

J. O. NEIKIRK.  
DUMPING DOOR OPERATING MECHANISM.  
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973,874.

Patented Oct. 25, 1910.

Fig. 2

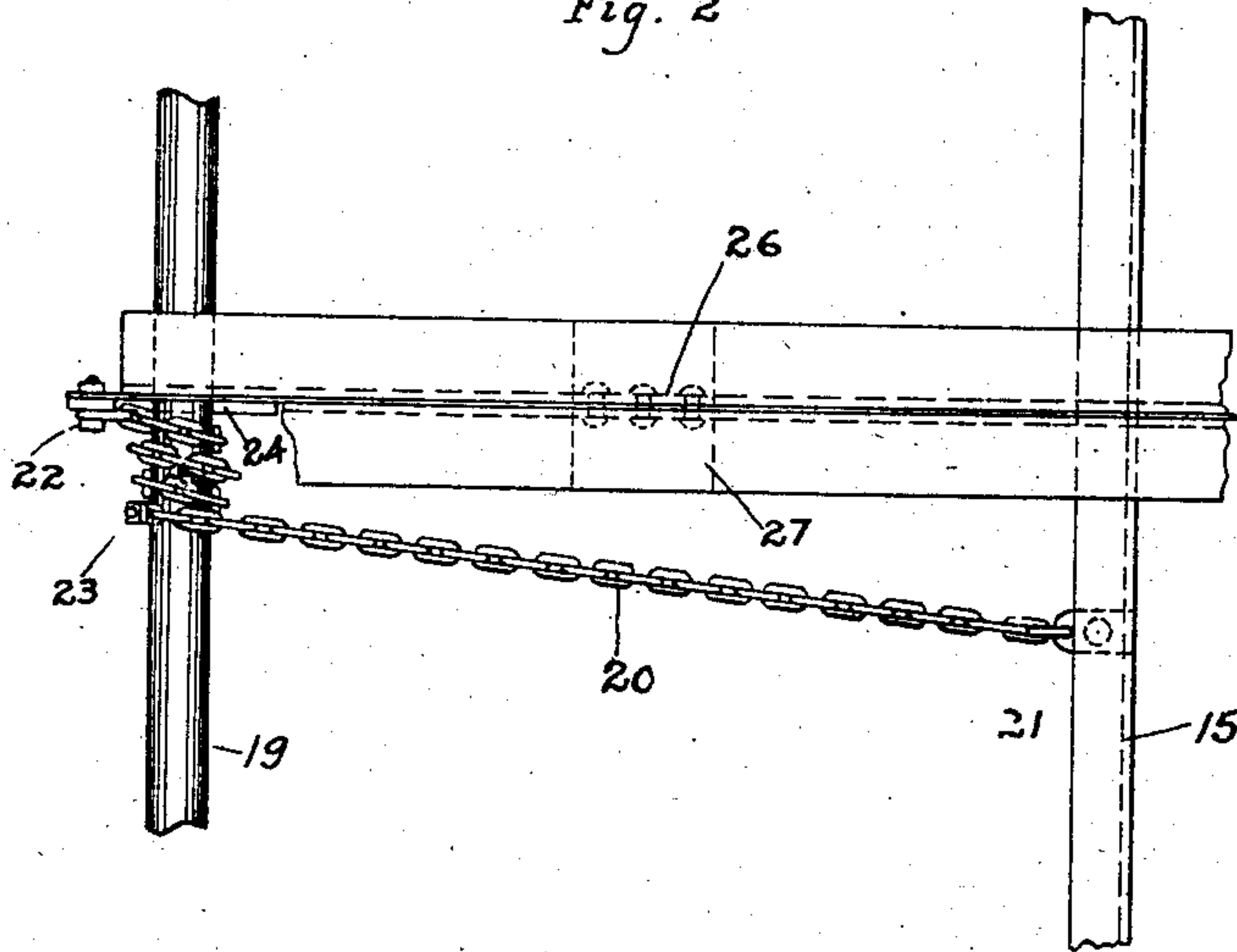


Fig. 1

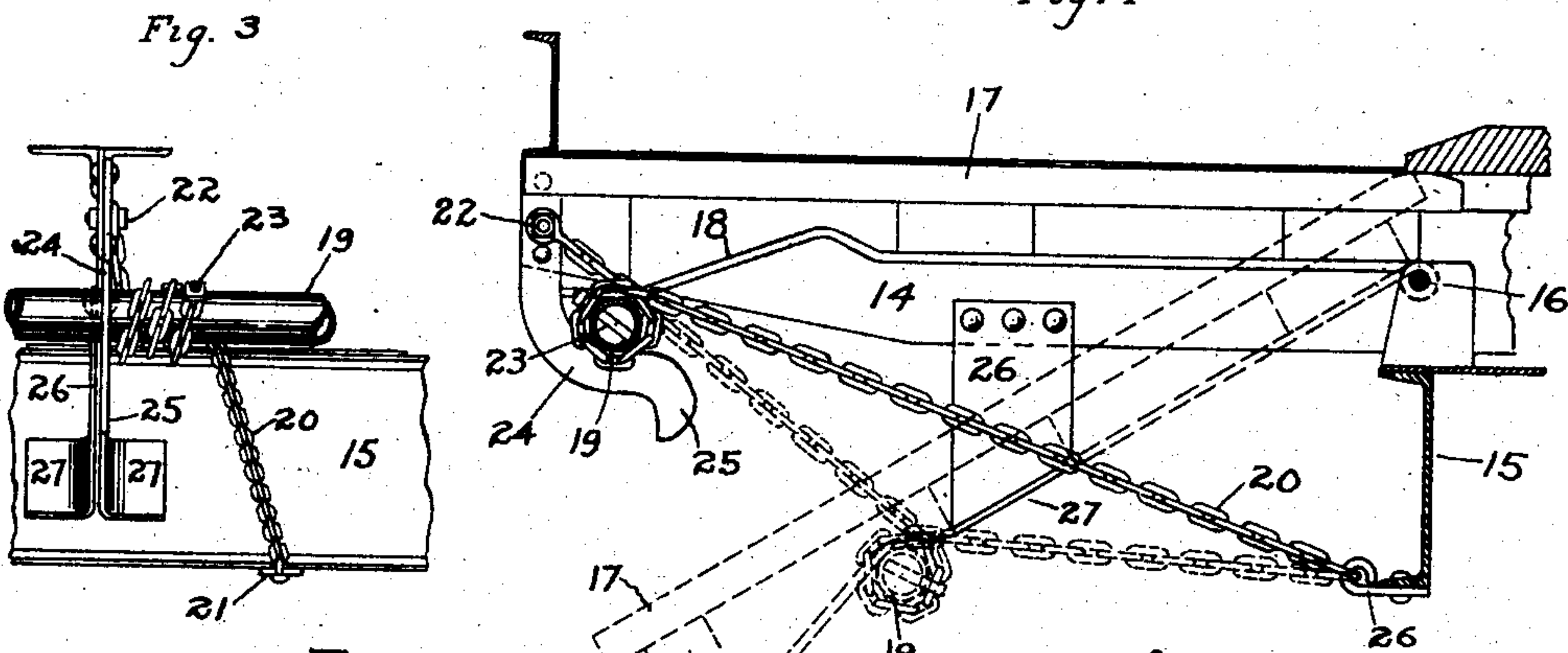


Fig. 3

