

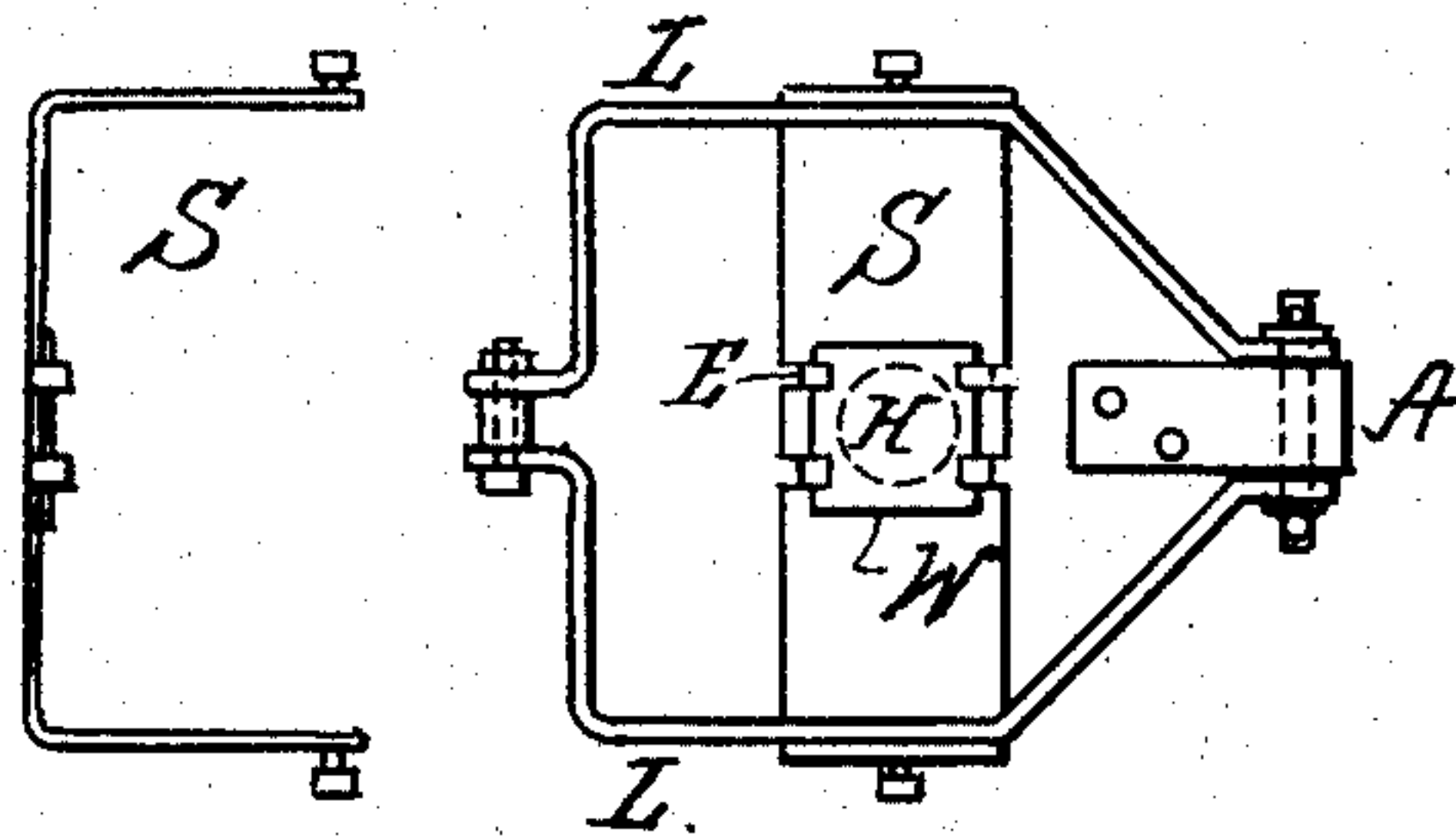
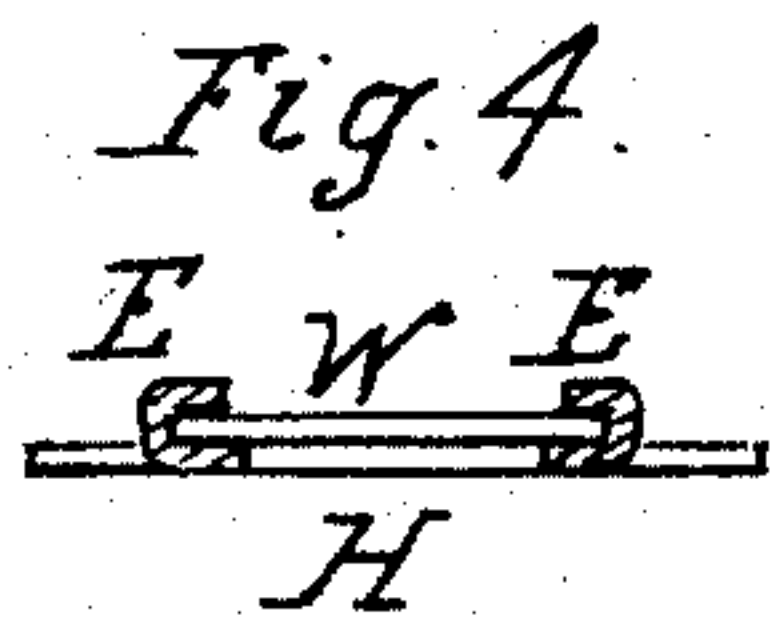
