

(No Model.)

L. IANKE.

APPARATUS FOR CONVERTING CAST IRON.

No. 397,365.

Patented Feb. 5, 1889.

Fig. 1.

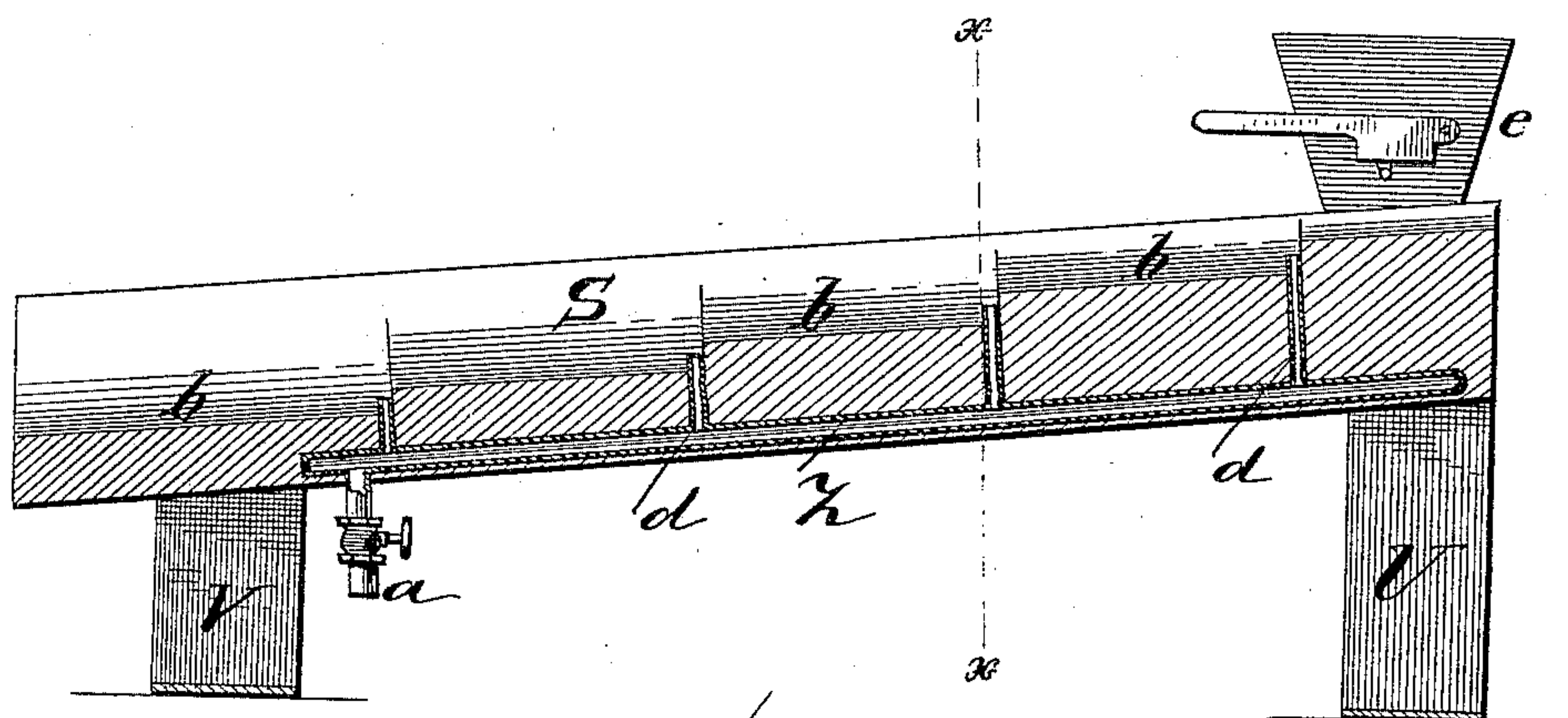


Fig. 2.

