

No. 754,910.

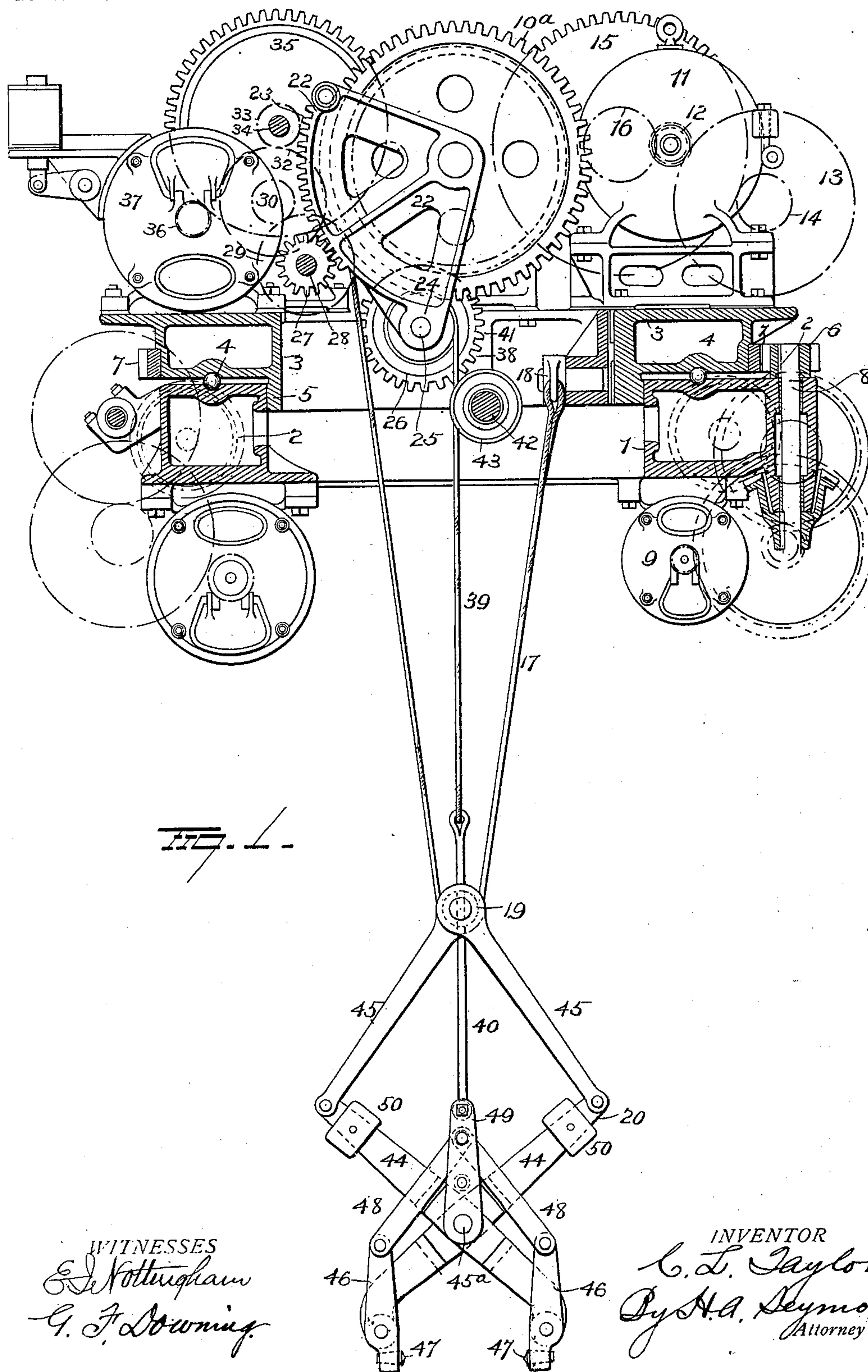
PATENTED MAR. 15, 1904.

