

No. 725,471.

PATENTED APR. 14, 1903.

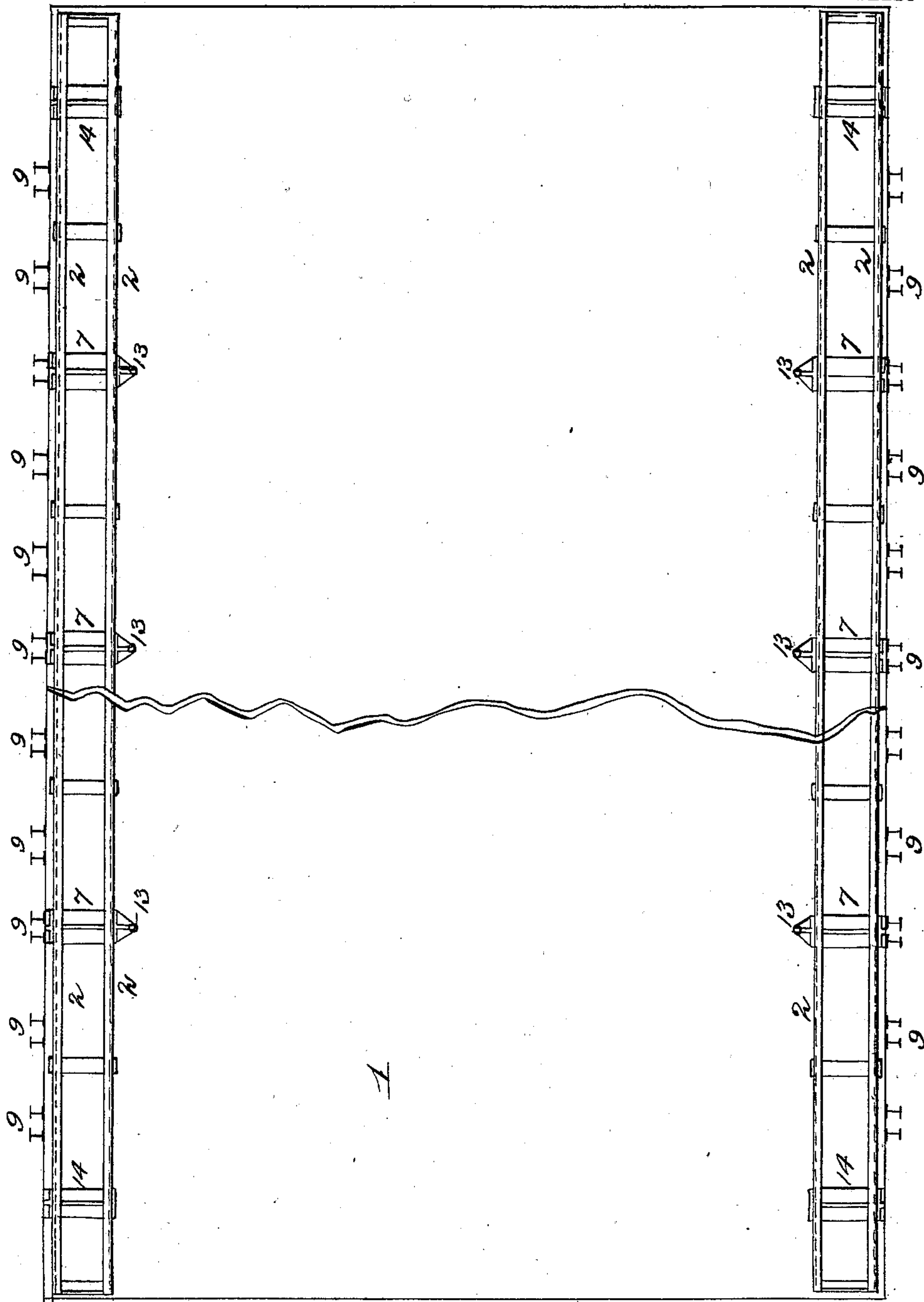
E. A. MOORE.

MEANS FOR REMOVING COKE OVEN DOORS.

APPLICATION FILED JULY 9, 1902.

