2 Sheets--Sheet 1.

I. M. KENWORTHY.

Improvement in Molding and Casting Pipe.

No. 128,493. Patented July 2, 1872.

Fig. 1.

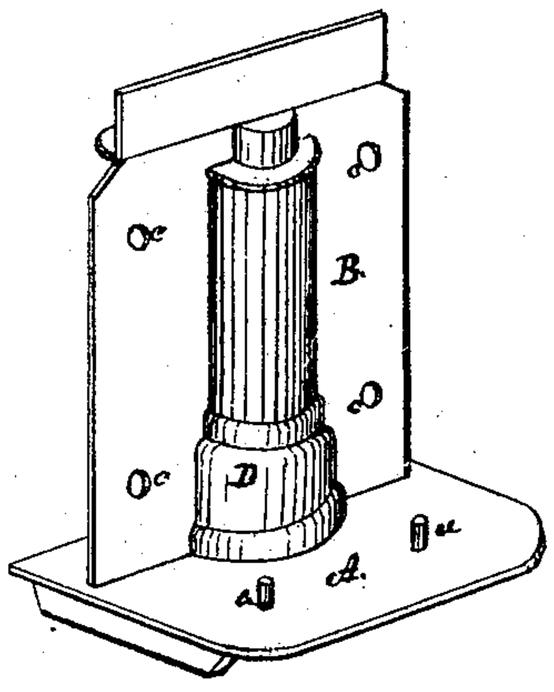


Fig. 2.

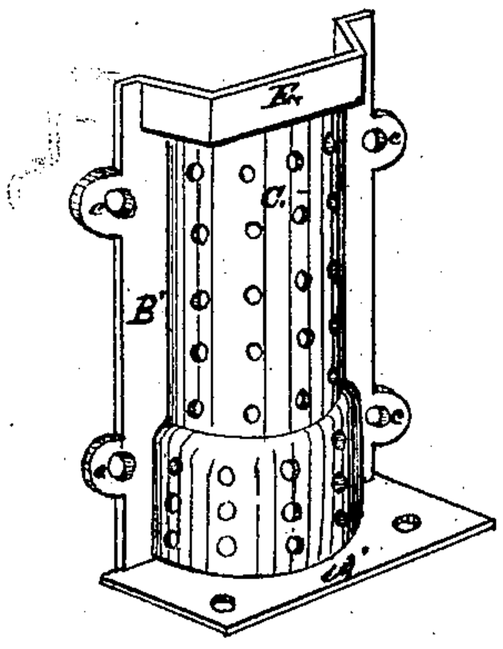


Fig. 3.

