Oct. 7, 1958 H. W. DIETERT 2,854,712

MOLDING MACHINE

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FIG.I.

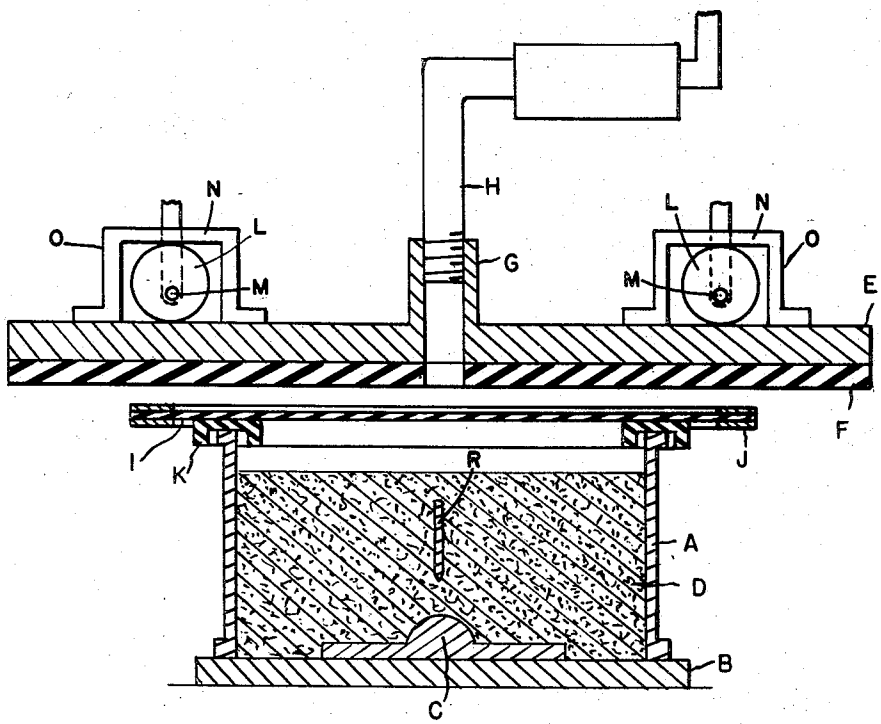
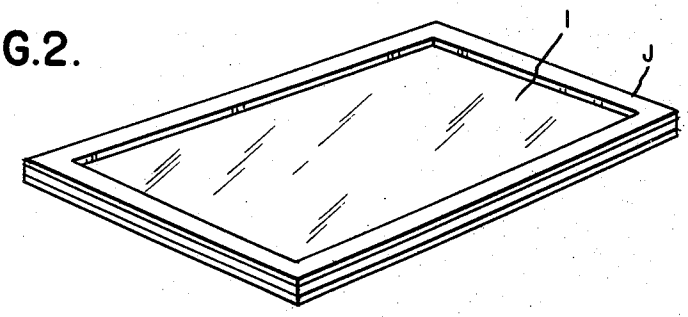



FIG.2.




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# MOLDING MACHINE

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4 Claims. (Cl. 22—42)

The invention relates to molding apparatus of that type in which the loose molding material covering the pattern within the flask is compacted by air pressure acting through the medium of a flexible and elastic air impervious wall of an air chamber. As heretofore constructed the air impervious wall of the air chamber is formed of rubber or similar material of considerable thickness and is relatively expensive. It is also subject to injury through various causes which shorten its life. Further, it is fixedly attached to the air chamber and if at any time rendered inoperative valuable time is lost in its removal and replacement.

It is the object of the invention to simplify the construction of apparatus of this general type and to lessen danger of injury thereto. Further objects are to reduce the initial cost and to avoid loss of time where replacement is necessary.

With these objects in view the invention consists in the construction as hereinafter set forth.

In the accompanying drawings:

Fig. 1 is a vertical section through a mold flask showing my improved apparatus in connection therewith.

Fig. 2 is a perspective view of the flexible air impervious sheet and the frame in which it is mounted.

As above stated apparatus of the type as heretofore constructed involves an air chamber distinct from the flask having the flexible impervious wall attached thereto. With my improvement the air chamber is formed within the flask by the provision of a cover plate for the latter. Also, the flexible wall is initially unattached to either the cover plate or the flask but is clamped therebetween with provision for forming a complete air seal with the wall of the flask. It may also be formed of much thinner elastic material than has been heretofore used, which reduces the initial cost. More in detail, A is a flask section supported on a pattern plate B. C is a pattern on said plate and D is the loose sand or other molding material covering the pattern and substantially filling the flask. E is a plate, preferably formed of metal extending completely over said flask to cover the same. F is a cushioning and sealing material on the underside of said plate. G is a lug on the upper side of said plate having an aperture therein extending through the plate. H is a hose or other flexible conduit connected to said lug and extending to a source of air under pressure. I is the flexible sheet which is of an area greater than that of the flask and is preferably attached to a border frame J for convenience in handling the same. The sheet is supported in the frame in normally planar condition. Before the plate E is placed upon the flask, the sheet I is positioned thereover so as to be between the cushioned face F and the upper edge of the flask wall. This edge must be free from any roughness which might injure the sheet and it may be desirable to place a sealing strip K of inverted U-shape in cross-section over said upper edge and between the same and said sheet. The web of the sealing strip K is relatively wide and cooperates with the



cushioning and sealing material F to clamp a relatively wide area of the flexible sheet I. Any suitable means is provided for clamping the plate to the flask and if desired the plate may be incorporated in a press into which the mold flasks may be successively introduced. As shown, the plate E and cushioning material F carried thereby may be raised and lowered relative to the flask A by means of eccentrics L fixed to rotatable shafts M and engageable with the upper surface and said plate E and with the horizontal portions N of inverted U-shaped brackets O fixed to the upper side of said plate E.