NO MODEL.

5 SHEETS—SHEET 1.



Witnesses  
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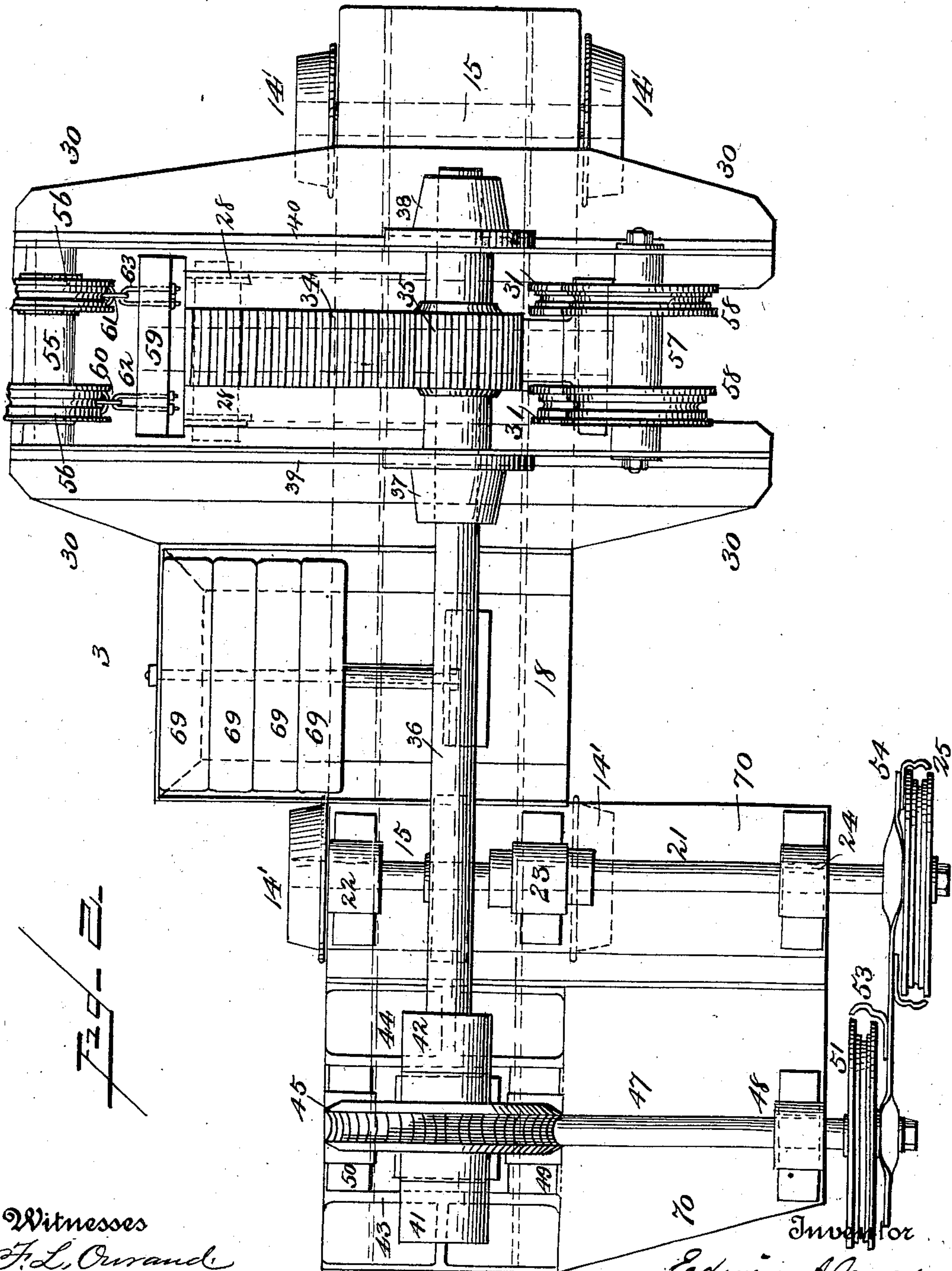
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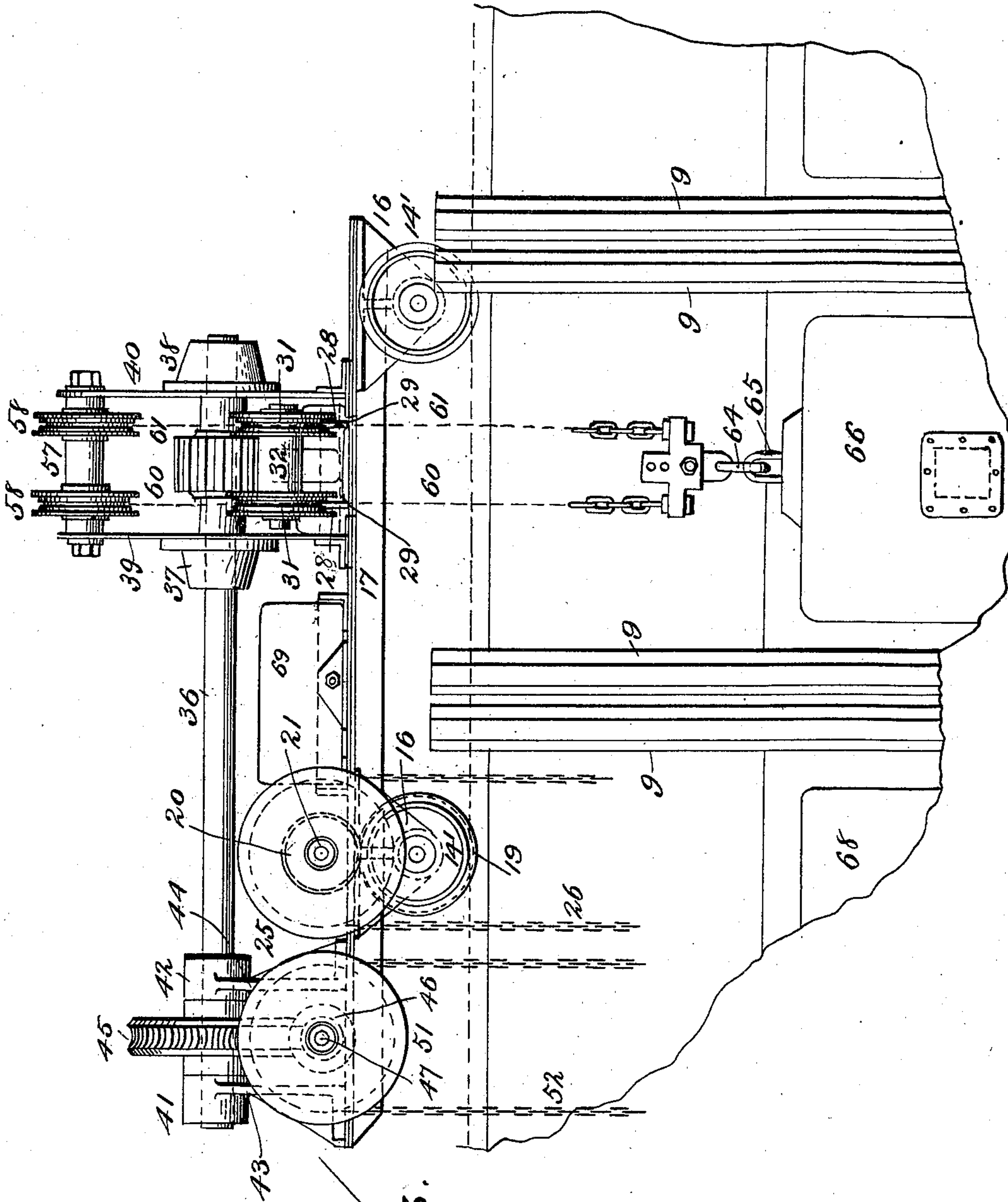


