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Explosions in Molding.

We notice in one of our cotemporaries that while George Keyser was recently pouring some melted composition metal into journal boxes, at North Adams, Mass., an explosion occurred causing the molten metal to fly out in all directions, and some of it into his face, slightly injuring his eyes. The accident is attributed to some moisture having gathered in the cavity which was to receive the molten metal. This, we think, was the true cause of the explosion, as we have known like accidents occurring from similar causes; and we notice this one to give a word of advice.

Before metal is run into a mold it should be clearly ascertained that there is no water in it, because a very minute quantity is liable to cause an explosion when the molten metal comes in contact with it. In molding such simple things as rifle bullets, several persons have had their eyes permanently injured by neglecting this precaution. In the act of molding bullets it is not unusual to dip the mold into cold water, to cool it, and if not dried when the metal is again poured in, an explosion will certainly occur, and the lead, in all likelihood, will be thrown into the face of the molder. "A word to the wise is sufficient."

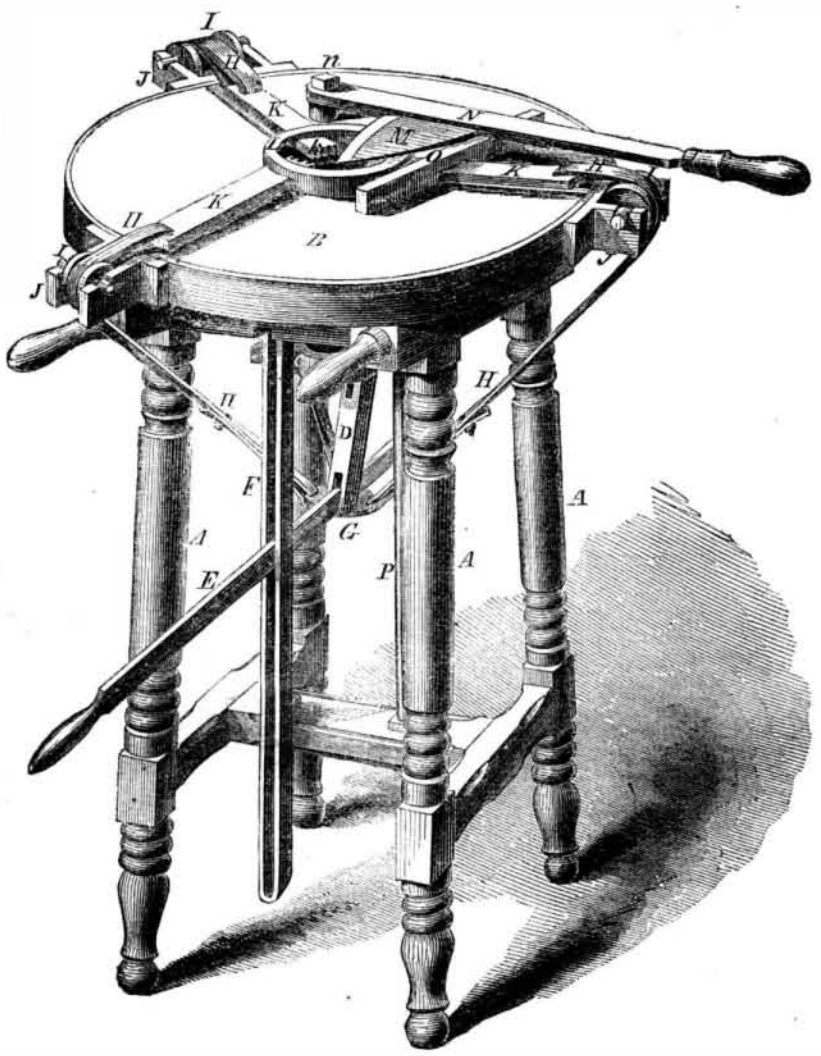
Painted Pails.

A correspondent writing from New Lebanon, N. Y., informs us that a cheap description of pails, "painted inside," are extensively used in that region for gathering maple sap; and as the paint is very soon removed, some persons are afraid of lead being in it, which is a dangerous poison. Our opinion is solicited in regard to this question.

Of course we cannot tell whether there is or is not lead in the paint employed for these pails, but if there is, the detection of it is a very simple affair. Let any person take one of these pails and scrape some of the paint from it into a tumbler, then pour some boiling hot soft water upon it, and stir it up for a few minutes. Now take some bi-chromate of potash, (a piece about the size of a pea,) and dissolve it in another tumblerful of water, and then mix the two solutions together. If there is any lead present it will form a light yellow precipitate; the iodide of potassium also forms a yellow precipitate with lead, and the hydro-sulphuret of ammonia a black precipitate. These simple re-agents can easily be applied to detect very minute quantities of lead in solution.

Our correspondent also asks us if it is advisable or right, to use pails that are painted inside for holding water or milk for drinking. We think it is not advisable to use such pails for these purposes, nor is there the least necessity for painting them. As white lead acts as a poison when taken into the stomach, it should never be used for painting any vessel designed to contain food or drink.

HURST'S IMPROVED CORN HUSKER.