C. L. TAYLOR.
INGOT CRANE.

APPLICATION FILED MAY 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES
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G. F. Downing

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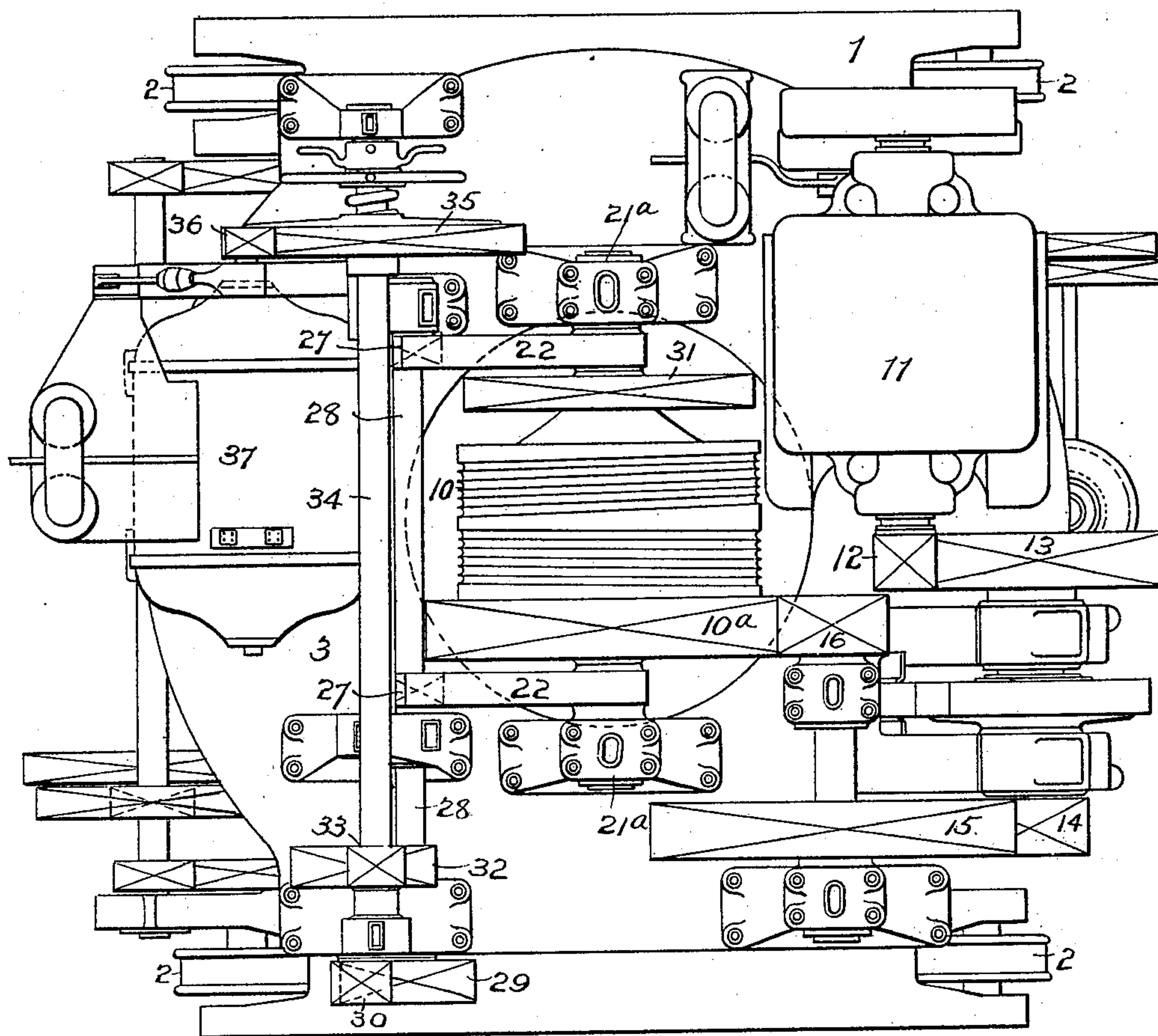


FIG. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

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

INGOT-CRANE.

SPECIFICATION forming part of Letters Patent No. 754,910, dated March 15, 1904.

Application filed May 27, 1903. Serial No. 159,044. (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 Ingot-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 trolley for overhead traveling cranes designed more particularly for operating ingot-tongs; and it consists in the parts and combination of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in vertical section, partly in elevation, of a traveling trolley embodying my invention, the motors and a majority of the gear-wheels being shown diagrammatically; and Fig. 2 is a plan view of same, the motors and gear-wheels being shown diagrammatically.

