

No. 717,053.

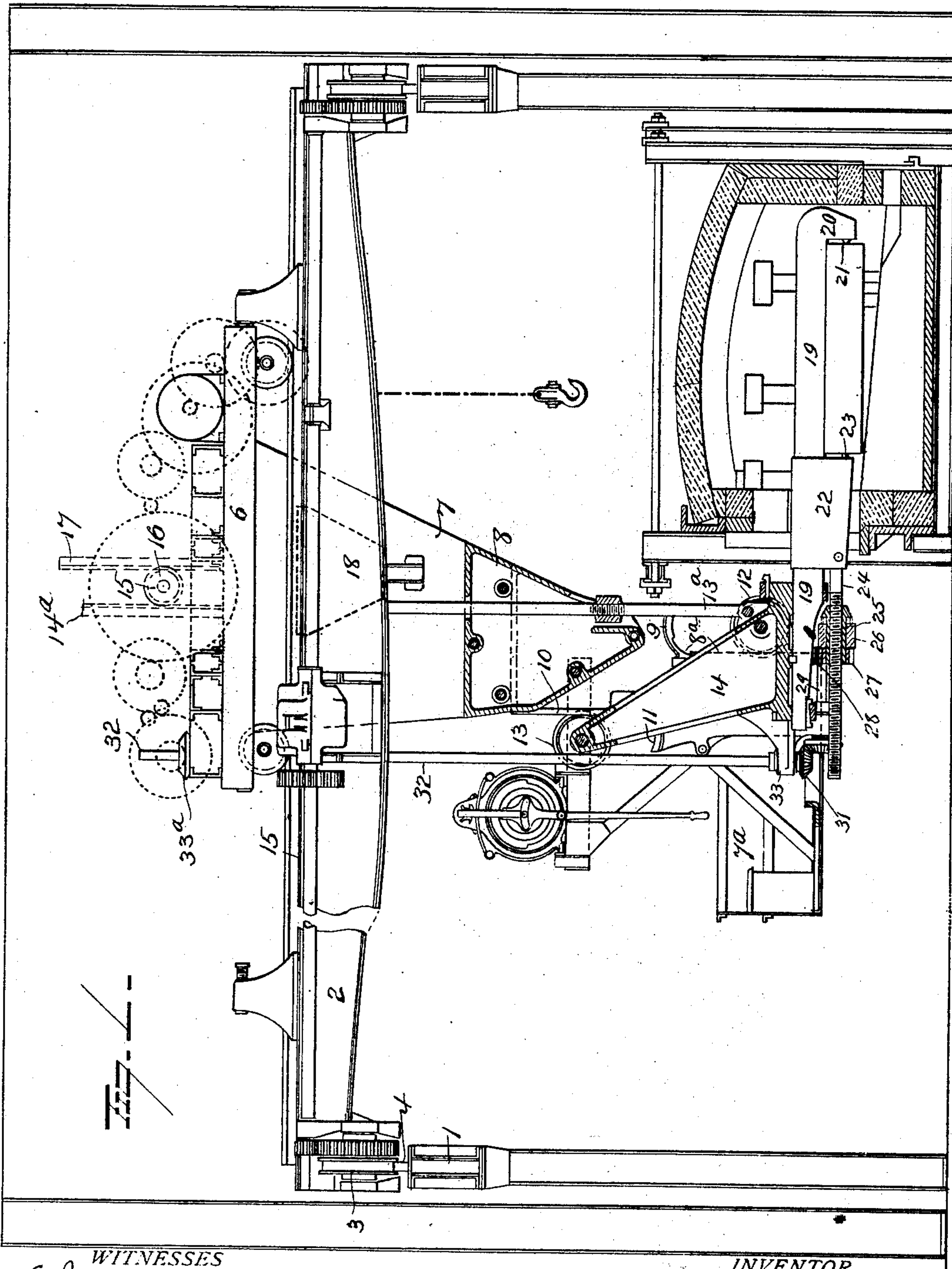
Patented Dec. 30, 1902.

C. L. TAYLOR.  
CHARGING OR DISCHARGING CRANE.

(Application filed July 8, 1902.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

*E. J. Nottingham*  
*G. F. Downing*

INVENTOR

*C. L. Taylor*  
*By N. A. Seymour*  
Attorney

No. 717,053.

