

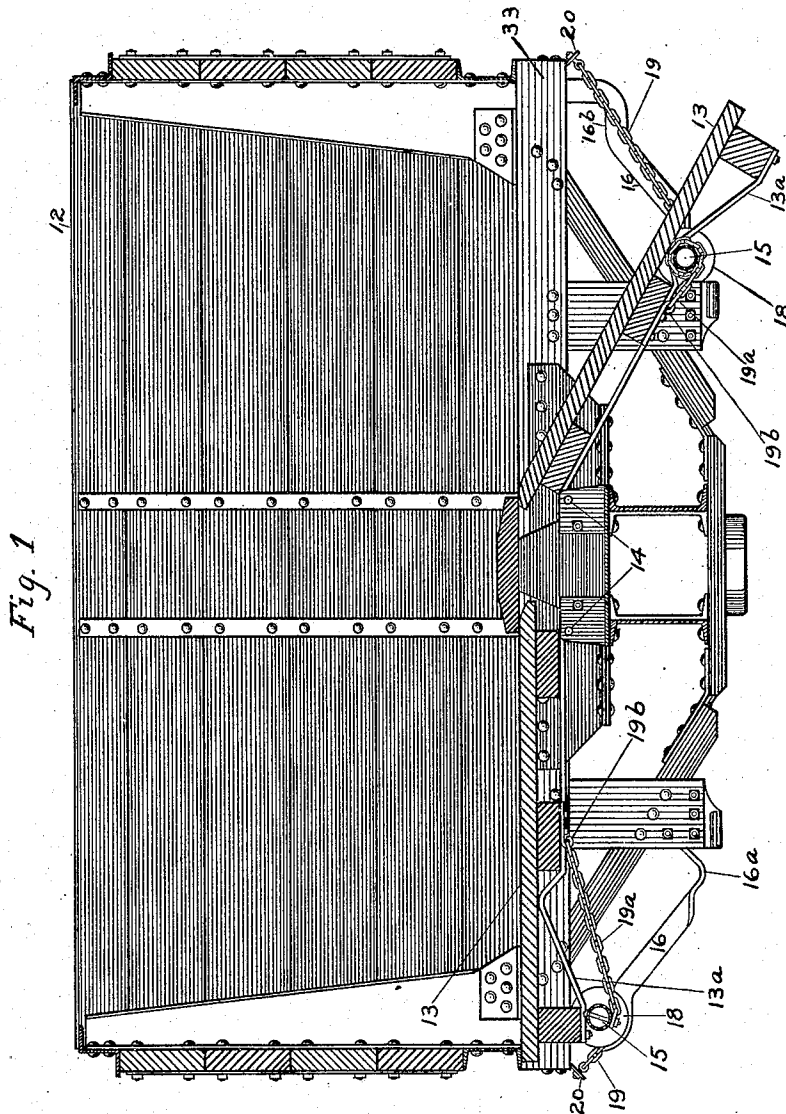
S. OTIS.
DUMP CAR.

APPLICATION FILED AUG. 13, 1907.

Patented Nov. 30, 1909.

6 SHEETS—SHEET 1.

941,381.



Witnesses:

Lillian Tibby,
Carl A. Richmond

Inventor.

Spencer Otis

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Attorneys.

