

(No Model.)

W. B. DEVEREUX.

SLAG BUGGY.

No. 335,114.

Patented Feb. 2, 1886.

Fig. 1.

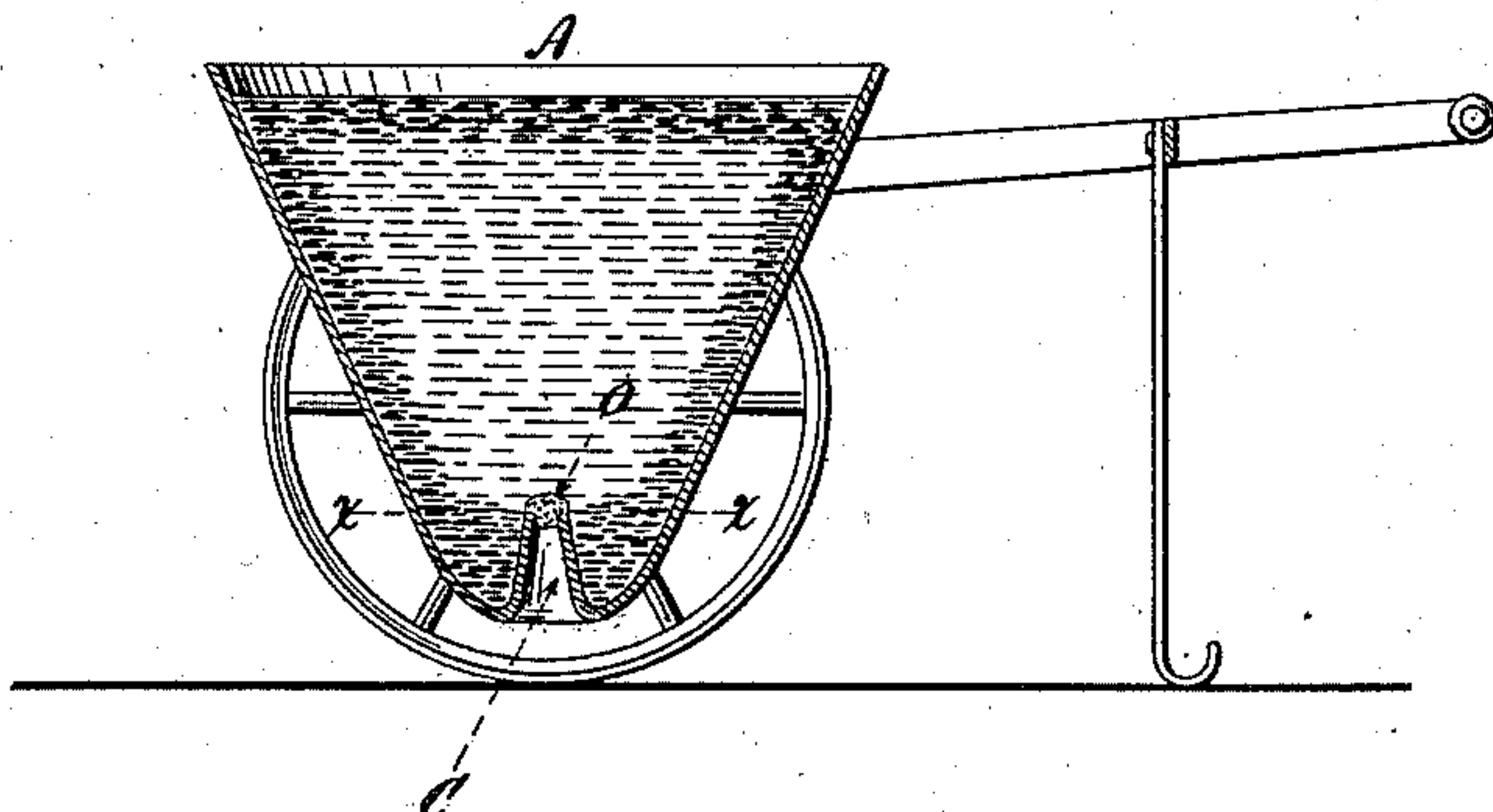


Fig. 2.