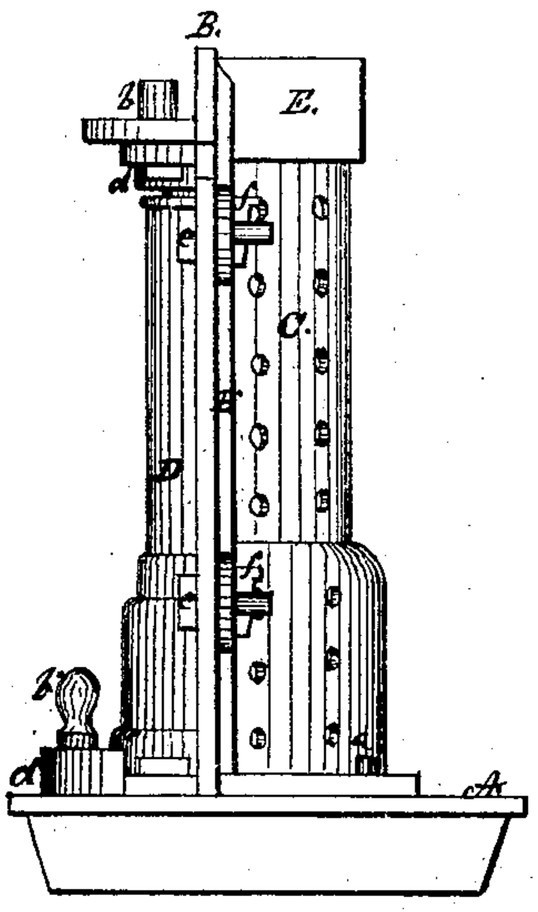
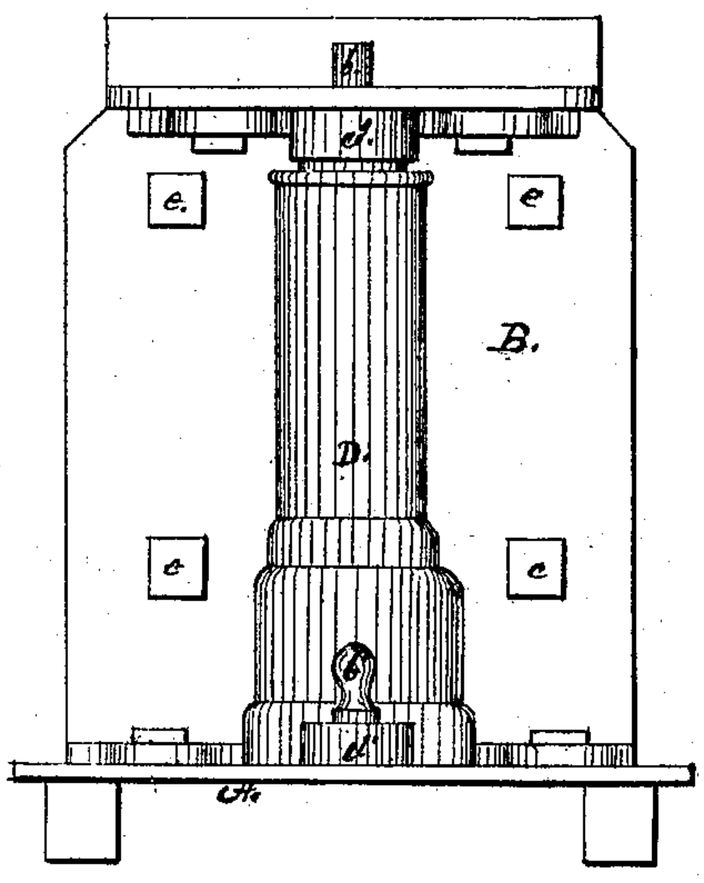


Fig. 4.



Witnesses
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2 Sheets--Sheet 2.

I. M. KENWORTHY.

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Fig. 5.

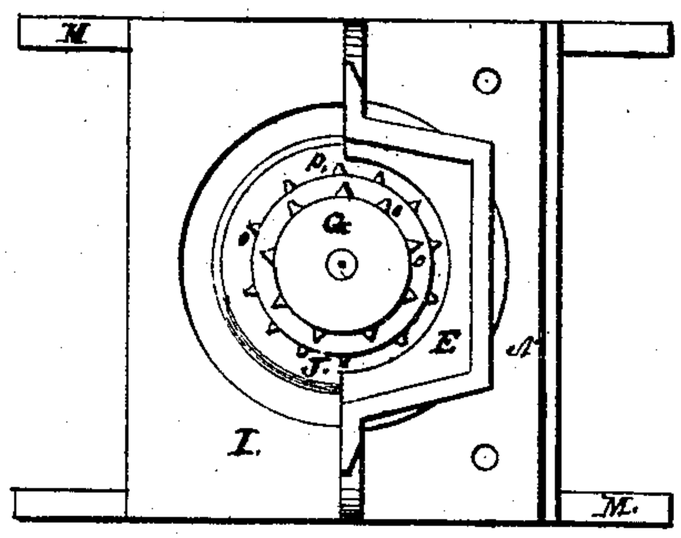


Fig. 6.

