

W. R. SWIFT.
MOLDER'S FLASK.

APPLICATION FILED SEPT. 30, 1913.

1,120,759.

Patented Dec. 15, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

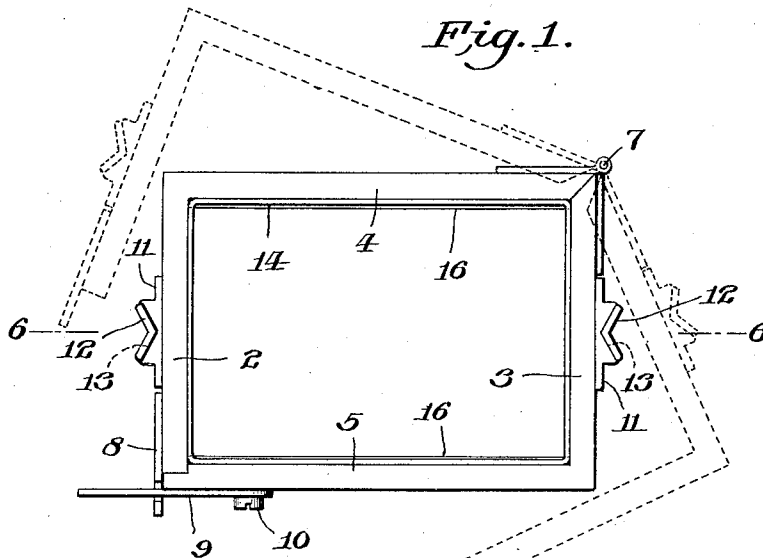


Fig. 2.

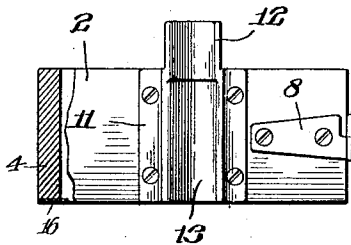


Fig. 3.

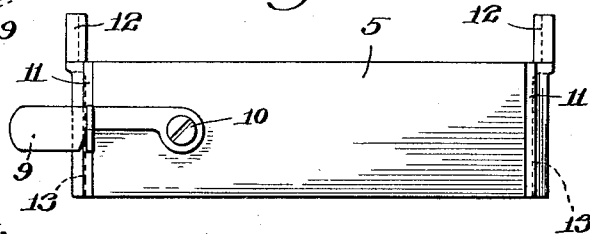


Fig. 4.

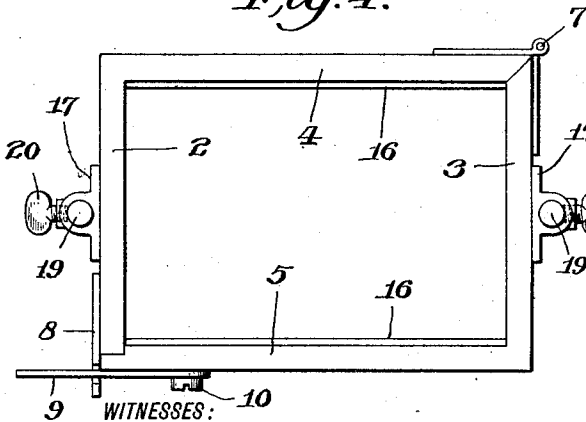
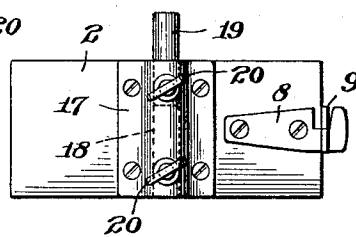


Fig. 5.



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 2 SHEETS—SHEET 2.

Fig. 7.

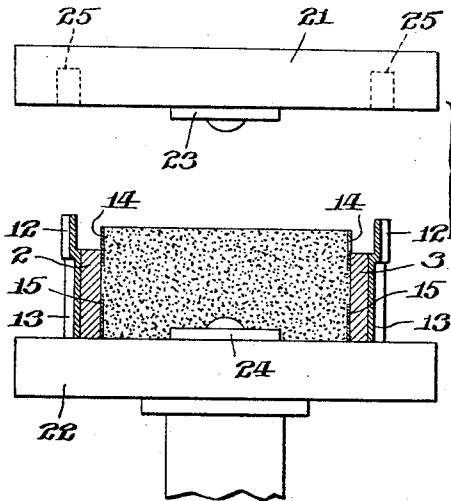


Fig. 8.