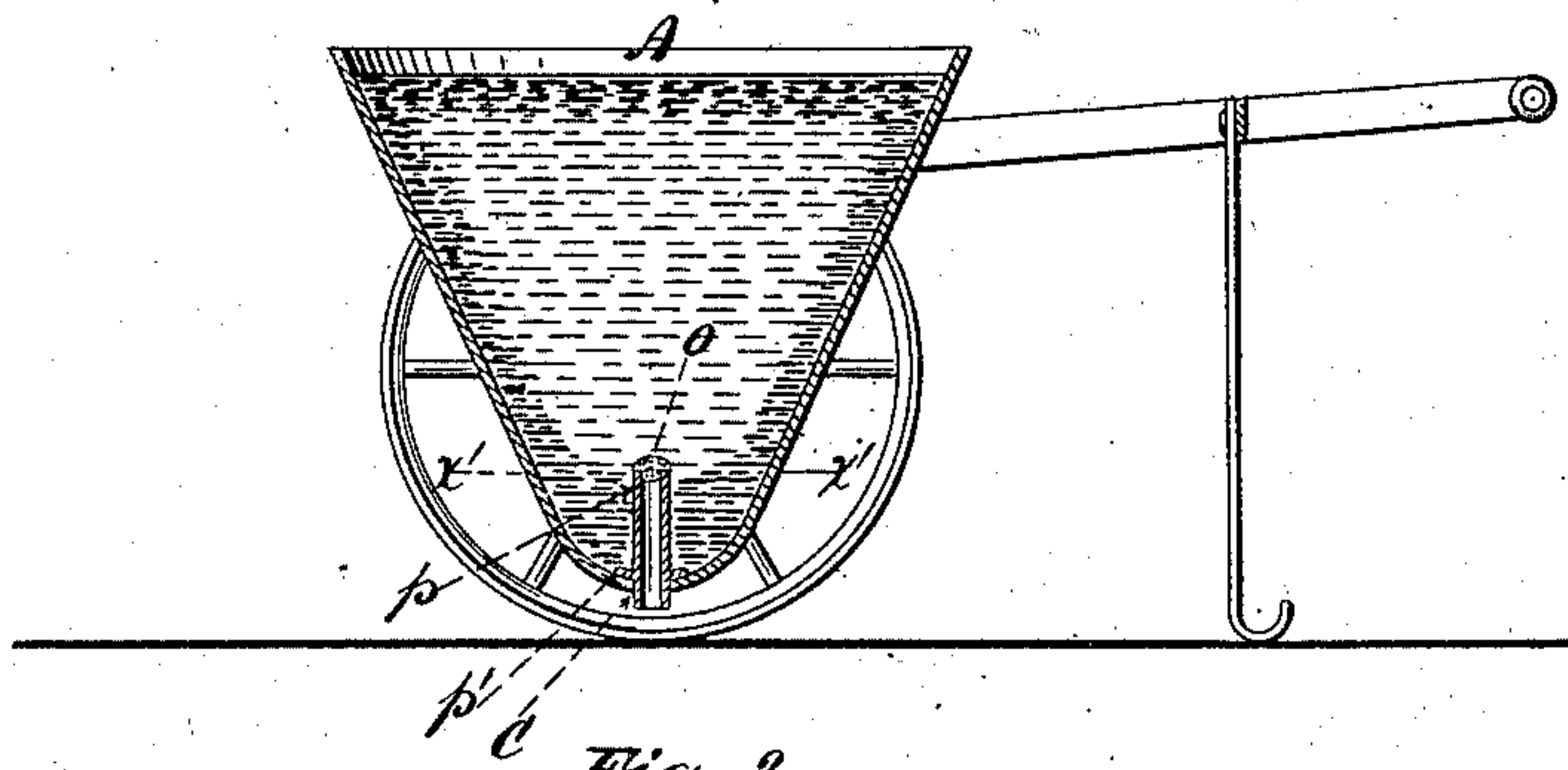


Fig. 3.

