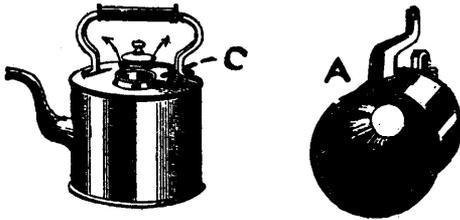


REGISTERED TUBULAR TEA KETTLE.

Mr. B. Barron, of Cross Cheaping, Coventry, has invented a new and improved tea-kettle, which it is claimed will boil water with either fire or gas in one-fourth the time occupied by any ordinary kettle of equal capacity, and consequently the invention is likely to be of service where rapid boiling is required. This rapid boiling is effected by an arrangement consisting of a funnel shaped tube, shown in the accompanying engraving A, by means of which the heat is conveyed through the interior of the kettle, entering at B, and leaving at C, where the upper portion is so arranged as not only to secure the funnel but firmly fix the handle and holding it more securely than the old style of riveting. In this way the heat not only embraces the outside of the kettle, but is drawn through the inside of the cone-shaped funnel by a strong draught, exposing a greater area of metal to the action of the fire, and causing the water to boil as if by magic. These kettles, which may be ordered through Messrs. Martineau & Smith, Birmingham, are manufactured of best block tin, of extra strength, and are produced at a price that will place them within the reach of even the most economic of house-keepers.



THE PRESERVATION OF IRON SURFACES.—In a note on this subject Mr. C. Graham Smith says: The paints used for iron-work are of every description, name and quality. The usual varieties employed for preserving it against corrosion may be divided into lead, iron oxide, silicate, and tar paints. Differences of opinion exist as to the relative merits of the first three descriptions, but the experience of three foremen painters connected with establishments in England is decidedly in favor of lead paints, when of good quality and mixed with good oil without spirits. Unfortunately, there are no reliable practical tests to insure good materials alone being used. Consequently, both the colors and the oils are often inferior in quality and much adulterated. For these reasons, and on account of cheapness, iron oxide paints are by some preferred. A little white lead mixed with red makes it go further and easier to work into corners. If the first coats are put on with pure red lead, owing to its weight, it is liable to run off; but the last coat should consist of red lead alone. The tar paints are more often used for iron-work which is not to be seen, such as water-pipes, floor-plates for bridges, and girders which are to be built into masonry on brickwork. It is cheap and answers well for such purposes and for sea-work, as it is said not to foul so readily as lead or other paints of a finer description. A good rough paint is made by heating coal tar and mixing with it finely sifted slaked lime, in the proportion of between half a pound and a pound of lime to a gallon of tar, adding sufficient naphtha to render it of a convenient consistency for laying on. This composition should be applied while hot, but not too hot. Do not keep it over the fire too long, or it will lose its essential oils. Some positions admit of the paint being sanded, in which case it should be done, as it adds to its durability. Before painting iron, give it a coat of boiled linseed oil applied hot.—*The Iron Age*

A USEFUL COPPER ALLOY.—A very useful copper alloy which will attach itself to glass, metal or porcelain, may be made as follows:—From 20 to 30 parts finely blended copper (made by reduction of oxide of copper with hydrogen or precipitation from solution of its sulphate with zinc) are made into a paste with oil of vitriol. To this add 70 parts of mercury and triturate well, then wash out the acid with boiling water and allow the compound to cool. In ten or twelve hours it becomes sufficiently hard to receive a brilliant polish and scratch the surface of tin or gold. When heated it becomes plastic, but does not contract on cooling.

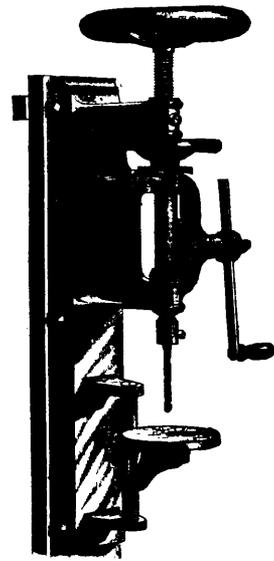
It is said that if twice the amount of water flows from a given-sized jet against a turbine, it will increase the capacity or power of the turbine eight times.

IMPROVED BLACKSMITH'S DRILLS.

The adjoined engraving represents an improved self-feeding drill, intended especially for the use of blacksmiths. It is, however, of course adapted to for various kinds of drilling, and will drill from $\frac{1}{8}$ to $\frac{3}{4}$ inch holes in cast or wrought iron. The frame is of iron, cast in one piece, giving the machine strength and stiffness. The forked arm, accurately machined, holds the finished table upon the lowest spindle at any elevation within its limit of adjustment of 6 to 12 inches from the bottom of the main spindle.

The feed, having a run of 4 inches, has three rates of speed, which may be quickly adjusted by a thumb-screw. The gears, ratchet, and feed cam are cut; the cam roll, pawl and screws are hardened, and the construction throughout is excellent. The crank being rectangular, will not turn in the socket when the thumb-screw is loosened for adjustment. All bearings of the main spindle may be lubricated through an oil-hole in its top. Drilling may be done on wheels and other bulky articles by removing the table, or swinging it aside, and resting the work upon the arm or an independent support.

This machine may be fitted for power by adding a cone pulley, which will not interfere with the hand crank. Its weight is 120 pounds, and is manufactured by the Pratt & Whitney Co., of Hartford, Conn.

**HOW TO KEEP VARNISH BRUSHES.**

It is but needful to say when speaking of a method for keeping varnish brushes in good order, to first get your brush, and every painter will know what that means.

There seems to be nothing more difficult than to obtain a good brush, and no painter, willingly, will part with it, or even loan it to another. The next thing of importance, after getting the brush, is to keep it in good working order. No doubt there are a great many different opinions as to which is the best way, and though many feel they have the "best," yet there is room for further ventilation of ideas. Having often talked to painters on this subject, we find they will differ, some prefer one thing and some another. This method has been known to give satisfaction, yet it is given for what other minds may see and find in it.

WHAT TO KEEP YOUR BRUSHES IN.

As to the keeper, it matters little, so long as the brushes are suspended by wires and have a good covering so that no dust can penetrate. Sufficient varnish should be in the keeper, so that with the bottom of the brushes at least an inch and a-half or two inches from the bottom of the can, the hair and rim of the brushes are submerged. This prevents the varnish drying on the hair or binding. Never let your varnish get but to the top of the hair, as it will dry, and your brush will become lousy.