

(No Model.)

2 Sheets—Sheet 1.

W. WHITE.
FLASK FOR CASTING PIPE.

No. 487,810

Patented Dec. 13, 1892.

Fig. 1

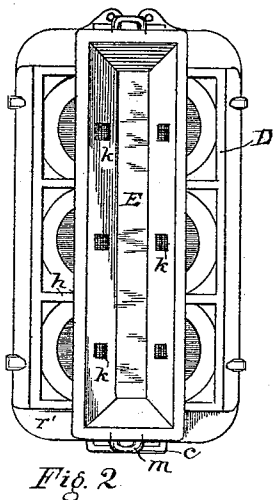
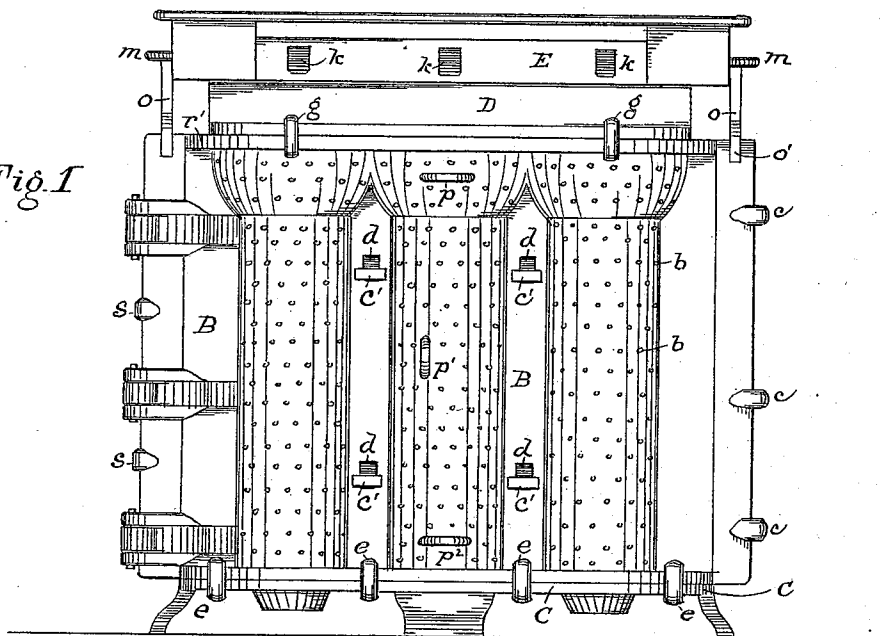


Fig. 2

Fig. 3

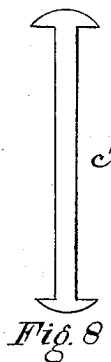
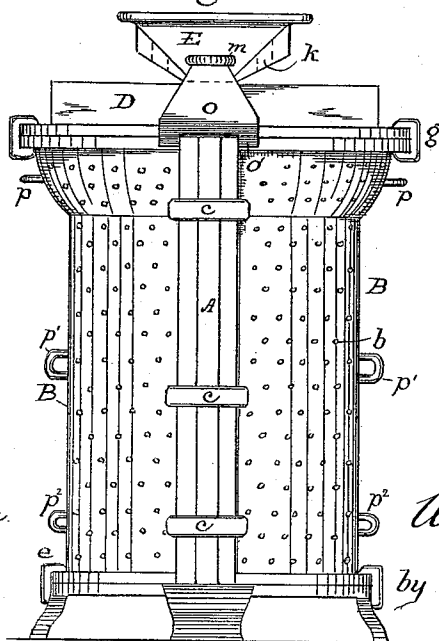


