W. D. ORD.

LOAD TRANSFERRING AND DEPOSITING APPARATUS.

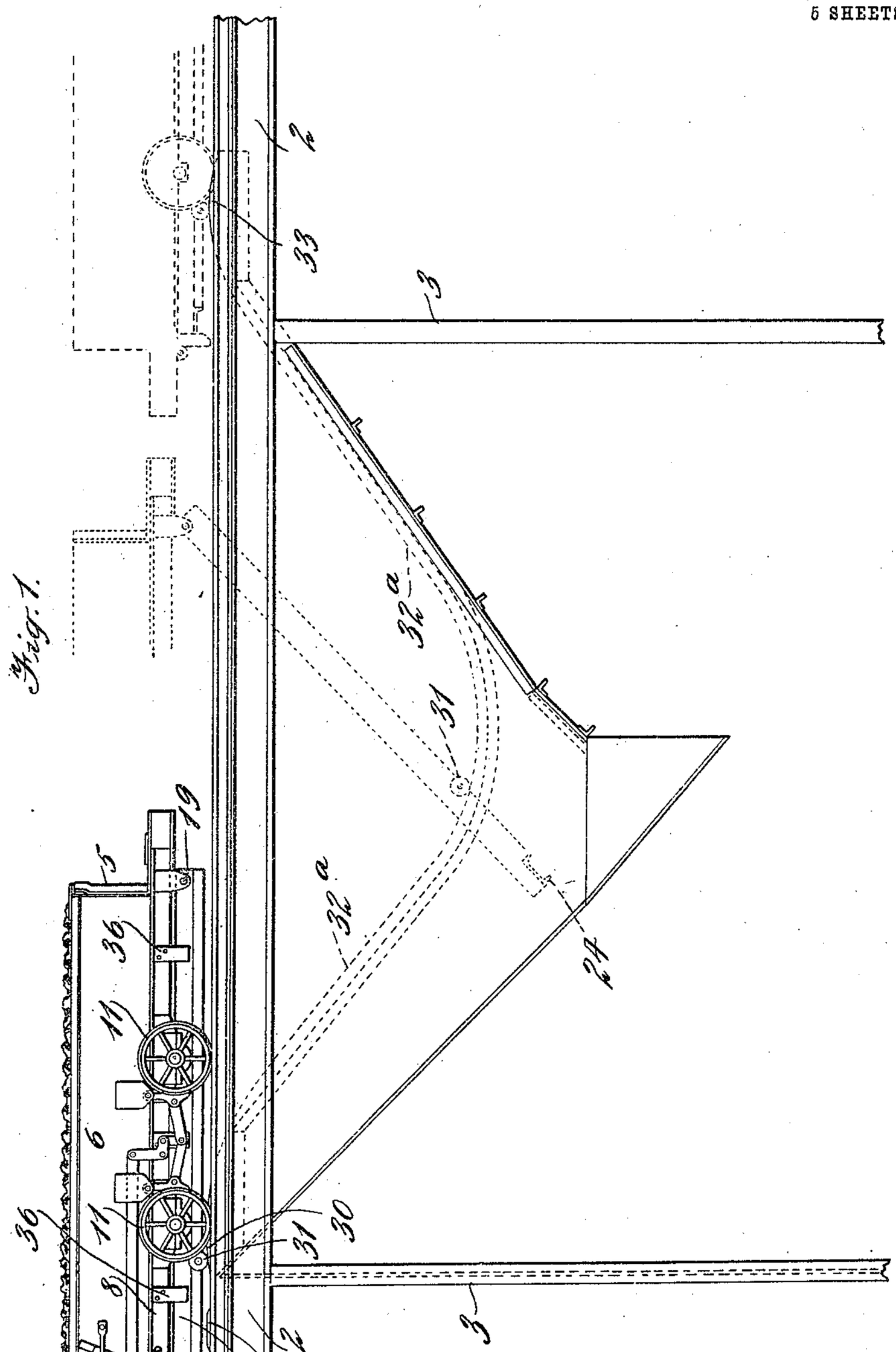
APPLICATION FILED AUG. 27, 1910.

990,380.

Patented Apr. 25, 1911.

5 SHEETS—SHEET 1.

Fig. 1.



