

No. 683,367.

Patented Sept. 24, 1901.

F. W. WOOD.
INGOT MOLD.

(Application filed June 3, 1892. Renewed Nov. 13, 1894.)

(No Model.)

Fig. 1.
on line 2-2.

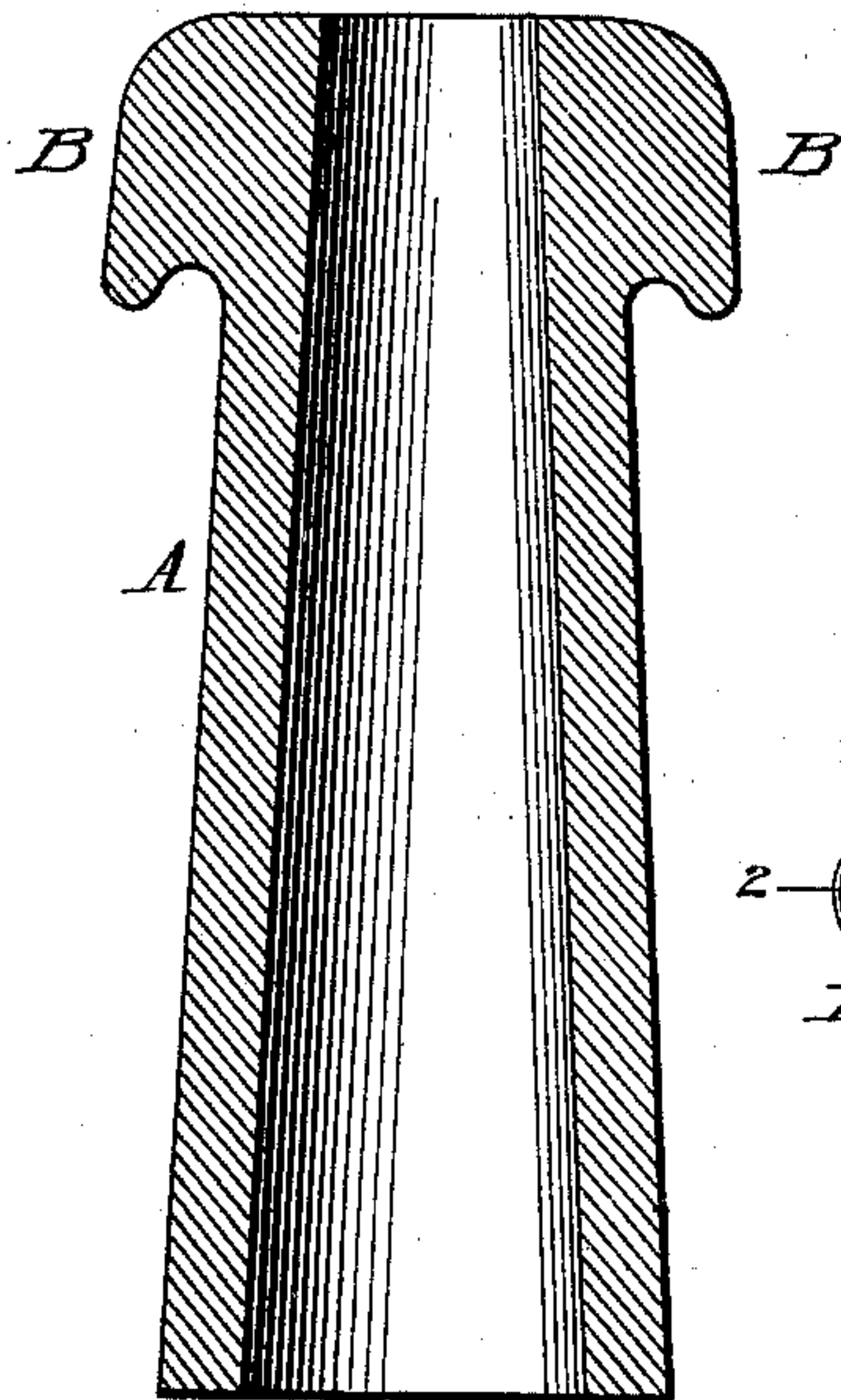


Fig. 2.