Fig. 8

WITNESSES

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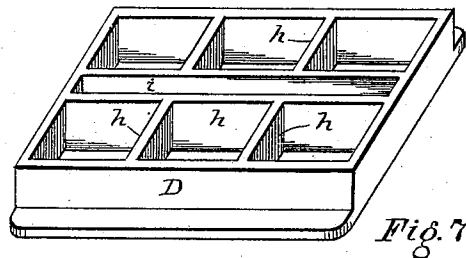
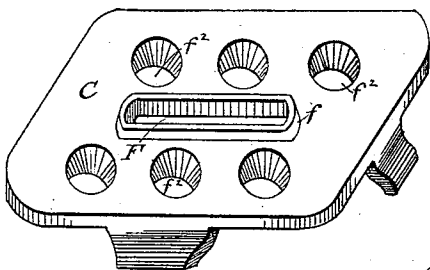
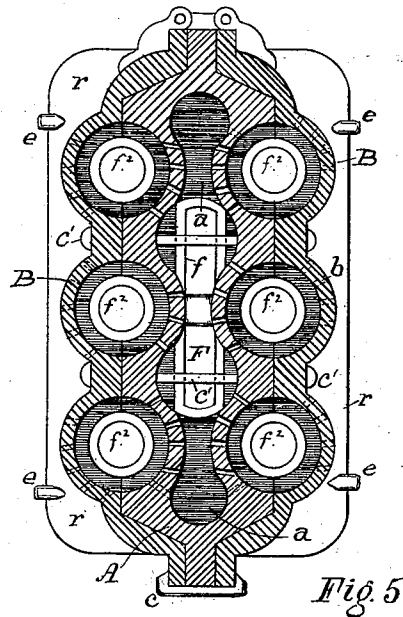
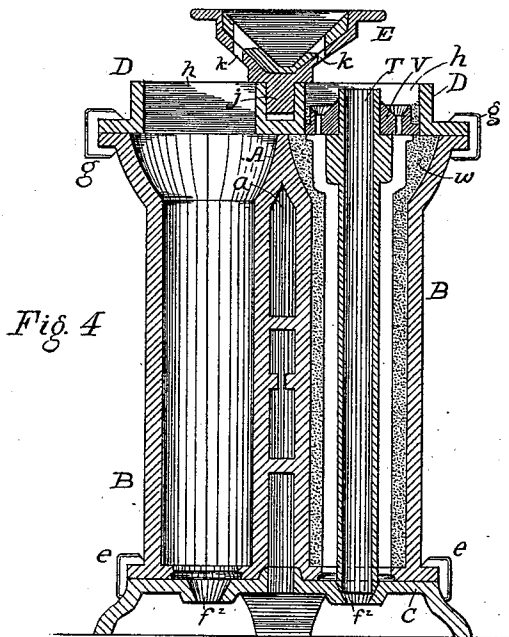


Fig. 6

Fig. 7

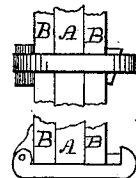
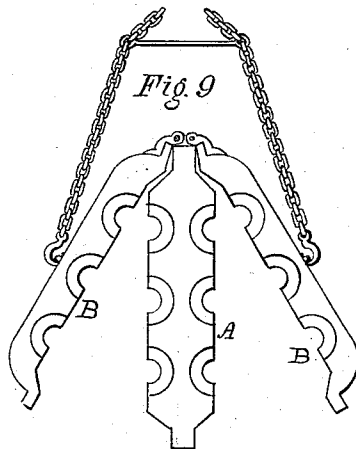


Fig. 9

Fig. 10

WITNESSES
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UNITED STATES PATENT OFFICE.

WILLIAM WHITE, OF CLEVELAND, OHIO.

FLASK FOR CASTING PIPE.

SPECIFICATION forming part of Letters Patent No. 487,810, dated December 13, 1892.

Application filed April 25, 1892. Serial No. 430,494. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WHITE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Flasks for Casting Pipes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in flasks for molding and casting pipes.

The object of the invention is to increase the efficiency of the apparatus and the economy of the work in the casting of pipe, particularly gas and water pipe, and thereby to cheapen the cost of the pipe; and it consists in the novel features of construction and combination of parts hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 represents a side view, in elevation, of the apparatus complete. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation. Fig. 4 is a central vertical section showing on one side the empty flask and on the other the filled mold with the core and core-head in place ready for pouring. Fig. 5 is a central horizontal section. Fig. 6 is a perspective view of the chill-plate; Fig. 7, a like view of the head-frame; Fig. 8, a view of the locking-clamp *c'*; Fig. 9, a diagram showing the manner in which the flask opens to discharge the pipes, and Fig. 10 a detached view showing a modification of the construction of the clamps for holding the flask shut.