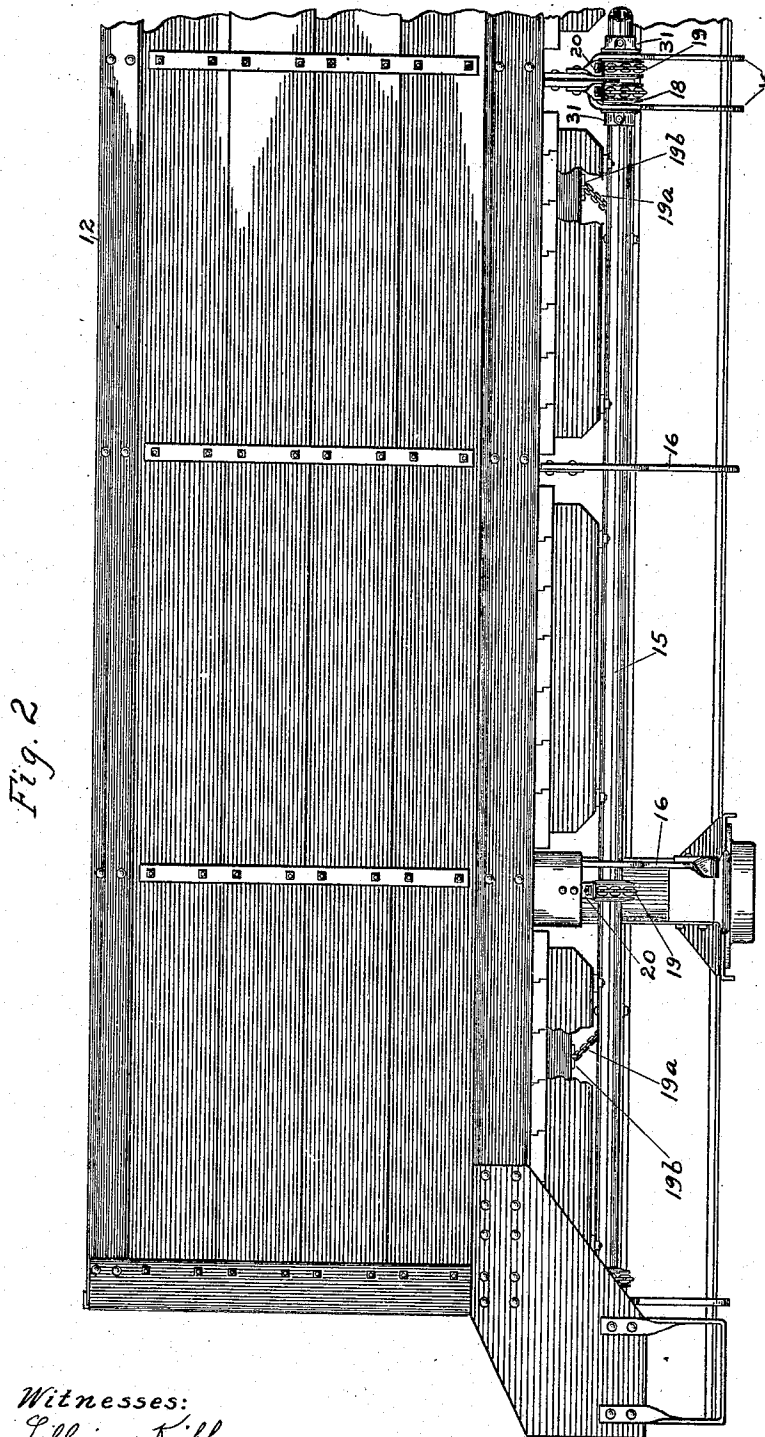
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6 SHEETS—SHEET 2.



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6 SHEETS—SHEET 3.