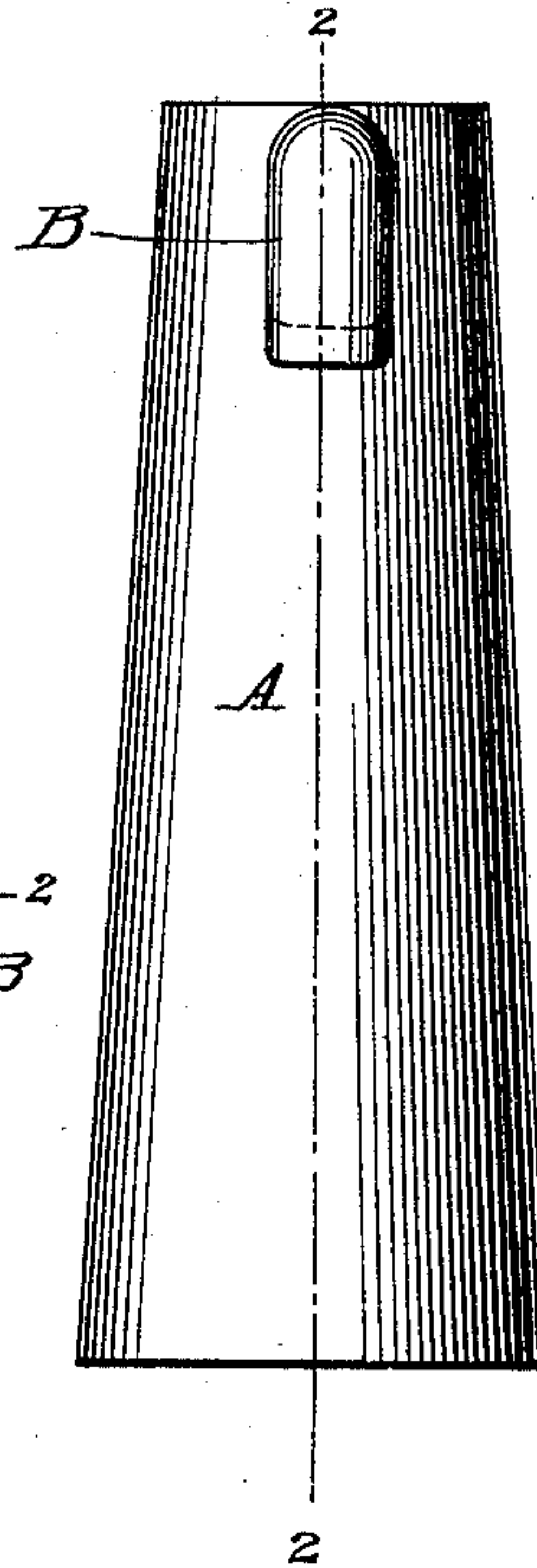


Fig. 3.