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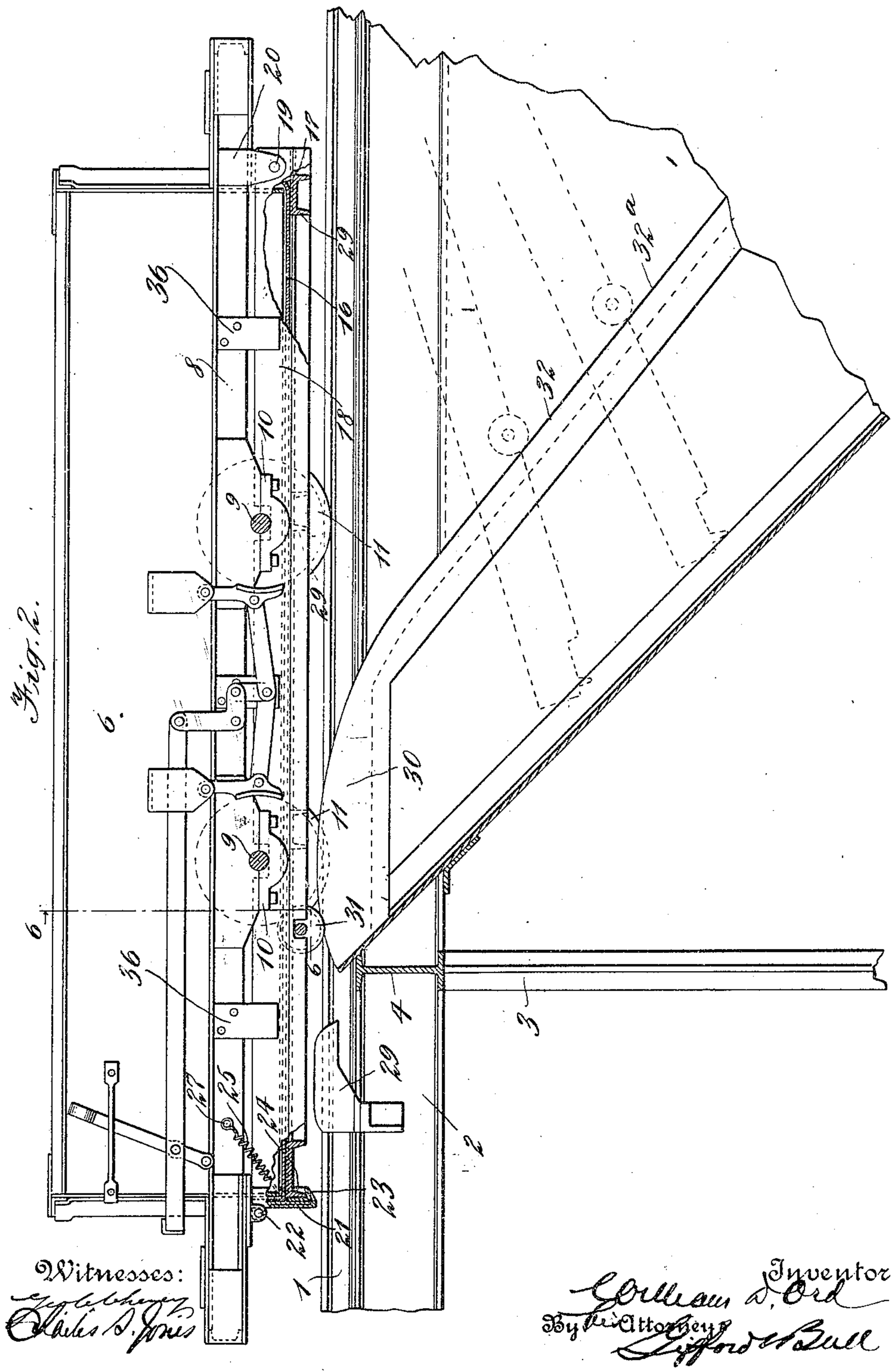
5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 3.

Fig. 3.

