(No Model.)

J. F. KEIPER.

SLAG TROUGH OR SPOUT.

No. 370,262. Patented Sept. 20, 1887.

Fig. 1.

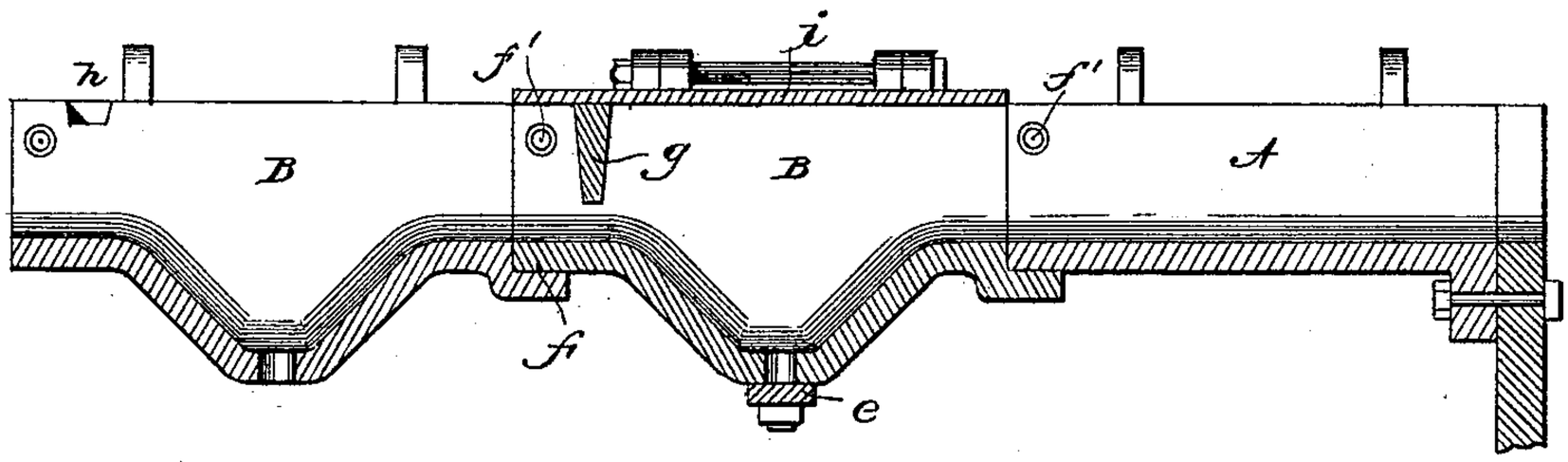


Fig. 2.

