

designed for automatically shutting off gas steam, or a liquid used in heating or lighting, or in driving machinery. An expansion tube, A, of brass, copper or other suitable metal, is secured at one end to a bracket permanently fixed in the immediate neighborhood of the device on which it is to be used, which is in this case the under side of the top plate of a gas stove, and the other end of the tube is pivotally connected with a lever fulcrumed on an inner bracket. The opposite end of this lever is pivotally connected with the inner end of another expansion tube, B, the latter being pivotally connected at its front end with a lever, C, having on its outer end a lug adapted to engage one of the teeth on the under side of a weighted arm, D. This arm is pivotally connected with a vertical lever on the lower end of which is a shoulder supporting a weighted lever secured on the stem of a valve held in the supply pipe by which gas or fuel is furnished to the burner. When the burner is lighted, the latter lever is swung upward and placed at rest on the shoulder, as shown in the illustration, but when the burner is extinguished, accidentally or otherwise, the expansion tubes contract,

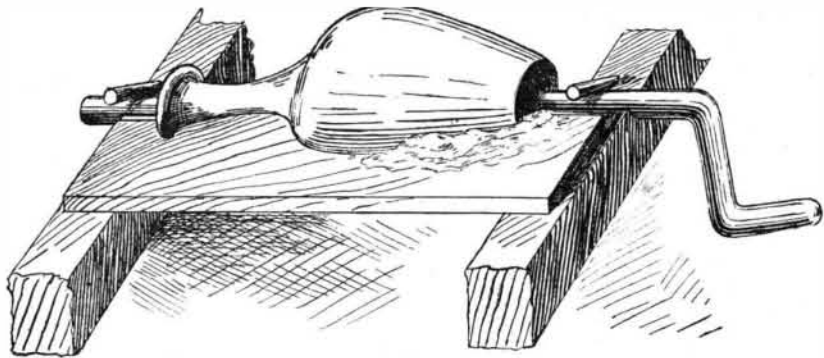


Fig. 1.—FORMING PLASTER OBJECTS.

causing the lever, C, to exert an outward pull on the arm, D, whereby the shoulder on the lower end of the vertical lever is withdrawn from under the weighted lever on the stem of the valve, allowing the latter to drop and cut off the supply of gas or other fuel. For further information in relation to this invention address Mr. G. H. Blanchard, No. 556 State St., St. Paul, Minn.

Abridgments of Industrial Liberty.

That the members of a particular profession should have laws passed in their special interest, and should be empowered to decide who may and who may not enter into competition with them, is, we think, a violation at once of justice and of liberty. The worst of these things is that a public motive is always alleged for what is in the main, if not exclusively, the outcome of private greed or jealousy. It would scarcely be too much to say that the most offensive forms of trade-unionism are found in connection with the so-called learned professions. Time was when it was supposed that the state had to look after the spiritual health of individuals; and for that purpose to prescribe their theological beliefs and religious observances. That belief has for the most part been exploded in the modern world, but its place has been taken by the notion that the state is responsible for the intellectual health of its members; and in lieu of the state church we have state schools. As regards the physical health of the community, the general method is to legalize one or two—possibly quite conflicting—schools of medicine, and to empower them to rule out, and if necessary to prosecute and punish, all others. Nobody, broadly speaking, seems to believe that, in the absence of all legislation of this character, people could in any adequate manner preserve their health or protect themselves against gross imposture. We believe it—believe it most heartily; and we believe that the science of medicine would advance far more rapidly, and that, on the whole, the public health would be far better, if every man were left perfectly free to employ any one he chose to attend him in sickness. At present every licensed practitioner feels himself authorized to call every unlicensed practitioner a quack. We should prefer a system under which, to a quickened public intelligence in questions of health and disease, the quack should stand revealed by his quackery. How much of real quackery is now concealed by the license to practice it might distress a confiding public to know.—*Popular Science Monthly*.

Why Crabs and Lobsters Become Red when Boiled.

The shell of the crab and lobster owes its bluish-gray color to the superposition of two pigments or coloring matters, which have been isolated—a red pigment and a blue one.

As long as these two pigments exist simultaneously, the crustaceans remain gray. But the blue pigment is very fugitive, and sometimes, under the influence of a disease, it is destroyed, and crabs are found with portions of their shell more or less reddish. When the crustaceans are immersed in boiling water, the blue pigment is entirely destroyed, and the red pigment, which is very stable, appears alone in all its brilliancy.—*La Science en Famille*.

HOME MADE ORNAMENTS.

It is sometimes convenient to form objects of circular section from plaster of Paris. This is a very simple operation, requiring only very simple tools and apparatus. An iron rod, bent at one end to form a crank, and carrying a conical wooden roller, two notched bars of wood for supporting the iron rod, and a pattern made from a thin piece of hard wood, comprise the outfit for making these articles. The rod is held in its bearings in the bars by pins inserted obliquely in holes in the wood, so as to project over the rod. The pattern is cut so that its edge is a profile of one side of the article to be made. The wood should be made thin on the working edge. The patterns may be made to advantage of metal backed by wood.

The conical wooden roller should be flattened on three or four sides to prevent the plaster from turning around on it. The roller is oiled or smeared over with grease, and a batter of plaster of Paris is prepared by mixing the dry plaster with water to the consistency of cream. As soon as the plaster begins to set it is applied plentifully to the roller, and while the rod is turned by means of the crank, the pattern is moved forward toward the rod, and the surplus plaster is removed by the pattern, which acts as a scraper. Any deficiencies are supplied by a new application of the batter. When the object is of the right size and form, the pattern is removed and cleaned, and again applied to the object, the latter having been brushed over freely with water. This gives the finishing touch.