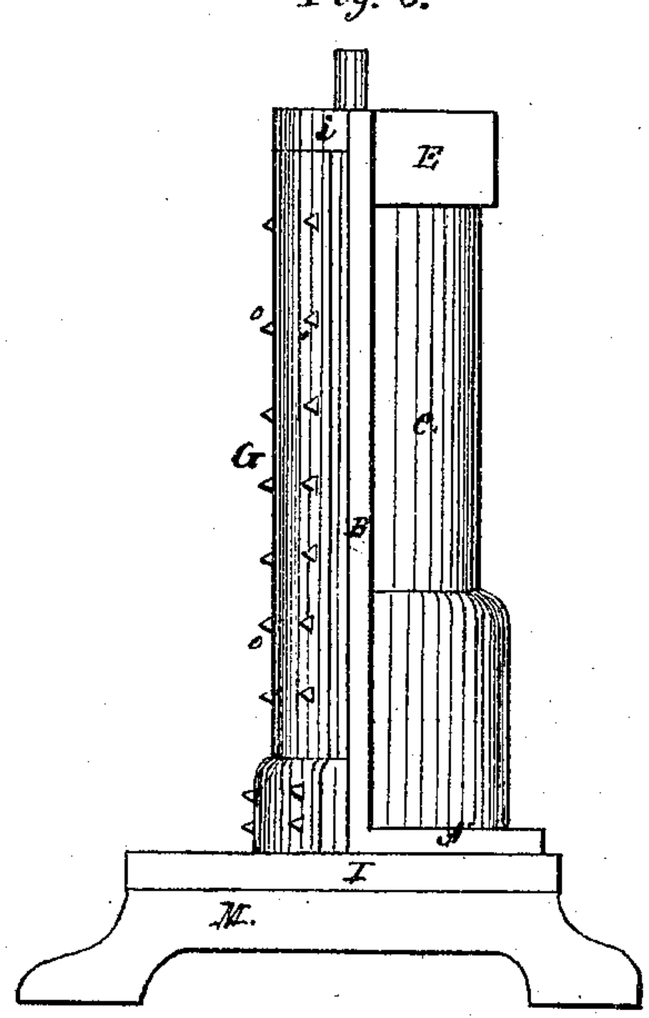


Fig. 7.

