

**Improved Hoop, Lock.**

The usual method of connecting barrel hoops so as to form a continuous circle is well known to most persons. The preparation of the hoops occupies a great deal of time, and is not only costly but insecure. Our engraving represents a new method of attaching the ends of hoops to each other so as to make the process cheaper as well as stronger. The end is attained by providing a simple metallic clasp, A. This clasp is punched out of sheet-iron, and so set as to allow the ends of the hoops to be passed through slits, or recesses in it. The ends are easily pushed in, but cannot be withdrawn readily, as the sharp edges of the clasp bite against the wood at an angle and prevent the same from slipping back. A blow with a hammer suffices to turn the outer ends over so that a neat and handsome appearance is presented and the hoop, as thus formed, is far stronger and less liable to slip or lose its hold than the ordinary kind.

This device was invented by H. W. Catlin, of Burlington, Vt., to whom a patent is ordered to issue through the Scientific American Patent Agency, and further information can be had by addressing him as above.

**The Best Whitewash.**

Mr. Uriah Ritchie, well known in Boston as a master-builder, and one of the owners of the immense building in New York in which are located the offices of the SCIENTIFIC AMERICAN establishment, gives to us the following recipe for whitewashing. Mr. Ritchie is a practical and successful mechanic in the broadest sense, and after forty years' experience at mason-work, and after having made a great many experiments in the art of preparing whitewashes, he comes to the following conclusions:—

First—For rough outside walls—those exposed to the weather—the best mixture is clear lime and water. Any animal or vegetable substance added diminishes the adhesion and durability of the wash.

Second—But if the wall is hard and smooth, the wash is improved by a mixture of very fine sand—as much as will mix and can be applied.

Third—For inside walls an addition of a little glue—say a quarter of a pound to three pailfuls—increases the adhesion. If it is desired to have the walls very white, the whites of eggs may be used in the place of the glue.

**Improvement in Hanging Car Bodies.**

The Boston horse railroads have an improved method of connecting the bodies of their cars with the trucks, to avoid the jolting going over any obstruction upon the rails. At each end of the truck there is a rubber spring held firmly in position by a pedestal fastened to the body of the car, and resting on a bracket shelf on the side of the journal box. Fastened to the truck is a steel spring in leaves, the smaller end of which is held at the top of the rubber spring by a bolt or suspension rod, which passes through both springs and is fastened to the lower part of the hanging pedestal. There is sufficient play and elasticity to obviate the blow coming from any direction. The weight of the car is divided between the springs, one supporting the other, thus producing a gentle, easy, swaying motion, extremely agreeable and perfect in comparison with the heavy, grinding rumble, and rigid hard shocks of the common arrangement now in use.

**Coating Iron with Aluminum.**

Mr. Wm. Clark, of England, has invented a peculiar process for covering the surface of iron with a layer of the above metal. The surface of the iron is first cleansed; a mixture is then made of porcelain-clay, feldspar, and white lead, properly ground and incorporated; then about ten parts of this combination are added to about five pounds of calcined and powdered alum-clay. This last mixture having been made into a thin paste, and poured over the surface of the metal,

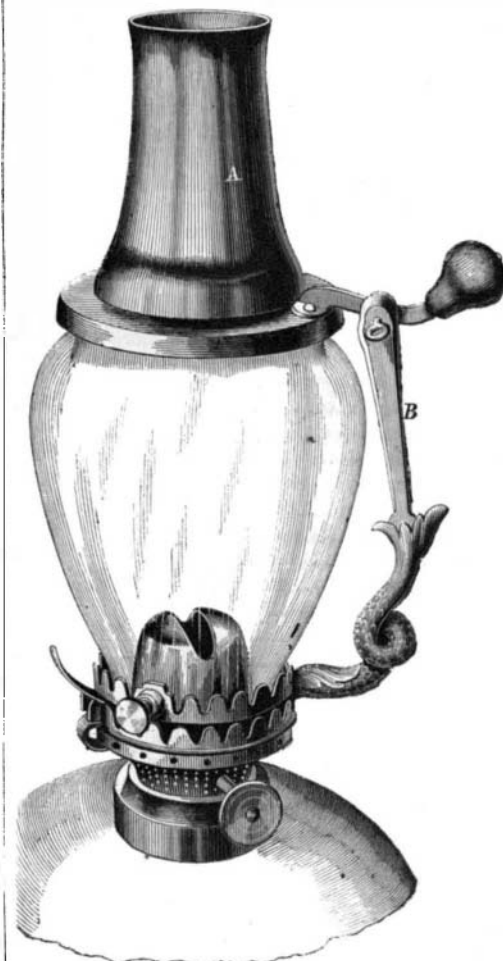
the latter is dried and placed in a reverberatory furnace until it presents a glazed appearance. When the iron is removed it will be found to have received a tough, adhesive, and elastic coating, which is so closely attached to the metal that, when this is bent even at right angles, no symptoms of cracking appear. This coating is also unacted on by acids and alkalis. It is supposed that during the baking-process the