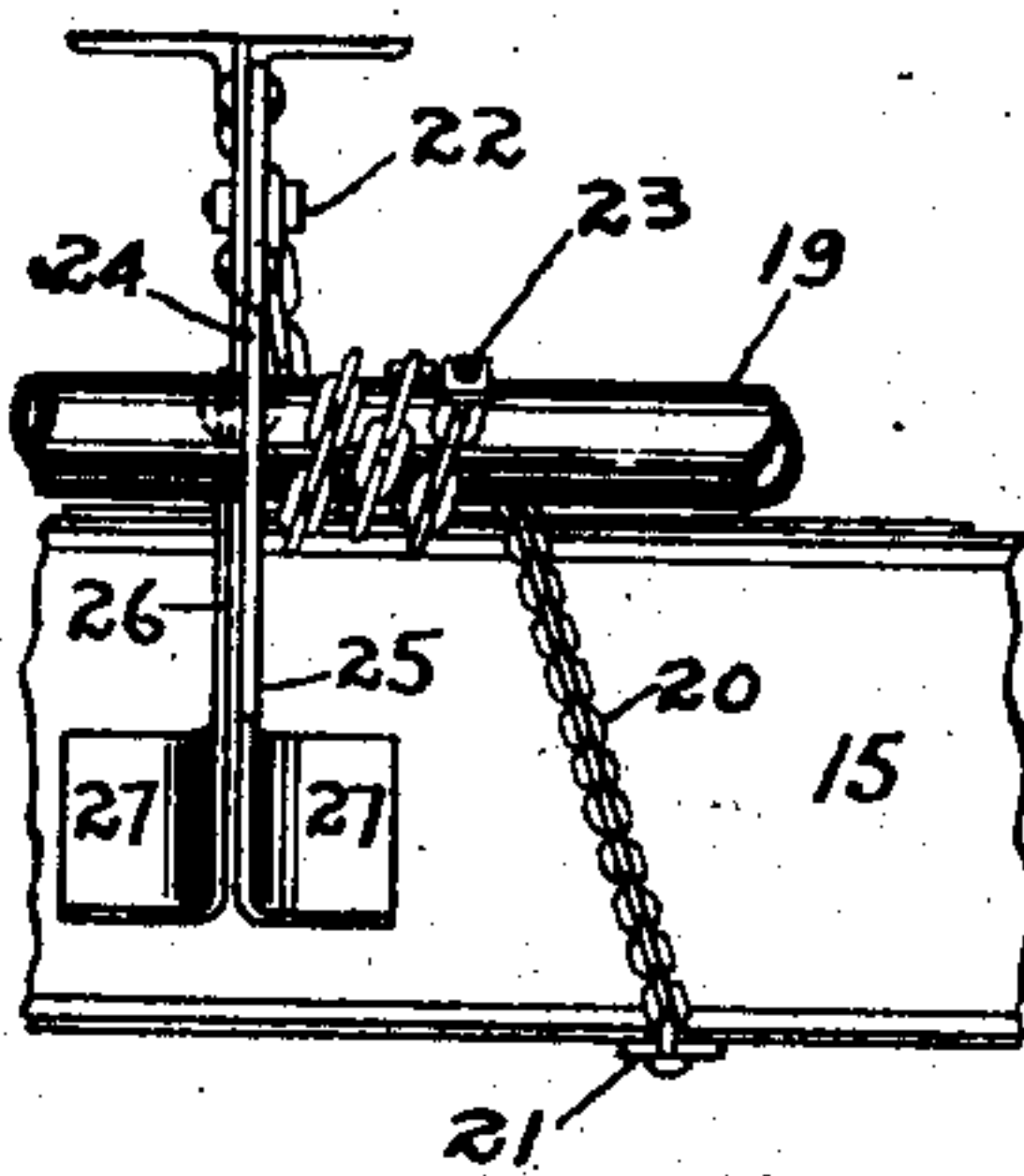
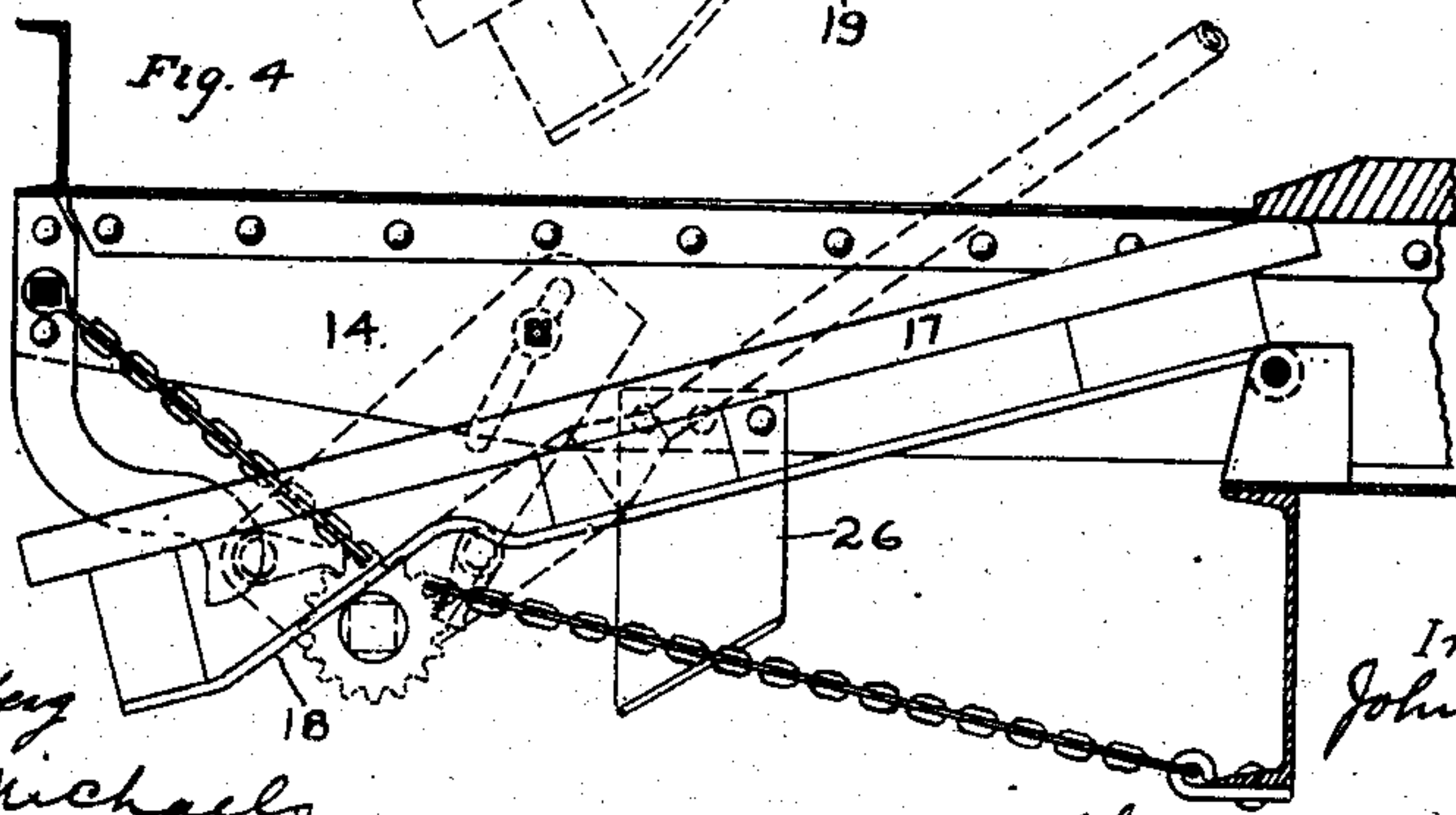


