

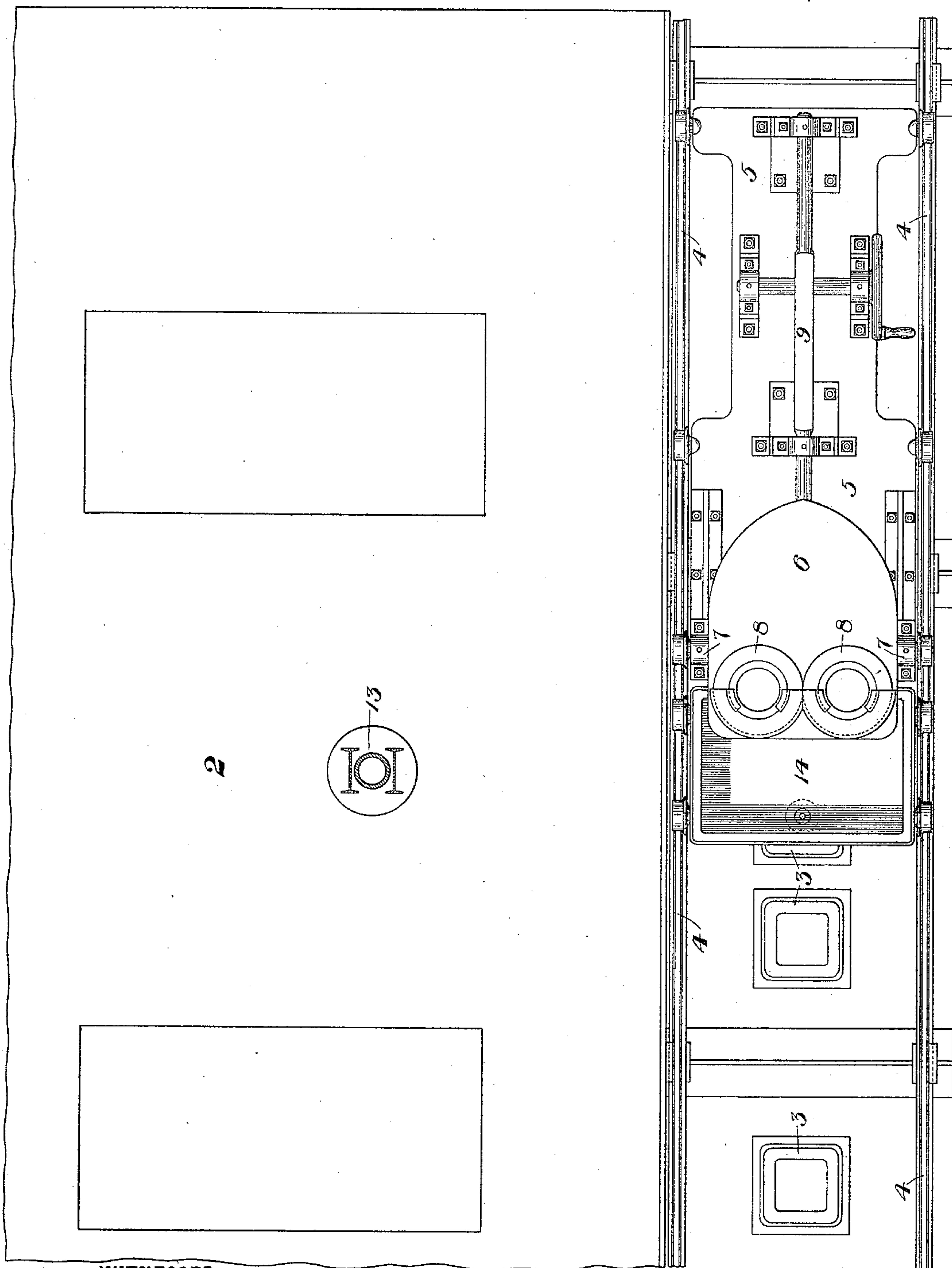
(No Model.)

2 Sheets—Sheet 1.

C. CAPPER.
APPARATUS FOR CASTING CRUCIBLE STEEL.

No. 529,321.

Patented Nov. 13, 1894.



WITNESSES

Thomas W. Baxendell
H. B. Swartz

Fig. 1.