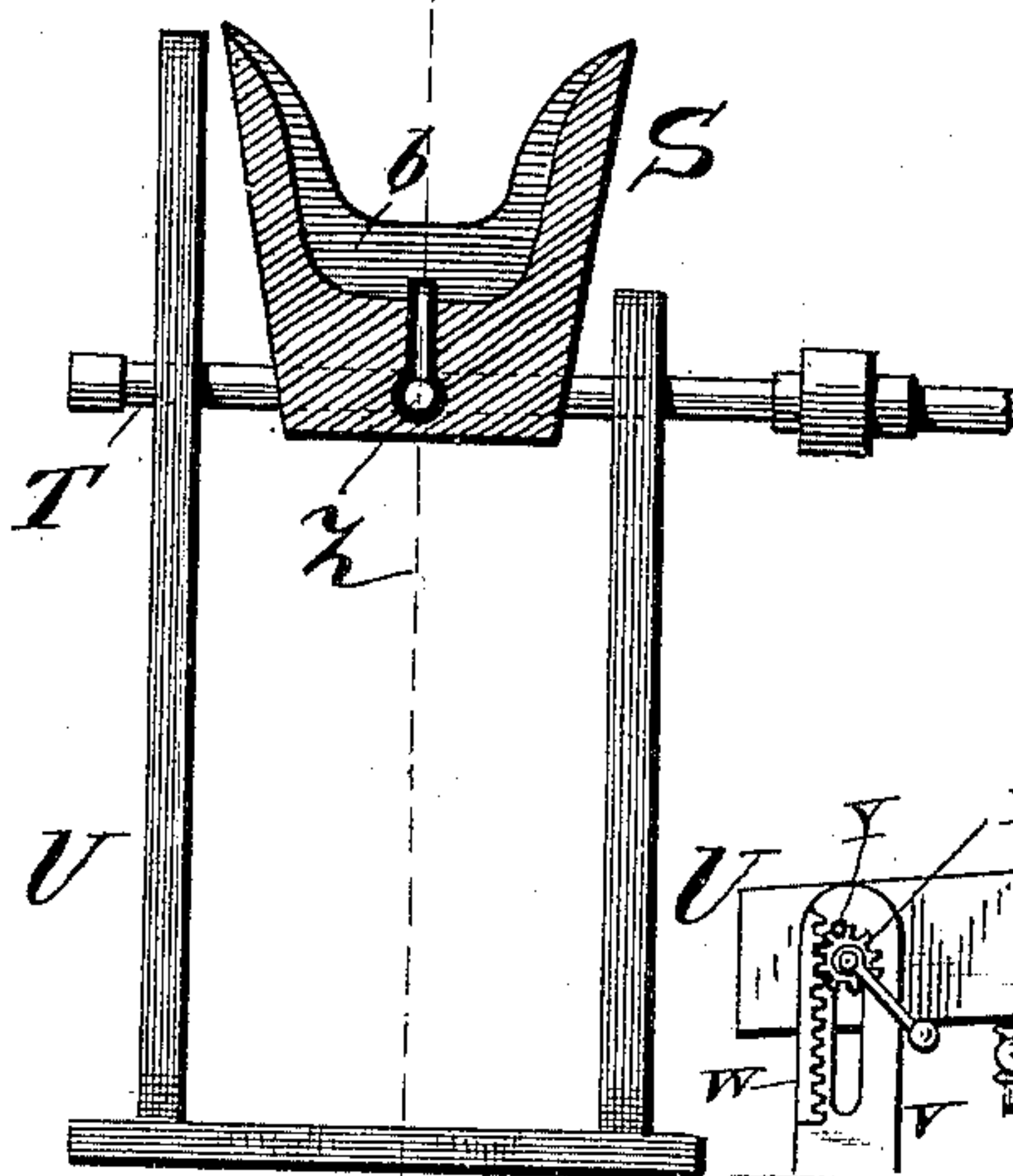