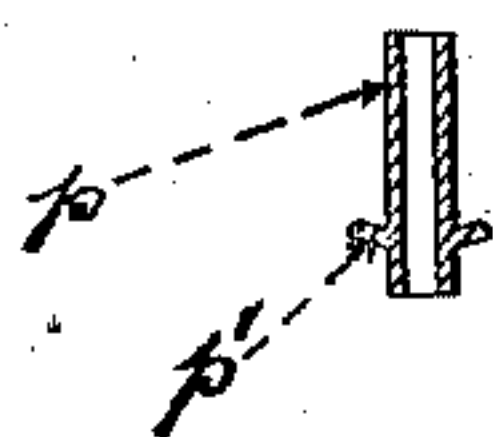
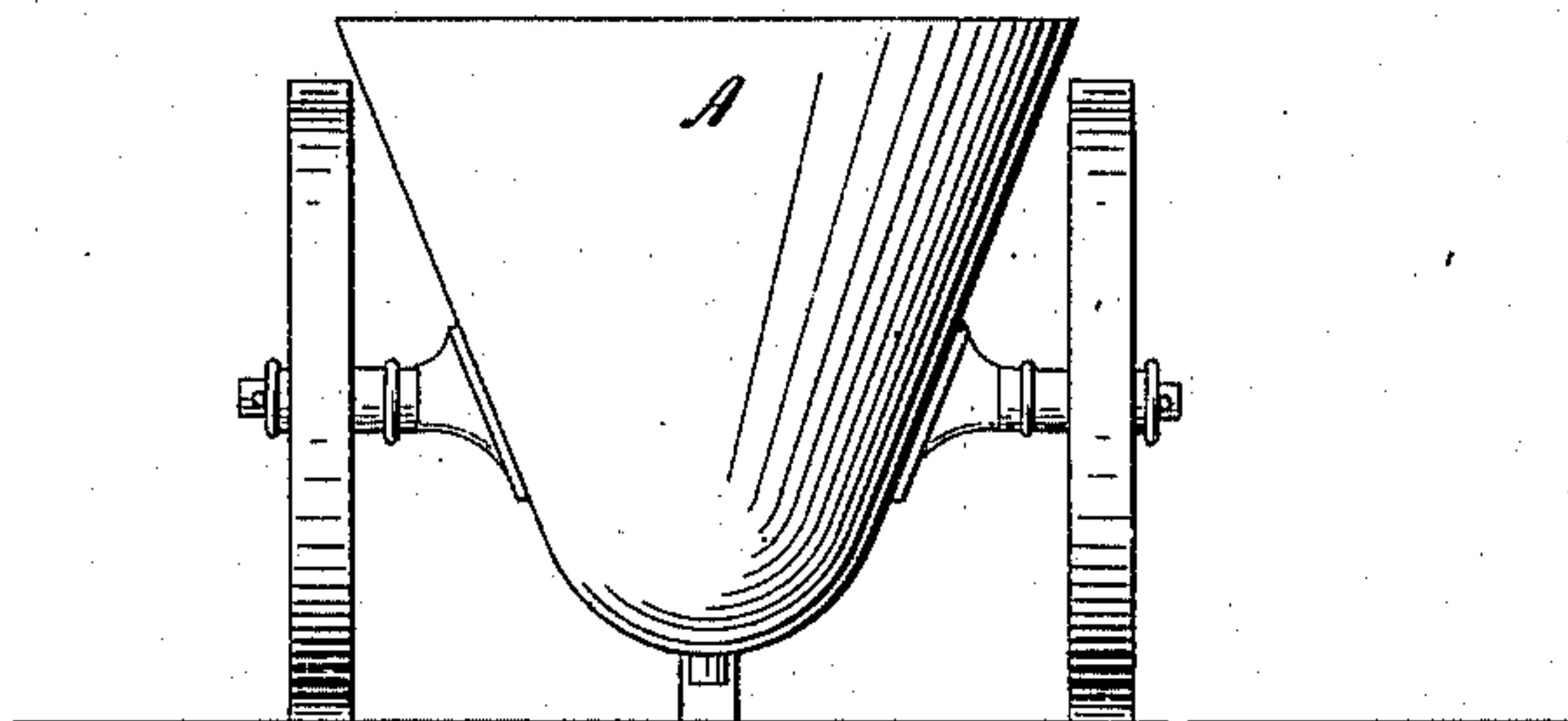


