J. A. RATHBONE.

MOLDING APPARATUS.

APPLICATION FILED DEC. 9, 1905.

949.497.

Patented Feb. 15, 1910.

Fig. 1.

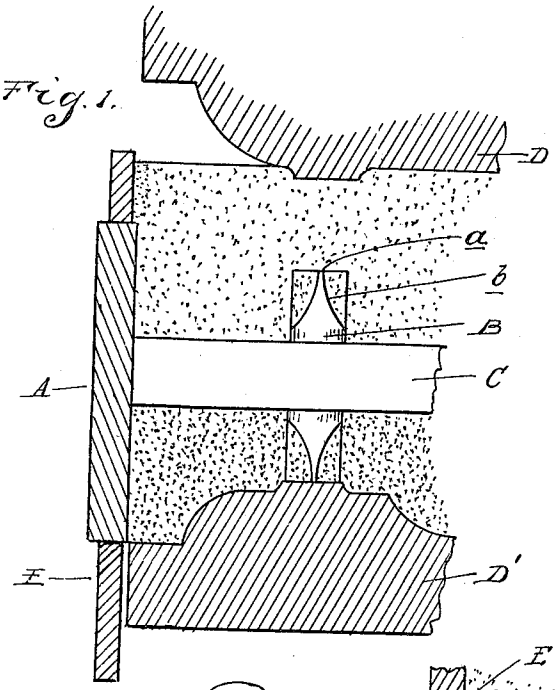


Fig. 7.

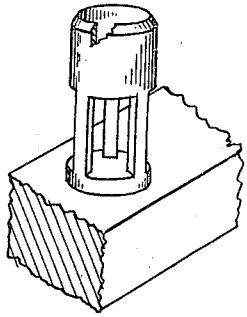


Fig. 2.

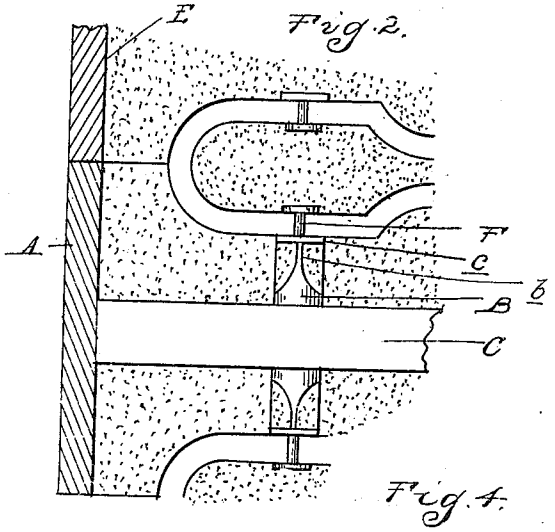
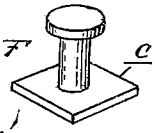


Fig. 3.



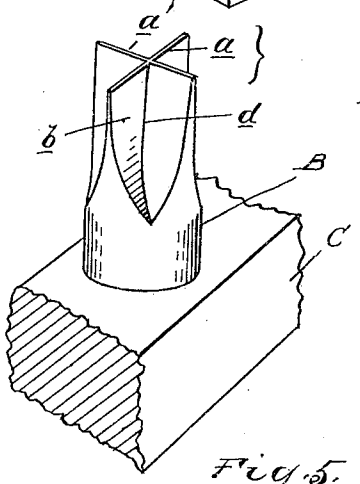


Fig. 5.

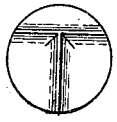
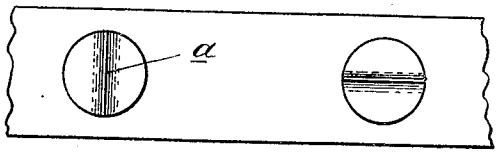


Fig. 4.

Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

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MOLDING APPARATUS.

949,497. Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed December 9, 1905. Serial No. 291,017.

To all whom it may concern:

Be it known that I, JOHN A. RATHBONE, a citizen of the United States of America, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Molding Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

It is the object of the invention to provide means by which the chaplets for supporting the cores may be accurately positioned; and it is a further object to obtain a construction which is adapted for use in press molding, being particularly applicable to the formation of multiple or series molds.

The invention consists in the peculiar construction of a chaplet bearing; further, in its peculiar arrangement in relation to the mold flask; and further, in the peculiar construction, arrangement and combination of parts, as hereinafter set forth.

In the drawings, Figure 1 is a vertical cross section through a portion of a mold flask, showing the same in connection with the opposed patterns in the operation of forming a section of a series mold; Fig. 2 is a similar sectional view, illustrating portions of two completely formed mold sections, with the chaplets and core supported thereby in position; Fig. 3 is a perspective view of a chaplet bearing and a chaplet; Fig. 4 is a plan, illustrating a modified form of chaplet bearing; Figs. 5 and 6 are similar views, illustrating still other modifications; and Fig. 7 illustrates another modification.

In the ordinary hand process of forming sand molds, the loose sand is rammed within the flask against the face of the pattern. With certain forms of press molding, on the contrary, the pattern face is pressed into the loose sand to compact the same. This difference renders it difficult to adapt methods of positioning and supporting chaplets employed in the hand process to the machine work. Thus, if a chaplet bearing of ordinary construction is placed within the mold flask and sand is then compressed within the flask between pattern faces, it will result in the formation of a hard spot in the sand between the bearing and the pattern, which will prevent the pattern faces from coming to the required distance from each other, so that the core will not be sustained by the chaplet centrally in the mold; this hard spot also frequently causes the mold to "blow"; furthermore, it is difficult to properly form the mold in a press where there is any obstruction to the free movement of the sand between the pattern faces.