Fig. 4



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# UNITED STATES PATENT OFFICE.

JOHN O. NEIKIRK, OF MORGAN PARK, ILLINOIS, ASSIGNOR TO NATIONAL DUMP CAR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF MAINE.

## DUMPING-DOOR-OPERATING MECHANISM.

973,874.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed March 12, 1908. Serial No. 420,737.

*To all whom it may concern:*

Be it known that I, JOHN O. NEIKIRK, citizen of the United States, residing at Morgan Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dumping-Door-Operating Mechanism, of which the following is a specification.

The object of my invention is to provide a new and improved mechanism for controlling and operating the doors of dump cars.

A particular object of my invention is to provide an operating mechanism to be used in connection with a flat bottom car of gondola type having dumping floor sections, and having a creeping shaft under said floor sections which supports them in open or closed position.

A further object of my invention is to provide means for supporting the door operating shaft of such a character that none of the mechanism will project downwardly beneath the car floor when the doors are closed sufficiently to be in danger of injury.

These objects and others will be made apparent in the following specification and claims, taken in connection with the accompanying drawings, in which—

Figure 1 is an end elevation partly in section of so much of a car as is essential to an understanding of my invention. Fig. 2 is a plan view of the parts shown in Fig. 1, the dumping door being removed. Fig. 3 is a side elevation of these same parts, this view being taken in a direction at right angles to that of Fig. 1, and Fig. 4 is an elevation of a detail showing the shaft locking mechanism.

The reference numeral 14 designates a cross member of the framework of the car which rests on the channel beam 15 which in turn forms a part of the center sill of the car. Supported by this center sill is a pivot 16 on which the dumping door 17 is hinged. On the other side of this dumping door is fixed an inclined track 18 which rests upon a longitudinal shaft 19. This shaft has wrapped several times about it a chain 20, one end of which is attached to the center sill at 21 and the other end attached to the end of the cross member 14, as indicated by the reference numeral 22. A bolt 23 is passed through the shaft 19 and an intermediate link of the chain 20, thus

preventing any slipping of the chain around the shaft. A member 24 having the shape shown in Fig. 1 depends from the outer end of the cross member of the car and is bent under the shaft 19, so as to support it when the door 17 is in closed position. The end of this stub-track 24 is curved downwardly, as indicated by the reference numeral 25 in Fig. 1, for a purpose which will appear in connection with the subsequent description of the operation of the device. A double plate 26 depends from the cross member 14 of the car and has its lower ends bent laterally on an incline, thus forming supports for the edges of the door 17 when it is in open position.

Any suitable mechanism may be provided for rotating the shaft 19. Such mechanism is well known in the art to which my invention pertains, and I have, therefore, not illustrated it. Moreover any suitable mechanism may be provided for locking the shaft 19 in desired position. By way of example, I have shown a creeper 30 loosely engaging the shaft 19 and also engaging the car framework at one side by means of the sliding connection 31. This creeper carries a pawl 32 which is adapted to engage the ratchet wheel 33 and thus hold the shaft 19 in any desired position. When the shaft is in the position shown in full lines in Fig. 1, it has been rotated so as to wind the chain thereon and bring it close to the end 22. At this time the shaft 19 rests on the depending track 24 and in turn supports the door 17 through its affixed track 18. When it is desired to open the door, the shaft 19 is rotated counter-clockwise, as viewed in Fig. 1. Thus the shaft 19 winds onto the chain toward the point 21 and unwinds away from the point 22. Presently it will reach the part 25 of the depending supporting track 24 and will also at the same time come under the inclined part of the track 18. Thereafter, the weight of the door 17 and its load will force the shaft to move to the position shown in dotted lines in Fig. 1. At this stage the door 17 will be supported by the hooks 27 at the lower end of the double plate 26. When it is desired to close the door from the position shown in dotted lines in Fig. 1, the shaft 19 is rotated in a clockwise direction, and accordingly moves to the left, raising the door 17 by this movement. The shaft 19



will strike somewhere against the depending end 25 of the track 24 and this will guide it upon said track in the desired position. Thereafter, the shaft 19 can be locked  
 5 against rotation by any suitable means. It will be observed that the chain 20 not only constitutes a means for shifting the shaft 19 but also acts to support the shaft and guide it in its movements. However, the parts  
 10 are so arranged that in closed position the shaft is supported by the depending track 24, and, moreover, in open position the dumping floor section 17 is supported by the hooks 27. Thus the door is supported in in-  
 15 termediate positions by the chains, but at terminal positions other supports are provided. The creeper 30 follows the shaft 19 in its movement, and the pawl 32 thereon coacting with the ratchet 33 on the shaft 19  
 20 serves to hold the shaft in a position corresponding to a complete closure of the door or to hold it in an intermediate position as may be desired.

The chain 20 having an intermediate link  
 25 attached to the shaft, is equivalent to two chains each having an end link attached to the shaft and being respectively oppositely wound thereon. In some of the following claims I find it convenient to refer to two  
 30 chains, meaning with reference to the particular embodiment of my invention illustrated in the drawings, the chains that extend oppositely from the common link se-  
 cured by the bolt 23.