**CATLIN'S HOOP LOCK.**

aluminium is separated from its oxide and forms a thin metallic stratum, intermediate between the iron and the glazed surface.

**COLBURN'S BRACKET LAMP CHIMNEY.**

It is well known that the ordinary glass chimneys used for kerosene lamps break very easily and are a



source of continued expense and annoyance to renew them. The metallic top added to the chimney here-with illustrated is intended to prevent this trouble,

and they are highly spoken of by those who have tried them. They can be used on any kind of burner and with any sort of fastening. We have made an experiment with a sample chimney of this kind, and find that it answers the purpose intended. The inventor says, concerning his chimney:—

“It is constructed on an entirely new principle. The metal top is not fastened in any way to the glass, but to a bracket attached to the burner. Its advantages are, that the glass portion has no metal fastened to it to cause it to be broken by heat unequally expanding it, or to convey the heat from the metal top down the glass to the oil, endangering explosion; the heat of the metal portion is conducted away from the glass by the bracket, B, which also serves as a handle to remove the chimney when hot. The top can be turned off so that the wick can be lighted at any time without removing the chimney.

Patented on the 14th of April, 1863, through the Scientific American Patent Agency. Further information concerning the sale of rights, etc., can be obtained by addressing W. S. Meeker, 34 Mercerst., Newark, N. J.

**How Granite was Formed.**

In delivering one of the lectures of the Swiney course at the Royal School of Mines, Dr. Percy objected to the assertion of geologists, that granitic rocks must have been formed by plutonic agencies, for, said he, there are certain difficulties which have always been in the way of accepting this view of the subject—difficulties known at all events to those who have been ac-

customed to make experiments on the fusion of mineral substances at high temperatures. This is especially seen by examining the condition of quartz in granite; it is always found in the crystalline condition, and has invariably a specific gravity of 2.6. There is not a single instance known to the contrary. Hence there is reason to believe that the quartz could never have been fused, for the moment silica is fused, no matter in what condition it was previously, a peculiar glass-like colloidal mass is produced, having a specific gravity which never exceeds 2.3. Therefore there is good reason to conclude that granite could never have been found under the condition of a high temperature.

**SPIRITS OF TURPENTINE.**

The very high price of spirits of turpentine, resulting from the war, is causing great efforts to be made for producing it at the North. There are very large numbers of pitch-pine trees in many portions of the Northern States, and we are having inquiries from correspondents of the proper mode of procuring turpentine from these trees.

The method of procuring pitch from the pine trees of North Carolina is to chop a box or pocket in the trunk of the tree. A long-bladed ax is used, the lower lip of the box is made horizontal with a deeper portion in the rear, and the upper surface is inclined; the box holding from one to three pints. From one to three boxes are made in a tree according to its size. The boxes are cut during the winter, and the pitch begins to flow about the middle of March. A thin shaving of wood must be taken from the top of the box once in eight or ten days so as to expose a fresh surface. The sap is collected by means of ladders from the boxes as they become filled, and deposited in barrels.

The spirits of turpentine is obtained by distilling the pitch in stills similar to those used for distilling ardent spirits. The article may be purified by a second distillation with caustic soda or potash.

FALLING UP.—When the moon is overhead it is difficult for us to conceive that if a cannon ball was fired at us from the central portion of the moon's disk, it would rush down towards us a short distance, and then turn backward and fall up to the moon again.