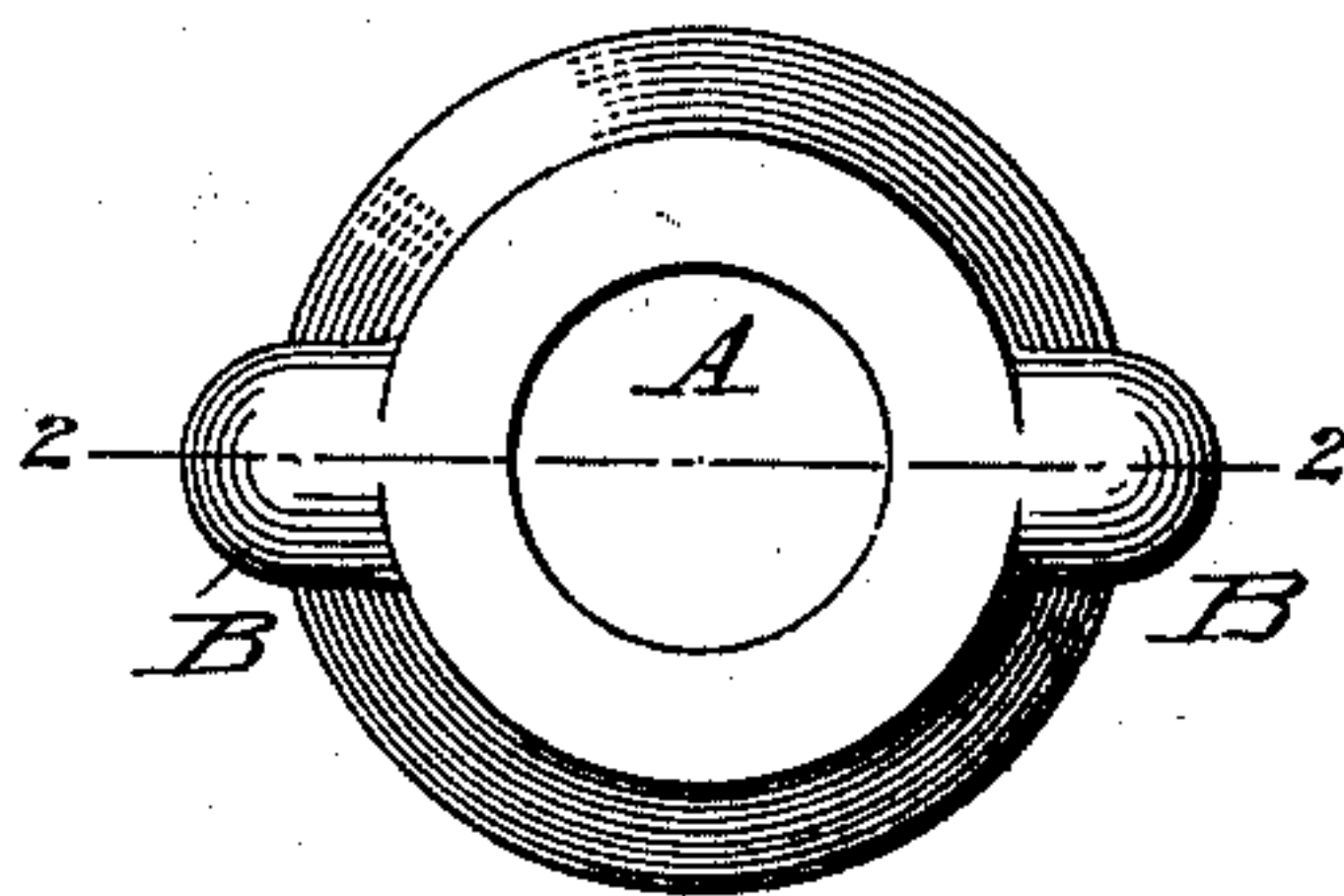
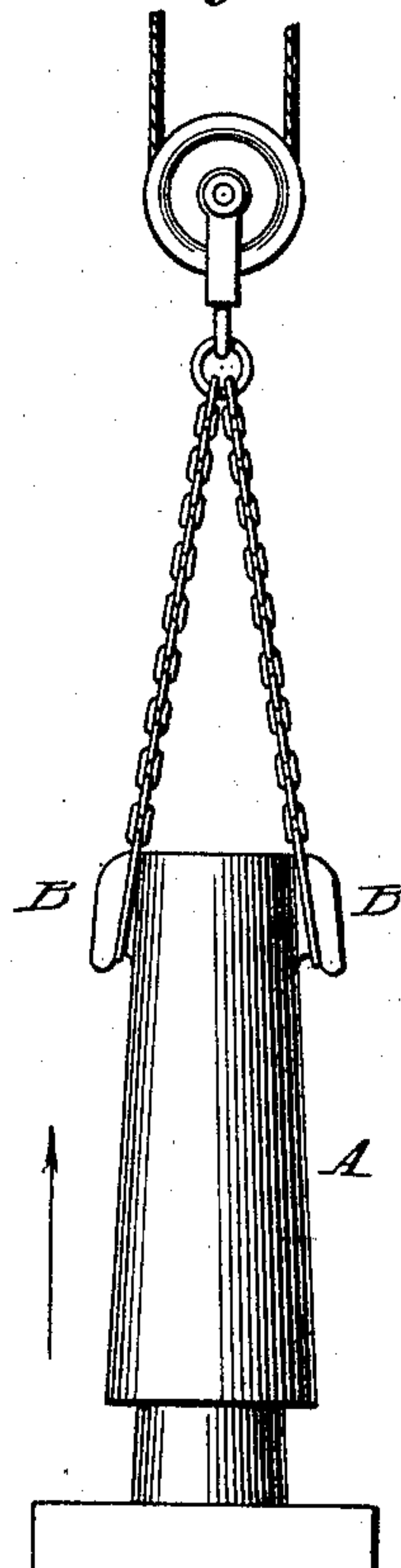


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK W. WOOD, OF BALTIMORE, MARYLAND.

INGOT-MOLD.

SPECIFICATION forming part of Letters Patent No. 683,367, dated September 24, 1901.

Application filed June 3, 1892. Renewed November 13, 1894. Serial No. 528,627. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. WOOD, of Baltimore, in the State of Maryland, have invented a new and useful Improvement in Ingot-Molds, of which the following is a specification.