INVENTOR

Charles Capper

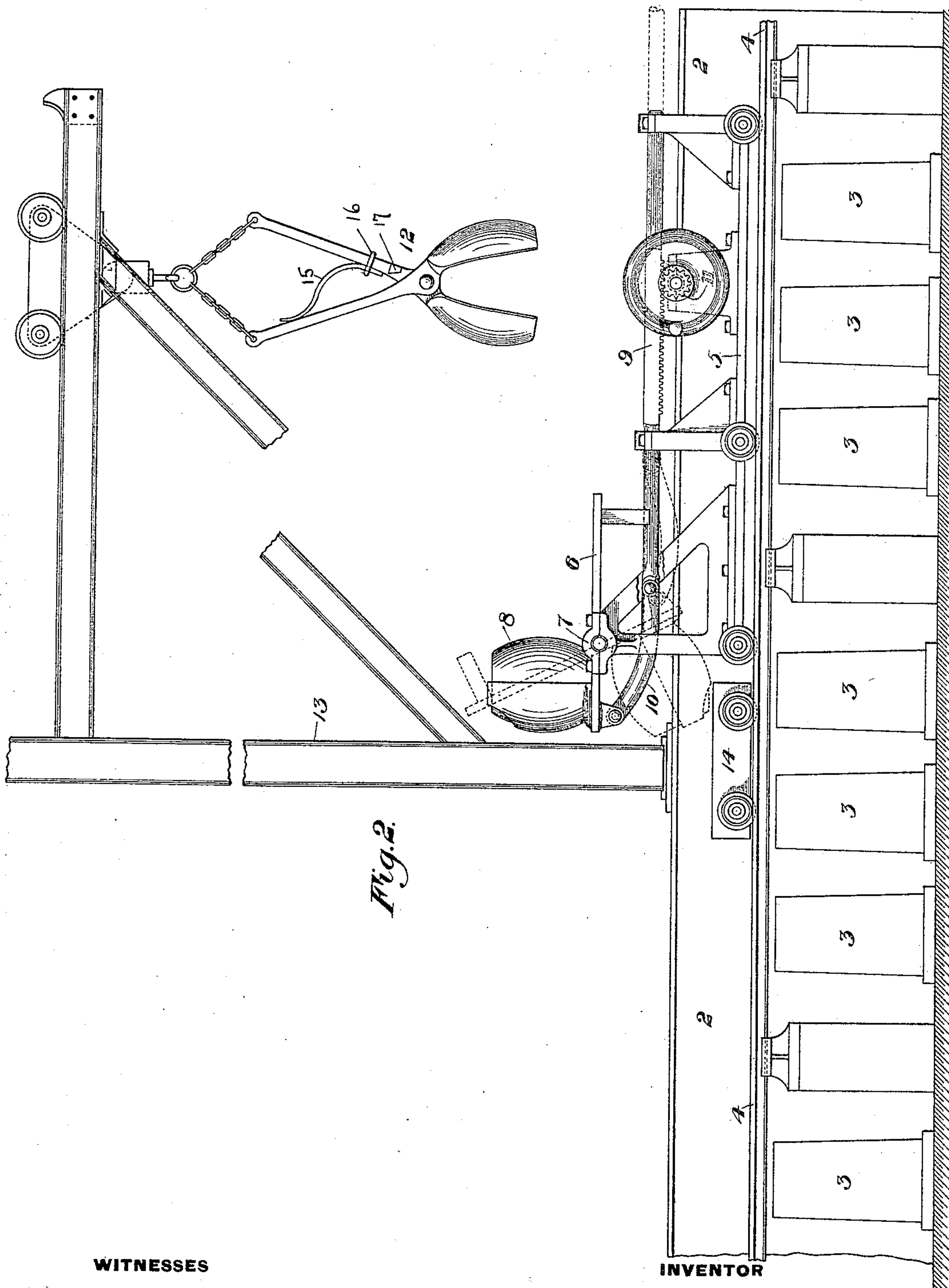
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WITNESSES

Thomas W. Oakwell
H. B. Swartz

INVENTOR

Charles Capper

UNITED STATES PATENT OFFICE.

CHARLES CAPPER, OF WILKINSBURG, ASSIGNOR OF ONE-HALF TO WILLIAM D. CORCORAN, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR CASTING CRUCIBLE-STEEL.

SPECIFICATION forming part of Letters Patent No. 529,321, dated November 13, 1894.

Application filed October 31, 1893. Serial No. 489,636. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CAPPER, of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Casting Crucible-Steel, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my improved apparatus; and Fig. 2 is a side elevation thereof.

Like symbols of reference indicate like parts in each figure.

Heretofore, in the manufacture of crucible steel, it has been common practice to melt the steel in small crucibles which are raised from the furnaces by workmen and their contents teemed into the ingot molds; but as no efficient means have been known by which large crucibles can be handled and teemed, the operation of crucible steel making has necessarily been slow and laborious.

My invention relates to means for facilitating the work of casting, and it consists principally in a tipping holder adapted to receive and hold a crucible, and to tip the same so as to discharge its contents directly or indirectly into an ingot mold, and also in certain other parts and combinations of the apparatus, as hereinafter described.