35 I claim:

1. In a dump car, a door supporting shaft and supporting chains therefor, said shaft being supported in intermediate positions  
 40 solely by the chains.

2. In a dump car, a door supporting shaft, means to support the shaft when the door is closed or nearly closed, and chains forming  
 45 the sole support of the door in intermediate positions and serving to reciprocate the shaft.

3. In a dump car, a door supporting shaft, opposed supporting chains extending oppo-  
 50 sitely from the shaft to fixed parts of the car, and fixed supports for the door in its extreme open and closed positions, said shaft being supported solely by said chains in in-  
 termediate positions.

4. In a dump car, a door supporting shaft, supporting chains for the shaft, and means  
 55 adapted to receive and support the shaft when it is at the end of its path of movement corresponding to a closure of the door, said shaft being supported solely by said chains in other positions.

5. In a dump car, a door supporting shaft, a chain wrapped about the shaft, and means  
 60 for preventing said chain from slipping on the shaft, the ends of said chain extending from the shaft and being connected respec-  
 65 tively to fixed parts of the car framework,

said chain constituting the sole supporting means for the shaft in intermediate positions thereof.

6. In a dump car, a door supporting shaft, supporting chains therefor, said shaft being  
 70 supported in intermediate positions solely by the chains, a creeper engaging the shaft, and locking means on the creeper adapted to hold the shaft against rotation.

7. In a dump car, a door supporting shaft, supporting chains therefor, said shaft being  
 75 supported in intermediate positions solely by the chains, and means to lock the shaft against rotation.

8. In a dump car, a hinged door, a re-  
 80 ciprocating shaft for supporting and operating said door, a stationary support for said shaft adjacent the free edge of said door, a chain secured to said shaft and to the car adjacent the free edge and hinged edge of  
 85 said door, means for rotating said shaft, said chain constituting the sole support of said shaft when the latter is out of engage-  
 ment with said stationary support.

9. In a car, a dump door, a reciprocating  
 90 shaft for supporting and operating the same, means for rotating said shaft, winding chains for supporting and operating said shaft, and a supplementary support extend-  
 95 ing inwardly from a point adjacent the free edge of said door, said shaft being adapted to contact with and rest upon said supplementary support when said door is in closed position.

10. In a car, a dump door, a reciprocating  
 100 shaft for supporting and operating the same, means for rotating said shaft, winding chains for supporting and operating said shaft, and a supplementary support at the upper end of the path of movement of said  
 105 shaft, said supplementary support being fixed to a rigid part of the car and so positioned that as the shaft arrives at the end of its upward movement it rides upon said supplementary support.  
 110

11. In a car, a dump door hinged longi-  
 tudinally near the center thereof, a shaft beneath said door, means for rotating said shaft, a chain secured to said shaft and to the car structure, and a support extending  
 115 inwardly from the side of the car beneath the plane of the door when closed, said shaft being adapted to move between said support and door when the shaft has carried the door to closed position and to move off from  
 120 said support when moved in the opposite direction.

12. In a car, a center sill, cross sills, a dump door hinged longitudinally of the car  
 125 adjacent the center sill, supports depending from the outer ends of the cross-sills and extending inwardly beneath the door when in closed position and terminating a short distance inside the outer edge of the door opening, a door supporting and operating  
 130



shaft, a chain secured to said shaft and to a fixed part of the car, means for rotating said shaft and thereby moving it bodily, said parts being so arranged that said shaft  
5 rests upon said supports when it reaches the upward and outward limit of its movement.

13. In a car, a center sill, cross sills, a dump door hinged longitudinally of the car adjacent the center sill, supports depending  
10 from the outer ends of the cross sills and extending inwardly beneath the door when in closed position and terminating a short distance inside the outer edge of the door opening, the surface of said supports in-

clining downwardly and inwardly at their 15 ends, a door supporting and operating shaft, a chain secured to said shaft and to a fixed part of the car, means for rotating said shaft and thereby moving it bodily, said parts being so arranged that said shaft rests upon 20 said supports when it reaches the upward and outward limit of its movement.

In testimony whereof, I, have subscribed my name.

JOHN O. NEIKIRK.

Witnesses:

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