The flask is designed for molding a number of pipes at once, and consists of a center piece having wing-pieces hinged to it, one on each side, a chill-plate on which the flask is mounted and on which the bead-rings may be carried, a head-frame mounted on the flask, and a runner-box mounted on top of all.

A represents the center piece, and B B the wings, both hinged to the same edge of the center piece.

C is the chill-plate, D the head-frame, and E the runner-box.

T represents the cores, hollow and perforated in the usual manner; V, the core-head, and *w* the sand filling, in which the molds are formed.

The center piece contains on each side the

half-mold of the pipes. Channels *a a* are formed in the center piece for venting the molds, and perforations *b b* are provided in the center piece and the wings to permit the escape of gas. The perforations in the center piece communicate with the channels *a a*, while those in the wings communicate, of course, with the external air.

The flask when in use is locked shut by clamps *c c* of the usual or any suitable kind, and additional clamps *c' c'*, passing through openings *d d*, formed in the wings and center piece, are employed to lock the flask centrally and prevent spreading or bulging of the wings, which is liable to occur from the weight of the metal when the flask is locked only at the edges, and which when it does occur either spoils the mold, causes it to leak, or casts the pipe too thick. The chill-plate is clamped to the flask by clamps *e e*, of the usual kind. It is formed with central opening F, surrounded by a flange *f*, which fits into the lower end of the center piece, so as to bring the opening F in communication with the openings *a a*, and also to cause the openings *f*² to register correctly with the molds. The openings *f*² in the chill-plate receive the lower ends of the cores T, and may have the usual bead-rings inserted therein, or preferably the bead may be formed in the lower part of the mold itself. This interlocking of the chill-plate with the flask prevents the chill-plate being moved by any accidental blow when hoisting or swinging the flask, as sometimes happens when the chill-plate is flat on top, and which if it occurs causes the pipe to be cast thin on one side.

The head-frame D fits upon the flat top of the flask and is clamped thereto by clamps *g g*. It nowhere projects beyond the flask sides or rim and is not liable to be accidentally displaced. The frame D is divided by partitions *h h* into compartments corresponding with the separate molds of the flask, each compartment receiving the core-head *v* of its corresponding mold. A recess *i* in the center of the head-frame receives a rib *j* on the bottom of the runner-box when the latter is in position. The runner-box is preferably made in the form of a widely-flaring trough lined with fire clay or brick and having sprue-openings *k k* in its sides, opening downward

directly over the inner side of the core-heads which contain the gates or runners leading into the molds. The box has eyes *m* for lifting it and feet *o o*, having projections *o'*, fitting over the edges of the flask, which, together with the rib *j*, hold the box firmly in place and prevent its shifting while the molds are being poured.

pp'p² are eyes on each side of the flask for lifting and swinging the same.

The operation of the device is as follows: The wings being closed upon the center piece and securely clamped thereto, the flask, by means of suitable hooks and chains, is swung from a crane by the eyes *p*, or by hooking under the flange *r'* at the top of the flask, and lowered upon the chill-plate in its proper position, which is insured by the opening in the bottom of the center piece fitting upon the flange *f*. The chill-plate is then clamped to the bottom flange *r* of the wings, the patterns set, and the flask is then ready to be filled and rammed in the usual way. In the swinging of the flask into or from the drying-oven the hooks by which it is swung from the crane, whether by the flange *r'* or the eyes *p*, disengage without jar as soon as the flask rests upon the floor, and no sand is jarred loose, as sometimes occurs when heavy flasks are swung by a chain hooked around them. When the molds are dry, the cores are set and the core-heads placed each in the proper compartment of the head-frame *D* and the frame is filled and rammed to the top of the core-head. The runner-box *E* is finally placed in position and the metal is poured. In casting the metal is poured from the ladle into the runner-box *E* and flows through the sprue-holes *k* directly downward upon the inner side of the core-head and through the gates therein into the mold. By this means there is no accumulation of metal upon or about the core-head, as usually occurs. No pouring-basin about the core-head is necessary and there is no heavy runner to be removed and remelted, as the small amount of metal left above the core-head when the casting is finished is very easily knocked off and removed. By stopping any of the sprue-holes *k* by means of a fire-clay plug or otherwise the pouring of the mold beneath it is prevented, and thus any number less than the whole of the molds may be poured, as desired. In case one or more of the molds should break down while being poured, as sometimes happens, the pouring of that mold may be instantly stopped by thus plugging the hole *k*, that feeds it, without interfering with the other molds, and much waste of metal may thus be saved, which is difficult to do with the usual methods and apparatus. When the casting is finished, the cores drawn, and the pipe cool enough to draw, the flask is hoisted out of the casting-pit, being swung by the eyes *pp*. The clamps are mostly removed or opened, and the crane-hooks being shifted to the eyes *p'p'*, or to *p* on one side and *p²* on the other, the flask is