In the drawings, 2 represents the crucible-furnaces of a steel plant.

3, 3, are ingot molds set preferably beneath a track 4, on which the crucible holder travels.

As shown in the drawings, the crucible holder is mounted on a car 5, set on the track 4, and adapted to be moved thereon back and forth over the ingot molds. The holder proper consists of a table or plate 6, journaled in suitable bearings 7 on the car, and adapted to receive and hold one or more crucibles 8. For this purpose, it is preferably provided at its forward end with curved guard-plates which are of the size and shape of the side of the crucible, and have at their upper edges lips adapted to fit over the rim of the crucible. When the crucible is fitted against these guard-plates they are held thereby and prevented from falling when the table is tipped

forwardly, and as the guard-plates are open at the back, they permit easy insertion and removal of the crucibles.

Suitable mechanism is employed for tipping the table 6. The preferable device for this purpose is a rack-bar 9 set in bearings on the car, and connected at the end by a pivoted link 10 to the table. When the rack-bar is reciprocated by means of a pinion 11 or other device, the table will be tipped and the contents of the crucible discharged directly into one of the molds, or preferably into a funnel or pan 14, which may be moved on the track so as to bring its discharge nozzle over any of the molds, and whose mouth is made of sufficient width to receive the pouring from two or more crucibles at once.

To remove the crucibles from the melting furnace and to place them on the holder, I employ tongs 12, whose jaws are made approximately of the shape and size of the surface of a crucible, so that acting in combination with the stop 17 hereinafter described, they may seize and support the same without exerting a crushing force upon any portion thereof. These tongs are hung from the jib of a crane 13, and by means thereof the crucible to be poured is grasped in the heating-furnace, raised therefrom, and placed in the tipping holder, without requiring the close approach of the workmen. The tongs are normally held open by means of a spring 15, and are fitted with a ring 16 or similar device, by moving which upwardly the pressure of the spring upon the tongs may be relieved and the tongs permitted to be closed upon the crucible.

17 is a stop which limits the approach of the jaws of the tongs and prevent their excessive pressure upon the crucible. When the crucible or crucibles have been set in the holder, the car 5 and funnel or pan 14 are moved over the mold to be filled, and the holder is then tipped, so as to discharge the metal from the crucibles into the funnel. When the metal has been teemed, the holder is righted, the crucibles removed by the tongs, and other full crucibles substituted.

The apparatus enables me to dispense with a large amount of the labor heretofore required in casting, and as I can use crucibles

of large capacity, holding heavy charges, the work is expedited and the manufacture of the steel correspondingly cheapened.

Within the scope of my invention as defined in the broader claims of this application, changes in the form and construction of the parts may be made by the skilled mechanic, since

What I claim is—

10 1. In an apparatus for the manufacture of crucible steel, a movable car provided with a platform permanently pivoted to the car, and forming a part thereof, with plates or arms on the forward end of said platform for grasping the crucible and holding it rigid during the movement of the platform; substantially as described.

20 2. For the manufacture of crucible steel, a tipping table having a holder adapted to fit and hold the forward side and top of a crucible, and open at the back to permit easy insertion of the crucible; substantially as described.

25 3. In an apparatus for the manufacture of crucible steel, a movable car provided with a table journaled in bearings on the car, and provided with means for holding the crucible on said table, with mechanism for tipping said table, comprising a reciprocating rack bar set in bearings on the car and connected with the table by a pivoted link, and means for operating said rack bar.

35 4. In an apparatus for the manufacture of crucible steel a furnace, a crucible to be inserted therein, a holder for said crucible,

means for removing said crucible from the furnace to the holder, said holder comprising a tilting platform with plates or arms for grasping said crucible, and means for tilting the holder; substantially as described.

40 5. In an apparatus for the manufacture of steel, a furnace, and crucible holder with means for transferring the crucible to the holder, said holder being independent of the furnace and adapted to receive and hold the crucible when taken from the furnace, and means for tipping the crucible holder.

6. In an apparatus for the manufacture of steel, a movable car, a platform pivoted on said car and having upwardly projecting curved guard plates embracing the crucibles at the front and conforming to the shape thereof, and having lips fitting over the rims of the crucibles, upon opposite sides thereof, and mechanism mounted on the car for tipping the platform; substantially as described.

7. For the manufacture of crucible steel, a tipping holder adapted to hold at least two crucibles and movable to carry the same over the molds to to be filled, in combination with a pan or funnel movable with the holder in the same plane and adapted to receive the contents of the crucibles when the same are tipped; substantially as described.

In testimony whereof I have hereunto set my hand.

CHARLES CAPPER.

Witnesses:

THOMAS W. BAKEWELL,
H. M. CORWIN.