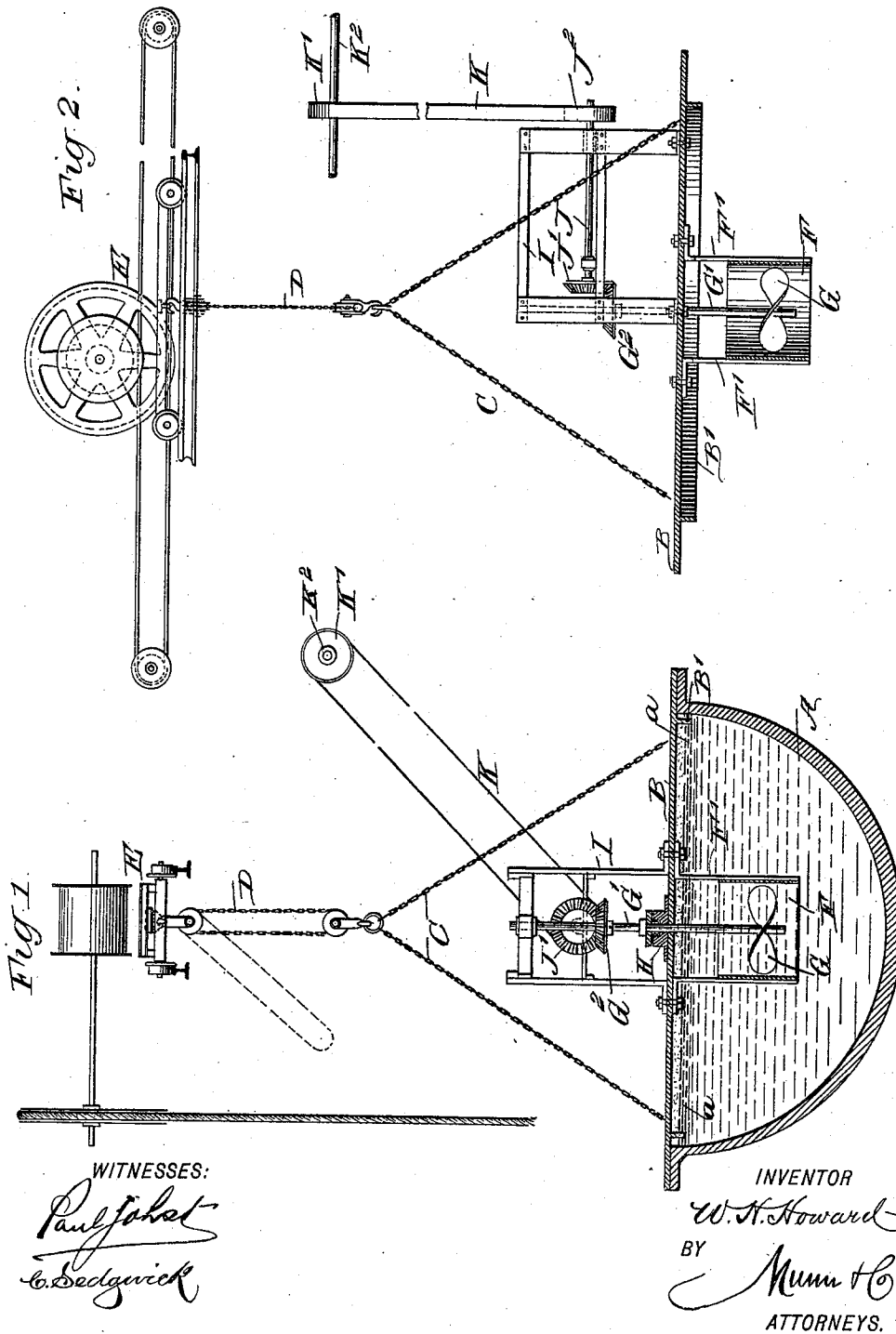


(No Model.)

W. H. HOWARD.
STIRRING IN OR MIXING DEVICE.

No. 529,617.

Patented Nov. 20, 1894.



UNITED STATES PATENT OFFICE.

WILLIAM H. HOWARD, OF PUEBLO, COLORADO.

STIRRING-IN OR MIXING DEVICE.

SPECIFICATION forming part of Letters Patent No. 529,617, dated November 20, 1894.

Application filed April 5, 1894. Serial No. 506,458. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HOWARD, of Pueblo, in the county of Pueblo and State of Colorado, have invented a new and Improved Stirring-in or Mixing Device, of which the following is a full, clear, and exact description.

The invention relates to the process of alloying the silver contained in molten argentiferous lead, with zinc; and its object is to provide a new and improved device for conveniently and thoroughly mixing the zinc with the molten argentiferous lead, and without danger of oxidizing and rendering the zinc inert, as is so frequently the case with the means heretofore employed.