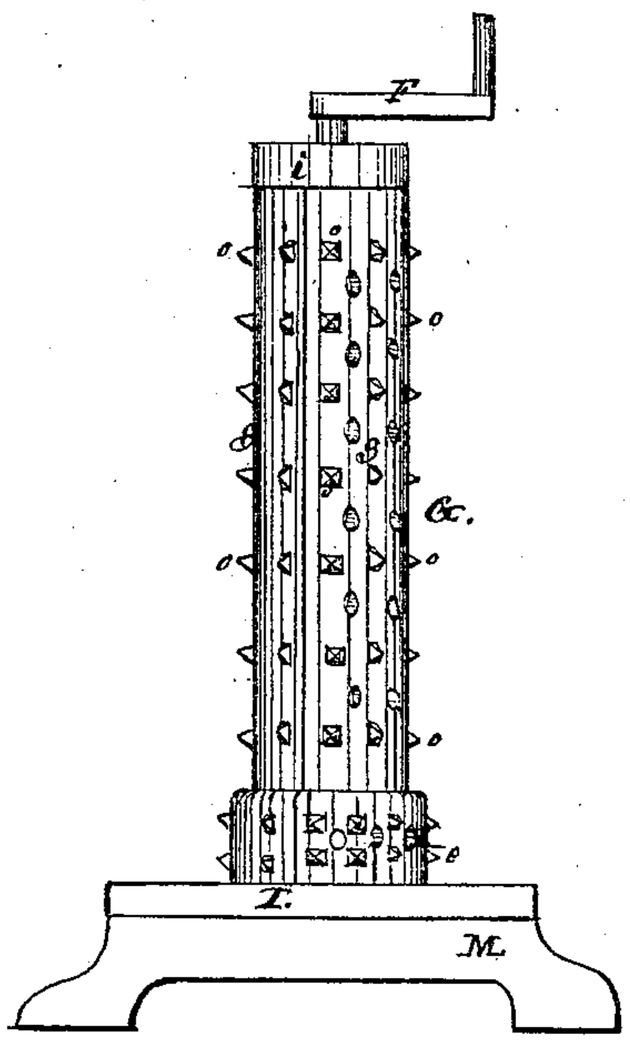
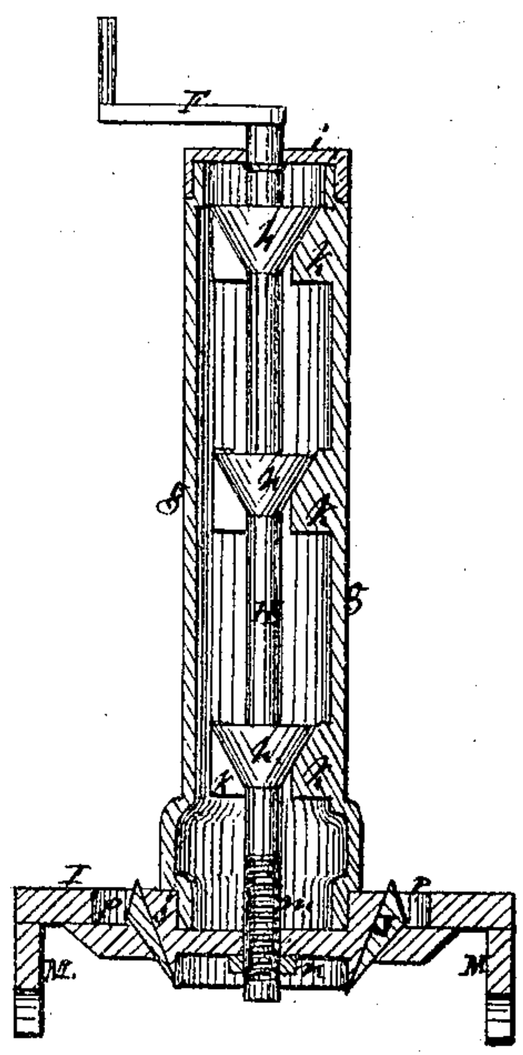


Fig. 8.



Witnesses
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UNITED STATES PATENT OFFICE.

ISAAC M. KENWORTHY, OF CARBONDALE, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO WALTER HARVEY AND WADE BUCKLEY, OF PORT JERVIS, NEW YORK.

IMPROVEMENT IN MOLDING AND CASTING PIPE.

Specification forming part of Letters Patent No. 128,493, dated July 2, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ISAAC M. KENWORTHY, of Carbondale, Luzerne county, Pennsylvania, (assignor to himself and to WADE BUCKLEY and WALTER HARVEY, of Port Jervis, Orange county and State of New York,) have invented certain new and useful Improvements in Core-Making, Molding, and Casting Iron Pipe for water and gas mains, pillars, and for other purposes; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Plate I—Figure 1 represents a perspective view of the horizontal base and vertical molding-board, showing the pattern for molding pipe in a proper position for one-half the flask. Fig. 2 shows a perspective view of the flask. Fig. 3 shows an edge view of the molding-board or frame, pattern, and flask, all secured in position for molding pipe, &c. Fig. 4 shows the rear-side view of the molding-frame and pattern.

Plate II—Fig. 5 represents a plan or top view of the base of the mold, showing one-half of the flask on, and an end view of the expansible core-tubes or frame in its conical support. Fig. 6 shows a vertical edge view of the same. Fig. 7 shows a vertical cylindrical view of the segmental expansible core-frame or ventilating-tube and base-support forming the bottom of the mold for casting pipe, tubing, pillars, &c. Fig. 8 is a sectional view of the same, showing the mechanism for expanding the segments.

My invention relates to the manufacture of iron pipe for water and gas mains, pillars for buildings, large tubing for bridges and other structures, and hollow or cored castings generally; and it consists, first, in the construction of the expansible core-pipe and its conical cup-seat or support; and second, in the vertical molding-frame, and the method of applying and liberating the pattern from the mold; and also in the construction of the flask and the manner of applying and securing it to the molding-frame.