again swung clear, when it will turn and rest with the hinge side of the flask upward. The remaining clamps are now removed, when the flask will open, as shown in Fig. 9, allowing the pipes to roll out upon suitable ways placed to receive them.

I prefer to form the clamps *c'* in the form of a double-headed bar, as shown in Fig. 8, and to make the openings *d* long enough vertically to allow the head of the clamp to be passed through, after which the clamp is turned with its head horizontal, as shown in Fig. 1, and fastened by a wedge or other proper means. This leaves the upper part of the hole *d* in free communication with the interior hollow *a* of the center piece and assists the venting of the molds. I may, if preferred, in place of using the common clamps at *c* employ a clamp hinged to one of the wings *B* and having a head or hook at the free end to close over the other wing and fasten with a wedge, as shown in Fig. 10. This prevents the losing of the clamps by their being buried under the sand or mislaid. The heavy hinges by which the wings are secured to the center piece will usually hold that edge of the flask sufficiently tight; but, if need be, clamps *s s* may be used of the common kind in use in all foundries. As an additional means of preventing leakage at the joints of the flask where the wings join the center piece, they are angularly deflected, as seen in Fig. 5, which, with their extended surface, effectually prevents leakage. The venting of the cores is done in the common way, the core end as well as the core-print being fitted to the holes *f²* of the chill-plate, the hollow of the core communicating therethrough with the external air. The runner left in the box *E* contains substantially all of the metal not actually utilized in the cast.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the three-part flask having a hollow center piece with wings hinged to each side at the same edge thereof, a chill-plate having an opening communicating with the hollow of the center piece, and a flange to register the chill-plate with the flask, a head-frame fitting upon the top of the flask, and a runner-box mounted thereon and having sprue-holes opening above the molds, substantially as described.

2. The combination, with the flask having hollow center piece and wings hinged to each side at the same edge thereof and a chill-plate having an opening to communicate with the hollow of the center piece, of the head-frame having compartments corresponding with the molds of said flask and the runner-box having sprue-holes opening above the molds, substantially as described.

3. The combination, with the flask having hollow center piece and wings hinged to each side thereof at the same edge and a chill-plate having an opening to communicate with the hollow of the center piece, of the head-frame having compartments corresponding

with the molds of the flask and the runner-box mounted thereon and having a sprue-hole over each compartment of the frame, substantially as described.

5 4. The combination, with the three-part flask having the wings hinged on opposite sides of the hollow center piece at the same edge thereof and having oblong ventilating-openings in the wings and center piece, which
10 openings coincide when the flask is closed, of the double-headed locking-clamp *c'*, passing through the three parts of the flask in the oblong ventilating-openings between the molds and adapted by being rotated in such
15 openings to lock the flask centrally without impairing the ventilation thereof, substantially as described.

5. In a three-part flask having the wings hinged to the center piece on opposite sides at the same edge thereof, the combination, 20 with a center piece having its meeting edges reduced in width from the parting-line of the molds, of wings having their meeting edges correspondingly projecting beyond the parting-line of the molds, whereby a doubly-de- 25 flected angular joint is formed between the wings and center piece at each edge of the flask, substantially as described.

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

WILLIAM WHITE.

Witnesses:

LOREN PRENTISS,
WM. G. TAYLOR.