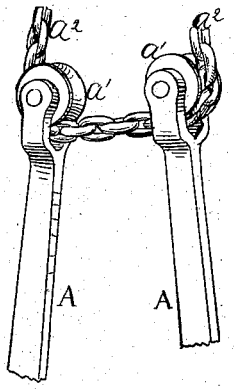
(No Model.)

S. C. MURDOCH.

CRUCIBLE TONGS.

No. 263,799. Patented Sept. 5, 1882.



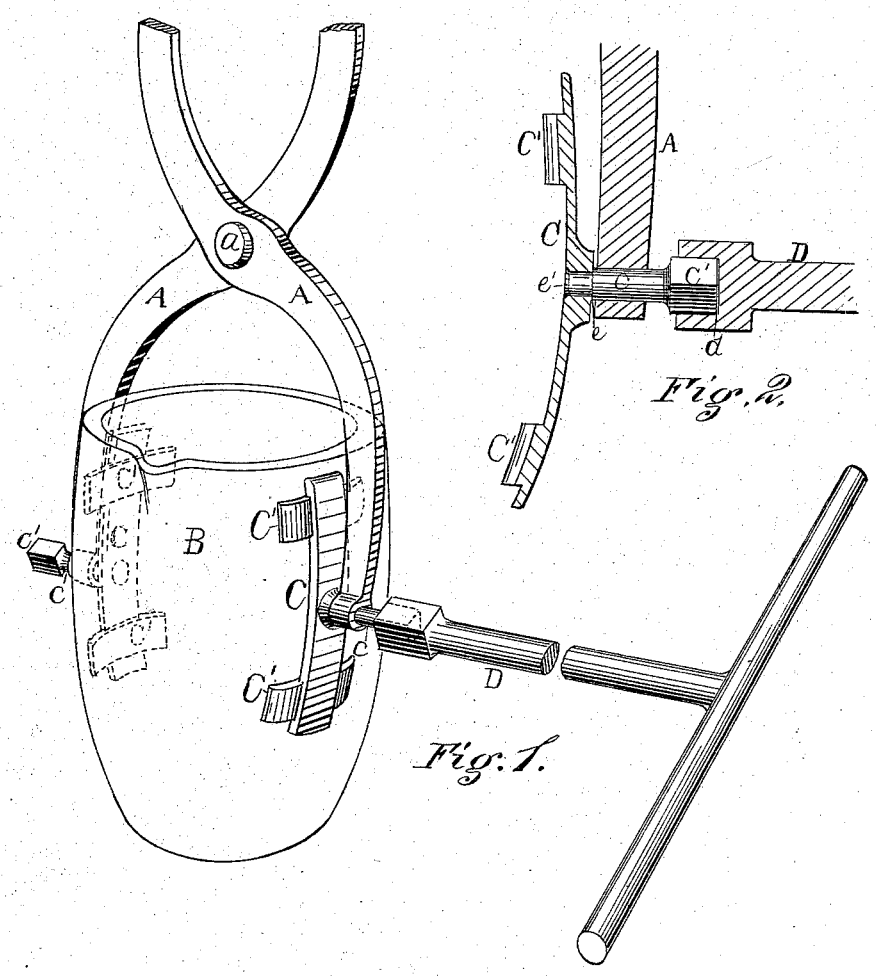


Fig. 1.

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

SAMUEL C. MURDOCH, OF PITTSBURG, PENNSYLVANIA.

CRUCIBLE-TONGS.

SPECIFICATION forming part of Letters Patent No. 263,799, dated September 5, 1882.

Application filed July 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL C. MURDOCH, a citizen of the United States, residing at Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Crucible-Tongs; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of my improved crucible-tongs, showing the same applied to a crucible; and Fig. 2 is a vertical sectional view of a part of the device to an enlarged scale.

In making crucible-steel the crucibles are ordinarily removed from the furnace by a workman, who stands over the furnace-opening above the crucible, and in such position applies a pair of tongs to and lifts the crucibles, with their contents, up from the furnace and sets them to one side on the floor. Then, with another pair of tongs, he, or another workman, pours out the contents. This work of lifting the crucibles and pouring them is not only very laborious and exhausting, owing to the intense heat, but it is also dangerous, and is frequently attended with bodily injury.

