S. Fulton,

Molding Pipe.

No. 32,359. Patented May 21, 1861.

Fig. 1.

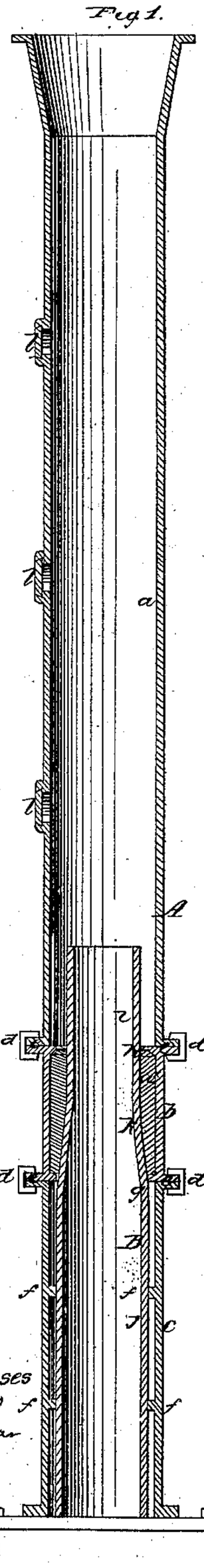


Fig. 2

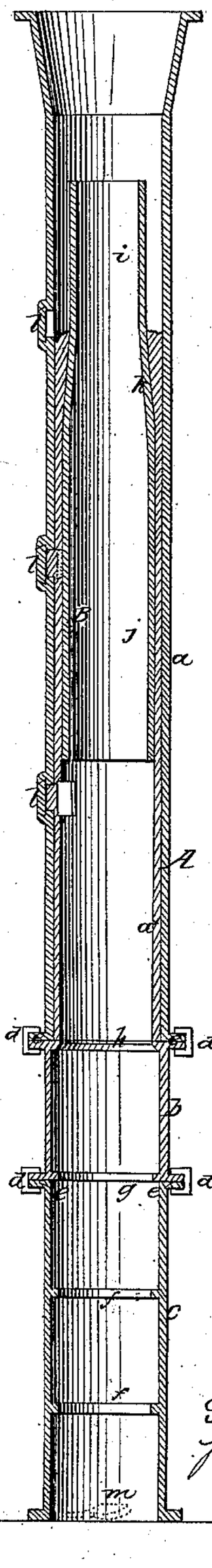


Fig. 3.

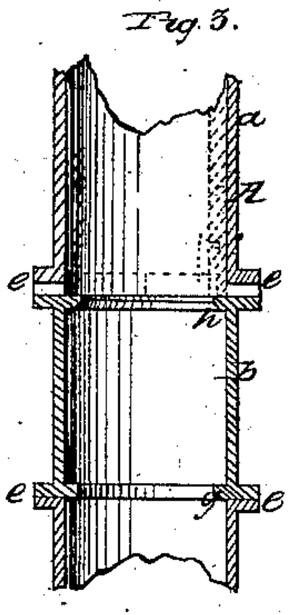
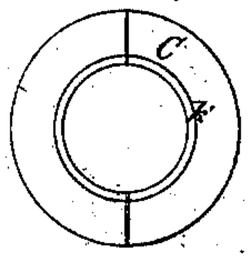


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

SAMUEL FULTON, OF CONSHOHOCKEN, PENNSYLVANIA.

IMPROVEMENT IN CASTING PIPE.

Specification forming part of Letters Patent No. **32,359,** dated May 21, 1861.

To all whom it may concern:

Be it known that I, SAMUEL FULTON, of Conshohocken, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Forming Molds for Casting Small Pipes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figures 1 and 2 are vertical sections of a flask with a pattern within it, also bisected vertically, the two parts aforesaid showing one part of my invention; Fig. 3, a vertical section of a portion of the flask, showing the manner in which beads may be cast on the pipes; Fig. 4, a detached view of the pattern by which the mold is formed with the recess to admit of the bead being cast.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to avoid the manipulation and consequent time and labor hitherto required in forming molds for casting small metal pipes. To this end I employ a flask and a pattern, the former having its internal diameter greater than the external diameter of the pipes to be cast, and the latter corresponding in its external diameter to the internal diameter of the pipes, and by means of any suitable power drawn vertically through the flask while the flask is supplied with sand, thereby forming the mold without the operation of "hand-ramming." The flask is also provided with slides at suitable points, to admit of boss-patterns being applied to the pattern for the purpose of forming the mold so that bosses may be cast on the pipes without the trouble and embarrassment hitherto attending the forming of molds for such purpose. A ring or bead pattern is also used in connection with a joint in the flask, so as to enable the mold to be so formed that pipes may, when required, be cast with beads at one end.

