Aug. 14, 1928. 1,681,085

W. H. BEATTY

FLASK FOR CENTRIFUGAL SAND MOLDS

Filed May 12, 1927

FIG. 1

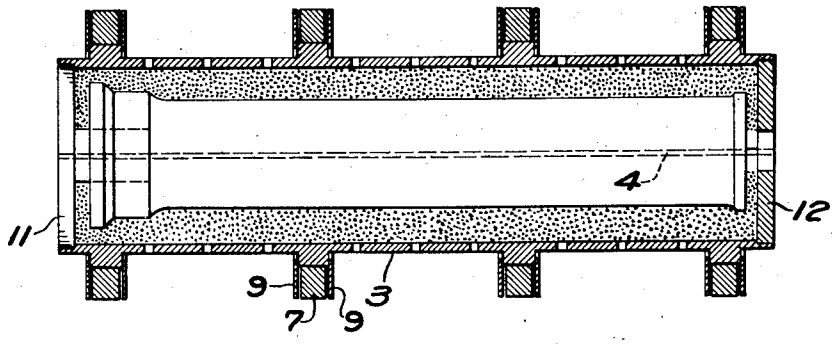


FIG. 2

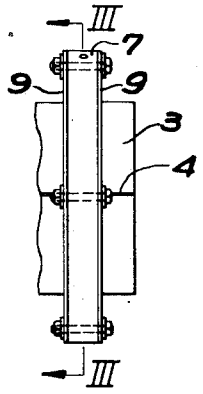


FIG. 3

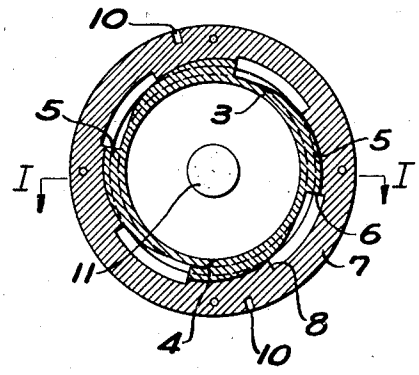
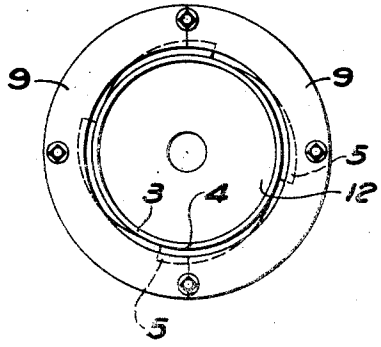


FIG. 4



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By

Attorney

Patented Aug. 14, 1928. 1,681,085

UNITED STATES PATENT OFFICE.

WILLIAM H. BEATTY, OF BIRMINGHAM, ALABAMA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO BEATTY, PALMER AND BEATTY, A PARTNERSHIP COMPRISED OF WILLIAM HENRY BEATTY, CLARENCE J. PALMER, AND WILLIAM H. BEATTY, ALL OF BIRMINGHAM, ALABAMA.

FLASK FOR CENTRIFUGAL SAND MOLDS.

Application filed May 12, 1927. Serial No. 190,800.

My invention relates to new and useful improvement in a flask for centrifugal sand molding apparatus, and is more particularly concerned with the development and perfection of a metallic flask adapted to receive a sand mold and to be spun for the production of pipe and like articles therein.

More particularly, my present invention is an improvement on the flask shown and described in Letters Patent No. 1,620,427, issued to me on March 8th, 1927, wherein I show a tapering flask associated with a centrifugal molding machine, the flask being of cylindrical structure with a taper therein provided to facilitate the removal of the sand mold and finished casting.

In my present invention, I have conceived that the removal of the casting can be facilitated and the operation of the machine improved if provision for the ready release of the casting be had by the expansion of the flask. To this end my improved flask is provided with a continuous slot from end to end thereof and has co-acting clamp means by which it can be contracted until the slot is closed and held in this position during the molding operation. When it is desired to strip the casting, the clamp means are adjusted to permit the expansion of the flask and therefore the ready and easy removal of the sand and finished casting therefrom.

More particularly, my invention contemplates the provision of a plurality of cam-like wedge enlargements on the split flask with which complementary wedge rings coact so that by a movement of the rings in one direction the flask is contracted and closed to form a complete circle, and by a movement of the rings in the opposite direction the flask will open out responsive to its inherent resiliency and will thus expand itself and release the sand mold and casting.

A further advantage of my present arrangement is, that the wedging rings will materially reinforce the split pipe and serve as riding rings by which the flask is rotated on roller supports, not shown.

A further distinctive feature of my invention relates to the arrangement of one longitudinal row of the wedge lugs to overlap the slot in the pipe whereby these lugs will serve as an external brace when engaged by the wedges to hold the flask to its true diameter.

My invention further comprises the novel details of construction and arrangements of parts, which, in their preferred embodiments only, are illustrated in the accompanying drawings which form a part of this specification, and in which:—

Fig. 1 is longitudinal cross-sectional view taken on the line 1—1 of Fig. 3, showing the flask expanded and the finished casting therein.

Fig. 2 is a bottom view of one end of the flask broken away.

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 2, but showing the flask contracted to its operating position.

Fig. 4 is an end view of Fig. 1.

Similar reference numerals refer to similar parts throughout the drawings.