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER B. DEVEREUX, OF ASPEN, COLORADO.

SLAG-BUGGY.

SPECIFICATION forming part of Letters Patent No. 335,114, dated February 2, 1886.

Application filed July 28, 1885. Serial No. 172,866. (No model.)

To all whom it may concern:

Be it known that I, WALTER B. DEVEREUX, a citizen of the United States, and a resident of Aspen, in the county of Pitkin and State of Colorado, have invented a certain new and useful Improvement in Slag-Buggies, of which the following is a specification.

My invention relates to that class of slag-buggies which are used for the removal of slag in lead, silver, copper, and other smelting works; and the object of the same, like that of the invention for which Letters Patent of the United States No. 312,439 were granted to me upon the 17th day of February, 1885, upon which the present invention is an improvement, is to provide an easily-constructed, economical, and effective apparatus for carrying out a process of separating from the slags poor in precious metals, which are collected in the buggy, the rich slags, mattes, and metals, which run out and are collected with them. This I accomplish by means of a slag-buggy of the character shown in the accompanying drawings, which are to be taken as a part of this specification, and in which—

Figure 1 is a vertical section of one form of slag-pot; Fig. 2, a vertical section of a modification thereof; Fig. 3, a section of one of the details of Fig. 2, and Fig. 4 a front elevation of the buggy.

Similar letters refer to similiar parts throughout the several views.

As has been set forth in the aforesaid Letters Patent No. 312,439, when a slag-buggy is filled under the conditions met with in processes of smelting, in which mattes, speisses, or metals are drawn off with the slag, either intentionally or otherwise, the mass as it comes in contact with the iron shell of the buggy is immediately cooled, and a layer or crust of cool slag forms upon the upper surface of the slag and rises with the same as the pot is gradually filled. The larger portion of the mattes or metal, however, by reason of their greater specific gravity, settle in the liquid slag into a layer at the bottom of the buggy, while many small globules of the mattes, metals, &c., in their descent come in contact with the layer of cooling slag next to the iron of the slag-pot, and owing to the viscous

condition of the slag, become enveloped and finally fixed in the exterior layer, and I have discovered that by allowing the slag-buggy to stand for a few moments after filling, the mattes, metal, &c., with the exception of that inclosed in the exterior layer, settle to the bottom of the pot almost completely, and that by drawing off the slag mass in the interior of the pot, while still molten, without carrying with it the portion collecting in the bottom upon the side walls and upon the top of the mass, I am able to effect a very perfect separation between the rich slags and mattes and the poor slags.

For the purposes of carrying out the method of separation above set forth, I provide the following-described improved form of slag-buggy.

Figs. 1 and 2 show a slag-buggy of the ordinary form, in which A is the pot or receiving-vessel. For the purposes of effecting the separation above referred to, I cast the receiving-pot A with a hollow cone or cylinder, C, in its bottom, which cone is open at its upper extremity, O. The cone may be cast in one piece with the pot, as shown in the drawings, or may be made separate and attached thereto over an opening in its lower walls in any convenient manner. The opening O may be of any convenient size, and in practice it is made circular, with a diameter of about one to three inches. The height of the cone above the bottom of the pot A will be regulated by the height to which it is found that the mattes, metals, &c., will settle in the bottom. In figures the dotted lines *xx* indicate the point to which they rise, and the opening in the cone will be so arranged that slags below that point will not be drawn off. The opening O may be closed on the outside of the cone or on the interior extremity in the pot in any convenient manner. In practice, however, it will be found most convenient to close the same by means of a small piece of fire clay upon the interior, as shown in Fig. 1.

