No. 738,279. PATENTED SEPT. 8, 1903.

A. K. BECKWITH.

MOLDING APPARATUS.

APPLICATION FILED SEPT. 29, 1902.

NO MODEL.

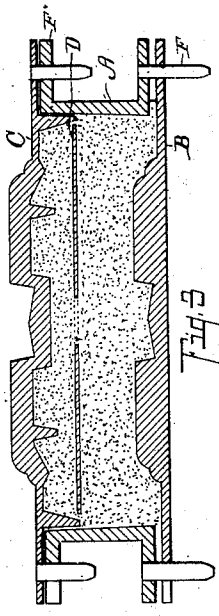


Fig. 3

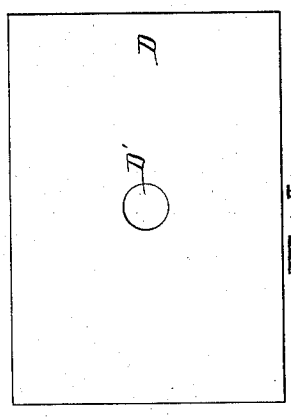


Fig. 4

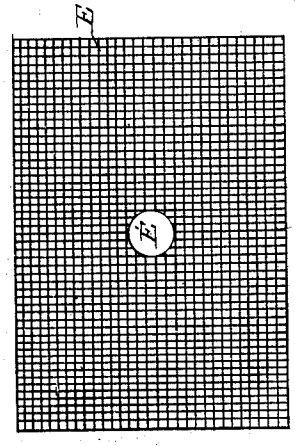


Fig. 5

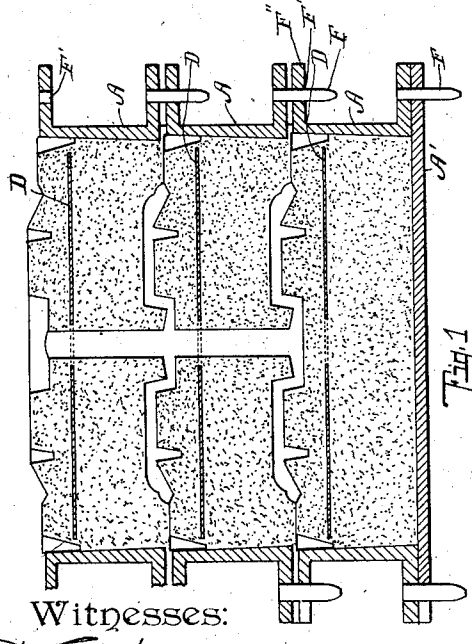


Fig. 1

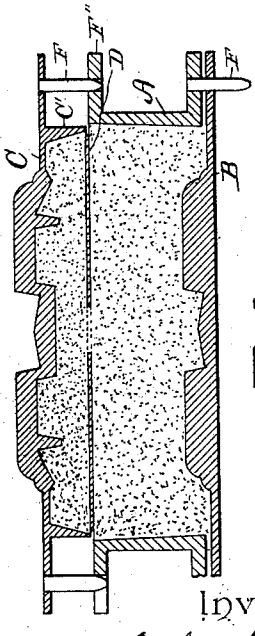


Fig. 2

Witnesses:

D. E. Wood.

Otis A. E. Earl.

Inventor,

Arthur K. Beckwith

By Fred L. Chappell

Att'y.

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No. 738,279. Patented September 8, 1903.

UNITED STATES PATENT OFFICE.

ARTHUR K. BECKWITH, OF DOWAGIAC, MICHIGAN.

MOLDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 738,279, dated September 8, 1903.

Application filed September 29, 1902. Serial No. 125,229. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR K. BECKWITH, a citizen of the United States, residing at the city of Dowagiac, in the county of Cass and State of Michigan, have invented certain new and useful Improvements in Molding Apparatus, of which the following is a specification.

This invention relates to improvements in multiple molding devices and means. It is a modification and improvement of the structure described in patent application filed May 3, 1902, Serial No. 105,775.

The objects of this invention are, first, to provide a simple and efficient means of forming multiple molds in which the molds are located one above the other and in which any possibility of breaking down the mold is avoided; second, to provide improved means of forming the molds and retaining the sand or other molding material in position.

Further objects will definitely appear in the detailed description to follow.

The objects of this invention are accomplished by the devices and means described in this specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of the invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical central sectional view through a multiple mold and flasks embodying the features of this invention, a part of the guide at one side being broken away. Fig. 2 is a similar central sectional view of the apparatus and means by which this result is accomplished as the same are first brought into juxtaposition. Fig. 3 is a similar sectional view after the parts have been pressed together by a suitable press or molding-machine. Fig. 4 is a plan view of the plate D for retaining the sand in position. Fig. 5 is a plan view of the same plate when made of screen or expanded metal.

In the drawings similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, the flasks A are of the usual form, except that they are open at top and bottom and adapted to receive patterns for molds and are provided with guides at both top and bottom like those appearing in the former application referred to, although in the present devices they could be snap-flasks. A match-plate or mold-board B, bearing a pattern divided on its parting-line, is provided for the bottom, and a match-plate or mold-board C is provided with the reverse side of the pattern for forming the molds. When I use the word "match-plate," I do not confine myself to match-plates only, as I recognize the fact that the pattern may be made and supported in any manner which provides that the part of the pattern on each side of the parting-line shall be exposed. Both match-plates or mold-boards and the flask are provided with suitable guides, as shown by the pins F and guide-holes F′ in ears F″, planned in such a manner and position that when the plates and flask are together the patterns are directly in line one above the other. A sand-retaining plate D, perforated at D′, is provided to allow the forming of the sprue-holes. The match-plate or mold-board C is also provided with a raised rim C′, extending beyond or above the pattern.

