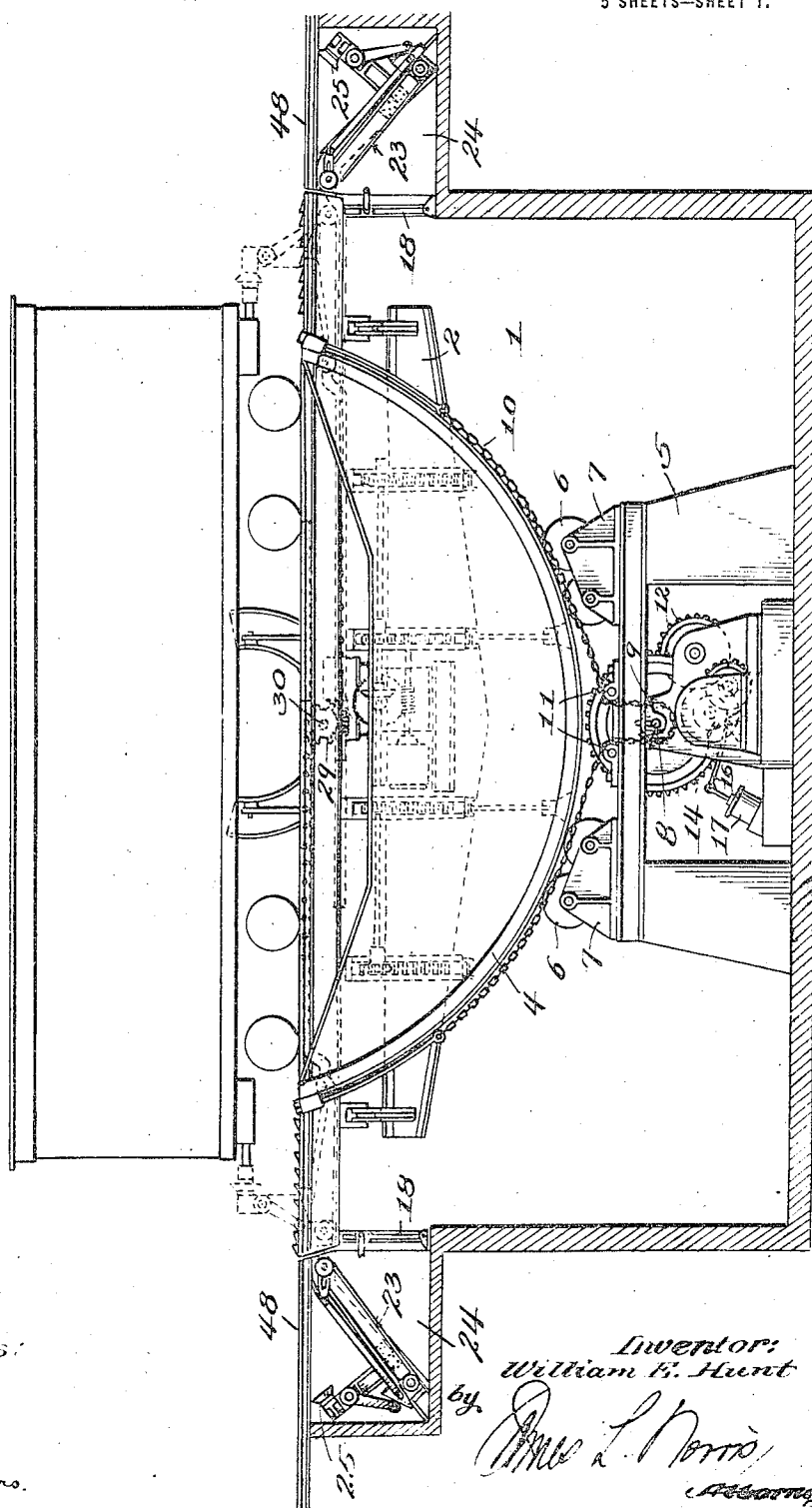


1,266,474.

W. E. HUNT.
CAR UNLOADER.
APPLICATION FILED DEC. 20, 1916.

Patented May 14, 1918.
5 SHEETS—SHEET 1.

Fig. 1.