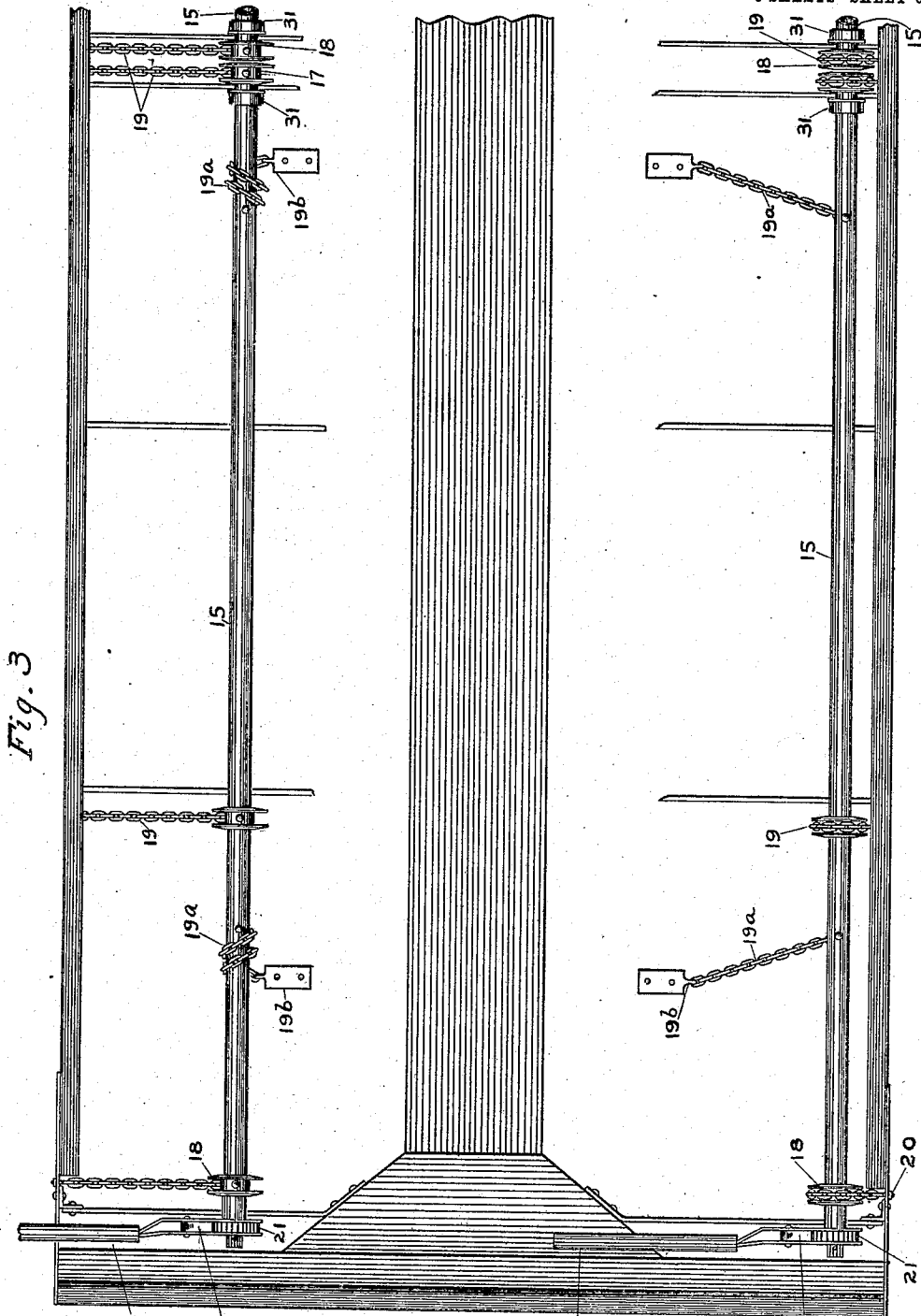


Fig. 3