The object of my invention is to provide for doing this work by means of mechanical appliances, the use of which does not involve the excessive labor and exposure heretofore incurred in doing the work by hand.

My invention consists, in general terms, of a pair of tongs having pivoted clamping devices adapted to fit and grasp the exterior of the crucible on opposite sides and at different points in its height, with provision for turning such clamps on their pivots, whereby the crucible may be raised or lowered by the tongs, and while firmly held by them may also be tipped or turned for pouring; and I also provide for raising and lowering the tongs by means of a crane instead of by hand, as hereinafter more fully described and claimed.

In the drawings, A A represent two arms or members of a pair of tongs, the two being pivoted together centrally, in the usual way, as at *a*. To the lower end of each member A is secured, by a rotary bearing or pivot, *c*, a clamp-bar, C, such bar being rigidly secured to the inner end of pivot-pin *c*, in any convenient way—for example, between a shoulder, *e*, and upset head *e'* on the pin. Other forms of rigid attachment may be employed, however, if desired. To either end of the bars C are attached rigidly, in any convenient way, clamping shoes or blocks C' C', which have curved inner faces corresponding in form to the surface of the crucible B. When the tongs are closed upon a crucible, as illustrated in the drawings, these shoes C' bear against it on opposite sides, and at two points in its height on each side, thereby taking a firm and secure grip upon the crucible, such that it may be suspended and turned to either a vertical, horizontal, or inclined position at pleasure. One or both the pivots *c* are extended outward beyond the members A, and the outer end or ends, *c'*, are formed into an angular shank, to which a wrench or key, D, having therein a corresponding socket, *d*, may be applied for tipping the crucible for pouring. Instead of this wrench or key D, a crank, arm, a pair of tongs, or other equivalent device, may be used for tipping the crucible on the pivots of the tongs. I prefer to use wrenches, however, substantially such as shown, on account of convenience in applying, using, and removing them.

In the upper ends of members A are journaled pulleys or sheaves *a'*, through which is passed a chain, a^2, which is carried upward and attached in any convenient way to the hoisting-chain of a crane. Such crane may be of the usual construction, consisting of a vertical rotary post and a jib, on which is mounted a traveling car having sheaves on its frame. The lifting-chain is passed in various ways over these sheaves on the car, and thence, over suitable guide-sheaves, to a winding-drum on the post. Such cranes are in common use in and about steel-works, and need not be shown or described in detail.

In operation, the tongs are brought to the proper position over the crucible to be lifted by moving the jib and car of the crane. The tongs are then lowered, and a workman adjusts the clamping-shoes C' upon opposite sides of the crucible. Upward strain on the chain a^2 causes

the tongs to close tightly upon the crucible, and the heavier the crucible may be the tighter will be the grip of the tongs, so that the crucible will be held and raised by the tongs as the crane-chain is wound up. When raised to the proper height the crane is turned on its post, bringing the crucible over the molds which are to receive its contents. The wrenches D are then applied to shanks c' on one or both sides, as may be desired, and the crucible is tipped or turned on its pivots $c\ c$, so as to pour its contents into the mold or molds. When the crucible is emptied it may be placed on the floor or bed in the desired position by turning the crane and lowering the tongs. By reversing this operation the tongs may be used as well for setting the crucibles preparatory to melting. By this means the workmen are relieved from the laborious part of the work of lifting, moving, and pouring the crucibles. This work is very exhausting and dangerous when done by hand, as heretofore. With my improvement machinery may be employed for this work instead of hand-labor, and the workmen relieved to a corresponding extent.

I claim herein as my invention—

1. In a pair of crucible-tongs, the combination of pivoted members A A, bars C, pivoted one to each of the members A at their lower ends, and clamping-shoes C′, secured to the ends of such bars, substantially as set forth.

2. The combination of pivoted members A A, bars C C, pivot-pins $c\,c$, connecting the bars and members by a rotary joint, with wrench-shanks c' on the extended ends of such pins, and clamping-shoes C′ C′, substantially as and for the purposes set forth.

3. The combination of pivoted members A A, bar C, connected by a rotary joint to the lower end of each member, clamping-shoes C′, and lifting-chain a^2, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SAMUEL C. MURDOCH.

Witnesses:
R. H. WHITTLESEY,
C. L. PARKER.