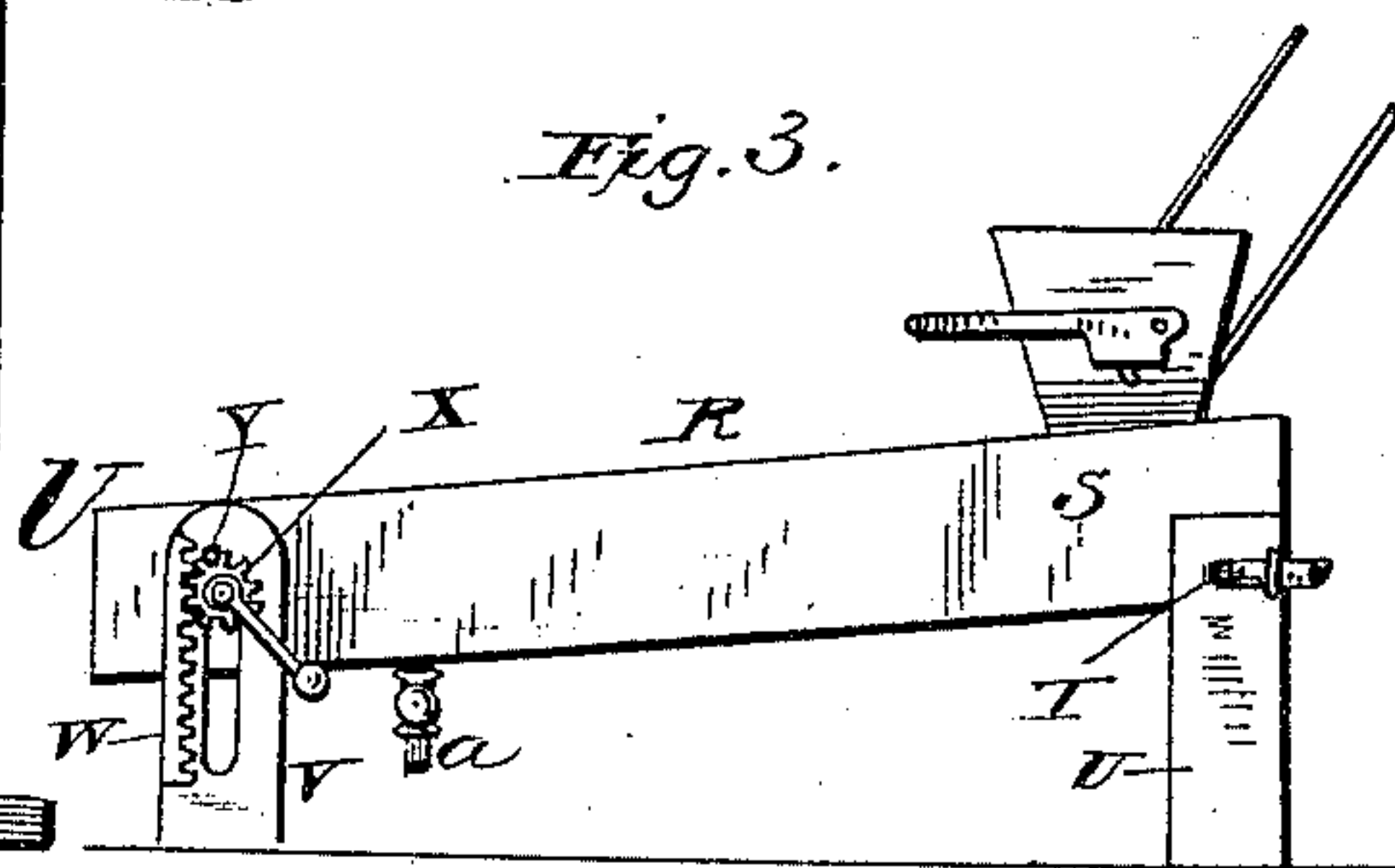