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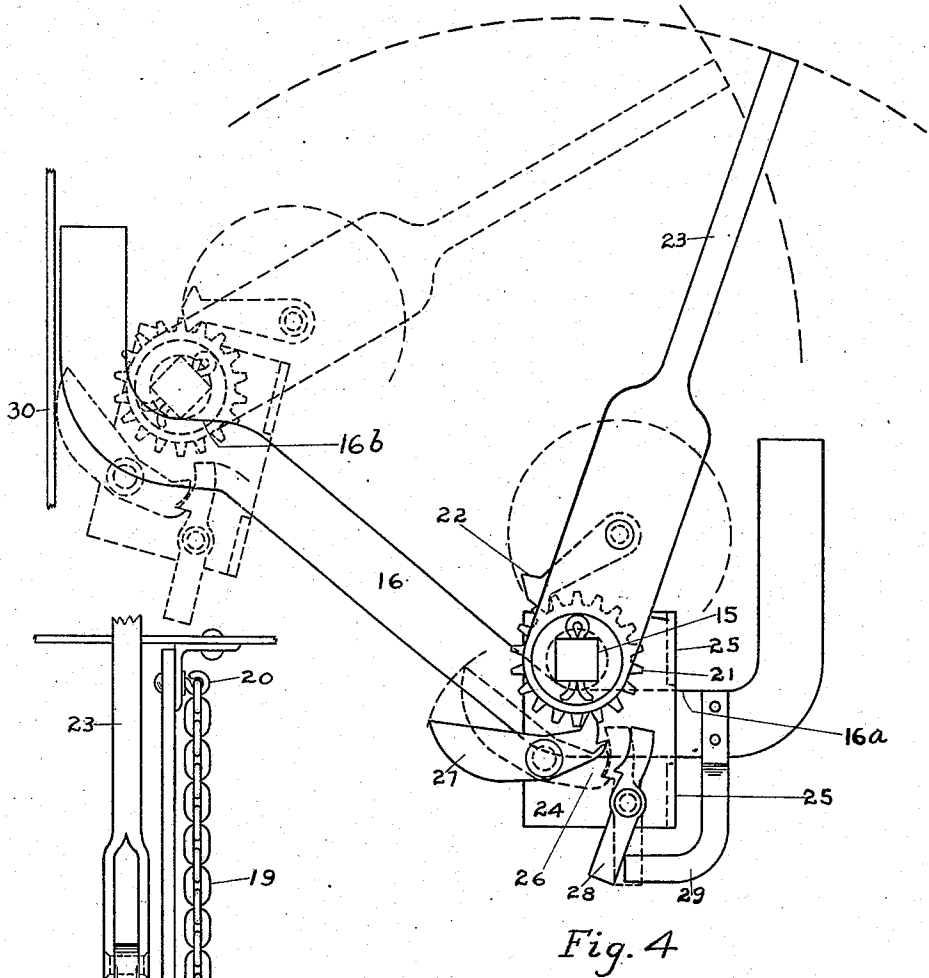