1 represents a trolley mounted on track-wheels 2, which latter are designed to travel on rails on an overhead traveling bridge. (Not shown.) The track-wheels at one or both ends of the trolley are positively actuated by a motor or gearing in the well known and usual manner. Mounted on the trolley 2 is the turn-table 3, which latter carries the tongs hoisting and closing mechanism. This table rests on antifriction balls or rollers 4 and is provided with a depending flange 5, which rests within a central opening in the trolley and prevents any lateral displacement or movement of the table on the trolley. This table is rotated by the pinion 6, meshing with the rack-bar 7 on the table 3. This pinion 6 is carried by shaft 8, mounted in trolley 1, and is actuated by the motor 9 and suitable interposed gearing. (Shown in dotted lines.)

Mounted on the turn-table 3 is the main hoist-drum 10. This drum is actuated by the motor 11 through the pinion 12 on the motor-shaft and the toothed wheels 13, 14, 15, and 16, the latter of which meshes with a toothed wheel 10^a on the drum 10 or on the drum-shaft and operates to wind and unwind the cable or cables 17. The free end of the cable

17 or the ends, if more than one cable be used, are secured at 18, as shown in Fig. 1, to a bracket carried by the turn-table and then pass around a sheave or sheaves on the beam 19, carrying the tongs 20, and from thence up to the drum 10.

Mounted on the drum-shaft at opposite ends of the drum 21 are the segments 22, each of which is provided throughout a portion of its surface with the teeth 23. The two segments thus mounted are provided at their lower ends with bearings 24, in which is mounted the shaft 25, carrying the auxiliary drum 26. The auxiliary drum normally rests below the main drum, as shown in Fig. 1, and as it is mounted in swinging or movable bearings concentric with the axis of the main drum it is free to move in the arc of a circle partly around the main drum.

Meshing with the teeth 23 of the segments 22 are the pinions 27. These pinions are secured to shaft 28, which also carries the larger gear-wheel 29, which meshes with gear-wheel 30. The shaft carrying wheel 30 also carries a large gear-wheel 32, which meshes with small gear 33 on shaft 34, and the latter carries the larger toothed wheel 35, which meshes with pinion 36 on the armature-shaft of motor 37.

Shaft 25, carrying the auxiliary drum, also carries the pinion 38, which meshes with pinion 31, fast on shaft 21^a of the main drum 10, so that as the main drum is rotated to wind up its cable or cables it also turns the auxiliary drum in a direction to wind up its cable, and the two drums are of such size and so geared that they lift evenly. Hence as cable 17 from the main drum carries the tongs 20 and the cable 39 from the auxiliary drum is connected to the rope-clamp 40 of the tongs it will be seen that the tongs will rise without any tendency toward opening or spreading of the tongs-levers.

Depending from the table 3 are brackets 41, carrying shaft 42, on which is mounted the guiding pulley or sheave 43. This pulley is located in a position to hold the cable 39 centrally under the main drum irrespective of the position of the auxiliary drum.

The tongs 20 comprise two levers 44, pivoted at 45^a and connected at their upper ends by the braces 45. The braces are attached at their upper ends to the sheave-beam 19, carrying a sheave around which the cables 17 pass and carry at their lower ends the tongs 46. These tongs 46 are pivoted at points between their ends to the levers 44 and are provided near their lower ends with the bits 47 and connected at their upper ends by the braces 48 to the hanger 49. This hanger 49 carries the pivotal bolt 45^a, carrying the levers 44, and also carries the rope-clamp 40, to which the cable 39 is attached. The levers 44 are each weighted, as shown at 50, whereby they normally tend to a separation of the lower ends of the levers 44 and to an opening movement of the tongs 46, the latter being maintained in an approximately parallel position by the braces 48.

The tongs are normally suspended on the cable 17, and as the latter is connected to the levers 44 it follows that when the weight is on the levers 44 the tendency will be to close the tongs 46; but just as soon as the weight of the tongs and its load are transferred from the levers 44 to the hanger 49 the weights 50 cause the tongs to separate, thus releasing the ingot or other object engaged by the tongs.