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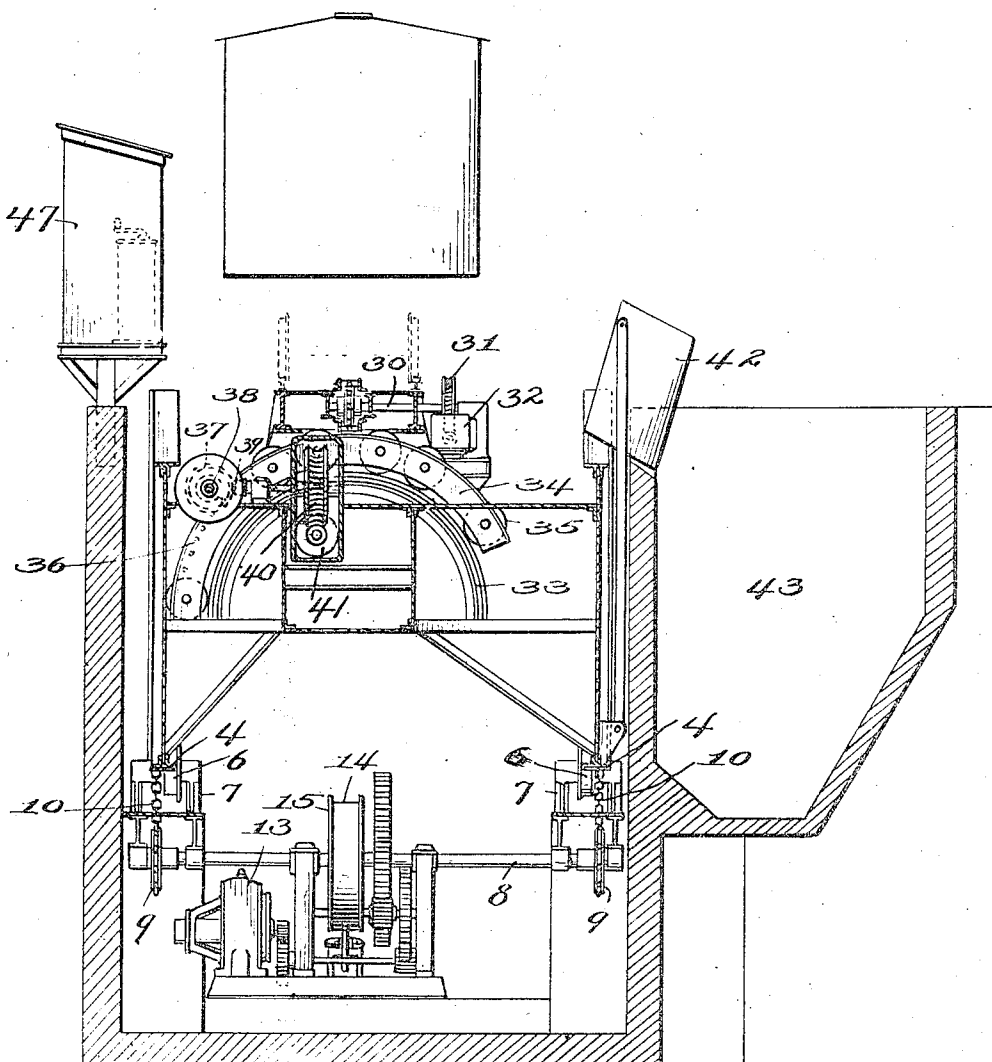
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5 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

