

Constructive Carpentry.

Framed and Double Floors.—In this kind of floor there is a member in addition to those forming the assemblage of timbers in a single floor. This additional member is called a binder, or binding joist, as *b* in Fig. 4, *a* being the flooring joists, corresponding to *a* in Fig. 1, page 38; *c* the ceiling joists, and *d* the flooring boards; *e* indicates the line of plaster on the ceiling. Fig. 5 is a side elevation of this double floor; Fig. 6 is a cross section, *a* being the flooring joists, also sometimes called bridging joists, *b* the binder or binding joists, *c* the ceiling joists, and *e* the line of lath and plaster ceiling. Fig. 8 is part plan.

The thickness of the binding joists varies with the bearing; as a rule, they are made half as thick again as the flooring joists of the corresponding floor; the bearing on the wall will be ample if at 6 inches. The distance between the binders, measured from center to center, (see Fig. 4 and 5), is generally from 5 to 6

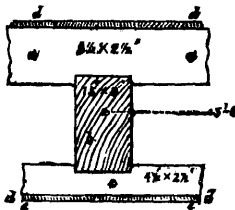


Fig. 4.

feet. When in the arrangement of the timbers of a double floor the binding joists are placed to, or come near a wall, their thickness is reduced one-third; thus, if the binder is 9 inches thick in the central part of the floor, it is only 6 inches when near a wall. When a fire-place interrupts the line of joisting, or when a hole is required to be made in a floor to receive a staircase, a trap-door, etc., an arrangement known as a trimmer, or trimming joist, is introduced, as illustrated in Fig. 9. In this drawing the jambs of a fire-place projecting from the wall show two of the ordinary flooring joists; the other joists are broken off, and instead of resting upon the wall, which cannot be used as a bearing surface for them in consequence of the fire-place, they are jointed to and are carried by a cross

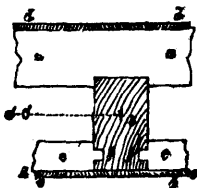


Fig. 5.

joist, which is termed a trimmer, this being at its end jointed to and carried by the trimmer, which runs parallel to the flooring joists. The trimmers and trimming joists are thicker than the flooring joists, one-sixth or one-eighth of thickness of the flooring joists being added for each joist carried or supported by the trimmer.

Molding and Founding.

Molding Hollow Ware.—Without a proper division of labor, the art of molding hollow objects would never have attained the perfection which is the admiration of all reflecting minds. An iron pot, kettle, or stove may be a very common thing, but if any one reflects upon the construction of the mold which made it possible not only to cast such objects, but to cast them light, sharp, smooth, and with well defined outlines, he must confess that a great deal of skill and dexterity, aided by the experience of more than one generation, was necessary to accomplish the production of these now so common and cheap objects.

There are at present foundries in which the casting of hollow ware is made a specialty. In such foundries the sand is fine and liberally mixed with coal powder. Nowhere in the world at present are such elegant pat-

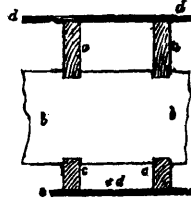


Fig. 6.

terns of stoves manufactured as in the United States, where it is a rightful boast that the art of stove and grate making has been so much improved, as well in elegant form as in adaptability to the purpose and economy of fuel.

In casting hollow ware, the main point is to have well-finished patterns, and as the articles are always thin, there is no danger of the sand burning and adhering to the metal. It is the same with small articles, such as hinges, knife-blades, latches, parts of locks, etc., of which a dozen or more are usually molded in one flask and cast at once, being connected by a small channel from the gate to the patterns.

Patterns for hollow ware require to be very accurate, if we expect the molding to be well done. The originals of these patterns are generally molded in loam, cast in brass, and turned in a lathe, or, if not of a round form, worked by other means until a perfect form is obtained. A pattern having been smoothed and polished, is then cut into such parts as are considered necessary to make it available. Pins, ears for handles, and studs for feet or handles, are generally put on loose. All dished utensils are generally cast with their mouth downward, except covers. Where the neck of a core is narrow, and there is any danger of the hot metal lifting the core, as may occur in the case of a coffee-pot, the core is fastened to the bottom of the flask by a thin iron rod with a cross at the upper end, buried in the core and fastened below the bottom. Hollow ware molders need a variety of peculiarly shaped tools and siekers. Most of the tools are button-shaped, with short studs for handles, more or less round, or even cylindrical, to suit the various hollow forms of the patterns; others are plain and heart-shaped; and others again have double plain surfaces at certain angles with each other, to suit certain corners in the mold.