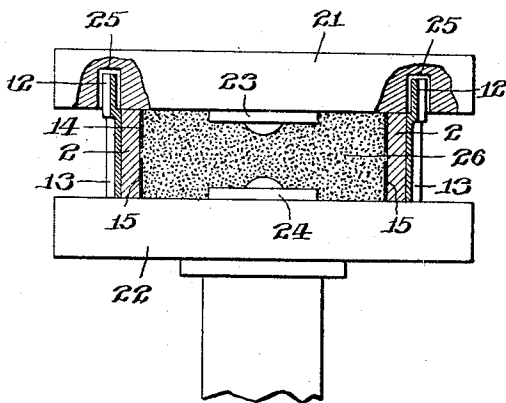
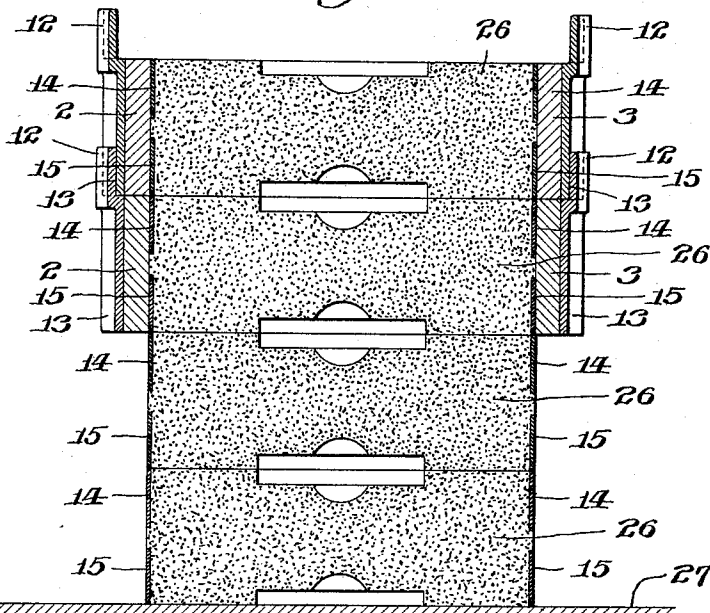


Fig. 6.



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MOLDER'S FLASK.

1,120,759.

Specification of Letters Patent.

Patented Dec. 15, 1914.

Application filed September 30, 1913. Serial No. 792,552.

To all whom it may concern:

Be it known that I, WILLIAM R. SWIFT, a citizen of the United States; residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Molders' Flasks, of which the following is a specification.

My invention relates to molders' flasks.

The primary object of my invention is to reduce the large number of flasks heretofore required in multiple molding, wherein a number of separately formed molding sections are placed one upon another and wherein the molten metal is fed to the several molds through a common sprue and suitable runners.

Heretofore, in making multiple molds, it has been the practice to form the molding sections in separate flasks and place the flasks one upon another and retain the flasks upon the sections until the completion of the molding operation. By the employment of my invention, the flasks may be removed from the molding sections as rapidly as they are placed one upon another and before the molten metal is introduced thereto; two flasks and a number of inexpensive bands being all that is required to form any number of molding sections or stacks of sections strong enough to receive and support the molten metal during the casting operation.

The invention consists in the novel construction and combinations of parts herein-
after fully described and particularly claimed.

In the accompanying drawings, illustrating my invention: Figure 1, is a plan view of my improved flask and supporting bands, showing the flask in the closed position by full lines, and showing the flask in the open position by dotted lines. Fig. 2, is an end view of the flask. Fig. 3, is a side view of the flask. Fig. 4, is a plan view of a modified form of the flask. Fig. 5, is an end view of the form shown in Fig. 4. Fig. 6, is a vertical section showing a number of molding sections placed one upon another and the two flasks employed in forming the same, the section extending longitudinally through the flasks, on the line 6-6 of Fig. 1. Figs. 7 and 8 are views of parts of a molding machine and my improved flask, partly in section, and showing different positions

of the parts during the formation of a mold-
ing section.

The flask shown in Figs. 1, 2, 3, 6, 7 and 8 is of the following construction: 2, 3 designate the two vertical end walls and 4, 5 the two vertical side walls of the flask. The side wall 4 and end wall 2 are secured together at their meeting ends, and the side wall 5 and end wall 3 are secured together at their meeting ends, thereby forming the flask in two halves which are hinged together at 7 and which may be closed, as shown by full lines in Fig. 1, and which may be opened on the hinge 7 to or beyond the position shown by dotted lines in Fig. 1.