The season will, in a month or two, be upon us, when green corn will form an article of general food, and the streets generally will be enlivened by the musical cry of "Hot corn!" It is, therefore, the proper time to illustrate corn huskers, so that before the crop is yet ready for gathering, the machines by which the ears of corn are prepared either for the market or the mill may be generally known.

The corn husker represented in our illustration is the invention of A. R. Hurst, of Chambersburg, Pa., and was patented by him on the 31st of March, 1857.

A are four legs, supporting the platform, B, having a circular hole through the center. On the bed-piece or platform, B, three metal plates, K, are placed radially from the center of B, and having their ends cut into teeth, *k*; they rest in slots in a rim, L, placed around the aperture in B. Each of these pieces, K, has a stop underneath it, which works on a rod placed in a groove in B. These pendants and rods serve as guides to K, and around these rods are also placed springs. To the outer end of each rod are attached straps, H, which pass over pulleys, I, on bearings, J, on the periphery of the bed piece, B. The springs on the rods have the tendency to keep the three pieces, K, in contact at their toothed end, *k*. To the lever, E, is pivoted the link, D, that is also pivoted to the disk, C. This lever works over another disk, G, that has the straps, H, fastened to it. The lever works in a guide, F. The disk, C, also works up and down in guide rods, P.

On the top of B a lever, N, is placed, having a screw, *n*, at its end, to form a fulcrum, and it is also provided with an angular knife, M; it works over a piece, O, which always keep it in the same plane.

The operation is as follows:—The lever, E, is depressed, and the plate, G, is also depressed, the pieces, K, are drawn back, and the ears of corn are placed one at a time, point downward, through the opening in the center of B. The points of the ears rest in C. The corn is placed with the butt just below the inner ends of the plates, K; the knife, M, is then operated by the lever, N, and the butt or stick is cut off. The butt being then cut off, the lever, E, is released, and is brought back by the springs in the groove in B. The plates, K, then grasp the corn by means of these same springs, and the disk, C, is then forced upward by elevating the lever; and as the toothed projections, K, grasp the ear, the husks are retained, while the corn is forced up, perfectly free from the husk or shell. This machine can be worked rapidly, and there are no parts to become choked or clogged, so as to render it inoperative. It is compact, and judging from the one we have seen, it will do its work cleanly and well.

Any further information can be obtained from the inventor, by addressing him as above.

Starch from Horse Chestnuts.

This fruit contains a great quantity of starch, and as the tree will grow almost anywhere and everywhere, it would be advisable to apply the hitherto useless fruit to a valuable purpose. The tree is one of the most beautiful, and might well be planted along our streets and roads.

American Submarine Explorers at Sevastopol.

By the most recent accounts from Europe, we learn that both of the two American companies, which had formed contracts to raise the sunken ships at Sevastopol, have given up the project as quite impracticable. The hulls of these sunken vessels have been rendered completely useless by the *torpedo* of the Black Sea. Some of these vessels were caulked and made seemingly tight for the purpose of pumping out the water prior to the act of raising them, but the timber was afterwards found so rotten that the water run through it like a seive. The anchors and cables raised are sufficient to cover some of the expenses of the companies, but not the whole. No less than eighty-one vessels were sunk, and some of these were eighty gun ships—all are lost forever.

Diller's Axle Box.

We have previously noticed this invention on page 218 of the SCIENTIFIC AMERICAN, but it will be better understood by reference to the accompanying engravings, of which Fig. 1 is a perspective view, and Fig. 2 a section showing the lubricating grooves.

Fig. 1

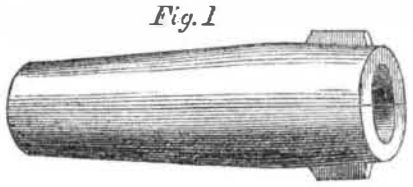
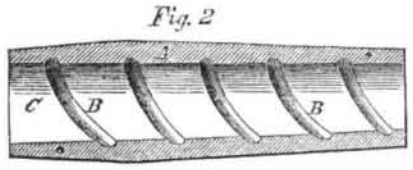


Fig. 2



A represents the axle box, which externally is of the usual form, and may have its inner surface chilled or not, as desired. Within the box, A, a series of grooves, B, are made. These grooves extend entirely around the box, and are inclined, as seen in Fig. 2. Any number of grooves can be used, according to the inclination and the length of the box. The grooves can be of any suitable width or depth, and are so arranged that the edge of one groove on one side of the box will nearly, if not quite, reach the edge of the adjoining groove at the opposite side of the box. As each groove extends entirely around the box, and as the base or inner diameter is of slightly taper form, the grooves, being inclined, will, of course, be slightly elliptic in their form. The grooves, B, are formed by having corresponding projections placed on the cone, and when the casting is made and the cone withdrawn, they can be planished, or cleaned out, and regularly formed by a proper tool, and the inner surface of the box bored out, reamed or smoothed.

When the arm is lubricated at C, the oil will collect in the grooves, B, they forming oil chambers; and as the box rotates, the whole surface of the arm is lubricated, the perfect lubrication being somewhat assisted by the slight longitudinal play of the arm. The bearing of the box is not much dimished, and the wear and tear will be less than if the grooves were made circumferentially in its center, to receive the lubricating material.

It is the invention of William Diller, of Lancaster, Pa., from whom any desired information can be obtained. Patented March 9, 1858.