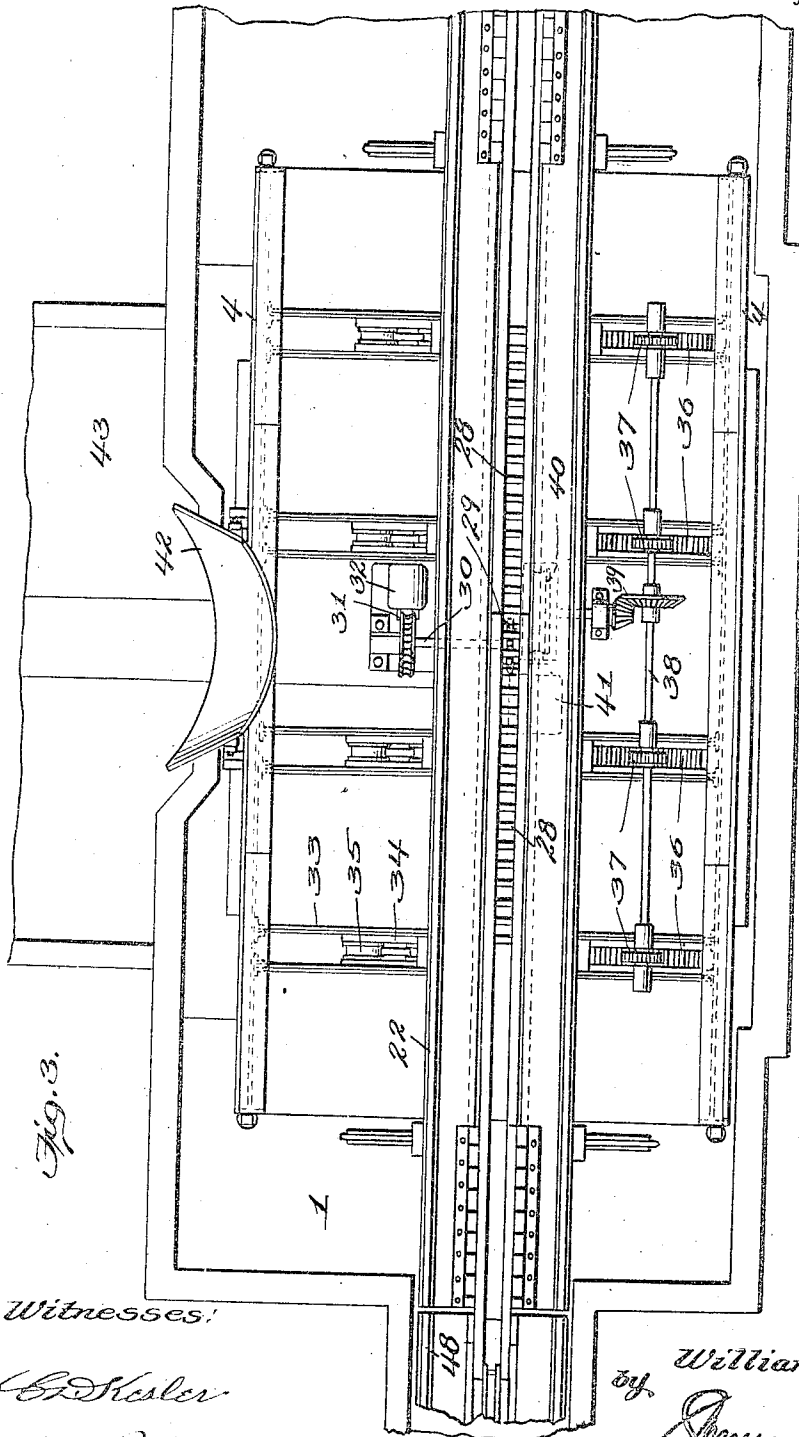


Fig. 3.

Witnesses:

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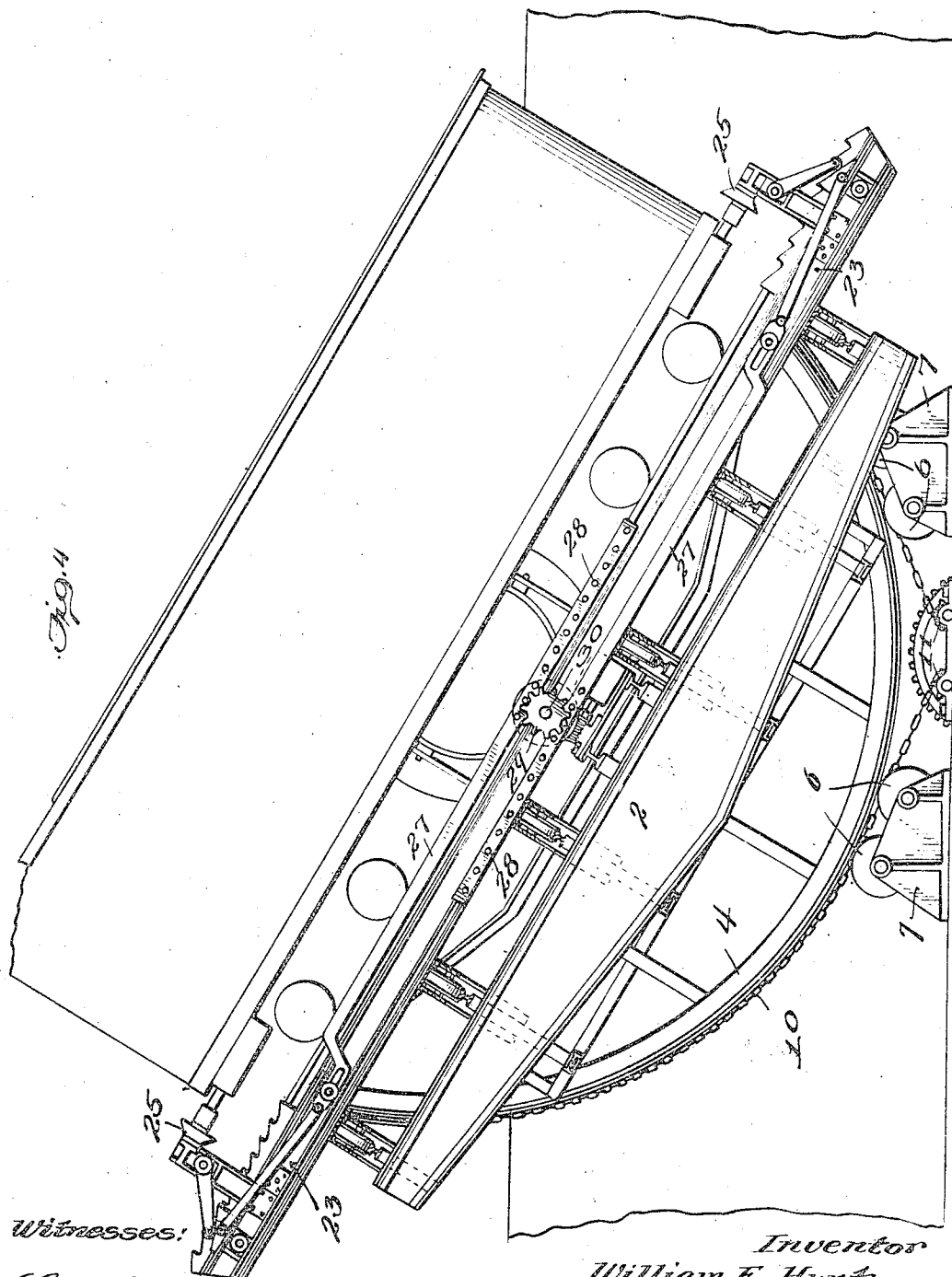
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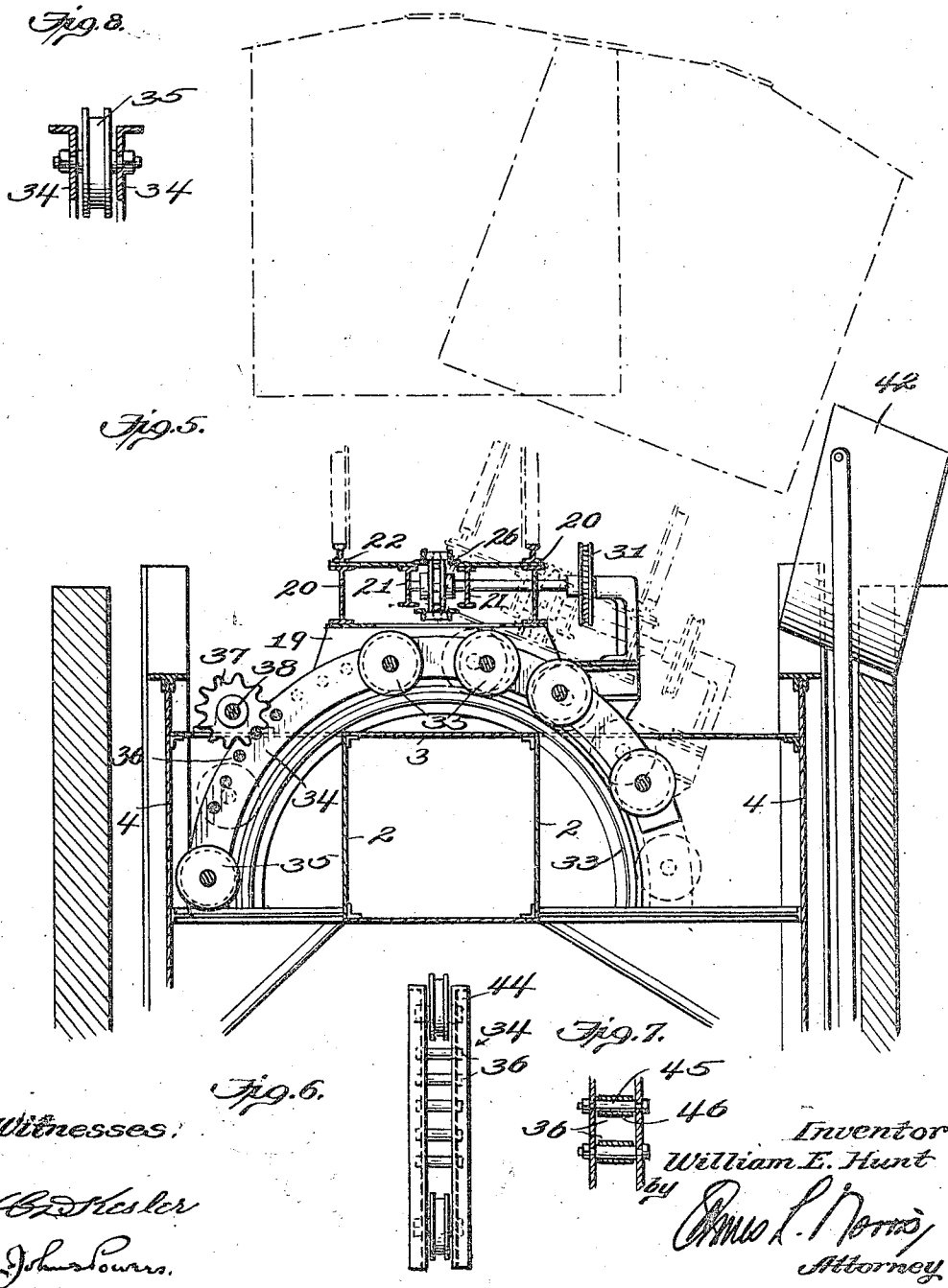
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Patented May 14, 1918.
5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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CAR-UNLOADER.