Fig. 4

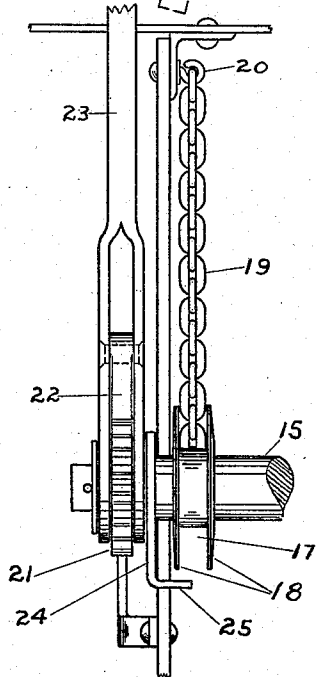


Fig. 5

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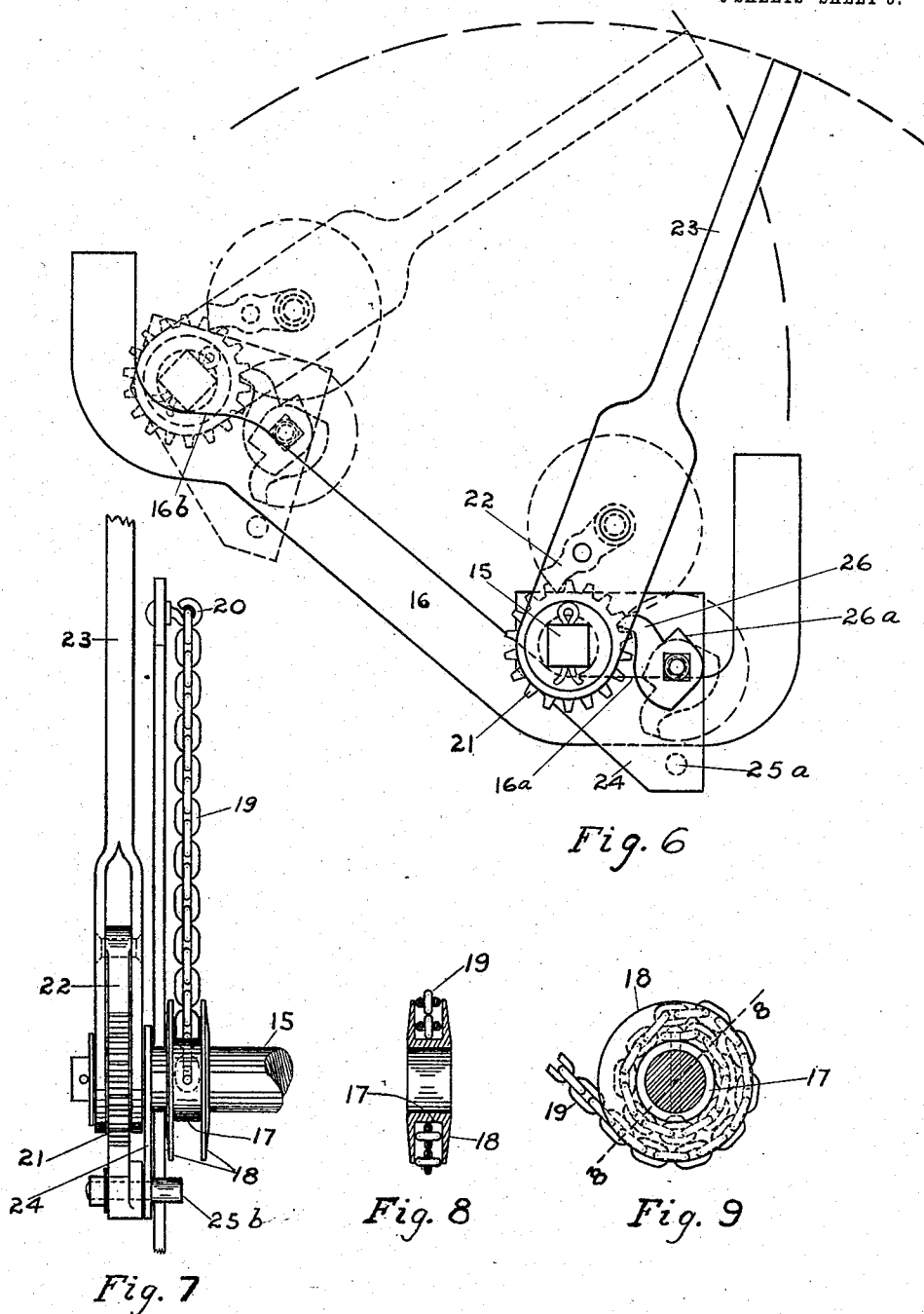
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WITNESSES:
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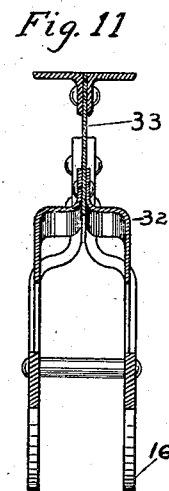
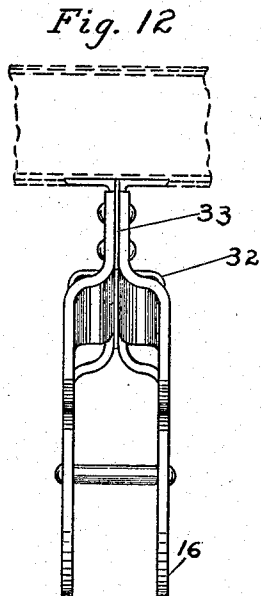
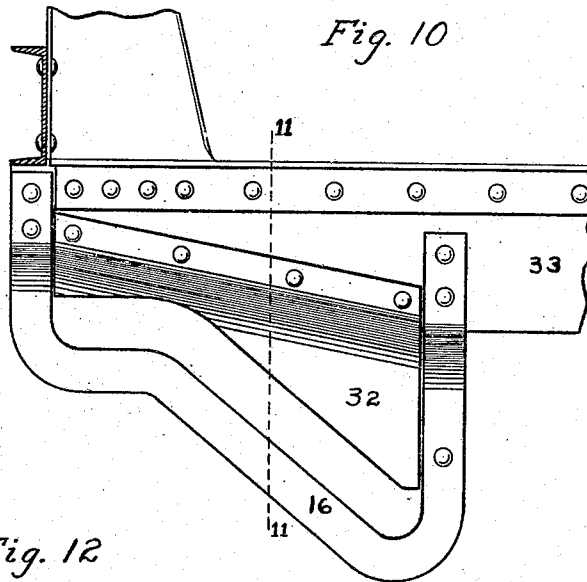
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

SPENCER OTIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO NATIONAL DUMP CAR COMPANY,
OF CHICAGO, ILLINOIS, A CORPORATION OF MAINE.