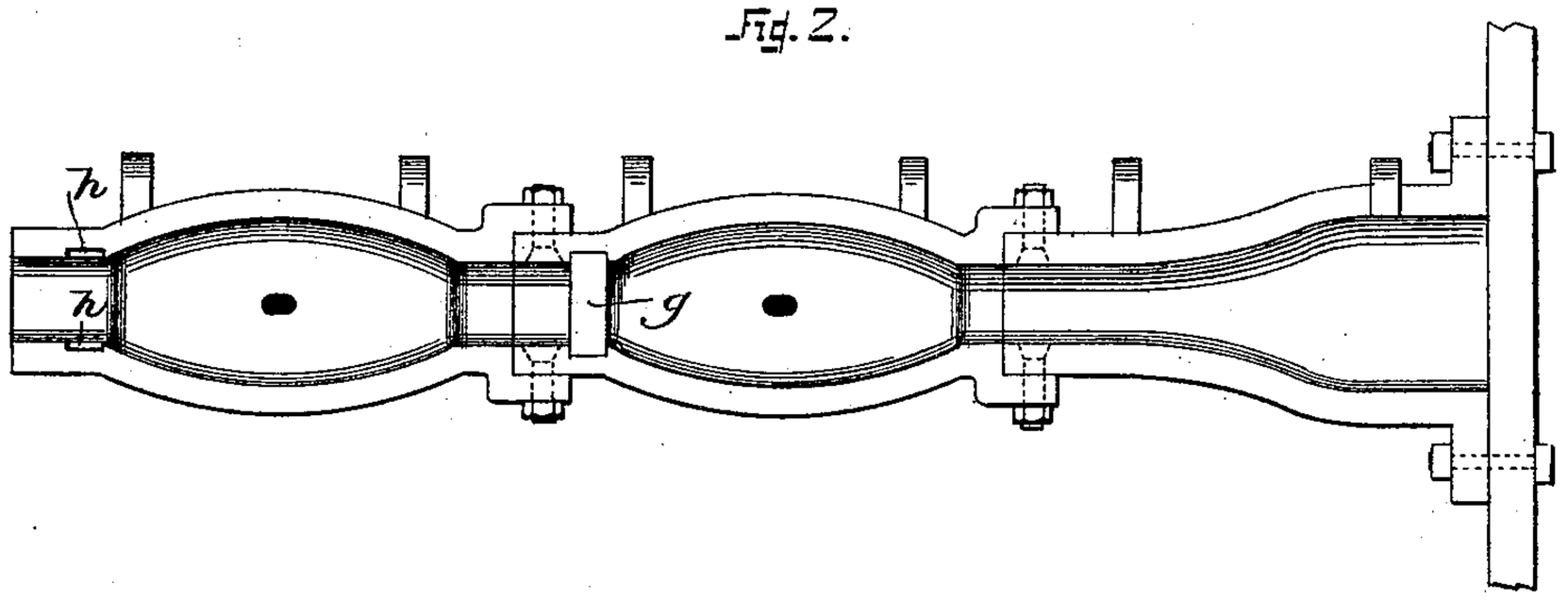


Fig. 3.

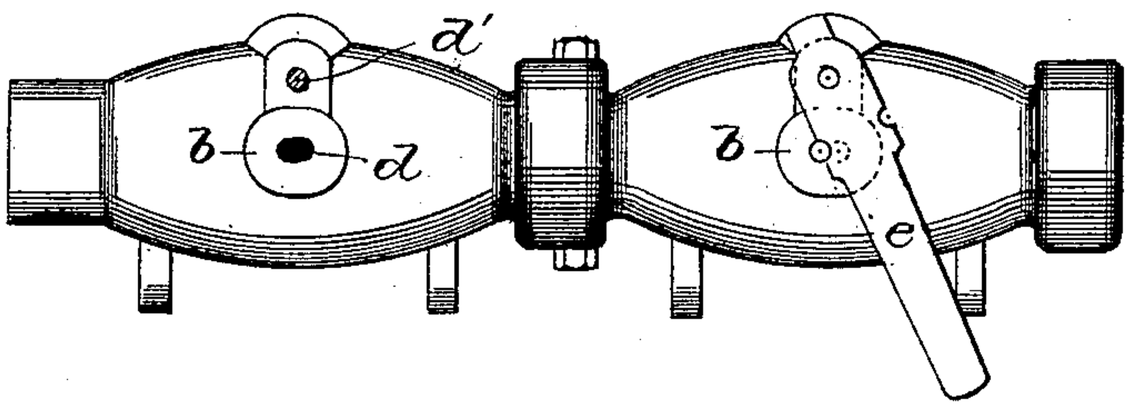


Fig. 5.

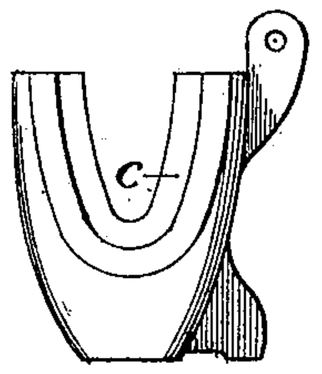
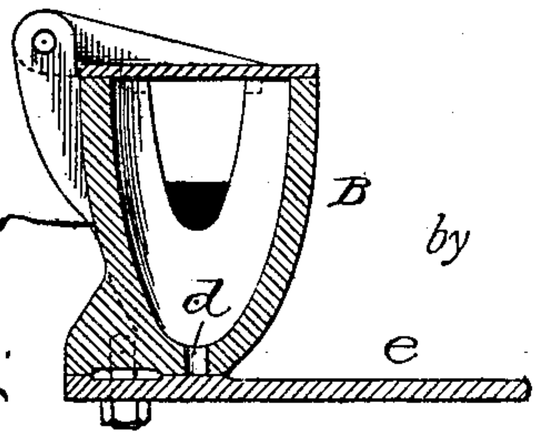


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN F. KEIPER, OF DENVER, COLORADO.