The rope-clamp 40 passes up through the sheave-beam 19 and is connected at its upper end to the cable 39. This cable 39 is, as before stated, wound on the auxiliary drum 26, and the parts are so proportioned and arranged that the cable 39 moves vertically at a speed equal to the vertical movement of the tongs carried by the cable 17. If, therefore, the two drums are in their normal position and are rotating (and as the auxiliary drum is driven by the main drum they must rotate in unison) either in directions to raise or lower the tongs, it will be seen that the load will be borne by the main drum and its cables. When, however, it is necessary to open the tongs to either grasp or release an ingot or other object, the segments 22, carrying the auxiliary drum, are turned in a direction to elevate the auxiliary drum in the arc of a circle, and this upward movement of the auxiliary drum combined with its increased rotary movement, due to its travel in a direction opposite the direction of rotation of the main drum, operates to shorten the cable 39, and thus transfer the weight of the tongs from the cable 17 to the cable 39. This transfer of the weight from the braces 45 of the tongs to the hanger 49 releases the levers 44, which drop or open, and thus cause the tongs to separate.

With this device all the movable parts are carried on the turn-table. Hence the tongs can be turned to any position to grasp an ingot or other object without any twisting of the cables.

It is evident that many slight changes might be resorted to in the relative arrangement of

parts herein shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction 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 an overhead traveling crane, the combination with a main drum and means for rotating same, of an auxiliary drum geared to the main drum so as to be actuated thereby and means for changing the position of the auxiliary drum with relation to the main drum.

2. In an overhead traveling crane, the combination with a main drum, of an auxiliary drum and means for changing the position of the auxiliary drum with relation to the main drum.

3. In an overhead traveling crane, the combination with a main drum, of an auxiliary drum, gearing connecting the two drums whereby they are caused to move in unison, and means for changing the position of the auxiliary drum with relation to the main drum.

4. In an overhead traveling crane, the combination with a trolley and a turn-table thereon, of two drums carried by said turn-table and means for changing the relative positions of the two drums.

5. In an overhead traveling crane, the combination with a trolley, of a main drum, means for rotating the latter, an auxiliary drum located in a plane below the main drum and gearing for rotating the auxiliary drum.

6. In an overhead traveling crane, the combination with a trolley, a main drum thereon and means for rotating said drum, of movable bearings normally located in a plane below the main drum, an auxiliary drum in said bearings, means for rotating the auxiliary drum and means for moving the bearings.

7. In an overhead traveling crane, the combination with a trolley and a turn-table thereon, of a main drum on said turn-table, an auxiliary drum geared up to said main drum so as to rotate therewith, and means for moving the auxiliary drum in the arc of a circle concentric with the axis of the main drum.

8. The combination with a main drum, of an auxiliary drum, gearing connecting the main and auxiliary drums, a guiding sheave or roller below the auxiliary drum and means for swinging the auxiliary drum in the arc of a circle partly around the main drum.

9. The combination with a main drum, and a motor and gearing for same, of an auxiliary drum geared up to the main drum so as to be rotated thereby, a guiding sheave or roller below the auxiliary drum for maintaining the cable of the auxiliary drum always in the line of the vertical axis of the main drum, and means for swinging the auxiliary drum in a direction toward and over the guiding-sheave.

10. The combination with a main drum and means for rotating same, of frames mounted on the axis of the main drum, an auxiliary drum carried by said frames, toothed wheels
5 connecting the two drums, and means for swinging the frames.

11. The combination with a main drum and means for rotating same, of frames mounted on the axis of the main drum, an auxiliary
10 drum carried by said frame, gearing connecting the two drums, a guiding sheave or roller below the auxiliary drum, and means connected with the frames for swinging the auxiliary
15 drum toward and away from the guiding sheave or roller.

12. The combination with a main drum and means for rotating same, of toothed segments mounted on the axis of the main drum, means

for rocking said segments, an auxiliary drum carried by said segments and gearing connect- 20
ing the two drums.

13. The combination with a main drum and means for rotating same, of toothed segments mounted on the axis of the main drum, means
for rocking said segments, an auxiliary drum 25
carried by the segments, gearing connecting the two drums and a guiding sheave or roller below the auxiliary drum.

In testimony whereof I have signed this specification in the presence of two subscrib- 30
ing witnesses.

CLARENCE L. TAYLOR.

Witnesses:

A. L. ROBERTS,
N. C. FETTERS.