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR CONVERTING CAST-IRON.

SPECIFICATION forming part of Letters Patent No. 397,365, dated February 5, 1889.

Application filed November 19, 1887. Serial No. 255,628. (No model.)

*To all whom it may concern:*

Be it known that I, LEOPOLD IANKE, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Apparatus for Converting Cast-Iron; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a sectional elevation of my improved converter for apparatus for converting cast-iron. Fig. 2 is a transverse section taken on the line  $x x$  of Fig. 1, and Fig. 3 is a side elevation thereof.

This invention relates to certain improvements in converter-troughs for refining cast-iron; and to this end it consists of the detailed construction and combination of parts, substantially as hereinafter set forth and claimed.

In carrying out my invention I employ a converter, R, to which is connected the pipe which supplies superheated steam to the cupola by suitable connection, but which latter forms no part of my invention. This converter consists of a trough, S, which is supported at one end upon pivoted trunnions or bearings T in the standards U. The other or free end of the trough is supported between uprights or standards V V in such manner that it may be readily raised or lowered to assume any desired angle. The mechanism shown for effecting this result consists of a toothed rack, W, fixed in one of the standards and adapted to engage a pinion, X, journaled in the side of the converter-trough. The pinion is provided with a crank and handle, by means of which it may be readily revolved, and the free end of the converter thus be raised or lowered, as desired. After such adjustment of the converter the pinion is locked against turning, it may be, by the insertion of a key or pin, Y, into the side of the trough between the teeth of the pinion, or by any other suitable means. It will be understood, however, that I do not restrict myself to the details of the construction and arrangement of the parts for effecting the vertical adjust-

ment of the outer end of the trough or runway, as it is obvious other means may be employed for this purpose without materially departing from the spirit of my invention. 55

In the bottom of the converter-trough is arranged a steam-pipe, Z, which in practice is connected to the superheated steam-pipe, above referred to, and has a blow-off cock,  $a$ . Above the pipe Z is arranged the series of uniform steps or platforms  $b$ , traversing the length of the converter-troughs, so that the molten metal as it is received into the trough at its upper end will descend this series of steps or cascades. The steam-pipe Z is provided with upwardly-extending branch pipes or arms  $d$ , which extend through said steps—one at each riser of a step—in such a manner that jets of superheated steam will be injected vertically across the series of platforms and into the molten metal as it flows from one to another of the platforms or steps. 65 70

Each upwardly-extending or vertical branch pipe or arm,  $d$ , stops a short distance below the next higher step and a short distance above the next lower step, in order to inject the jets of steam into the thin stream of molten metal just where it passes or bridges the points of intersection between the steps, thereby effecting the thorough commingling or intermixture of the steam-blasts and the molten metal. In this manner it will be seen that the molten metal is subjected during its passage through the converter-trough to the action of a series of jets of superheated steam, and that the speed at which the molten metal passes through the converter-trough may be regulated at will by raising or lowering the free end of the converter-trough, thereby subjecting the metal in its passage through the trough to the action of the superheated steam for a longer or shorter period, as may be desired. The upper end of the hopper is provided with a hopper,  $e$ , adapted to contain such ingredients—as, for instance, finely-powdered carbonaceous matter, as charcoal, &c.—as it may be found desirable to mix with the molten metal before this passes through the converter. 85 90 95

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States— 100

The apparatus for converting iron or steel, consisting of the inclined trough or receiver having a series of uniform steps traversing its length and a steam-pipe provided with a  
5 series of branch pipes or arms rising vertically through said steps, one at each riser of a step, and having their discharging ends stopping a short distance below the higher steps and a short distance above the lower steps,  
10 substantially as shown.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

LEOPOLD IANKE.

Witnesses:

ARTHUR L. MORSELL,  
GEO. E. FRECH.