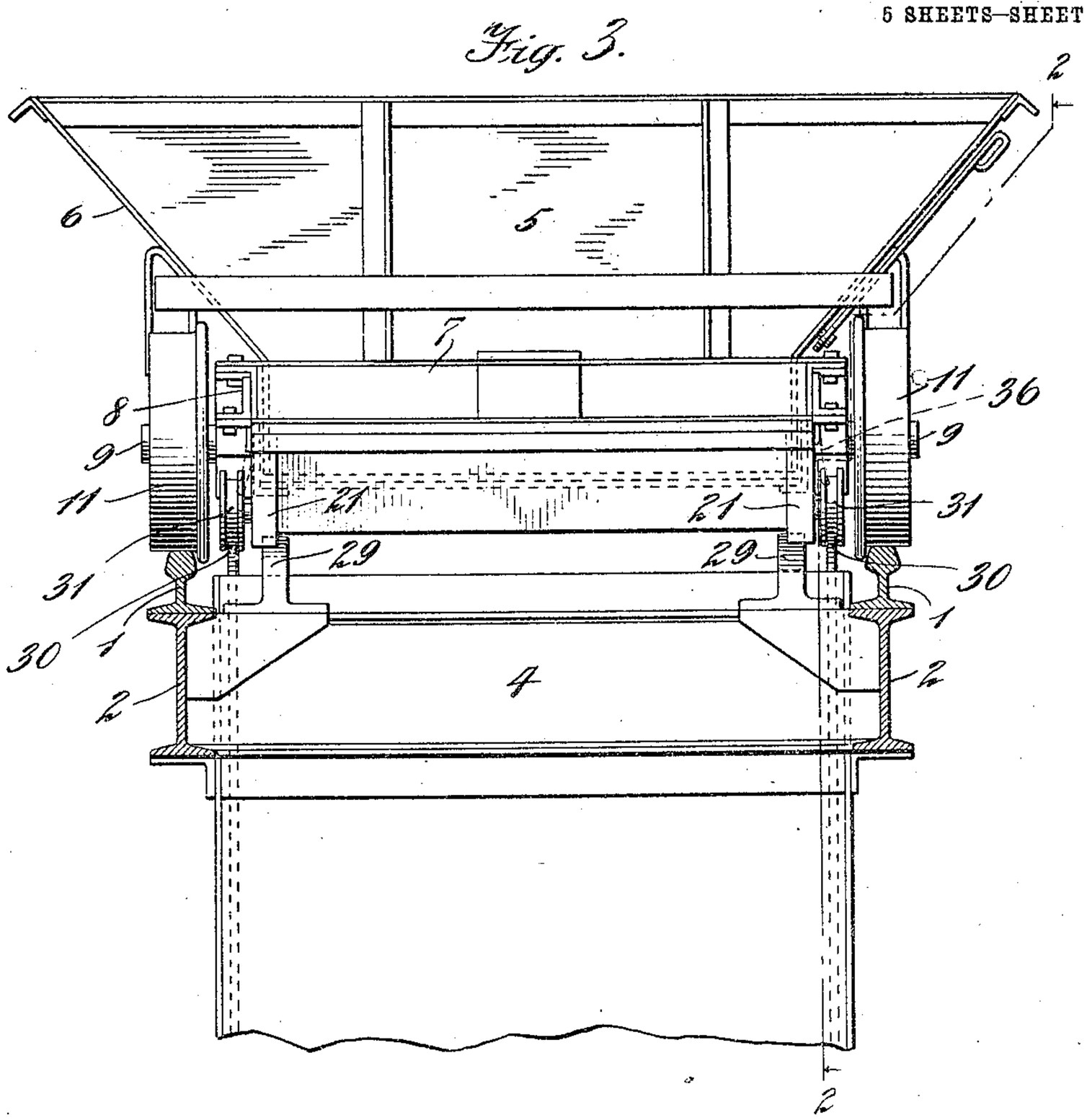
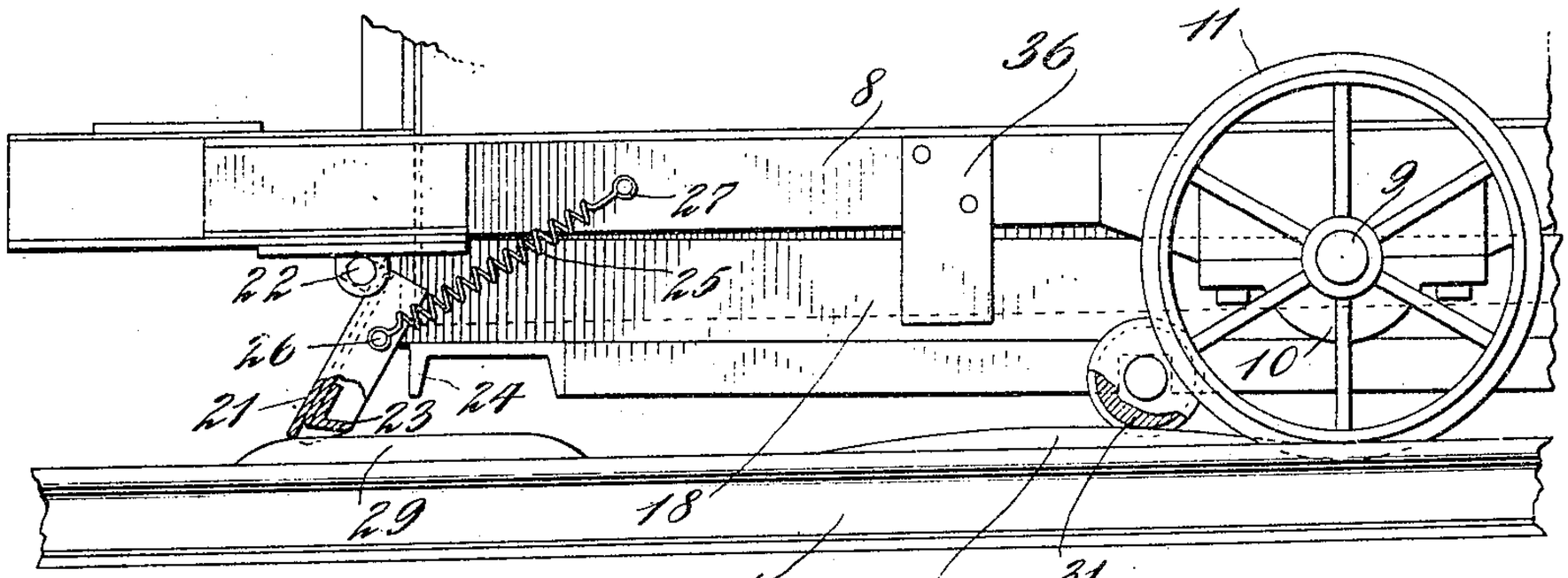


Fig. 5.