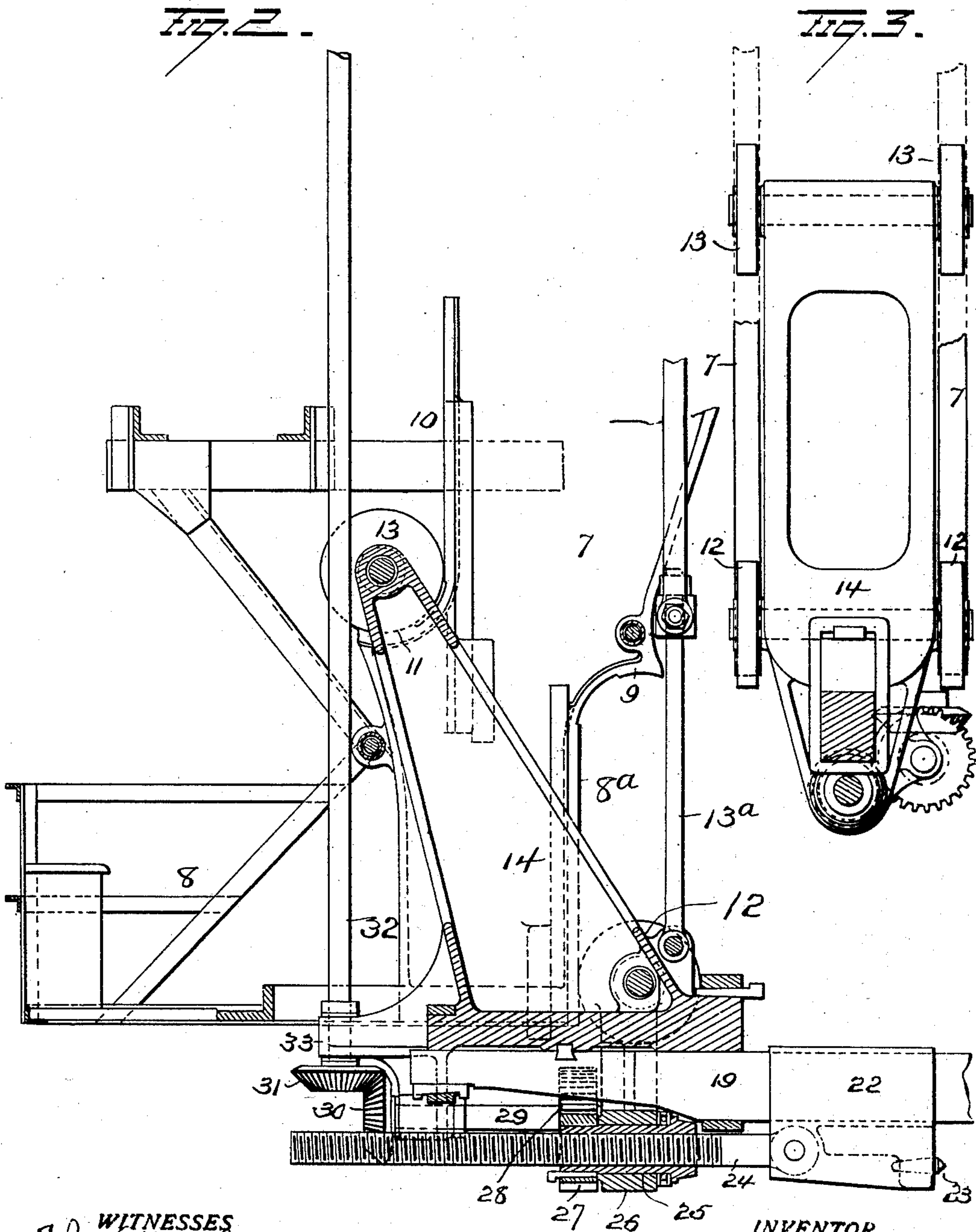
Patented Dec. 30, 1902.