Fig. 2 shows a modification which may be used where it is desired to vary the position of the tap-hole from time to time, according to the height to which the mattes, &c., settle in the pot, and in certain other cases. Here

A is the ordinary form of slag-pot, in the bottom of which is drilled an opening, *c*. A small iron pipe, *p*, Figs. 2 and 3, of any convenient diameter, open at both ends, and provided with a flange or collar, *p'*, Figs. 1 and 2, is fitted into this opening, as shown in Fig. 2, so that it shall rise vertically in the interior of the slag-pot, as before. The contents of the pot are tapped off through the pipe, which is closed at either extremity, but preferably at the upper extremity, by a piece of fire-clay, as shown in Fig. 2, or an iron plug, or in any other convenient manner.

Where the amount of slag settling in the bottom of the pot varies, pipes of varying lengths may be substituted, according to the requirements of the case.

The operation of the buggy, which is substantially the same as that of the invention described in the aforesaid Letters Patent, is as follows: The extremity of the cone *C* or the pipe *p* having been carefully closed with fire-clay or in any other convenient manner, the buggy is wheeled up to the furnace and the slag tapped into it. It is then run off to the slag-dump and allowed to cool and settle until the top surface of the slag becomes hard. The tap-hole is then opened by driving a sharp-pointed iron bar through the viscous crust which has formed on the top of the pot, through the liquid interior, and also through the fire clay or other stopping of the cone or pipe, whereupon the contents of the pot may be discharged into any convenient kind of molds or over the waste-dump. When the slag ceases to run, the buggy is drawn off and is allowed to cool. When cold, the rich slag, mattes, and metals, now in the form of a hollow cone, are dumped out and sent back to the furnace, to be treated over again, or are broken up and subjected to further treatment by hand. The tap-hole, when closed with fire-clay, may also be opened from underneath the pot by means of a bar of iron bent at right angles and provided with a sharp point.

I claim as my invention—

1. In a slag-buggy, a receiving or slag pot having in its lower walls an opening containing a pipe projecting upward therein above said lower walls, through which the poor slag may be drawn off from the interior of the pot without carrying with it the rich slag, mattes, or metals in the bottom or on sides of the pot.

2. In a slag-buggy, the combination, substantially as hereinbefore set forth, of the slag-pot, the opening in the lower walls of the same, the flanged pipe in the interior of the pot fitting into said opening and projecting upward above said lower walls, whereby the poor slag in the interior of the pot may be drawn off without carrying with it the rich slag, mattes, or metal in the bottom or sides of the pot, and means, substantially as described, for closing said pipe and for attaching it to the walls of the pot.

3. In a slag-buggy, a receiving-pot having in its lower walls an interior cone projecting upward into the interior of the pot and provided with an opening in its apex, whereby the poor slag in the interior of the pot may be drawn off without carrying with it the rich slag, mattes, or metal in the bottom or on the side walls of the pot.

4. In a slag-buggy, the combination, substantially as hereinbefore set forth, of the slag-pot, the interior cone projecting upward into the interior of the pot, an opening at the apex of said cone, whereby the poor slag in the interior of the same may be drawn off without carrying with it the rich slags, mattes, or metal in the bottom or on the sides of the pot, and means for closing the orifice of said cone, substantially as described.

Signed at Aspen, in the county of Pitkin and State of Colorado, this 7th day of July, A. D. 1885.

WALTER B. DEVEREUX.

Witnesses:

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RICHARD J. BOLLES.