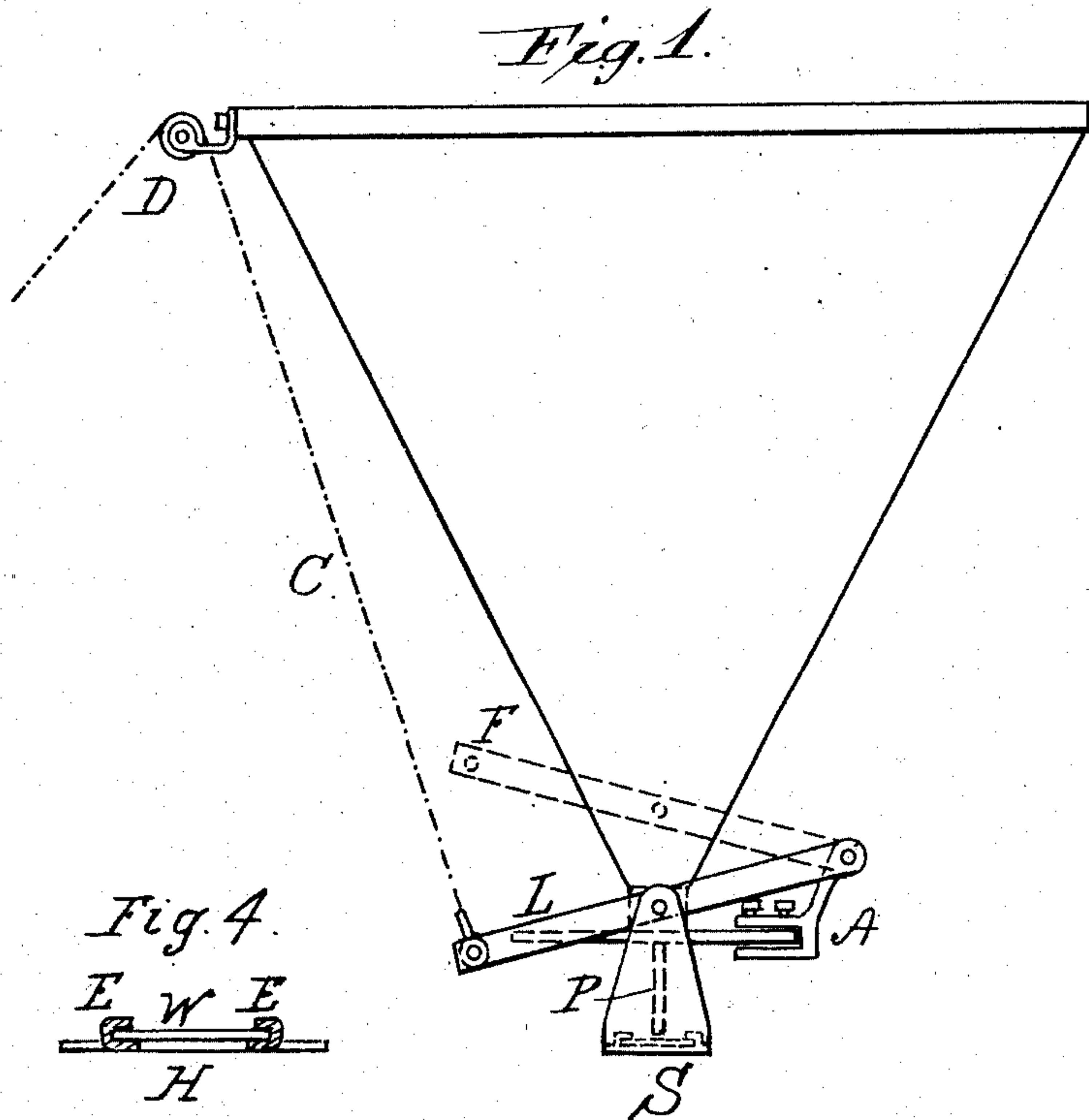
No. 865,037.