To enable those skilled in the art to fully understand and use or practice my invention, I will proceed to describe it.

A represents a flask, which is of cast metal and formed of three parts, *a b c*, connected together by hooks *d*, which are fitted over flanges *e*, as shown clearly in Figs. 1 and 2. The two upper parts, *a b*, constitute the flask proper and are equal in diameter. The part *c* is also of the same diameter; but it has rings *f* (two or more) cast on its inner side and projecting therefrom a suitable distance, the lower end of the part *b* of the flask, also a ring, *g*, projecting from its inner surface and corresponding in dimensions with the rings *f* of the part *c*. The upper end of the part *b* also has a similar ring, *h*, the under side of which is beveled. The upper part, *a*, of the flask, it will be seen, is not provided with any rings or projections.

B represents a pattern which is of cylindrical form, of cast metal—at least that would be the preferable material. This pattern is not of equal diameter throughout, the upper portion, *i*, being considerably smaller than the lower part, *j*, and the portion *k* between being of curved form. The upper part, *a*, of the flask is provided with slides *l* at suitable distances apart, said slides, when opened, affording a communication with the interior of the flask at certain points for the purpose hereinafter described.

In order to form a mold for casting a pipe without a bead, the operation is as follows: The pattern B is first placed within the lower part, *c*, of the flask, and the part *c* secured permanently in a vertical position. The pattern B is then lowered in the part *c*, the pattern just fitting within the rings *f*, which serve as guides for the pattern, and insure its concentric position within the flask. The part *b* is then clamped to the part *c*, and the part *a* clamped to the part *b* by the hooks *d*. Sand is then poured into the top of the flask, the top of part *a*. This sand passes down within the flask and rests on the ring or projection *g* of the part *b* of the flask, said ring or projection forming a bottom. As soon as the part *b* of the flask is filled with sand, the pattern B is elevated by any convenient power, and the sand is still poured into the flask as the pattern is drawn through it, so that the sand will keep nearly up to the top of the pattern, and the latter may be drawn through the flask as rapidly as the flask may be supplied with sand. The drawing upward through the flask of the pattern B forms the shell of the mold, the sand (designated by $a^{\times}$) being compressed between the flask and the pattern, which ascends and compresses the same with a wedge-like action due to the curved taper form of the pattern,

and the usual hand-ramming being thereby avoided. The part *b* of the flask is an important feature of the invention, as it enables the pattern to form a compact sand surface or mold at the lower part of *a*. This result could not be obtained without the part *b*, as there is not sufficient space between the upper part of the pattern and the flask to contain enough sand to admit of the mold being properly formed at the commencement of the elevation of the pattern. The sand in the part *b*, it will be understood, forms no part of the mold proper, and it is removed at the commencement of each operation.

When pipes are to be cast with a bead at one end, the upper part, *a*, is detached from the part *b* before the pattern B is drawn entirely through the latter, and a ring, C, (see Fig. 4,) is introduced between the two parts *a b*, said ring having a bead, *k'*, on it. The part *a* is then lowered and clamped, and the bead *k'* of course leaves its imprint in the sand. (See Fig. 3.) The pattern B is then again raised and drawn through the flask. The usual cores are used in casting the pipes, and the ring C is removed before the insertion of the core.

When pipes are to be cast with bosses on them, the slides *l* are opened as the larger part of the pattern B passes them, and the operator, by introducing a proper tool, scrapes away a portion of the compressed sand and places a boss-pattern, *m*, which is a section or portion of a ring or band, against the pattern B, and then replaces the sand. As the pattern B rises above the boss-patterns *m*, the latter drop to the bottom of the part *c*, and their imprints are left in the mold and cause the bosses to be cast on the pipes.

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

1. Forming molds for casting pipes by drawing up vertically through a proper flask, A, a pattern, B, while the sand is being poured into the flask, the pattern being formed, substantially as described, so as to compress the sand without any ramming or other treatment thereof.

2. Forming the flask A of three parts *a b c* the part *a* being smooth, and the parts *b c* provided with internal rings or projections, to operate as and for the purpose set forth.

3. In connection with the two parts *a b* of the flask, the ring C, provided with the bead *k'*, arranged as and for the purpose specified.

4. The boss-patterns *m*, when inserted through slides *l* in the sides of the flask and adjusted to the pattern B, as and for the purpose set forth.

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Witnesses:

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