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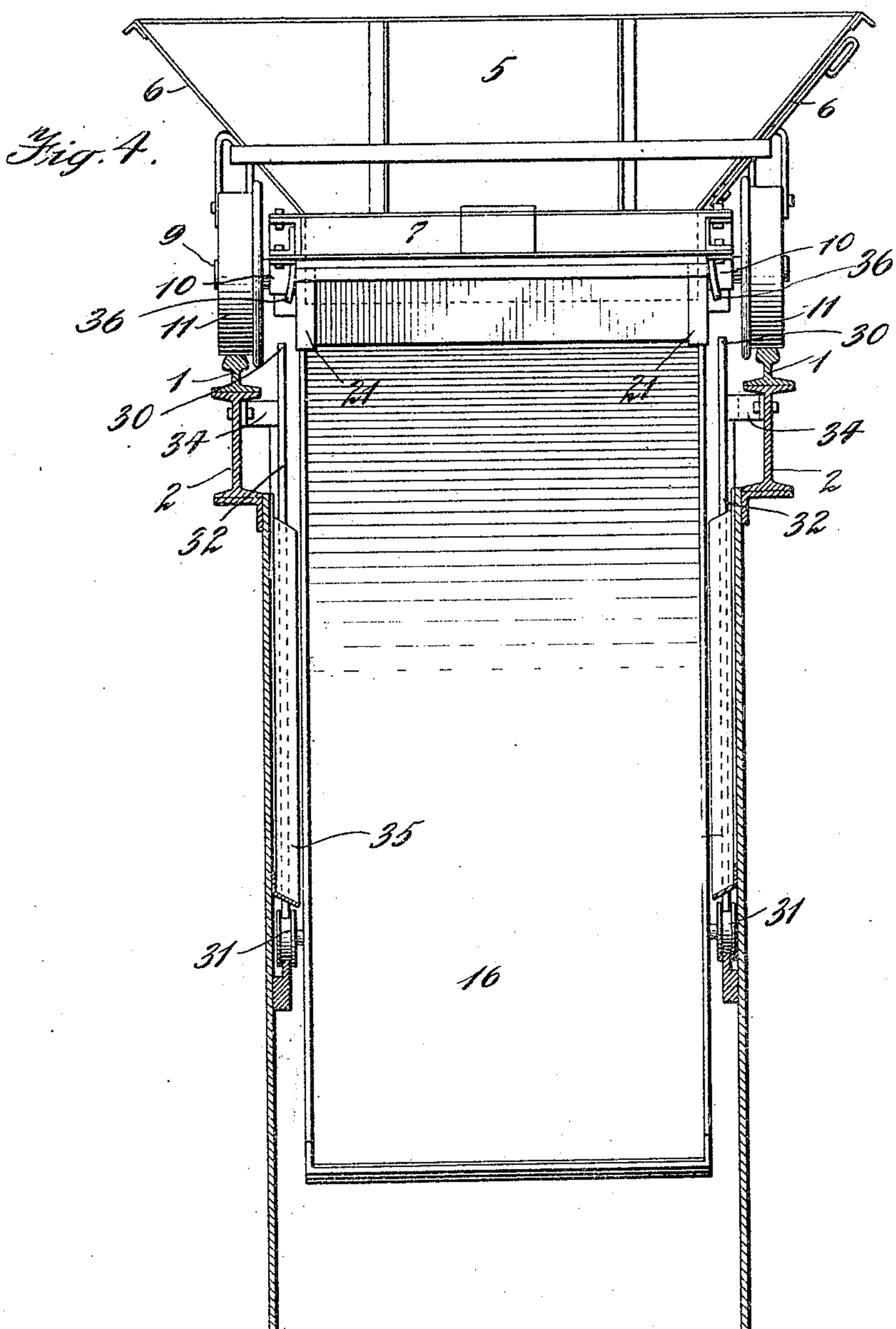
5 SHEETS—SHEET 4.

Fig. 4.



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5 SHEETS—SHEET 5.

Fig. 6.

