# W. HAINSWORTH.

## MOLDS FOR STAMPING-MILL SHOES.

No. 182,314. Patented Sept. 19, 1876.

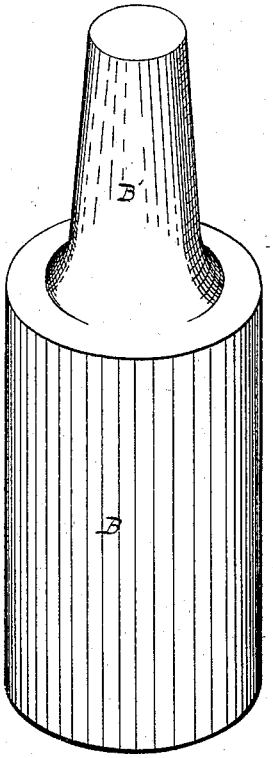


Fig. 2.

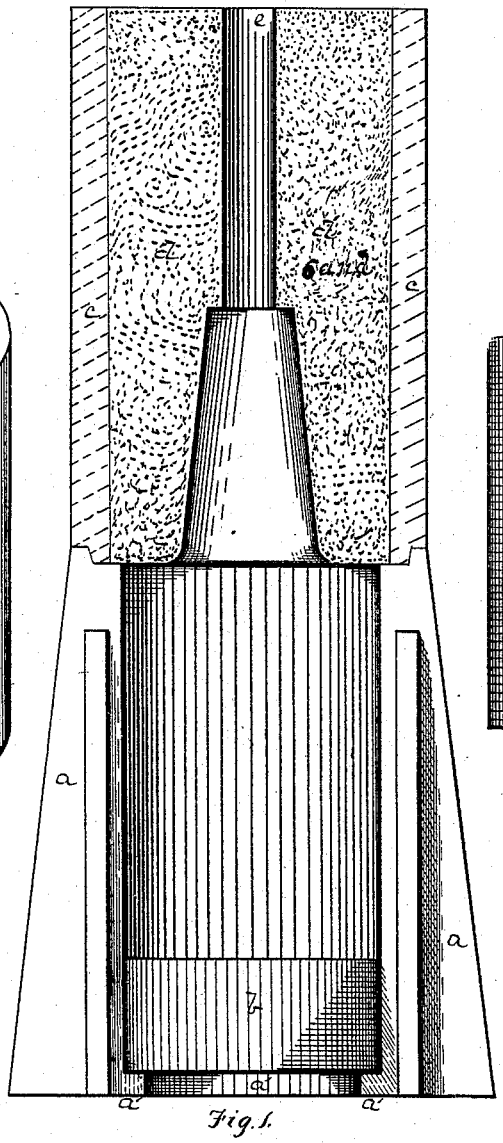


Fig. 1.

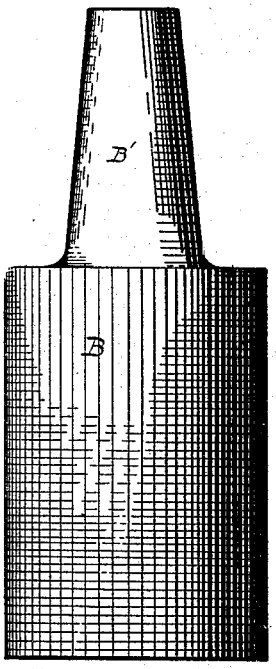


Fig. 3.

Witnesses.

Claudius L. Parker

J. E. Boggs.

Inventor

William Hainsworth

by George H. Christy

his Atty.

# UNITED STATES PATENT OFFICE

WILLIAM HAINSWORTH, OF PITTSBURG, PENNSYLVANIA.

## IMPROVEMENT IN MOLDS FOR STAMPING-MILL SHOES.

Specification forming part of Letters Patent No. **182,314**, dated September 19, 1876; application filed February 2, 1876.

*To all whom it may concern:*

Be it known that I, WILLIAM HAINSWORTH, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Molds for Casting Stamping-Mill Shoes and Dies; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a vertical sectional view of the mold employed, and Fig. 2 is a perspective view; and Fig. 3 is a side view of the shoe cast therein.

In the casting of shoes for stamping-mills a considerable loss is experienced from the breaking off of the stem at the place of its junction with the body of the shoe, caused, probably, by the ununiform shrinkage of the stem and body. I have overcome this difficulty by casting the body part in a metal mold, and the stem part in a sand mold; and I have further cheapened and facilitated the manufacture of such shoes, and also of the dies used in connection therewith, by providing the mold with a removable bottom, so that the same mold, with only a change of bottom, may be employed in the casting of shoes and dies of different lengths.

In the drawing, *a* represents the one half of a cast-iron or other suitable mold, of proper diameter for the casting of the shoe B therein. Its cavity is made long enough for the casting therein of the greatest length of shoe desired.

In order to adapt this mold for the casting of shoes of different lengths, I employ a removable metallic bottom, *b*, supported on a ledge, *a'*, or in other suitable way. This bottom being removable, its place may be supplied by other like bottoms of the same diameter, but greater or less vertical thickness, accordingly as a shorter or longer shoe is desired.

In connection with the cast-metal mold *a*, in which the body part B of the shoe is cast, I employ a sand mold, *d*, for the casting of the stem B'. This sand mold is made in any suitable known way, and is inclosed in a flask, *c*, and is provided with the usual gate *e*. The casting is done in the ordinary way.

The removable bottom I also employ in the casting of dies for stamping-mills as well as shoes.

Such dies and sleeves as are used in the art differ but little in diameter, but differ greatly in length. Hence, with removable and interchangeable bottoms, all the sizes of dies and shoes in general use can be cast with but very few molds.

I am aware that it is not new to insert a stopper in the upper open end of an ingot-mold for the purpose of limiting the length of the ingot to be made; but such a stopper, even if so arranged in the top of an inverted die-mold, would be impracticable, since the impurities of the metal, rising to the surface, would accumulate in the working face of the die, and injure or spoil it for practical use. Hence the removable part must be inserted in the bottom, where it performs a function which the stopper in the ingot-mold could not perform, viz., to give the die or shoe a perfectly smooth hard working face, already finished for immediate use. I am also aware that stamping-shoes have been cast on a chill, and hence I make no claim to a chill-faced stamping-shoe; and I am also aware that a sand mold for the stem has been combined with a solid chill-mold for the body of the shoe, and such combination is hereby disclaimed.

I claim herein as my invention—

1. In molds for casting shoes and dies for stamping-mills, the combination, with a metal mold, of interchangeable bottoms, substantially as and for the purposes set forth.

2. The combination of sand mold, metal mold, and interchangeable bottoms, within or against which to cast the stem, body, and working face of the shoe, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WILLIAM HAINSWORTH.

Witnesses:

HENRY C. OVER,

JOHN L. HULL.