In practicing Bessemer-steel processes the liquid steel is delivered from the converters into vertical metal ingot-molds, which are temporarily closed at the base by the metal stools on which they stand. Heretofore it has been the usual practice to lift these molds and hold them in suspension by small loops or ears in their sides while they are subjected to an external hammering to loosen the ingots and cause them to drop out. The loops or eyes projected above the upper ends were liable to be covered and filled with metal and were weak and unfit to hold the mold against any strong pressure. If, therefore, the ingot required to be forced out of the mold, the latter required to be sustained at its base, an operation requiring special apparatus and a special handling of the mold and involving much trouble and expense. To avoid the troubles and dangers attending this system and to gain other advantages, a practice has been recently introduced under which the mold containing the hot ingot is allowed to remain standing on its stool while pressure is applied to the top of the ingot to keep it down and at the same time a very forcible lifting influence applied to the mold to strip it from the ingot. This method of stripping the highly-heated ingot, often molten in the center, must be speedily performed and demands that the mold shall be strongly held and that the lodgment of metal on the ears or holding devices shall be prevented. The small top eyes or ears are unfit to meet the new conditions, and I have therefore devised a mold having in place of the usual eyes strong solid lugs lying on their outer sides, having at their lower ends shoulders adapted to engage the supporting arms or links of a mold-lifting device and so formed that they offer no opening or place of lodgment for metal and that they can be engaged by the mere act of bringing the arms or links of the mold-lifting device together upon the sides of the mold.

Figure 1 is a vertical central section through my mold on the line 2 2 of Fig. 3. Fig. 2 is a

side view of the same. Fig. 3 is a plan view. Fig. 4 is a side elevation showing the manner of stripping the mold from the ingot.

A represents the body of the mold, cast in one piece and open at both ends, as usual.

B B are two lugs or ears of large size and very strong, being cast integral with the body and located on opposite sides. They are rounded and smooth on their upper and outer sides, are located wholly below the top of the body, and are recessed in the lower ends, forming shoulders at points out of the reach of the overflowing metal, so that the lifting chains or tongs, such as shown in Fig. 4, when brought together upon the sides of the mold may engage the under side of the lugs and may retain a firm hold. They are commonly made of a vertical length of one foot and a width of eight inches. Ears or lugs of this character afford a cheap and reliable means for lifting and strongly holding the mold and avoid all danger of interference from accumulation of metal.

My mold is constructed more especially with reference to its use in a steel plant in which the metal from the converters is cast directly into ingots in molds standing vertically on cars, and as soon as the ingot is sufficiently solidified the mold is stripped vertically therefrom while the ingot is held down in position on the car by a pressure device bearing on its upper end. In this "car system" it is essential that every mold should be regularly and promptly removed from its ingot to insure continuity of the operations and to leave the ingot at the highest possible temperature and frequently while it is still molten in the interior. At such times the mold generally clings tenaciously to the ingot, so that a pull of from fifty to one hundred tons is commonly required to lift the mold from the stationary ingot. The ingots for rails are commonly of a weight of two and one-half tons and the mold of approximately the same weight. Ingots for armor-plates are frequently of ten tons in weight and the molds of corresponding weight. In consequence of this fact and of the fact that the molten metal frequently overflows the mold it is necessary that the lugs or ears on the mold shall be at or near the top, that they shall be of such form that the molten con-

tents will not interlock with them, and that they shall be of such great strength that their breakage or dislodgment can never occur under the great strains to which they are subjected.

5 The molds are commonly used from eight to ten times per day and often with much greater frequency. Their life is short, and therefore they must be of cheap construction.

10 The mold herein described and claimed, cast in one piece, with lugs or ears integral therewith, meets all the foregoing conditions.

Molds of my construction are now in very extensive use and are found to meet every
15 requirement and to be freed from objections previously experienced with others.

By the word "recessed" in the claim I intend to cover any lugs wherein the lower outer ends of the lugs are below the inner

gripping parts to hold the arms of the stripping device and prevent slipping of them. 20

I claim—

A cast-metal ingot-mold having projecting laterally from its opposite sides at or near the top, integral massive lugs with recessed
25 shoulders at the lower ends adapted to engage with the supporting-arms of a mold-lifting device and shielding portions arranged to prevent lodgment of molten metal on the recessed shoulders, substantially as described. 30

In testimony whereof I hereunto set my hand, this 8th day of April, 1892, in the presence of two attesting witnesses.

FREDERICK W. WOOD.

Witnesses:

WM. ELLIS COALE,
ISAAC COALE, Jr.