Fig. 3.

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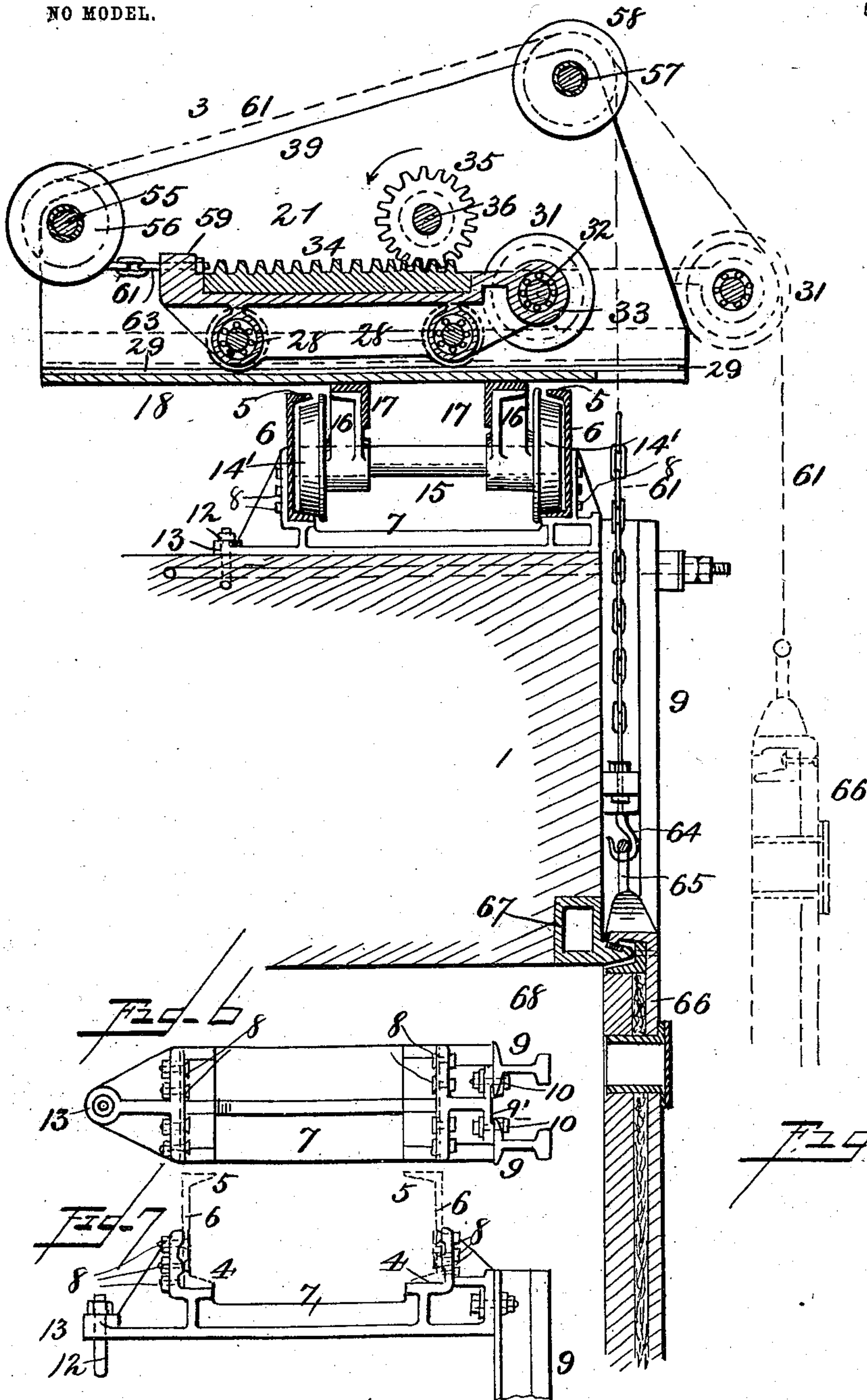
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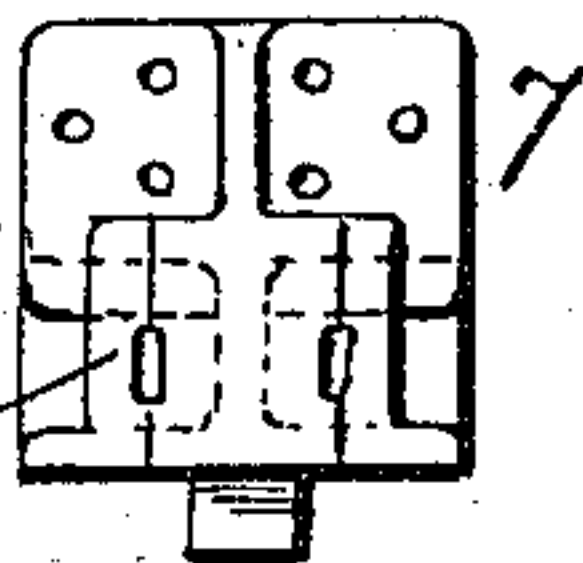
NO MODEL.