In use I place a flask A on any suitable board or plate A′, which will hold the sand while the first of the stack of molds is being pressed. Fill the flask loosely with sand and strike it off flat. Then fill the rimmed side C of the match or pattern plate and strike it off flat. On the rim and sand I place the plate D, perforated at D′. Then I invert the pattern-plate C, together with the sand and plate D, and place it on the flask A, as appears in Fig. 2, the object of the plate D being to retain the sand in the rim on the plate C during this operation. I then press the same by press or suitable means to place, as indicated in Fig. 3, the guides F F′ retaining the match-plate in position with flask as it is being pressed. I now lift the pattern-plate C and remove the mold from the machine or press, the mold so formed being the bottom one of a stack of multiple molds. The board or plate on which the flask was placed may be removed with it, or the flask containining the pressed sand may be lifted from the board or plate and placed where most convenient to receive the stack

of molds. In practice I remove the flask and board together, placing the board on the floor as a support for the stack of molds. I now place a flask on the plate B, the guides F F' bringing it to correct position, and proceed as before and place the mold now formed on the one previously made, making one complete mold and the lower part of another. Additional molds are made in the same manner until the stack is as high as desired, as shown in Fig. 1. The plate for placing on the rim of the match-plate or mold-board may be of screen, as at E, suitably perforated, as at E', as clearly appears in Fig. 5. When the mold is formed in this way, a sprue-hole is cut through the aperture in the plate before moving the mold, so that there is a passage down through the molds, as appears in Fig. 1.

The retaining-plate is made smaller than the flask, so that it can be readily pressed into the same. The sand is sifted into the molds and then struck off as nearly flat as is practical before inserting this plate, which serves to retain the sand in the upper part of the mold until the same can be inverted over the remaining part. Of course this use of the plate is possible with molds differently constructed or with flasks which are capable of collapse to a certain extent by being made up in any suitable way. I, however, prefer the same in the form I have shown it, as it is most expeditious. The same is better retained than by any other means of which I am aware for multiple molds. In piling the molds one above the other the plates serve as distinct and separate supports like the bottom boards of molds, so that molds can be piled up to an indefinite height without any danger of breaking. These plates also serve in a measure to retain the sand from lateral displacement, so that there is less likelihood of the metal breaking through the side of the mold, owing to heavy static pressure from the liquid metal poured into these sprues from the top, and this is so effective that the molds can be built up to a considerable height by the use of snap-flasks merely, although, of course, ordinary flasks with properly-fitted bearing-points placed one above the other are much preferred.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a molding apparatus, the combination of a series of flasks A with suitable guides at top and bottom, adapted to be superimposed and rest one upon the other; bottom mold-boards B with suitable patterns thereon, for supporting the flasks; a top match-plate or mold-board carrying a reverse corresponding part of the pattern; a rim upon the under side of said top match-plate or mold-board, extending below the pattern and adapted to receive and hold a quantity of sand; perforated cover-plates to fit within the sides of the said rim and adapted to pass within the flasks when the same are superimposed one above the other, to permit the parts being pressed together.

2. In a molding apparatus, the combination of a series of flasks A with suitable guides at top and bottom adapted to be superimposed and rest one upon the other; bottom mold-boards B with suitable patterns thereon, for supporting the flasks; a top match-plate or mold-board carrying a reverse corresponding part of the pattern; a rim upon the under side of said top match-plate, extending below the pattern and adapted to receive and hold a quantity of sand; cover-plates to fit within the sides of the said rim and adapted to pass within the flasks when the same are superimposed one above the other, to permit the parts being pressed together.

3. In an apparatus for forming multiple molds, the combination of a flask A with a suitable guide at top and bottom; a bottom match-plate or mold-board B, with a suitable pattern thereon, for supporting the flask; a top match-plate or mold-board carrying a corresponding reverse part of the pattern; a rim upon the under side of said top match-plate or mold-board extending below the pattern and adapted to receive and hold a quantity of sand; a perforated cover to fit within the side of said rim and adapted to pass within the flasks when the same are superimposed one above the other to permit the parts being pressed together.

4. In an apparatus for forming multiple molds, the combination of a flask A with a suitable guide at top and bottom; a bottom match-plate or mold-board B with a suitable pattern thereon, for supporting the flask; a top match-plate or mold-board carrying a corresponding reverse part of the pattern; a rim upon the under side of said top match-plate or mold-board, extending below the pattern and adapted to receive and hold a quantity of sand; a cover to fit within the side of said rim and adapted to pass within the flasks when the same are superimposed one above the other to permit the parts being pressed together.

5. In an apparatus for forming multiple molds, the combination of a flask A; a match-plate or mold-board for supporting said flask; a top match-plate or mold-board with a rim conformed to the same and adapted to form a receptacle to maintain the sand in position on the match-plate or mold-board; a perforated cover for said receptacle, the same being adapted to pass into the flasks when the same are properly superimposed above each other, for the purpose specified.

6. In an apparatus for forming multiple molds, the combination of a flask A; a match-plate or mold-board for supporting said flask; a top match-plate or mold-board with a rim conformed to the same and adapted to form a receptacle to maintain the sand in position on the match-plate or mold-board; a cover for

said receptacle, the same being adapted to pass into the flasks when the same are properly superimposed above each other, for the purpose specified.

7. An apparatus for making molds consisting of parts having the patterns for the molds supported in receptacles; a cover for one of the receptacles to retain the molding material in place therein while it is being placed over the corresponding part, said cover being smaller than the top of the flask and adapted to remain between the parts to permit them to be pressed together.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

ARTHUR K. BECKWITH. [L. S.]

Witnesses:
T. W. CLYBORNE,
M. J. SHEPARD.