DUMP-CAR.

941,381.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed August 13, 1907. Serial No. 388,290.

To all whom it may concern:

Be it known that I, SPENCER OTIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Dump-Cars, of which the following is a specification.

My invention relates to improvements in dump cars, and has for its object to provide an improved door operating and controlling mechanism with suitable locking devices.

Another object is to provide a locking device that shall hold the door from falling back when it is closed, but that shall permit it to open freely when desired.

Other objects of my invention are to provide a new and improved winding drum for the chain which comprises a part of the door controlling mechanism, to provide positive means for opening and closing the door, and also to provide a shield to protect certain mechanism from dumped material.

My invention also comprehends certain minor improvements of detail.

These and other objects will be obvious to one reading the following specification and claims in connection with the accompanying drawings, in which—

Figure 1 is a cross section of a dump car embodying my improvements; Fig. 2 is a side elevation thereof; Fig. 3 is a plan view of essential parts, the dumping doors being removed; Fig. 4 is an elevation showing on an enlarged scale two limiting positions of the controlling mechanism; Fig. 5 is a plan view of the parts shown in Fig. 4; Figs. 6 and 7 are views of a modification corresponding respectively to Figs. 4 and 5; Fig. 8 is a section of the chain drum taken on the line 8, 8 of Fig. 9; Fig. 9 is a transverse section of the chain drum; Fig. 10 is a detail showing the protective shields; Fig. 11 is a section on the line 11 of Fig. 10 looking in the direction of the arrow; and Fig. 12 is an elevation looking in the same direction as in Fig. 11.

The car body 12 has the doors 13 pivoted at 14, and normally forming the greater part of its floor. To the under side of each door 13 are affixed several frames or tracks 13^a, each of which rests on a shaft 15 and this in turn rests on a track 16. The shaft 15 constitutes a movable sill. As more clearly shown in Fig. 4, the track 16 has

terminal level portions 16^a at the lower end and 16^b at the upper end. The shaft 15 carries a chain drum 17 with two flanges 18 thereon, which are spaced apart by the thickness of the chain 19, thus forcing the chain to wind upon itself, as shown in Figs. 8 and 9. Said chain 19 is attached at one end to the drum 17, and at the other end 20 near the upper end of the inclined track 16. The shaft 15 also carries a ratchet 21, and a reversible pawl 22 mounted on the operating handle 23 engages therewith. A plate 24 is also mounted on the shaft and has flanges 25 bent over to act as guides and constrain the plate to move along the inclined track 16. This plate 24 carries a dog 26 adapted to engage the ratchet 21 and counterweighted at 27, as shown in Fig. 4. Furthermore, the plate carries a catch 28 adapted, when desired, to engage the dog 26 and withhold it from the ratchet 21. At the lower end of the inclined track is a stop 29, adapted to withhold the catch 28 from engagement with the dog 26. At the upper end of the track is another stop 30 adapted to throw the dog 26 out of engagement with the ratchet 15 and into position to be retained by the catch 28. In addition to the chains 19 which wrap about the drums 18, there are other chains 19^a wound oppositely on the shaft 15 and having their free ends attached to the door at 19^b.

On referring to the right hand portions of Fig. 3, it will be seen that the shaft 15 is not continuous throughout the length of the car, but is composed of sections the adjacent ends being terminated by drums 18. The dumping doors are divided into sections corresponding to those of the shaft 15 and there would be a tendency for dumped material to fall on the chains 19 and the drums 17, and obstruct their proper working. Shields 32 are therefore attached to the cross girder 33 on which the tracks 16 are hung, and these shields 32 spread out over the chains 19 so as to protect them from falling dumped material. The drums 17 on the adjacent ends of the shaft 15 act in conjunction with the tracks 16 to prevent longitudinal displacement of said shaft 15. As a further means to the same end, the collars 31 are placed upon the shaft 15. All this will be clear from an inspection of Fig. 3.