5 SHEETS—SHEET 5.



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# UNITED STATES PATENT OFFICE.

EDWIN A. MOORE, OF PHILADELPHIA, PENNSYLVANIA.

## MEANS FOR REMOVING COKE-OVEN DOORS.

SPECIFICATION forming part of Letters Patent No. 725,471, dated April 14, 1903.

Application filed July 9, 1902. Serial No. 114,881. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN A. MOORE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Means for Removing Coke-Oven Doors; 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, primarily, to coke-ovens, preferably of the type known as the "Otto-Hoffman," and has especial reference to means employed for removing and replacing the oven-doors; and the invention consists in certain improvements in construction which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a top plan view of a battery of coke-ovens, showing only the position of the rails or tracks for the door-hoisting car; Fig. 2, a top plan view of the car on an enlarged scale; Fig. 3, an elevation showing part of a battery of coke-ovens with the car in position for hoisting or removing a door, the rail or track being omitted to avoid confusion; Fig. 4, a transverse section of the battery of ovens, showing the car in end elevation; Fig. 5, a like view showing the car, partly in section, and a door in removed position in dotted lines; Fig. 6, a top plan view of one of the rail-chairs; Fig. 7, a side elevation of the same; Fig. 8, an end view of the chair; Fig. 9, a side elevation of the rail-chair used near the ends of the track, and Fig. 10 an end view of the same.

Reference being had to the drawings and the designating characters thereon, 1 indicates a battery of coke-ovens, on the top of which and near each side, one of which constitutes the front or charging side and the other the rear or discharging side of the ovens, are rails 2 2, constituting a track for the door-hoisting car 3. The rails 2 are preferably made of channel-iron, as shown in Figs. 4, 5, and 7, having inwardly-extending flanges 4, on which the wheels of the car run, and 5, which overhangs the tread of the wheels and in conjunction with the web 6 forms a guard

therefor and prevents interference with the track or rails from the outside thereof.

7 represents chairs on which the rails rest and are secured thereto by bolts 8, and the chairs extend across the track, so that both rails rest upon each chair. The chairs are secured to the buckstaves 9 at their outer or front ends 9' by bolts 10, and at their rear or inner ends they are secured to the transverse tie-rod 11 by a bolt 12, having a hook on the inner end (not shown) which engages rod 11, as shown in Figs. 4 and 5, the latter bolt passing through an extension 13 of the chair.

14 represents chairs applied to the rails or track near the ends of the battery and are like the chairs 7 in all respects except that they are not provided with vertical end 9' and the extension 13.

The car 3 is provided with wheels 14', secured to axles 15, and on the axles are brackets 16, on which rest beams 17, which support the body 18 of the car, and on one of the axles is a gear-wheel 19, which is engaged by a pinion 20 on the inner end of shaft 21, supported in bearings 22, 23, and 24 and provided with a wheel 25, engaged by a chain 26, by which the car is propelled along the track throughout the length of the battery by manual power.

27 is a trolley having wheels 28, which engage tracks or grooves 29, which extend across the car-body 18 and the lateral extensions 30, as shown in Figs. 2, 3, and 5, and the trolley is provided with sheaves 31 at its front end, supported on shaft 32, which is supported in extensions 33 on the trolley-frame, a rack 34, engaged by a pinion 35 on shaft 36, supported in bearings 37 and 38 in the vertical sides 39 and 40 of the car-body 18 and in bearings 41 and 42 in brackets 43 and 44 on the rear end of the car-body.