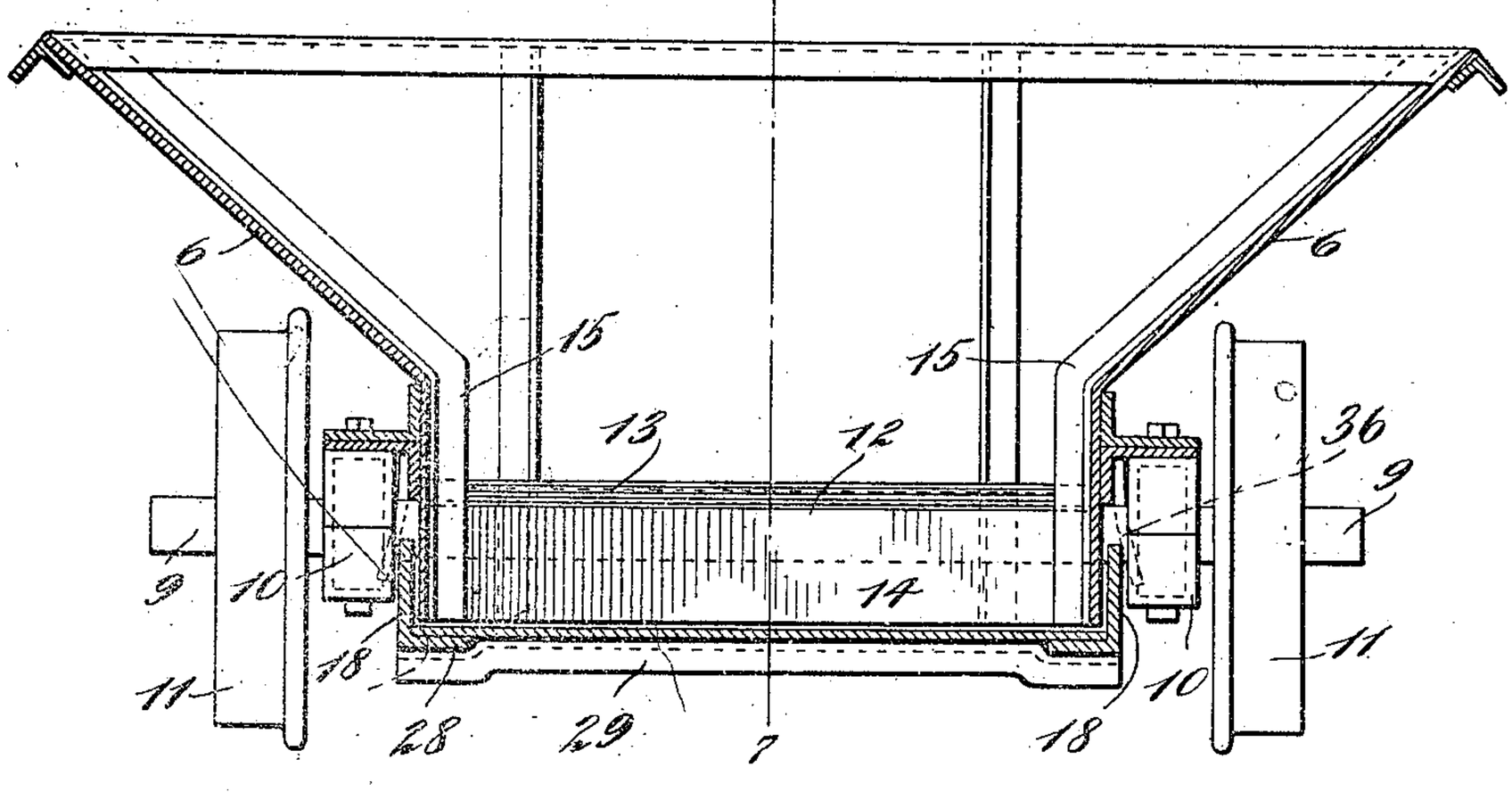
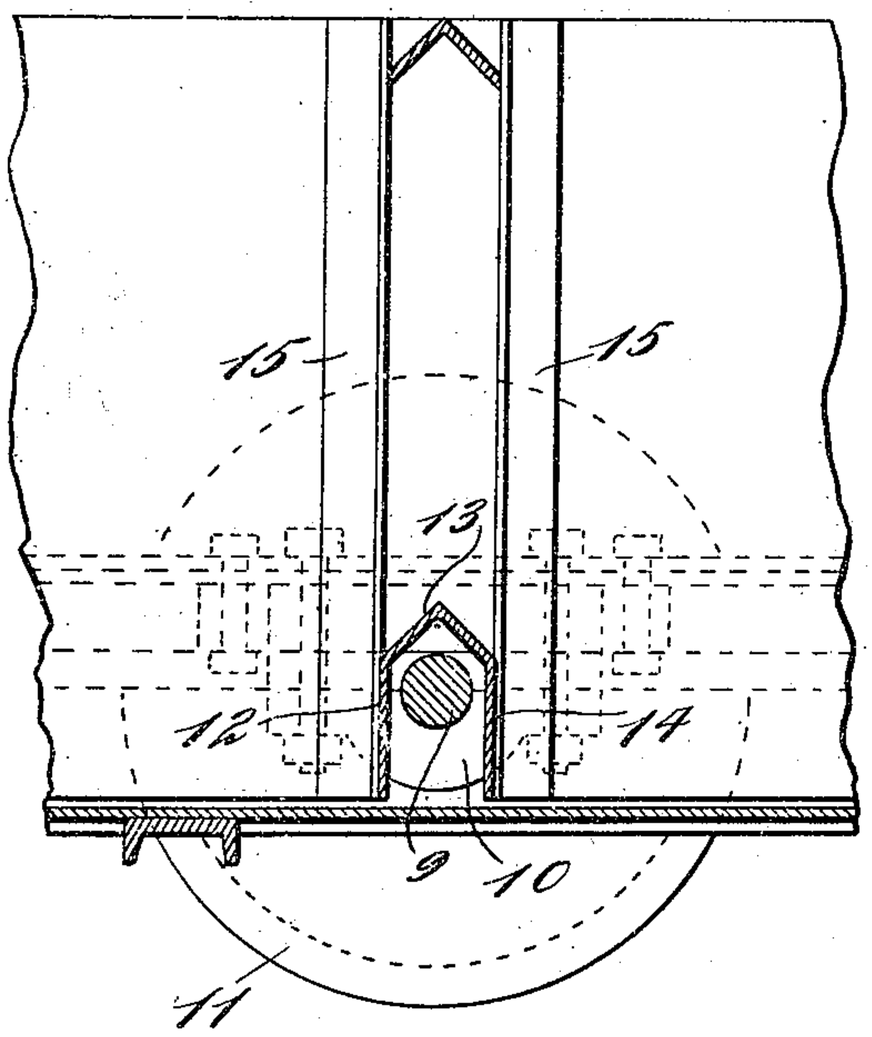


Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM D. ORD, OF LANDGRAFF, WEST VIRGINIA.

LOAD TRANSFERRING AND DEPOSITING APPARATUS.

990,380. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed August 27, 1910. Serial No. 579,213.

To all whom it may concern:

Be it known that I, WILLIAM D. ORD, a citizen of the United States, residing at Landgraff, in the county of McDowell and State of West Virginia, have invented certain new and useful Improvements in Load Transferring and Depositing Apparatus, of which the following is a specification.

My invention relates broadly and generally to new and useful improvements in load transferring and depositing means, and more particularly to that character or type adapted to carry and dump loose material in bulk, such for example, as coal.

An object of the invention is to provide a receptacle adapted to carry loose material with means for discharging the material so that it will pass easily and gradually from the receptacle without undue crushing or breakage, this being an important feature particularly when friable material such as coal is the material being transferred.

A further object is to provide an apparatus in which is employed a dumping receptacle of novel form which is operable to dump the load while said receptacle is in transit without necessity of stopping or arresting the movement thereof when the load is being dumped.

Another object is to construct a receptacle having a novel form of drop bottom, and to provide means for automatically dropping said bottom and subsequently returning it to closed position.

A further object is to construct a dumping receptacle of novel and efficient form, which will when operated to discharge the load, be emptied thereof quickly and thoroughly.

Further objects will become apparent during the course of the following description.

The invention consists in the novel construction and combination of parts to be fully described hereinafter and the novelty of which will be particularly pointed out and distinctly claimed.