In my present invention it is contemplated that the flask will be used with a centrifugal molding machine such as is described in my Letters Patent aforesaid, but since its novel features may be of value in connection with many other types of sand mold flasks, it is not contemplated that my present invention is limited to any particular shape of flask or to any particular manner of carrying out the molding operation therein.

In the embodiment of my invention illustrated, I show a cylindrical metal flask 3 provided with a slot or slit 4 extending from end to end thereof so as to form a unitary flask structure capable of being contracted. A vent or slit 1/4" wide will serve in 10" pipe flasks. It is contemplated that the removal of metal to form the slot will cause the flask when contracted to expand whenever pressure is removed which has effected a closing of the slot.

It is obvious that various means may be employed for effecting a compression of the split flask to close the slot, hence I do not desire to be limited to the specific compression

means shown, though I regard them as preferable. The compression means shown, comprises a plurality of sets of cam shaped lugs 5, either welded to, cast integral with, or otherwise attached to the flask, such lugs rising from the outer periphery of the flask and each presenting an outer eccentric bearing terminating in an abrupt radially disposed shoulder 6. I show four of these lugs in each set arranged in the same transverse plane and forming a corelated group adapted to coact with their respective compression rings 7, each of which has formed on its inner periphery a plurality of complementary cam shaped lugs 8 which are so shaped as to permit each ring to be assembled about its respective shouldered portion of the flask and then, by turning it about the long axis of the flask, its flanges 8 can be caused to co-act with the complementary cam lugs 5 and to compress the flask until the slot 4 is closed. I provide a pair of flange rings 9, formed in half sections, which are bolted to each side to each ring so as to clamp the projecting sides of the lugs 5 and hold the rings in position thereon both against lengthwise displacement and also against angular relative movement calculated to release their clamping effect on the flask.

It will be observed that the slot 4 is preferably arranged so as to underlie one longitudinal series of lugs 5 so that their overhung edges will serve as outer bearings for the opposite free edge of the flask and by engagement therewith will hold the flask against internal pressure in its true working shape. While I have shown the flask as cylindrical, it is to be understood that its shape may correspond to the contour of the mold to be formed therein or that it may have the taper desired, such as shown in my patent aforesaid, the particular shape of the flask itself being unessential.

In operation, the rings 7 and their clamp rings 9 are assembled on the flask, in number according to the length of the flask and to the reinforcement desired, and then are turned by any suitable means, such for instance as a spanner-wrench or the like co-acting with the holes 10, until the walls of the slot in the flask are brought together, when the flask is ready for service. The flask is then used in the manner of an ordinary flask to form the sand mold therein, and after the sand mold is formed the casting operation takes place in accordance with any desired practice. For centrifugal molding the rings 7 will engage suitable roller supports. The flask is contracted to a true circle, and the ends of its internal periphery are then turned concentric with the rings 7 and thus form seats to receive and center the bell head sand-surfaced core 11 at one end and the spigot end sand-surfaced core 12, said latter core taking the place of the centering head when the sand mold is being formed. After the molding operation, when it is desired to strip or shake out the flask, the rings 7 are unclamped by releasing the clamp bolts engaging the rings 9, and then rings 7 can be moved reversely to release the compression on the flask cam lugs 5 and thereupon the flask will spring open, releasing its grip on the sand casting and permitting both to be shaken out or removed with great facility. It is important to note that this expansion of the flask makes it possible to mold pipe therein centrifugally with both a bell or hub and a spigot bead and to remove the casting easily from the expanded flask.

Though I have described with great particularity the details of the embodiment of the invention herein shown, it is not to be construed that I am limited thereto, as changes in arrangement and substitution of equivalents may be made by those skilled in the art without departing from the invention as defined in the appended claims.

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

1. A flask of the character described slit longitudinally to provide for a limited contraction thereof, lugs along one edge of the slit portion of the flask which are adapted to overhang the other edge portion, and means to contract the flask, bringing its edges into abutting relation under said lugs, substantially as described.

2. A flask of the character described, having a longitudinal slit extending from end to end thereof, a plurality of sets of cam lugs arranged in parallel transverse planes at right angles to the long axis of the flask, and rings having internal wedges, each ring being adapted to surround the flask and with its wedges disposed to co-act with its respective set of cam lugs on the flask, substantially as described.

3. A flask according to claim 2, in which the slit is arranged to underlie one longitudinal row of lugs which are detached from the free edge of the pipe and overhang the same, as and for the purposes described.

4. A flask according to claim 2, in which each ring carries clamp means adapted to engage and hold it in adjusted position on the flask.

5. A unitary flask having a normally open slit longitudinally thereof, and means to contract the flask and close the slit, comprising rings adapted to serve as riding rings on which the flask is rotatable about its long axis.

6. A centrifugal molding flask longitudinally slit and resilient to permit of its mechanical contraction, riding rings for supporting the flask during rotation, and means for engaging the rings with the flask to draw the edges of the slit together.

7. A centrifugal molding flask longitudinally slit and resilient to permit of its mechanical contraction, riding rings for supporting the flask during rotation, said riding rings embracing the flask and loosely fitting thereover to permit longitudinal and angular displacement with respect thereto, and coacting wedge means carried by the flask and the riding rings respectively for firmly grasping the flask and drawing the edges of the slit together when supporting the flask.

In testimony whereof I affix my signature.

WILLIAM H. BEATTY.