On the shaft 36, between the brackets 43 and 44, is secured a worm gear-wheel 45, which is engaged by a worm-gear 46 on shaft 47, supported in bearings 48, 49, and 50, and on the outer end of shaft 36 is a wheel 51, engaged by a chain 52, by which the pinion 35 is revolved to raise the door of an oven by manual power. The chain-wheels 25 and 51 are preferably provided with guards 53 and 54, as shown in Fig. 2.

In the vertical sides 39 and 40 are support-



ed shafts 55, bearing sheaves 56, and shaft 57, bearing sheaves 58, and on the rear end of the trolley 27 is a bar 59, to which is attached chains 60 and 61 by staples 62 and 63, and the chains pass under and over the sheaves 56, thence forward over sheaves 58, thence downward to a hook 64, which is engaged with the bail 65 on the door 66, as shown in Fig. 5.

- 10 To remove the door, the wheel 51 is revolved by chain 52, which imparts motion to pinion 35, engaging rack 34, which propels the trolley 27 forward, by which movement the chains 60 and 61 are drawn in the same direction, 15 the door 66 projected outward away from the buckstays of the ovens, the sheaves 31 having engaged the chains 60 and 61 and pushed them and the door out clear of the buckstaves while the door is being raised. The car 3 is 20 now moved forward by chain 26, engaging wheel 25 and revolving the pinion 20 in engagement with gear-wheel 19 on the axle of the car, and the door moved out of the way of the door-frame 67 or the opening to the 25 oven 68 should no door-frame 67 be used to admit the coke-pusher for discharging the contents of the oven.

The weight of the overhanging shafts 21 and 47, their bearings 24 and 48 and supports 30 70, and the wheels 25 and 51 is counterbalanced by weights 69 on the opposite side of the transverse center of the car.

Having thus fully described my invention, what I claim is—

- 35 1. A series of coke-ovens arranged side by side, doors for said ovens, and a track on top of the structure; in combination with a car mounted on said track, a trolley-frame on the car, a trolley supported on said frame, means 40 on the car for propelling the car, a connection between the trolley and an oven-door, and means for moving the trolley and raising the door synchronously.

- 45 2. A series of coke-ovens arranged side by side, doors for said ovens, and a track; in combination with a car, a transversely-movable trolley on said car, a gear-wheel and a pinion for propelling the car, a connection between the trolley and an oven-door, and a 50 rack and pinion for propelling the trolley and raising the door synchronously.

3. A series of coke-ovens arranged side by side, doors for said ovens, and a track; in combination with a car, a transversely-movable trolley on the car, means for propelling 55 the car, a connection between the trolley and a door, means for propelling the trolley and raising the door, and a counterbalance on the car for the operating mechanism.

4. In a hoisting device, a car, a trolley transversely movable on said car, means for moving the trolley, and a connection permanently attached to one end of the trolley, and to an article to be raised, and adapted on the movement of the trolley to either raise or lower 65 the article without winding said connection.

5. In a hoisting device, a car, a transversely-movable trolley on said car, a sheave on one end of the body of the trolley, means for moving the trolley, and a connection between the 70 opposite end thereof and an article to be raised and projected, whereby the trolley is moved and the article raised and moved outward synchronously.

6. In a hoisting device, a car, means engaging one of the axles of the car for propelling 75 the car, a trolley transversely movable on the car, a rack on the trolley, a pinion engaging the rack, and a connection permanently attached to one end of the trolley, and to an 80 article to be raised, and adapted on movement of the trolley to either raise or lower the article without winding said connection.

7. A series of coke-ovens arranged side by side, doors for said ovens, and a car provided 85 with means for moving a door; in combination with a track whose rails inclose the wheels of the car on one side.

8. A series of coke-ovens arranged side by side, doors for said ovens, and a car provided 90 with means for moving a door; in combination with a track whose rails are of channel-iron, one flange of which is engaged by the wheels of the car and the opposite flange projects over the wheels. 95

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN A. MOORE.

Witnesses:

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C. W. METCALFE.