I have fully and clearly illustrated my invention in the accompanying drawings to be taken as a part of this specification and wherein—

Figure 1 is a view in side elevation of one embodiment of my invention. Fig. 2 is an enlarged view in section taken on the line 2—2 of Fig. 3, the drop bottom being shown in locked position. Fig. 3 is a view in rear end elevation of the same embodiment shown in Fig. 1, the track way being shown in cross section, the drop bottom of the receptacle being shown closed, and about to be released. Fig. 4 is a view in rear end elevation of the car showing the bottom dropped within a receiver, the latter being shown in vertical cross section. Fig. 5 is an enlarged detail view partly in section showing the latch for holding the drop bottom disengaged therefrom. Fig. 6 is a transverse vertical section through the car on the line 6—6 of Fig. 2. Fig. 7 is a section on the line 7—7 of Fig. 6.

Referring now to the drawings by characters of reference: 1 designates a track way shown as being horizontally disposed for the purposes of this specification, said trackway being in the form of the usual railway rail, and being supported upon any suitable supporting structure, as for instance the horizontal I beams 2, resting on vertical columns 3. The track rails are spaced apart according to the necessities of the particular installation and the whole structure may be connected and braced by transverse girders 4 shown in cross-section in Fig. 2. The particular construction or form of the track and its supporting means shown are not imperative as the same may be varied widely as desired.

Mounted to travel on the track way is a receptacle which may take any desired embodiment but which I have shown as preferably consisting of a car formed of sheet metal and having end and side walls, 5, 6, respectively, the body being substantially rectangular in plan, and mounted upon an underbody or truck frame consisting of end and side members 7, 8, respectively, preferably in the form of angle irons or other forms of structural iron. The under body or truck frame is supported upon transversely arranged horizontal axles 9, secured in boxes 10, of any suitable form carried by the side members 8 of the under body, the axles bearing flanged wheels 11 running on the track way. The axles extend through the body of the car and each is covered by a transverse housing 12 having a peaked top 13 and vertical side walls 14 completely covering the axle to protect the same from the contents of the car. The housings extend entirely across the car and have their ends riveted to vertical angle irons 15 which are

secured to the side walls of the car body. By this arrangement the housings also serve to brace and stiffen the car body.

The car body is open throughout its entire bottom portion and is closed by a drop bottom. This drop bottom consists preferably of a pan like member 16, having upwardly directed end and side flanges 17, 18, which when the drop bottom is in closed position, surround the bottom portion of the car body, as clearly shown in Figs. 2 and 6. The drop bottom is pivotally supported at one end of the car, as at 19, to brackets 20, depending from the under body, and at the end of the car opposite to its pivot, means is provided for holding the drop bottom in closed position to seal the bottom of the car, the flanges of the drop bottom extending up around the bottom of the car body to prevent leakage of the material.

Any suitable means may be employed for holding the drop bottom in lock position, but I prefer to employ a pivoted latch consisting of a latch plate 21, extending across the rear end of the car and pivoted to the under body as at 22, said plate or latch having an upturned ledge 23, to receive and hold the end of the drop bottom, the latter being preferably provided with a depending flange 24, to seat over the ledge and in connection therewith form a non-leaking joint between the latch and the drop bottom. The latch is normally held in position to support the drop bottom by means of contractile springs 25, one end of each spring being secured to an end of the latch as at 26, and the other end of the spring being secured to the body of the car as at 27. It will be seen that this spring acts to automatically return the latch into position to hold the drop bottom in closed position.

The drop bottom is preferably formed of sheet metal braced by longitudinal and transverse flanged stiffening irons, 28, said irons being preferably channel shape in cross section and arranged with their flanges depending. One of the flanges on the transverse stiffening iron at the rear of the drop bottom forms a convenient means for engagement with the ledge of the latch piece. The free transverse end of the drop bottom is not provided with a flange so that the contents of the car may readily pass from said free end of the drop bottom when the latter is operated in a manner to be presently described. The drop bottom is supported, in the present embodiment, solely by the pivot 19 and latch 21, the free or swinging end of the drop bottom resting by its own weight on the ledge on said latch.

Means is provided whereby the latch 21 will be released while the car is in motion for the purpose of permitting the drop bottom to fall so that the contents of the car will pass from the latter, the drop bottom acting as a chute to direct the discharge of said contents. Any means may be provided for accomplishing the release of the drop bottom but I prefer to provide a track cam 29 adjacent the track way and in proximity to the point where the load is to be dumped, said cam being arranged to be struck by the latch whereby the latter is swung out of engagement with the drop bottom.

It will be noted that with the contents of a car resting upon the drop bottom, there will be considerable weight upon the latch which might tend to prevent free release of the same, and I, therefore, provide means for lifting the drop bottom so as to relieve the latch of its weight at the time the latch is moved to release the drop bottom. This means may consist of track cams 30 arranged adjacent the track way and adapted to be engaged by runner wheels 31 or guides, mounted on the drop bottom, said cams 29 and 30 being so arranged and the runner wheel or guide and latch so located relative to each other that said runner wheel or guide will ride upon the cam 30 previous to the engagement of the latch 21 with the cam 29. By this arrangement it will be seen that the drop bottom is lifted away from the latch before the latter is moved to release the drop bottom. The latch being released, the drop bottom is then free to swing down on the pivots 19 to permit the contents of the car to pass therefrom.