The invention consists of certain parts and details, and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

Figure 1 is a transverse section of the improvement as applied; and Fig. 2 is a side elevation of the improvement.

The pot A into which flows the molten argentiferous lead from the furnace, is adapted to be closed by a cover or lid B, formed on its under side with an annular flange B' passing into the molten lead, so as to seal the same, to prevent atmospheric air from passing into the pot A. The cover B is supported by chains C from a hoisting device D of any approved construction, connected with a traveling carriage E adapted to move forward or backward so as to move the cover B from one pot A to another.

On the under side of the cover B is arranged a cylinder F extending a suitable distance into the molten argentiferous lead, as is plainly illustrated in Fig. 1, the said cylinder being supported by suitable rods or bars F', bolted or otherwise secured to the under side of the cover B. In this cylinder F is mounted to revolve a stirring device G, preferably made in the shape of a propeller wheel secured on a propeller shaft G' disposed vertically and passing through the cover B and a stuffing box H, attached to the top of the said cover, as is plainly shown in Fig. 1, so as

to prevent atmospheric air from passing into the pot A after the cover B is placed on top of the pot.

The shaft G is journaled in suitable bearings in a frame-work I secured to the top of the cover B, and on said shaft is fastened a bevel gear wheel G² in mesh with a bevel gear wheel J' secured on a longitudinally extending shaft J, journaled in suitable bearings in the said frame I. On the shaft J is arranged a driving pulley J² connected by a belt K with a pulley K' on a shaft K² driven from suitable machinery, so that when the said belt K connects the pulley K' with the pulley J², then the said shaft J is rotated and its rotary motion is transmitted by the gear wheels J' and G² to the propeller shaft G', so that the propeller wheel forming the agitating device G is rotated within the cylinder F. As the latter is open at the top and bottom, the molten metal in the pot A is stirred up, to completely mix the zinc with the molten argentiferous lead, to insure a perfect alloying of the silver with the said zinc.

The operation is as follows: When the pot A is charged with the argentiferous lead, then the cover B is brought over the said pot A by moving the carriage E to the proper position, as indicated in Fig. 1, and then the cover B is lowered by the hoisting device D until it extends to within a few inches of the top surface of the said pot A. At this time the zinc bars are slipped into the pot A below the lower surface of the cover B, and then a small quantity of crude oil *a* is scattered over the surface of the lead contained in the said pot A. The oil ignites by coming in contact with the molten metal, and it burns out the oxygen contained in the air between the surface of the molten lead in the pot A and the under side of the cover B, thus forming an inert gas between the top surface of the molten metal and the under side of the cover B. The latter is then immediately lowered and clamped or otherwise fastened to the pot A, whereby the whole surface of the lead is completely sealed from outside air. Connection is then made by the belt K between the pulleys K' and J², so that the stirrer G is rotated in the molten metal to agitate the molten argentiferous metal and mix the latter with the zinc, which is, by this time, melted, so that finally

the silver contained in the argentiferous lead alloys with the zinc, without the latter coming in contact with any particle of the atmospheric air. By this process less zinc is required, as none of it becomes oxidized when stirring and mixing it, and the product of silver zinc alloy finally produced is in a far better shape for the subsequent operation of liquation, as it parts more readily with its mechanically combined lead.

It will further be seen that considerable time and labor is saved by the process described, as the stirring and mixing is done by the mechanically driven stirrer G instead of by hand with ladles, as heretofore practiced.

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

1. A stirring or mixing device, comprising a cover formed on its under side with an annular flange adapted to pass into molten argentiferous lead contained in a pot upon which the cover fits, and a stirring device held on the under side of the cover and arranged to pass into the lead, substantially as described.

2. A stirring or mixing device, comprising a cover formed on its under side with an annular flange adapted to pass into molten argentiferous lead contained in a pot upon which a cover fits, and a stirring device held

on the under side of the cover and arranged to pass into the lead, the said stirring device comprising a cylinder open at the top and bottom and supported by brackets from the underside of the said cover, a propeller wheel mounted to rotate in the said cylinder and means for imparting a rotary motion to the shaft, of the said propeller wheel, substantially as herein shown and described.

3. In a stirring or mixing device of the character described, the combination with a traveling carriage, of a cover for the pot containing the material to be stirred or mixed, a stirring device carried by the cover, and a hoisting device connected with the cover and carriage, substantially as and for the purpose set forth.

4. In a stirring or mixing device of the character described, the combination with a pot, and a traveling carriage arranged above the pot, of a flanged cover for the pot, a cylinder open at top and bottom and suspended from the cover, a stirrer in the cylinder having its shaft mounted in the cover, means for operating the stirrer, and a hoisting device connected with the cover and carriage, substantially as described.

WILLIAM H. HOWARD.

Witnesses:

H. G. WILLIAMS,
W. W. COOPER.