With the construction as above described, after clamping the plate E to the flask air under pressure is admitted through the conduit H and lug G between the plate and the sheet I. This will produce uniform pressure against the molding material so as to compact it about the pattern within the flask. The cover is then raised and the sheet removed to a place of safety until required for another mold. There is nothing in this operation to abrade or otherwise injure the sheet I and consequently it will have a long life. Also a comparatively thin sheet will accomplish the purpose so that the amount of material used in its formation may be reduced to the minimum.

Where the flask is provided with one or more cross bars R to retain the sand or other molding material therein the upper edge of the bar is rounded or smooth to avoid injury to the sheet if pressed thereagainst.

The plate E may be made of dimensions to cover the maximum size of mold flasks and is equally applicable to flasks of much smaller dimensions. In each case the air chamber will be formed by only that portion of the flexible sheet I that is within the flask wall.

What I claim as my invention is:

1. In a molding machine, a plate adapted to support a pattern, an open top flask on said plate adapted to form an enclosure for said pattern and adapted to contain loose molding material to cover said pattern, a separate unattached quick replaceable elastic fluid impervious normally planar sheet completely covering the open top of said flask and operable to compact the molding material about said pattern, said sheet being provided with a border frame by which it may be manipulated, means including a movable plate for removably clamping said sheet upon the open top of said flask, a sealing strip of inverted U-shaped cross-section having a flat upper surface and operable when said sheet is clamped to provide a cushioning seal along the top edge of said flask between said flask and said sheet, said cushioning strip being inside said border frame, and means operable when said sheet is clamped for introducing fluid under pressure between said plate and sheet to cause said sheet to compact the molding material about said pattern.

2. In a molding machine, a plate adapted to support a pattern, an open top flask on said plate adapted to form an enclosure for said pattern and adapted to contain loose molding material to cover said pattern, a separate unattached quick replaceable elastic fluid impervious sheet completely covering the open top of said flask and operable to compact the molding material about said pattern, means including a movable plate for removably clamping said sheet upon the open top of said flask, said sheet being provided with a border frame by which it may be manipulated, means operable when said sheet is clamped to provide a cushioning seal along the top edge of said flask between said flask and said sheet, said cushioning seal being within said border frame, means operable when said sheet is clamped to provide a cushioning seal along the top edge of said flask between said sheet and said plate, and means operable when said sheet is clamped for introducing fluid under pressure between said

plate and sheet to cause said sheet to compact the molding material about said pattern.

3. In a molding machine, a plate adapted to support a pattern, an open top flask on said plate adapted to form an enclosure for said pattern and adapted to contain loose molding material to cover said pattern, a plate located above said flask and provided on its side surface adjacent said flask with cushioning and sealing material, a continuous sealing strip of inverted U-shaped cross-section positioned over the upper edge of said flask and having a relatively wide flat upper surface confronting the cushioning and sealing material on said plate, a separate quickly removable and replaceable elastic fluid impervious sheet having a rigid border frame, said frame being adapted to receive said sealing strip within its inner edge, means for effecting relative approaching movement between said flask and said plate while said elastic sheet is supported on said sealing strip with the frame of said sheet disposed outwardly of said frame to clamp a portion of said sheet inwardly of its frame between said sealing strip and the sealing material on said plate, and means operable when said sheet is clamped for introducing fluid under pressure between said plate and sheet to cause said sheet to compact the molding material about said pattern.

4. In a molding machine, a plate adapted to support a pattern, an open top flask on said plate adapted to form an enclosure for said pattern and adapted to contain loose molding material to cover said pattern, a plate located above said flask and provided on its side surface adjacent said flask with cushioning and sealing material, a continuous sealing strip of inverted U-shaped cross-section



positioned over the upper edge of said flask and having a relatively wide flat upper surface confronting the cushioning and sealing material on said plate, a separate quickly removable and replaceable elastic fluid impervious sheet having a rigid border frame in which said sheet is normally supported in planar condition, said frame being shaped to receive said sealing strip within its inner edge, means for effecting relative approaching movement between said flask and said plate while said elastic sheet is supported on said sealing strip with the frame of said sheet disposed outwardly of said frame to clamp a portion of said sheet inwardly of its frame between said sealing strip and the sealing material on said plate, and means operable when said sheet is clamped for introducing fluid under pressure between said plate and sheet to cause said sheet to compact the molding material about said pattern.

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