In the preferred embodiment of the invention, it is the purpose to dump the car into a receiver from which the material dumped from the car may be conveyed in any desired manner and one of the important objects of the invention, as heretofore stated, is to provide for the easy passage of the material into the receiver. The receiver is shown as consisting of a hopper like body formed of end and side members, the said members of which are arranged in proximity to the track release, and the body of said hopper located below the track way and of sufficient width to permit the drop bottom of the car when dropped, to depend within said hopper body. The receiver is provided with guide rails 32, which may be continuances of the cams 30, said track guides being inclined downwardly from the track cams as at 32ª in the direction of movement of the car, and then curve upwardly in the direction of movement of the car as clearly shown in full lines in Fig. 2 and in dotted lines at 32ª in Fig. 1. By this arrangement it will be seen that as the runner wheels or guides 31 pass from the track cams 30, they will ride down side guides 32, the bottom first dropping from the car and being supported in a gradual incline, the pitch of which increases as the car progresses over the receiver and the runner wheels ride farther down the track way, this construction pro-

viding for the gradual escape of the contents of the car, so that the same passes therefrom easily, riding down the drop bottom which serves as a chute. The length of the drop bottom is such that its end, when in the receiver, passes closely adjacent one of the inclined end walls of the receiver so that the material does not have a great distance to fall off the end of the drop bottom before reaching the inclined end wall of the receiver, which arrangement greatly reduces the likelihood of the contents being broken up.

As the car passes over the receiver the drop bottom operates, as just described, until it reaches the upwardly inclined portion of the track guide in said receiver, and as soon as it reaches this portion, the drop bottom is gradually raised until it reaches a position slightly above its normal closed position, which is effected by the runner wheel or guide engaging a cam 33 at the upper end of said upwardly inclined portion. When the drop bottom is swung up as just described, the end thereof strikes the lower inclined edge of the latch 21 and passes the same, the spring 25 serving to draw the latch under the end of the drop bottom, the latter dropping upon the ledge 23 as soon as the runner wheel passes over said cam 33.

The guide rails 32 are preferably arranged inside the receiver and are supported by the side walls thereof by brackets 34, outstanding from the side of the receiver. In order to prevent said rails from catching such material as may drop from the cars and which might tend to prevent free movement of the runner wheels or guides 31, I cover said rails with guard plates 35 secured above the same to the side walls of the receiver.

Means is provided for properly centering and guiding the drop bottom when it is raised to closed position, said means consisting preferably of depending guide plates 36 secured to the under body of the car and curved outwardly therefrom and beneath which the said flanges of the drop bottom are adapted to engage when the drop bottom is about to reach closed position so that it assumes its proper position relative to the bottom of the car body.

While I have described the invention above as being used in connection with a receiver, I do not desire to be limited to such a construction as the same would operate properly without a receiver, the guide rails for supporting and operating the drop bottom being supported in some other manner. This form of invention will be that adopted when it is desired to deposit the contents of the car on a pile beneath the track way instead of in a receiver. I employ the term receiver in a generic sense, meaning any receptacle or body into or onto which the contents of the receptacle may be deposited. I also do not desire to be limited to any specific construction of the locking means for holding the drop bottom closed nor to means for automatically operating the same as the latch might be released manually, although the preferable mode of operation is to provide for the automatic release of the latch.

While it is believed that the operation of the invention will be clear from the above description, I will, however, briefly state the operation as follows: The receptacle or car having been loaded with the drop bottom in closed position, the car may pass, as one of a train or singly, over the track way 1, any suitable means of propulsion being employed for this purpose. During the passage of the car, the drop bottom is held in closed position by the latch 21, so that the load is retained within the car until the latter approaches the point where the load is to be dumped, for instance, the receiver, when the runner wheels 31 ride up over the cams 30 whereby the bottom of the car is raised so that the depending flange 24 is moved up high enough to permit the release of the latch. The drop bottom is held in this position until the latch 21 strikes the track cams 29, the latch being thrown backward in the direction of the arrow, as shown in Fig. 5 and being held out in this position long enough to permit the guide wheel 31 to ride down the inclined face of the track guides within the receiver permitting the drop bottom to fall down to deposit the load. The car continues its progress across the point where the load is being discharged, the drop bottom passing down gradually at an increasing incline until all of the contents of the car have been discharged. The complete discharge will take place by the time the drop bottom reaches the lower portion of the incline and as the car continues its movement the running wheels 31 riding up the upwardly inclined portion of the track guide will raise the drop bottom until the rear end of the latter strikes the latch and moving past the same, permits it to swing back under the end of the drop bottom which descends into engagement with the latch after the running wheels pass over cam 33.

What I claim as my invention and wish to secure by Letters Patent is:

1. In a load-transferring and depositing apparatus, a trackway, a receptacle to travel on the trackway, said receptacle having a pivoted drop bottom, means to hold the drop bottom in closed position, a receiver for the load beneath a section of the trackway, means for releasing said holding means, and means to support said drop bottom in raised position independently of the holding means until the receptacle reaches the point of discharge over the receiver.

2. In a load transferring and depositing apparatus, a trackway, a receptacle to travel

on the trackway, said receptacle having a pivoted drop bottom, means to hold the drop bottom in closed position, means for releasing said holding means, means to support said drop bottom in raised position independently of the holding means until the receptacle reaches the point of discharge over the receiver, and means on the receiver to support the free end of the drop bottom as the load is discharged.

3. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means associated with the track way for releasing the drop bottom to discharge the load, and means also associated with the track way for returning the drop bottom to closed position.

4. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom, and means associated with the track way for supporting the drop bottom to cause it to open gradually when released.

5. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom, and means associated with the track way for supporting the drop bottom to cause it to open gradually when released, said means comprising a guide inclined downwardly in the direction of movement of the receptacle.

6. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom and means associated with the track way for returning the drop bottom to closed position, said means comprising a guide to support the drop bottom.

7. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom and means associated with the track way for returning the drop bottom to closed position, said means comprising a guide to support the drop bottom, the guide being inclined upwardly in the direction of movement of the receptacle.

8. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom and means associated with the track way to cause the drop bottom to open gradually to discharge the load and then be raised to closed position.

9. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom and means associated with the track way to cause the drop bottom to open gradually to discharge the load and then be raised to closed position, said means comprising a guide to support the drop bottom inclined downwardly and then upwardly in the direction of movement of the receptacle.

10. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom, and means for lifting the drop bottom before the same is released.

11. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, comprising a latch upon which the drop bottom is supported, means for releasing the latch and means for lifting the weight of the drop bottom off the latch before the same is released.

12. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, comprising a latch upon which the drop bottom rests by gravity, means for releasing the latch and means on the track way for lifting the weight of the drop bottom off the latch before the latter is released.

13. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, comprising a latch upon which the drop bottom rests by gravity, means on the track way for releasing the latch, and means on the track way for lifting the drop bottom before the latch is released.

14. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, comprising a latch upon which the drop bottom rests by gravity, means on the track way for releasing the latch, and means on the track way for lifting the drop bottom before the latch is released, said means comprising a cam.

15. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed, comprising a latch upon

which the drop bottom is supported, means on the track way for releasing the latch, and means on the track way for lifting the drop bottom before the latch is released, said means comprising a cam adapted to engage an attachment on the drop bottom.

16. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom, means for holding the drop bottom closed comprising a pivoted latch having a ledge upon which the drop bottom rests by gravity, means on the track way for releasing the latch and means on the track way for raising the drop bottom before the latch is released.

17. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom consisting of a floor portion pivotally supported at the forward end of the receptacle, means at the rear end of the receptacle for holding the drop bottom closed, means for releasing the drop bottom, and means associated with the track way for supporting the drop bottom to cause the same to open gradually as the receptacle moves along the track way.

18. In a load transferring and depositing apparatus, a track way, a receptacle movable along the track way and provided with a drop bottom consisting of a floor portion pivotally supported at the forward end of the receptacle, means at the rear end of the receptacle for holding the drop bottom closed, means for releasing the drop bottom, means associated with the track way for supporting the drop bottom to cause the same to open gradually as the receptacle moves along the track way and means for swinging the drop bottom to closed position.

19. In a load transferring and depositing apparatus, a trackway, a receiver beneath a section of the trackway, a receptacle to travel on the trackway, said receptacle having a pivoted drop bottom, means for holding said drop bottom in closed position, means for releasing said holding means in advance of the receiver, and means on the receiver to permit the gradual lowering of the free end of said drop bottom and for supporting the same as the receptacle travels over the receiver.

20. In a load transferring and depositing apparatus, a track way, a receiver, a receptacle movable along the track way over the receiver, said receptacle being provided with a drop bottom, means for holding the drop bottom closed, means for releasing the drop bottom, and means associated with the receiver to cause a gradual opening of the drop bottom and then return the drop bottom to closed position.

21. In a load transferring and depositing apparatus, a track way, a receiver, a receptacle movable along the track way over the receiver, said receptacle being provided with a drop bottom adapted when dropped, to enter the receiver, and means on the receiver for supporting said drop bottom in inclined position during the passage of the receptacle over the same.

22. In a load transferring and depositing apparatus, a track way, a receiver, a receptacle movable along the track way over the receiver, said receptacle being provided with a drop bottom adapted when dropped, to enter the receiver, and means for supporting said drop bottom in inclined position within the receiver during the passage of the receptacle over the same, said means consisting of a track guide inclined downwardly in the direction of movement of the receptacle.

23. In a load transferring and depositing apparatus, a track way, a receiver, a receptacle movable along the track way over the receiver, said receptacle being provided with a drop bottom adapted when dropped to enter the receiver, and means for supporting said drop bottom in inclined position within the receiver during the passage of the receptacle over the same, said means consisting of a track guide inclined downwardly in the direction of movement of the receptacle, and a guard overhanging said track guide.

24. In a load transferring and depositing apparatus, a trackway, a receiver beneath a section of the trackway, a receptacle to travel on the trackway, said receptacle having a drop bottom pivoted at one end, means for holding said drop bottom in closed position, means associated with the trackway in advance of the receiver to release said holding means, and means on said receiver to support said drop bottom in raised position independently of the holding means until the receptacle reaches the point of discharge over the receiver and to support the free end of said drop bottom in an inclined position as the receptacle travels over the receiver.

25. In a load transferring and depositing apparatus, a track way, a receiver, a receptacle movable along the track way over the receiver, said receptacle being provided with a drop bottom pivotally supported at one end thereof, said drop bottom being arranged to enter the receiver when dropped, and means within the receiver for supporting the drop bottom in inclined position therein during the passage of the receptacle over the receiver.

26. In a load transferring and depositing apparatus, a track way, a receiver, a receptacle movable along the track way over the receiver, said receptacle being provided with a drop bottom pivotally supported at one end thereof, said drop bottom being arranged to enter the receiver when dropped,

means within the receiver for supporting the drop bottom in inclined position therein during the passage of the same through the receiver, and means for returning the drop bottom to closed position after the discharge of the load.

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

WILLIAM D. ORD.

Witnesses:
LOUIS J. BERNSTEIN,
CHARLES S. JONES.