C. L. TAYLOR.  
CHARGING OR DISCHARGING CRANE.

(Application filed July 8, 1902.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES  
E. Nottingham  
G. F. Downing

INVENTOR  
C. L. Taylor  
By H. A. Seymour  
Attorney



# UNITED STATES PATENT OFFICE.

CLARENCE L. TAYLOR, OF ALLIANCE, OHIO, ASSIGNOR TO THE MORGAN ENGINEERING COMPANY, OF ALLIANCE, OHIO.

## CHARGING OR DISCHARGING CRANE.

SPECIFICATION forming part of Letters Patent No. 717,053, dated December 30, 1902.

Application filed July 8, 1902. Serial No. 114,808. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENCE L. TAYLOR, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Charging and Discharging Cranes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in charging and discharging cranes, and more particularly to the means for supporting and guiding the ingot-charging bar; and it consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of my improvement, partly in section, showing the apparatus about to deposit an ingot in a furnace. Fig. 2 is an enlarged view, partly in section, of the carrying-frame and charging-bar; and Fig. 3 is a view in front elevation of the latter, showing the charging-bar and screw in section.

1 represents an elevated trackway of any suitable construction designed to receive and support the traveling bridge 2. The trackway 1 extends lengthwise the mill, thus covering in its movements all the floor-space traversed by the ingot in its movements to and from the furnace.

The bridge 2 is mounted on wheels 3, which latter traverse the rails 4, and is propelled by a motor and suitable gearing, which, however, form no part of my present invention. This bridge is provided on its upper face with the rails 5, extending lengthwise the bridge, and mounted on the latter and adapted to travel on the bridge is the trolley 6, provided with the depending carrying-frame 7. This trolley carries its motor and gearing by which it is propelled lengthwise the bridge, and all the motors on the trolley and the one on the bridge for propelling the latter are controlled by mechanism of the usual character located within the operator's cage 7<sup>a</sup>, which, as shown in Fig. 1, is carried by the frame 7. This frame 7 comprises two parallel structures either in the form of plates or skeleton framework of somewhat triangular shape, the upper or larger ends of the parallel frames or

structures being secured to the trolley-frame and depending between and below the bridge-girders, the lower ends terminating well down below the tops of the furnaces. These side or carrying frames 7 are preferably braced at a point below the bridge-girders by the hollow block 8, which latter operates as a spacing-block and holds and braces the two frames 7 in their proper relative positions. The frames 7 are each provided on their front faces with vertical trackways 8<sup>a</sup>, starting from their lower ends and terminating at their upper ends in curved stops 9, and are also provided on their rear faces with similar tracks 10, terminating at their lower ends in curved stops 11, the curved stops of the rear tracks 10 being preferably in a horizontal plane above the stops 9 of the front tracks 8<sup>a</sup>. The tracks 10 and 8<sup>a</sup>, while they are parallel, are located in different horizontal planes, and the latter are designed to form bearings for the wheels 12, while the tracks 10 form bearings for the wheels 13, the said wheels 12 and 13 being secured to axles journaled in the vertically-moving truck 14. This truck 14 is located between the depending sides of frames 7 and is limited in its upward movement by the curved stops 9 and in its downward movement by the stops 11, and as the charging-bar projects from the lower front end of the frame adjacent to the lower wheels 12 the strain will be equally borne by the several wheels of the truck. This truck is free to move vertically and is connected near its front end to the rod 13<sup>a</sup>, which latter projects upwardly and is connected to a rack-bar 14<sup>a</sup>, the teeth of which are engaged by a pinion 15 on shaft 16, the latter being driven by any suitable motor.

Located on the opposite side of the pinion and engaging the latter is a rack-bar 17, carrying a weight 18 at its lower end, the said weight serving as a counterweight for the truck 14 and the charging-bar carried thereby.

From the construction thus far described it will be seen that by rotating pinion 15 the rack-bar 14<sup>a</sup> and the truck 14 carried thereby will be elevated or lowered, as the case may be, the weight 18 moving in the opposite direction and serving at all times as a counterweight for the truck 14 and parts carried thereby.