With the present construction, I have overcome these difficulties by providing a chaplet bearing which is held in fixed position with the mold flask and which does not interfere with the free flowing of the sand during compression. This is preferably accomplished by providing the end of the chaplet bearing with a sharpened edge, which, while affording support to the solid end of the chaplet, is capable of cutting through the sand which flows upon opposite sides thereof.

As illustrated in Fig. 1, A is one side of the mold flask and B is the chaplet bearing which is held in fixed relation to the flask, preferably by being secured to or formed integral with a cross bar C. Where, as illustrated in this figure, a section of a series mold is to be formed, the bar C is arranged centrally within the flask and oppositely-extending bearings B are secured thereto, which, if desired, may be formed of a single member secured in an aperture in the bar, as by a driving fit, or the bearings may be cast integral with the bar. The opposed pattterns D D′ are connected respectively to the bed and plunger of a suitable mold press (not shown) and in the operation of said press, the loose sand within the flask and the sand frames E, is compressed.

To illustrate the manner in which the sand is caused to flow past the chaplet bearing, the upper portion of Fig. 1 shows the loose sand within the flask and frame E, before the pattern D is pressed downward, while the lower portion of the same figure shows the sand within the flask compressed by the pattern D′ and the latter in proximity to the chaplet bearing. In practice, however, both of these operations are performed simultaneously and the sand between the pattern and the opposite ends of the chaplet bearing B is cut by the sharpened edges *a* of the bearing and flows upon opposite sides thereof without obstruction to the movement of the pattern or the formation of hard spots in the sand.

The chaplet bearing B may be formed in various ways, as, for instance, as illustrated in Fig. 3, in which the bar is milled, cast or

otherwise fashioned to form the crossing sharpened edges *a a'* and the tapering sides *b* extending from the body of the bar to said edges. This cross-shape form will afford a stable support for the base *c* of the chaplet F, while the sand is permitted to flow downward through the grooves *d* between the sides *b*.

In Fig. 4, a modification is illustrated, in which a single straight sharpened edge *a* is formed on each chaplet bearing, these edges being, however, arranged at different angles in adjacent bearings, so that the core resting upon the chaplets will be afforded a stable support.

In Fig. 5, the end of the chaplet is of the T-shaped form and in Fig. 6 in the form of a V.

Various other forms may be devised which are equally well adapted to the production of the desired result.

After the mold is formed, the chaplets may be arranged at the ends of the chaplet bearings, as illustrated in Fig. 2, and the cores placed in the mold cavity will thus be accurately positioned, being held both from downward movement and flotation. Inasmuch as the chaplet bearings are in fixed relation to the mold flask and come in direct contact with the base of the chaplet, it is evident that very accurate work may be produced and in series molds, the various sections may be superposed and the cores placed in the several mold cavities, without exerting any stress upon the sand between cavities.

While I have described specifically a construction of chaplet supporting bearing, the broad function of this element is to support a portion of the molding face, whether through the medium of a chaplet or otherwise. I therefore, employ this term "supporting bearing" broadly in the claims.

What I claim as my invention is:—

1. In a molding apparatus, the combination with a mold flask and a pattern, of a bearing member for supporting a portion of the molding face other than that formed by the sand within the flask, and means for moving said bearing member relative to said pattern through the intervening body of sand.

2. In a molding apparatus, the combination with a flask and a pattern, of a bearing for supporting a portion of the molding face other than that formed by the sand within the flask insertible through the sand, and means for moving said bearing relative to said pattern.

3. The combination with a molding flask and a relatively movable pattern, of a bearing for supporting a portion of the molding face other than that formed by the sand within the flask fixed within the flask and sharpened to cut through the sand during the relative movement of said flask and pattern.

4. In a molding apparatus, the combination with a flask and a relatively movable pattern, of a bearing post within said flask for supporting a portion of the molding face other than that formed by the sand having a sharpened edge to cut through the sand.

5. A chaplet bearing provided with a sharpened edge capable of cutting through the sand and comprising a plurality of points in different vertical planes, whereby stable support is afforded to the chaplet.

6. A chaplet bearing provided with a sharpened edge having portions thereof in angling planes.

7. The combination with a mold flask, of a chaplet bearing rigid within the same and provided with a sharpened edge for cutting through the sand, and support a portion of the molding face.

8. The combination with a mold flask, of a bar extending inward from the side of the flask and chaplet bearings extending oppositely from the said bar and provided with sharpened edges for cutting through the sand.

9. In a molding apparatus, the combination with a flask, a core supporting member therein provided with an end adapted to support the core at different points but cut away to permit of free passage through the sand and a pattern face for compressing the sand in the mold.

10. The combination of a mold flask and a bearing post fixed therein provided with a sharpened end adapted to pass freely through the sand, and support a portion of the molding face.

11. A chaplet bearing having a sharpened edge for cutting through the sand and fashioned to form a comparatively wide stable support for the chaplet.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. RATHBONE.

Witnesses:

JAMES P. BARRY,

EDWARD D. AULT.