PATENTED SEPT. 3, 1907.

L. HEYNEMANN.

TAPPING ARRANGEMENT FOR CRUCIBLES.

APPLICATION FILED APR. 26, 1906.



*Fig. 3.*

*Fig. 2.*

Witnesses:

Florence Lachman  
Gardner Landon

Inventor:

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# UNITED STATES PATENT OFFICE.

LIONEL HEYNEMANN, OF SAN FRANCISCO, CALIFORNIA.

## TAPPING ARRANGEMENT FOR CRUCIBLES.

No. 865,037.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed April 26, 1906. Serial No. 313,872.

To all whom it may concern:

Be it known that I, LIONEL HEYNEMANN, of the city and county of San Francisco, State of California, have invented certain Improvements in the Tapping Arrangements for Crucibles, of which the following is a specification.

My invention relates to the tapping devices for crucibles or other vessels designed to hold molten material.

By the present method, particularly with crucibles having the tap holes in the bottom, it is necessary to drive a pin into said tap hole, which pin perforates the plugging material in said hole, and allows the molten metal or other material contained in said crucible to flow out. This pin has to be driven into the tap hole by a rod, with a flat end, some times called a tapping spade. This operation makes it necessary to stand close to the crucible, which may be dangerous, as the metal may spatter as it spouts out of the tap hole. If the crucible were to give way, the result might be very serious to the operator. Besides the location of the tap hole may be such, as to make it difficult to get requisite room for conveniently manipulating said tapping spade.

To avoid the danger mentioned, and to make the tapping operation more convenient and positive, I have designed the device illustrated by the accompanying drawing in which

Figure 1. is a view, Fig. 2. a plan, and Figs. 3 & 4 details of parts of my device.

Similar letters refer to similar parts.

The device consists principally of three parts: the pivot A., the lever L., and the stirrup S. The pivot A., is arranged to be connected to any convenient part of the crucible by bands, clamps, or lugs bolted to the same. In the drawing it is shown clamped to the flange of the crucible by set-screws. (See Fig. 1.) The lever L., is arranged to turn on said pivot. In the drawing (Fig. 2) it is shown in two parts, so as to clear the flange of the crucible in its movement. At the end of the lever a chain, cord or wire C., is attached, which cord is led to any place at which the operator desires to stand when the crucible is to be tapped. In Fig. 1., I have shown the cord leading to a small guide-sheave D., attached to the crucible. It may however, not be considered desirable or convenient under certain conditions, to so attach said guide-sheave. The stirrup S., is shown hung loosely to said lever so that, when the lever is moved, the stirrup also moves in a direction axial to the pin. The stirrup is preferably made of thin iron, so as to take up little room below the tapping pin, and a hole H., is provided in said stirrup, through which the molten metal is allowed to flow. This hole is covered by a thin piece W., of some material instantaneously destructible by the heat of the molten material, as it

begins to flow from the tap hole. In most cases wood is to be preferred for the material of the cover-piece. This cover-piece, shown in Fig. 4 on a larger scale is shown held in place on the stirrup by little ears E. E. bent out of the material of the stirrup. The cover-piece may be attached to the stirrup in any suitable manner, or possibly not attached at all, and simply laid on the stirrup.

The tapping pin is shown in Fig. 1. at P., and may be either suspended from the crucible and left hanging in the tap-hole or attached to the cover-piece.

The operation of my device above described is as follows: Before tapping, the lever L., and the stirrup occupy the position shown in the drawing Fig. 1. When the crucible is to be tapped the operator moves the lever, by means of the cord C., into the position shown by the dotted lines F., Fig. 1. The tapping pin is struck by the cover plate W., and is forced by the same into the tapping hole. The molten metal burns its way instantaneously through said thin destructible material of which the cover piece must necessarily be made, and flows through the hole H., provided for this purpose in the stirrup.

It is not necessary that the arrangement shown should be strictly adhered to. The main feature of my invention is a tapping device operated at some distance away from the crucible by a cord, which causes a certain part of the device to press against the pin in a direction axial to said pin, and which part being instantaneously destroyed by the metal forms no obstruction to its flow.

What I claim and desire to secure by Letters Patent is:—

1. In combination with a crucible for molten material, a tapping device at the bottom thereof—consisting essentially of the tapping pin, the plate W, of a material to be destroyed by the molten metal, and mechanical means for moving the plate to actuate the tapping pin, substantially as described.

2. In combination with a crucible for molten material, having a tapping pin extending through the bottom thereof, a plate W, of a material to be destroyed by the molten metal, and means for moving the plate and tapping pin, substantially as described.

3. In combination with a crucible for molten material, having a tapping pin extending through the bottom thereof, a plate W, to be destroyed by the molten metal, and means for moving the plate to actuate the tapping pin, substantially as described.

4. In combination with a crucible for molten material, having a tapping pin extending through the bottom thereof, a stirrup S provided with a spout hole H, covered by the plate W, of a material to be destroyed by the molten metal, and means for moving the plate to strike the tapping pin substantially as described.

5. In combination with a crucible for molten material, a tapping device at the bottom thereof consisting of the tapping pin P, the movable stirrup S bearing the plate W, and the means for moving said stirrup and plate to actuate the tapping pin—for the purpose set forth.

6. In combination with a crucible for molten material,

5 having a tapping pin extending through the bottom thereof, the movable stirrup S bearing the plate W, and the means for moving said stirrup and plate to actuate the tapping pin, consisting of the lever L and cord C, substantially as described.

7. A tapping device for crucibles for molten material, consisting of a pin at the bottom thereof, and means for thrusting the pin through the plugging material of said crucible consisting essentially of the movable stirrup S,

actuating said tapping pin, lever L moving said stirrup S, 10 and cord C operating said lever L, substantially as described, & for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LIONEL HEYNEMANN.

Witnesses:

FLORENCE LACHMAN,  
GARDNER LANDON.