To hold the flask closed and permit it to be readily opened, I provide a suitable latch device comprising a notched arm 8 secured to and projecting from the end wall 2, and a notched latch arm 9 pivoted, at 10 to the side wall 5 and projecting beyond the end thereof and engaging the arm 8, as clearly shown in Figs. 1, 2 and 3. When the latch arm 9 is in the position shown by full lines the flask is held closed, and when the latch arm 9 is raised from engagement with the arm 8 the flask may be readily opened on its hinge 7. Each end wall 2, 3 of the flask has a bracket 11 secured thereto, and each bracket has a V-shaped projection 12 thereon and a V-shaped depression 13 therein. The projections 12 extend above the top of the flask and the depressions 13 are adjacent the lower portion of the flask. The projections 12 and depressions 13 are so arranged relatively to each other that when one flask is placed upon another, as shown in Fig. 6, the projections 12 of the lower flask will enter the depressions 13 of the upper flask and center one flask upon the other; and the depressions 13 and projections 12 are so arranged that after one flask has been centered upon another, and the lower flask is opened on its hinge 7, the projections 12 of the lower flask may be moved horizontally from the depressions 13 of the upper flask without disturbing the position of the upper flask.

Within the flask and extending around and engaging the inner faces of the vertical walls thereof are two endless bands 14 and 15 of sheet metal, one band 14 being located within the upper portion of the flask, and the other band 15 being located within the

lower portion of the flask. These bands 14 and 15 are vertically movable within the flask, and the lower band 15 is adapted to be supported in the position shown in Fig. 6 by thin sheet metal ledges 16 projecting inwardly from the bottoms of the side walls 4 and 5 of the flask, as shown in Figs. 1, 2 and 4. The upper band 14 is adapted to be supported by the sand within the flask, as will be hereinafter explained.

The flask shown in Figs. 4 and 5 is like the flask shown in Figs. 1, 2, 3 and 6, excepting that in place of the brackets 11 I provide brackets 17 which are secured to the end walls 2 and 3. Each bracket 17 has a vertical opening 18 extending therethrough in which is arranged a vertically movable pin 19, which may be secured in different positions by set screws 20 screwed into the bracket 17. These pins 19 are adapted to be projected above the top of the flask, as shown in Fig. 5, and held in this position by the upper screws 20. When the pins 19 are in this position, and one flask is placed upon another, the pins 19 of the lower flask will enter the bottoms of the openings 18 in the upper flask and thereby center one flask upon the other. After the flasks have been thus centered and it is desired to open the lower flask horizontally, the upper screws 20 of the lower flask are first loosened permitting the pins 19 to drop into the lower portions of the openings 18 in their brackets 17 and out of the openings 18 in the brackets 17 of the upper flask; whereupon the dropped pins 19 may be held in place by tightening the lower screws 20 and the lower flask may be opened horizontally on its hinge 7.

In Figs. 6, 7 and 8 I have shown the improved manner in which I form a multiple mold by the use of my invention. The parts of the molding machine shown in Figs. 7 and 8 are an upper head 21 suitably supported by parts of the machine, and a lower head 22 movable toward and from the upper head 21 and guided and actuated by suitable devices, not shown. Secured to the bottom of the upper head 21 is a pattern 23 of one-half of the form to be cast in multiple in the multiple mold, and secured to the lower head 22 is a pattern 24 of the other half of the article to be cast in multiple in the multiple mold.

The operation of forming the multiple mold is as follows: The head 22 is lowered to the position shown in Fig. 7, a flask is placed on the head 22 and suitably centered around the pattern 24 and the lower band 15 is placed within the bottom of the flask in the position shown. A quantity of fine sand is then sifted into the flask over the pattern 24, and then more sand is shoveled into the flask until the sand reaches or nears the top of the flask. The upper band 14 is