To enable others to make and use my improvements I will describe them more fully, referring to the drawing and the letters marked thereon.

A is the platform or base of the molding-board or frame. B is the vertical molding-board or face for the parting or one-half of the flask *c*, which may be of any desired height for the length of the pipe or height of the pillar to be cast. D is the pattern for outside of the pipe, which stands vertically in the opening made through the face-plate B, it being the size and configuration of the outline of the pattern D, so that it fills the opening closely, when just one-half of the pattern protrudes to a line with the face of the plate B, to make a central parting of the flask C. The pattern D is provided with lugs *d d'* at the top and bottom, on its rear side, into which are inserted pins *b b'* to hold it in place. The flask C is placed centrally with the pattern by the steady-pins *a a* projecting up from the base A, through corresponding holes in the plate A' on the bottom of the flask, and secured firmly to the face of the frame B by bolts *e e* and keys *f f*, put through the holes *c c* in the vertical frame, and the ears or flanges B' on the flask. The pattern and flask being secured in the manner as above described, the molding-sand is put into the hopper E on the top and is rammed sufficiently, when the pins *d d'* are removed, and the pattern D started back and relieved from the sand, the keys *f f* and bolts *e e* removed, when the flask C, forming one-half of the mold, is lifted off the base A and set in position, when another flask is set on and secured, the pattern again adjusted and secured in its place, and the other half of the mold made in the same manner. G is my expansible core-barrel or ventilating-pipe, on which the loam or sand-core is made to adhere without the use or winding with straw rope. It is constructed with curved staves *g*—three or more in number—held together in cups *i* and *j* at the top and bottom, by a shaft, H, extending longitudinally through the center, on the lower end of which is a screw-thread fitting in the cup *i*, and is provided with a series of cones, *h h*, at the required intervals, which impinge against corresponding lugs *k k* made on the inside of the segmental staves *g g*, and force them outwardly, to fasten in the

cut cups *i j*, while they form an inward support for the core. A wrench or crank, F, is fitted to the top projecting portion of the shaft H, which forms one of the journals, to true up the core, and also to tighten or loosen the segmental staves *g*, there being a jam-nut, *n*, on the lower end of the screw *m* to hold the shaft firmly in its place, the staves *g* being perforated in the usual manner to allow the gas to escape inwardly, also provided with projecting nibs *o o o* to aid in holding on the loam and sand. The series of staves *g* are beveled on their edges and made thin, so that they will easily collapse to remove the outside coating, or break it up to remove the core from the pipe after casting. I is the base of the mold, in which the core G is supported in a loose or stationary conical socket, J, and outside of which is an annular sunk-in groove, *p p*, to be filled with molding-sand to form the end face of the socket or flange of the pipe. The base I is elevated on timbers M M or placed over a pit, so that the core can be keyed to its seat and allow the gas to escape at the bottom through the holes in the conical cup as well as at the top.

The core being properly secured on the base I of the mold in a vertical position, the molds made in the flasks C C are then placed on the base around it and fastened together by the bolts *e* and keys *f*, and are ready to receive the melted metal.

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

1. The expansible core-pipe, constructed in the manner herein shown and described, when combined with the conical socket J, and arranged to operate substantially as and for the purposes set forth.

2. The supporting base A and the vertical molding-board or frame B, when said frame is provided with an opening through it to admit and adjust the pattern D to the face, so that one half can be molded accurately and the pattern withdrawn without moving the mold or flask, as herein specified.

3. The flask C containing the molds, provided with a hopper, E, and a right-angle base-support, A′, as constructed, and secured to the base A and vertical face frame B for molding pipe, in combination with the base I and core for casting the same, substantially as set forth.

In testimony whereof I hereunto subscribe my name.

ISAAC M. KENWORTHY.

Witnesses:
J. B. WOODRUFF,
A. L. YOUNGS.