SLAG TROUGH OR SPOUT.

SPECIFICATION forming part of Letters Patent No. 370,262, dated September 20, 1887.

Application filed October 6, 1886. Serial No. 215,435. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. KEIPER, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Slag Troughs or Spouts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to slag troughs or spouts.

The object of the invention is to produce means for effecting the separation of matte from slag more perfectly, quickly, and economically than has been possible heretofore.

The invention consists, essentially, of a slag trough or spout designed to be attached to a smelting-furnace in such a manner as to receive the slag and matte at the point most convenient for its discharge, the said trough being formed with a depression into which the matte settles, and provided with a suitable opening in the depressed portion, through which the matte is allowed to pass to a receptacle below, and having a bridge covering the upper portion of the trough, and a gate of convenient form for governing the passage of the matte through the opening to the receptacle below, as hereinafter set forth.

I am aware that a slag-trough has been provided with a cooling-tube cast in the bottom thereof; also, that a trough of this character has been provided with a valved opening in its bottom, and that a slag-catcher and iron-mixer, which receive the iron from the cupola and permit the workman to rake the slag through a covered discharge spout at the side of the trough, have been used prior to my invention, and I do not broadly claim said constructions herein.

I have illustrated the invention in the accompanying drawings, in which—

Figure 1 represents a central longitudinal vertical section of my improved slag-trough. Fig. 2 is a plan view. Fig. 3 is an inverted plan view showing two sections of trough, one showing the gate for regulating the outflow of metal. At the other trough this gate is not shown. Fig. 4 is a cross-section of my trough, and Fig. 5 is an end view.

In the drawings, A represents a spout designed to be connected in any suitable manner to a smelting-furnace, so that the matte and slag are carried off and passed to the trough, by which the separation of the matte from the slag is effected.

B represents sections of the trough, of which any desired number, from one upward, may be used, according to the amount of the matte in the slag. Each of these sections is provided with a depression near its center, into which the matte sinks, the slag passing through above the depression.

In the bottom of the breast portion is an opening, which is of appropriate size to regulate the outflow of matte. In order that the size of this opening may accurately be governed, I provide the lower portion of the trough with a plate, *b*, having an opening corresponding to that in the bottom of the trough, and provided, also, with an opening, *d'*, at which point is pivoted a lever, *a*, which is capable of being moved back and forth to entirely cover or expose to any desired degree the opening through which the matte passes.

One end of each of the sections B is provided with what may be termed a "socket," *c*, and the other end is provided with a neck, *f*, the necks of each section being of such size as to fit into the socket of the next adjoining section and leaving a plain upper surface for the passage of the slag. The sections are secured together by passing bolts through previously-prepared holes, *f'*, near the ends of each section.

When the troughs are used for separating matte from slag in which this separation is accomplished slowly, and it is therefore desirable that it be allowed to escape slowly from the trough, I provide the bridges *g*, which are provided with flanges at their ends fitting into notches *h* in the sides of the trough. These bridges extend a sufficient distance downward into the troughs to leave but a small opening for the passage of the slag.

Each section of the trough is preferably provided with a cover, *i*, secured in place by hinges, upon which it is free to be turned up to expose the interior of the trough.

The trough may be made of any suitable material—such as asbestus, iron, or copper.

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

The herein-described slag trough or spout, formed with a depression in which the matte settles, and provided with a suitable opening in the depressed portion, through which the matte is allowed to pass, and having also a bridge extending downward into the trough, and a gate for governing the passage of the matte through the opening, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. KEIPER.

Witnesses:

JACOB J. SNYDER,

O. E. ADAMS.