When it is desired to move the shaft 15 up

from the position shown in full lines in Fig. 4 in order to close the door 13, the lever 23 is rotated in the appropriate direction and between the strokes thereof the shaft is held in position by the dog 26; but when the shaft 15 reaches the upper level track 16^b the stop 30 disengages the dog 26 from the ratchet 21. When desired the pawl 22 may be thrown over in a position opposite to that shown and the lever 23 used to start the shaft 15 down the track. It will descend freely in as much as the dog 26 is held, as shown in dotted lines, but when it has reached the lower level track 16^a the stop 29 will disengage the catch 28 and the dog 26 will then be in position for again closing the door.

The extra chains 19^a are provided in order to make the door open positively upon proper rotation of the lever 23. A reference to Fig. 1 shows that both chains 19 and 19^a wind on the under side of the shaft 15 and that either one will unwind while the other is winding up. With this arrangement the shaft 15 rolls on the track 16 and slides on the track 13^a. However, the chains 19 and 19^a may wind on the upper side of the shaft 15, but in any case it is essential that they shall wind oppositely on said shaft.

The modification shown in Figs. 6 and 7 is similar to that of Figs. 4 and 5, except that the dog 26 is not thrown automatically from its operative to its inoperative position, and vice-versa, but the change must be made by the operator. This dog 26 may be disengaged from the ratchet 21 by being struck with a hammer on the shoulder 26^a and it may be reengaged with the ratchet by being thrown over by hand. It will be noted that the pins 25^a and 25^b in the plate 24 perform the same function as the flanges 25 shown in Figs. 4 and 5.

I claim:—

1. In door-controlling mechanism including a shaft on a track, a carriage borne by the shaft mounted to slide on the track, said carriage being provided with mechanism for preventing the shaft from movement in one direction, and means for disengaging said mechanism when desired.

2. In door-controlling mechanism including a shaft on a track, a carriage borne by the shaft mounted to slide on the track, said carriage being provided with mechanism for preventing the shaft from movement in one direction, and means for holding said mechanism in a disengaged position when desired.

3. In door-controlling mechanism including a shaft on a track, a plate rotatably mounted on the shaft, and guides on the plate engaging the track.

4. In door-controlling mechanism, a shaft bearing a ratchet, a crank bearing a reversible pawl, mechanism for preventing rotation

of the shaft in one direction, and means for throwing said mechanism into inoperative relation.

5. In door-controlling mechanism, a shaft bearing a ratchet, a crank bearing a reversible pawl, mechanism for preventing rotation of the shaft in one direction, and means for automatically throwing said mechanism into inoperative position.

6. In door-controlling mechanism including a shaft and an inclined track, a device associated with the shaft preventing downward motion along the track, means at the upper end to render the device inoperative, and means at the lower end to restore it to operativeness.

7. In door-controlling mechanism, a shaft, an inclined track therefor having terminal level portions, a device associated with the shaft which prevents its downward movement along the track, means associated with the upper level portion for rendering the device inoperative, and means associated with the lower level portion for restoring the device to operativeness.

8. In door-controlling mechanism including a shaft, a ratchet on the shaft, a dog adapted to engage the ratchet, and means for disengaging the dog from the ratchet.

9. In door-controlling mechanism including a shaft, a ratchet on the shaft, a detent dog adapted to engage the ratchet, and a catch for retaining the dog in disengagement from the ratchet.

10. In door-controlling mechanism, a shaft, an inclined track therefor, an operating handle connected to the shaft, a chain, a drum on the shaft with one end of the chain attached thereto, a carriage mounted on the shaft and adapted to slide along the track, a ratchet on the shaft, and a dog mounted on the carriage and adapted to engage the ratchet.

11. In door-controlling mechanism, a shaft, an inclined track therefor, an operating handle connected to the shaft, a chain, a drum on the shaft with one end of the chain attached thereto, a carriage mounted on the shaft and adapted to slide along the track, a ratchet on the shaft, and a dog mounted on the carriage and adapted in one position to engage the ratchet and in another position to clear it.

12. In door-controlling mechanism, a shaft, an inclined track therefor, an operating handle with ratchet and pawl connection to the shaft, a chain, a drum on the shaft about which the chain is adapted to wind, a carriage mounted on the shaft and adapted to slide along the track, a dog mounted on the carriage and normally adapted to engage the ratchet, a catch also mounted on the carriage so as to withhold the dog from the ratchet, a stop at the lower end of the track so placed as to withdraw the catch

from the dog, and another stop at the upper end of the track so placed as to push the dog away from the ratchet toward the catch.