Iron boxes are generally used in this kind of molding; these are the cheapest. In iron flasks the work is done fast, well, and safe, while imperfectly made or wooden flasks always cause more or less delay in the work. From well made flasks many advantages may be derived; if they are well made and fit one upon the other promiscuously, there is no need of boards after the first drag-box is molded. Upon the first box which

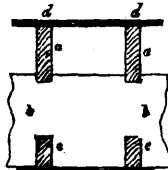


Fig. 7.

is molded its complement, the upper box, is rammed in. After parting upon the upper box, the next lower box is molded, leaving of course the pattern always in that box which serves as the bottom of the flask. In this way the top box of the first flask serves as the bottom to the next bottom box, and so on through the whole range of boxes.

In molding a water-kettle, the pattern is exactly as the kettle is to be, except the pipe, which may be solid. The flask consists of three boxes, of which the middle box is divided by a vertical division in two halves—

checks. This division runs through the pipe and divides the mold into two halves, so that when both boxes are removed, the pipe, which is not fastened to the pattern, may be withdrawn. The upper part of the pattern may be divided just in the division of the middle box; but this leaves an unsightly division, and is likely to expose the pattern to injury. It is better to have the middle box in one piece, and divide above and below. At the pipe the upper box reaches down into the middle box, as far as the pipe goes down, and divides the sand just along the bend of the pipe; the middle box parts with the lower at the rim of the kettle, where the core also separates. In molding a kettle the lower half is put on a board and the upper box rammed in, this box turned upside down, and the other half of the pattern put on. The middle box is then set in its place and fastened to the upper box. Both boxes

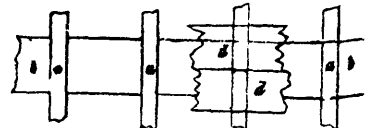


Fig. 8.

may also be put together, and rammed in together, just as conveniently. Sand is then filled in the middle box around the pattern, and after this the sand is rammed inside the kettle. The parting is made between the lower and middle box, and the lower box filled. The flask stands now inverted, and the kettle on its bottom. The lower box—as the flask stands it is the upper box—is now withdrawn, then the middle box lifted, and the upper half of the pattern withdrawn. First the middle and then the upper box is put on again, and the flask turned over, which will then stand in its original position. We may now draw the upper box, remove the lower part of the pattern, and put in the core for the pipe, which is made in a separate core-

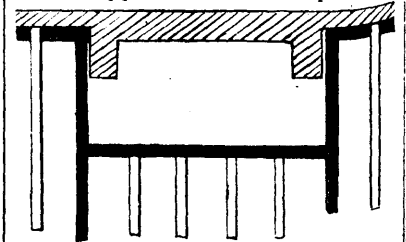


Fig. 9.

box. The git-pin is now withdrawn; this is very much tapered one way, and thin; the other way three or four inches wide, formed like a blunt wedge, with the edge $\frac{1}{4}$ of an inch thick. The box is now put on again, and the mold is ready for casting.

EMPLOYMENT OF CARRIER PIGEONS.—The experiment which was tried last year of employing carrier pigeons to bring early intelligence every morning from the fishing grounds off the Scottish coast, of the results of the night's labor, is again being resorted to this season. One of the birds is taken out in every boat in the afternoon, and after the nets have been hauled on the following morning, the pigeon is dispatched with a small piece of parchment tied around its neck, containing information as to the extent of the catch, the position of the boat, the direction of the wind, and the prospects of the return journey. If there be not wind enough to take the boat back, or if it is blowing in an unfavorable direction, a request is made for a tug, and from the particulars given as to the bearing of the craft, she can be picked up easily by the steamer.

BURNISHING GOLD DUST.—Gold dust cannot be burnished in a proper manner on frames, &c. Gold saltpre will dry what is called dead gold; to burnish it would be to destroy part of the gold, and the result would not please. If bright gilt is required it should be gilt with gold leaf; the frame may be then burnished in various parts. It is not usual to burnish the whole of any gilt frame, at least in best work, the dead gold gives tone and effect to the burnished parts.