The principal difficulty in making wooden imitations of pottery lies in the liability of wood to a change of form by shrinking or by the absorption of moisture. This can be avoided, however, by selecting very dry wood to begin with, and allowing it to further season after being turned or otherwise shaped.

Although a great variety of articles may be successfully made of wood and finished in imitation of pottery, only one example will be given (Fig. 2). This is a



Fig. 2.—WOODEN PITCHER, FINISHED IN IMITATION OF POTTERY.

pitcher having an annular body with moulded base and top. These parts are made of well seasoned pine glued together, and further secured by screws. A hard wood handle is firmly attached, and the whole is varnished with shellac varnish and allowed to dry thoroughly. A design is drawn on the pitcher and filled in a portion at a time with shellac varnish, slightly colored with some pigment. Before the varnish becomes entirely dry the surface is covered with bird shot No. 6, which adheres and forms a nodular surface. When all the varnish-coated surfaces are covered with shot, the varnish is allowed to dry, after which the entire vase is painted with white or cream-colored oil paint.

After the first coat is perfectly dry it is smoothed with fine sandpaper. A second coat of the same kind is applied, and when dry, smoothed as before. The paint for the final coat is mixed with varnish to give the vase a gloss. As soon as this coat becomes tacky, the parts covered with shot are brushed over with a piece of chamois skin sparingly charged with gold

bronze powder. This gilds the projecting convex surface of the shot, leaving the rest of the original color.

The effect is fine. This vase, if made 20 or 24 inches high, may be placed on the floor in any suitable nook or corner.

Suggestions by a Photographer.

A prominent photographer, interviewed recently by a representative of the *New York Sun*, has given a number of valuable hints. This photographer says, what has been said many times, that few people stand before a camera without the expression, "I am having my picture taken," defeating their own object. The second difficulty is that materials having a gloss never produce good effects in a picture; but the majority of women, though they may own any number of dresses that fall in soft, clinging lines, persist in wearing new glossy materials that have not become adjusted to the figure.

There is nearly always the possibility of producing an attractive if not a beautiful picture of a child, if the child is left for direction to the photographer. In reply to the question, "What is the most annoying thing about your work?" the answer was:

"Oh, the fond mothers who insist on dressing children in garments heavy with frills, instead of the soft, fine little dresses that fall in pleasing lines. Then, too, they insist sometimes on having a foot or shoulder, or more often a sash or shoulder knot, show, to confusion of art and the destruction of unities. Or they will dart out and twitch a little skirt or mantle that has fallen into natural curves of beauty, or a wandering curl, that falls in exquisitely careless grace, back into order and awkwardness again. That happened the other day when I was photographing a bride. She walked up to the chair, and as she turned to face me the silk train and thin veil fell in wonderful folds of graceful outline. I told her not to stir, but while I stepped back to get the effect, her friend darted out and straightened the whole thing out like a flag in a head wind."

The same lack of artistic sense that placed the furniture in a room at right angles still thinks the straight line the line of beauty, curves representing disorder.

Pilot Search Light.

The steamer Connecticut, of the Providence and Stonington Steamship line, has been equipped with a new Huntington search light. Men have been employed on the big boat for the last few months constructing the light and getting it in running order. They accomplished their task only a few days ago, and now the big Connecticut can forge its way through Long Island Sound during nights when fog dims the eyes of the ever-watchful pilot, without much fear of collision. The wonder is how the Long Island steamers ever managed to do without the search light.

It is located on top of the pilot house, and is played on any quarter desired by the pilot within. At his will he can throw the powerful light toward the sky or water, and all by the means of a little wheel with a switch. On a very dark night objects at a distance of two miles away can be seen quite plainly. When fog is dense, the light is thrown a distance of half a mile. By means of a weight that may be operated by a magnet, the steam fog horn of the vessel is also brought under the control of the electric current.

In the pilot house there are four switches controlling the current that runs to the search light and the fog horn, and by means of these switches the pilot can start the search light so that it will flash at regular intervals automatically; or it may be made to burn steadily; or it may be made to flash automatically at the instant the fog horn begins to bellow, and cease to flash when the bellow ceases; or the horn may automatically bellow alternately with the flash of the light; or the flashing and bellowing may be done alternately or simultaneously by hand. No such use of electricity was ever made before.—*Providence Journal*.

Accident on the Alliance.

On the U. S. steamer Alliance, now on her way to China, on the morning of the 9th ult., while the ship was cruising in the Mediterranean and the crew were at target practice, Boatswain's Mate J. McGowan was instantly killed by the premature explosion of a sixty-pounder breech-loading rifle. He was captain of the gun, and was in the act of locking the breech mechanism when the cartridge exploded, blowing the plug entirely through his body.

Commodore Taylor ordered a board of officers to investigate the cause of the explosion. Their report only deepened the mystery. They could find nothing to show that the primer had been placed in the vent, as ordinarily its shell remains in the vent when exploded, and there was none to be found on this occasion. McGowan was known to be a careful gunner, well acquainted with ordnance, and he had taken every precaution.

The board came to the conclusion that in the turning of the breech plug into place the metal must have struck a spark and ignited the cartridge. No blame was attached to any one for the accident.