13. In door-controlling mechanism including a shaft and a chain, flanges on the shaft separated by substantially the thickness of the chain, one end of the chain being attached to the shaft between the flanges, whereby the chain must wind upon itself.

14. In door-controlling mechanism, a shaft, an inclined track therefor, a chain with one end attached to a fixed portion of the car, and a drum on the shaft with flanges spaced apart by substantially the thickness of the chain, the other end of the chain being attached to the drum.

15. In a dump car a hinged door, a track having an inclined part, and having a horizontal part opposite the door hinges, a shaft, a chain secured to said shaft and to said door, said parts being so related that rotation of the shaft in one direction winds the chain thereon and draws the shaft from said horizontal part of the track and toward the hinged edge of the door.

16. In a dump car a hinged door, a track beneath said door and sloping upwardly toward the free edge thereof, a shaft movable along said track, a chain secured to said shaft and door, means whereby rotation of said shaft in one direction causes it to move on said track toward the free edge of said door and to unwind said chain therefrom, and rotation of the shaft in the opposite direction causing the chain to wind thereon and draw said shaft toward the hinged edge of said door.

17. In a dump car having a door, a shaft with two chains oppositely wound thereon, one chain being attached to the door and the other chain attached to the frame-work of the car.

18. In a dump car having a door, a shaft with two chains oppositely wound thereon, one chain being attached to the door and serving to assist in opening it and the other chain being attached to the frame-work of the car and serving to close the door.

19. In a door-controlling mechanism, a shaft having two oppositely wound chains attached thereto, one of said chains being also attached to the door.

20. In a door supporting mechanism, two supporting tracks, shafts resting on said tracks, chain drums mounted adjacent the ends of said shafts, said drums lying between said tracks and abutting against each other, and collars secured to said shafts on the side of the tracks opposite said drums.

21. In door-controlling mechanism, two adjoining shafts with chain drums on their adjacent ends, and supporting tracks under the shafts beside said drums.

22. In door-controlling mechanism, two

parallel inclined tracks, respective shafts with an end of each projecting over one track toward the other track, and drums on the projecting ends.

23. In door-controlling mechanism, a shaft, a drum on the shaft, a collar thereon near the drum, and a supporting track between the drum and the collar.

24. In door-controlling mechanism, a shaft under the door, two chains attached thereto, one of them being also attached to the door, and both chains extending from the under side of the shaft.

25. In a dump car a hinged floor section, fixed floor sections at each side of said hinged section, tracks beneath said fixed floor sections, a shaft movable along said tracks, shield plates depending from said fixed sections and extending outwardly on each side beyond said tracks, and means beneath and independent of said shield plates for causing said shaft to move along said tracks when rotated.

26. In a dump car a hinged floor section, fixed floor sections at each side of said hinged section, tracks beneath said fixed floor sections, a shaft movable along said tracks, shield plates depending from said fixed floor sections, means for actuating said shaft, said shield plates being bent outwardly beyond said track and actuating means and then downwardly to shield said track and actuating means for dumped material.

27. In a dump car hinged floor sections extending outwardly from the longitudinal central part of the car toward the side thereof, transverse fixed floor sections between said hinged sections, tracks beneath said fixed floor sections, a shaft resting on and movable along said tracks, means at the end of the car for rotating said shaft, chains attached to said shaft and to other parts of the car for causing said shaft to move bodily when rotated, said chains lying adjacent to said tracks, and shield plates depending from said fixed floor sections and overlying said tracks and chains.

28. In a dump car, a shaft, two oppositely wound chains attached thereto, a ratchet on the shaft, a lever with a reversible pawl adapted to engage the ratchet, and means to check backward movement of the shaft between the strokes of the lever.

29. In a dump car a hinged door, an inclined track, a shaft resting on said track and movable thereon toward and from the hinged edge of said door, said track being so disposed that said shaft is beneath said door in all of its positions, and a chain secured to said shaft and door respectively.

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Witnesses:

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