Detachably secured to the lower end of



truck 14 is the charging-bar 19. This bar is provided at its outer free end with a depending projection 20, having a gripping-toe 21, and slidingly mounted on the bar 19 is the sleeve 22, also provided with a gripping-toe 23. Secured to and projecting rearwardly from the sleeve 22 is the screw 24, on which is mounted the threaded nut 25. This nut 25 is journaled in a bearing 26, carried by the truck 14, and is provided at its rear end with a pinion 27, which latter is engaged by the pinion 28 on the shaft 29. This shaft is also journaled in bearings carried by the truck 14 and is provided on its rear end with a bevel-pin 30, which meshes with a bevel-pin 31 on vertical shaft 32. This shaft 32 is journaled and supported in a bearing 33, carried by the truck 14. Hence as the truck moves vertically the shaft 32 moves with the same. The upper end of this shaft is made either angular in cross-section or is provided with a spline, and in either event it passes through and has sliding contact with the bevel-pin 33<sup>a</sup>, carried by the trolley, the pinion 33 having motion imparted thereto through suitable gearing, thus rotating the shaft 32, and as the latter is coupled up to the nut 25 it follows that when shaft 32 is rotated the nut 25 is also rotated and operates to slide the sleeve 22 back and forth on the charging-bar 19. With this construction the truck 14 can be lowered to engage an ingot and lift the same for its passage out of or into a furnace, and as the wheels of the truck are located in different horizontal planes the strain is equally borne by both sides of the truck and by both sides of the depending frame 7.

It is evident that changes in the construction and relative arrangement of the several parts might be made without avoiding my invention, and hence I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described; but,

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

1. In a charging-crane, the combination with a bridge and a trolley thereon, of a frame depending from the trolley and provided at a point below the bridge with parallel trackways on its front and rear faces, the trackway on the front face extending below the trackway on the rear face, of a truck having wheels engaging said trackways, a charging-bar carried by said truck and means on the charging-bar for grasping an ingot.

2. In a charging-crane, the combination with a bridge and a trolley thereon, and a truck-carrying frame depending from the trolley, the said depending frame having a vertical trackway on its front face, and a trackway on its rear face, the latter trackway being parallel to, but in a plane above the trackway on the front face of the depending frame, of a truck having two sets of wheels, one set for each trackway, and a

charging-bar carried by the truck and means on the charging-bar for grasping an ingot.

3. In a charging-crane, the combination with a traveling bridge, a trolley thereon and a truck-carrying frame depending from the trolley, of a truck carrying wheels which travel against the front and rear faces of said depending frame, means for moving the truck vertically, a counterweight for the truck, and a charging-bar carried by the truck.

4. In a charging-crane, the combination with a traveling bridge, a trolley thereon and a truck-carrying frame depending from the trolley the said frame having trackways on its front and rear faces, of a truck having wheels engaging both of said trackways, means for raising and lowering the truck, a removable charging-bar carried by the truck, means on the charging-bar for grasping the ingot and means for actuating said ingot-grasping devices.

5. In a charging-crane, the combination with a traveling bridge, a traveling trolley thereon, and a truck-carrying frame depending from said trolley, the said frame comprising side sections, each of which has a track on its front and rear faces, of a truck located between said side sections and having wheels engaging the trackways, means for moving the truck vertically, a charging-bar carried by the truck and means on the charging-bar for grasping an ingot.

6. In a charging-crane, the combination with a traveling bridge, a traveling trolley thereon, and a truck-carrying frame depending from the trolley, the said frame comprising two separated side frames each of which is provided on its front face near its lower end with a trackway, and on its rear face with a track, the latter being in a plane above the track on the front faces, of a truck located between said side frames and having wheels resting on said tracks, means for moving said truck vertically, a charging-bar carried by said truck, and means on the charging-bar for grasping an ingot.

7. In a charging-crane, the combination with a traveling bridge, a traveling trolley thereon and a truck-carrying frame depending from the trolley and provided with trackways on its front and rear faces, the trackways on the front face terminating at their upper ends in curved stops, and the trackways on the rear face being in a plane above the front trackway and provided at their lower ends with curved stops for the rear wheels, means for moving said truck vertically, a charging-bar carried by said truck and means on the charging-bar for grasping an ingot.

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

CLARENCE L. TAYLOR.

Witnesses:

DAVID FORDING,  
A. L. ROBERTS.