rotating parts, into the distance in feet the bearing surfaces move over each other per minute, multiplying the product so found by the coefficient of friction for the peculiar materials of which the parts are made, and dividing the last product by 33,000. As, however, the above rule supposes perfection in construction, it will generally only approximate to the true friction. This is ascertained by the use of the steam engine indicator when the engine is running alone, or by the dynamometer when driving machinery. It is a mistake to suppose any loss arising from the *principle* of the crank. Both theory and practice show that there is no such loss.

J. E., of Texas.—The cause of the collapse of the steam pipe supplying steam to your shingle bolt steamer, was undoubtedly rapid condensation in the steam-box. As the steam is taken from the exhaust of a steam engine, it is evident that when no steam issues from the exhaust, such condensation would produce at least a partial vacuum in the pipe used, and it being of weak material (tin plate), the external pressure of the atmosphere crushed it.

J. H. C., of N. J.—The current of electricity produced by friction passed through a helix wound about a soft piece of iron, renders the soft iron electro-magnetic whenever the current is passed in either direction. The reversing of the direction of the flow reverses the polarity of the magnet, so that what is the north pole when the current flows in one direction will be the south pole when the current flows in the opposite direction.

W. D. S., of N. Y.—If the pressure of the atmosphere be excluded from the surface of water into which a pipe leading to a pump is inserted, no water can be drawn. We judge that this is the difficulty with your pump, but cannot say positively, as you do not state how you attach the pump to the pipe you have placed at the bottom of your well. The pipe being driven into the soft clay bottom, no air can reach the water through such material; so, if the pump be attached to the top of the pipe in such a manner as to prevent the ingress of air, no water can be drawn.

W. T. B., of Mo.—In our opinion electricity in any form has nothing whatever to do with boiler explosions. Our views on this subject ought to be well known to our readers, considering the amount we have published upon it. We call your attention to articles now in type in this office, and which will shortly appear. The views therein stated have our full concurrence.

J. B. E., of Pa.—The reason why 100° Centigrade do not equal 212° Fah., is that the zero on the Fahrenheit scale, is 32° below the freezing point of water, while the zero of the Centigrade scale is at the freezing point of water. 100° Cen. therefore equal 180° Fah., instead of 212° as you suppose.

J. H. D., of Mass.—Formerly indigo was used as "blueing" for laundry purposes. That now used is, however, for the most part, a soluble Prussian blue. Any good treatise on chemistry will give you the necessary formula for making this substance. You can buy it probably much cheaper than you can make it, unless you wish to use large quantities of it.

T. M., of Iowa.—The fatty acids (oil) cannot be profitably reclaimed from soap water.

Queries.

[We present herewith a series of inquiries embracing a variety of topics of greater or less general interest. The questions are simple, it is true, but we prefer to elicit practical answers from our readers, and hope to be able to make this column of inquiries and answers a popular and useful feature of the paper.]

1.—PAPIER MACHE.—I wish to know the way in which articles of papier mache are made, method of mixing the plastic material etc. Will some one give me full details of the process?—E. B.

2.—CHEAP BATTERY.—Will A. G. kindly give more particular directions how to make a cheap magnetic battery? I should very much like to make one, but cannot from his former directions. How are the conductors to be arranged, and what are they to be made of? Must an unusual amount of care be taken to prevent accidents to children?—L. D.

3.—POWER TO RUN CIRCULAR SAW.—What power will be necessary to run a 52-inch circular saw 700 revolutions per minute, with two inch feed?

4.—WOOD FILLING.—What is the best filling for black walnut and other woods—something that will dry quickly, work easily, and leave a nice level surface without raising the grain, transparent, so that the color of the wood will not be altered, and cheap?—M. W. B.

5.—RENOVATING ENGRAVINGS.—How can old copperplate and steel plate engravings be renovated, when soiled by grease and dirt, and yellow from age? Is there a work in any language that describes a method for cleaning and bleaching such prints?

6.—VARNISH FOR AXES.—What is the blue varnish used to cover the polished parts of axes and other edge tools? It resembles as nearly as possible the blue color caused by tempering.—E. T.

7.—CARE OF ENGINE.—What is the best substance to use for keeping the polished work of a steam engine bright?—C. H. C.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

APPLICATIONS FOR LETTERS PATENT.

69.—CASTING APPARATUS FOR IRON AND STEEL.—A. L. Holley, Brooklyn N. Y. January 11, 1871.

70.—BRICK-MOLDING MACHINE.—B. M. Gard, Urbana, Ohio, and E. R. Gard, Chicago, Ill. January 11, 1871.

85.—STEAM GENERATOR.—John F. Allen, New York city. January 12, 1871.

86.—COMBINED TILLER AND DIGGER.—J. P. Ross, Newark, N. J. January 12, 1871.

100.—APPARATUS FOR PROTECTING TROOPS UNDER FIRE.—W. S. Wetmore of United States, residing at 123 Chancery Lane, London, Eng.

103.—TRANSMITTING APPARATUS.—E Morris, Burlington, N. J. January 14. 1871.

124.—TICKET PUNCHING, ETC., APPARATUS.—J. H. Small, Buffalo, N. Y January 18, 1871.

125.—SHOT POUCH.—A. F. Allen, Providence, R. I. January 18, 1871.

126.—TABLE SPOONS.—Elise de Busson, Yonkers, N. Y. January 18, 1871.

141.—APPARATUS FOR REFINING LIQUORS.—S. H. Gilman, Galveston Texas. January 19, 1871.

142.—ELECTRIC TELEGRAPH CABLES.—P. S. Devlan, Jersey City, N. J., and Isaac Pennington Wendell and Stephen Paschall M. Tasker, both of Philadelphia, Pa. January 19, 1871.

164.—AIR AND GAS ENGINES.—A. K. Rider, New York city. January 21, 1871.

167.—MEANS FOR SECURING ARTIFICIAL TEETH.—B. J. Bing, of St. Mary's county, Md., now residing at 15 Finsbury Place South, London, England. January 23, 1871.

177.—CHEESEMAKING APPARATUS.—Artemus Holdredge, of West Burlington, and Benj. F. Harrington and H. H. Harrington of New Berlin, both in N. Y. January 23, 1871.