then placed in the upper portion of the flask with the lower portion of the band 14 extending into the flask and supported by the sand therein and with the upper portion of the band 14 extending above the top of the flask, as shown in Fig. 7. More sand is now shoveled into the flask and into the band 14 until the sand nears the top of the upwardly extending band 14, when a layer of fine sand is sifted into the top of the band 14 and the fine sand made even with the top of the band by passing a suitable stick over the top of the band and thereby brushing off the surplus sand, or by any other suitable means. This being done, the lower head 22 is raised to the position shown in Fig. 8, and during this operation the projections 12 on the flask enter openings 25 in the upper head 21, and the upper head 21 engages the top of the band 14 and forces it and the sand therein down into the flask until the top of the band 14 is flush with the top of the flask. It will be readily understood that this operation compresses the sand to the desired density and forms depressions in the upper and lower portions of the sand corresponding with the patterns 23 and 24. The head 22 is now lowered and the flask with the multiple mold section 26 of sand formed therein is removed from the machine and placed upon a suitable support, as shown at 27 in Fig. 6. A second flask is now placed upon the head 22 and the operation just described is repeated to form a mold section 26 within the second flask. The second flask with the mold section therein is then placed upon the flask and its mold section first placed upon the support 27, the second flask being centered upon the first flask as previously explained. The lower or first flask is now opened horizontally and freed from its mold section 26 and the bands 14 and 15 around the section, while the second flask is permitted to remain around its mold section 26. The operation of forming a mold section within the first mentioned flask is now repeated, and then the first mentioned flask with its mold section 26 is placed upon the second mentioned flask; and then the second mentioned flask is removed from its mold section and bands 14 and 15, supplied with another mold section, as previously explained, and again placed upon the first mentioned flask; and so on, as shown in Fig. 6, mold sections are successively formed within the two flasks and the two flasks are placed one upon the other in alternate succession until the desired stack or desired number of stacks of mold sections are produced.

It will of course be understood that in forming the different mold sections 26, suitable sprues and runners should be provided and connected to the open spaces in which the castings are formed, so that the molten

metal poured into a single opening in each stack of mold sections will find its way to all the casting spaces. Each time a mold section 26 is formed, new bands 14 and 15 are provided which remain around the sections when the flasks are removed. These bands hold the sand of the different sections in proper position during the casting operation. A suitable weight is placed upon the top of the uppermost section before the casting operation, to hold the parts down during the pouring of the metal.

It will be observed that the upper band 14 performs the double function of guiding the sand into the flask during the compression of the sand, and holding the sand in position after the flask is removed from the band. In moving the flasks with the mold sections 26 therein, the packed sand of the sections is prevented from accidentally falling from the flasks by extending between the two bands 14 and 15 and by the bottom band 15 being supported by the ledges 16.

I claim:

1. The combination of a plurality of molders' flasks, each flask having vertical walls which are separable horizontally to open the flask, each flask having means for securing its vertical walls together, each flask having upwardly extending parts, each flask having parts to which the upwardly extending parts of the adjacent flask are fitted, locking the adjacent flasks against relative horizontal displacement the upwardly extending parts and the parts to which they are fitted being horizontally separable from locking position when the vertical walls of a flask are moved away from each other horizontally, and said upwardly extending parts and the parts to which they are fitted being adapted to prevent relative horizontal movement between adjacent flasks when said parts are engaged with each other.
2. The combination of a molder's flask having vertical walls which are separable horizontally to open the flask, means for holding the flask closed, and a pair of endless bands extending around the inner wall of the flask one above the other; the upper band being vertically movable within the flask to extend its upper portion above the top of the flask and to move its upper portion down into the flask, the vertical walls of the flask being adapted to be separated horizontally from the bands.
3. The combination of a molder's flask having vertical walls which are separable horizontally to open the flask, means for holding the flask closed, a pair of endless bands extending around the inner wall of the flask one above the other, the upper band being vertically movable within the flask to extend its upper portion above the top of the flask and to move its upper portion down into the flask, a second flask below the first named flask, and a part projecting from one flask and engaging a part of the other flask and preventing relative horizontal movement between the flasks when the upper flask is closed, said parts being horizontally movable from each other when the upper flask is opened.
4. The combination of a plurality of molders' flasks, endless bands extending around the inner walls of the flasks, each flask having vertical walls which are separable horizontally to open the flask, each flask having means for securing its vertical walls together, each flask having upwardly extending parts, each flask having parts to which the upwardly extending parts of the adjacent flask are fitted, the upwardly extending parts of one flask and the parts of the adjacent flask to which they are fitted being horizontally separable from each other when the vertical walls of a flask are moved away from each other horizontally, and said upwardly extending parts and the parts to which they are fitted being adapted to prevent relative horizontal movement between adjacent flasks when said parts are engaged with each other.

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

WILLIAM R. SWIFT.

Witnesses:

JOSEPH P. BERGMAIER,
A. V. GROUPE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."