1,266,474.

Specification of Letters Patent. Patented May 14, 1918.

Application filed December 20, 1916. Serial No. 138,100.

To all whom it may concern:

Be it known that I, WILLIAM E. HUNT, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented new and useful Improvements in Car-Unloaders, of which the following is a specification.

This invention relates to an improvement in boxcar unloaders of that general type wherein the supporting means for the car provides for independent tilting movements of the car about transverse and longitudinal axes, and such movements of the car are effected in connection with the unloading thereof to promote speed and thoroughness.

The objects of the present invention, briefly stated, are to provide a car unloader of the type referred to which shall be adapted to the standard car loader construction shown in my prior Patent No. 895,089, and, therefore, capable of use, as the occasion may require, as a loader embodying all the advantages of my patented construction; which shall be quickly and easily operated and positively controlled, its operation requiring comparatively slight power; and in which the car, in connection with its transverse tilting movement, is tiltable through an arc of substantial length having a relatively long radius without impairing the compactness of the unloader structure but securing the two-fold advantage of greater quickness and thoroughness in unloading and of the most efficient control of the disposition of the unloaded material.

With the above objects in view, the invention consists in certain features of structure and combination which will appear more in detail as the description proceeds.

A preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of an unloader in which the features of the invention are incorporated;

Fig. 2 is a central cross-sectional view thereof;

Fig. 3 is a top plan view thereof;

Fig. 4 is a detail side elevation, partly in section, to a somewhat larger scale than Fig. 1, showing the car as tilted about a transverse axis;

Fig. 5 is a detail cross-sectional view, to a somewhat larger scale than Fig. 2, showing the car as tilted about a longitudinal axis;

Fig. 6 is a detail side elevation of one of the curved bearers which participates in the operation of transversely tilting the car; and

Figs. 7 and 8 are views showing details of the bearers as shown in Fig. 6.

Similar characters of reference designate corresponding parts throughout the several views.

The present construction embodies the structural features shown in my Patent No. 895,089 of August 4, 1908 but entails some re-arrangement or re-adjustment of these features in consideration of the fact that the car-carrying platform or car-carrier, as it will hereafter be termed for convenience, is tiltable transversely relatively to the unloader frame by which it is supported and which, in turn, is tiltable longitudinally.

The unloader frame is arranged within a well 1 and includes a pair of beams 2 supporting a platform 3. The unloader frame also includes at the sides thereof a pair of segments 4 which are connected to the platform and are suitably braced to the beams 2. For the support of the unloader frame a base 5 is provided; and the segments 4 rotate on idle rollers 6 whose trunnions have their bearings in uprights 7 mounted on the base 5.

The unloader frame is tiltable about a transverse axis and its tilting movements are effected by connections from a transverse shaft 8 journaled in suitable bearings in the base 5. The shaft 8 carries near each end thereof sprocket wheels 9; and the operative connections between said shaft and the unloader frame comprise chains 10 which are secured at points on the peripheries of the segments 4 somewhat near the ends of said segments and, following or lying against the peripheries of the segments, are trained over idler sprockets 11 supported by the base 5 and over the sprockets 9. Obviously, by rotating the shaft 8 in either direction, a tilting movement of the unloader frame about a transverse axis and in a corresponding direction will be produced. The shaft 8 is driven by a suitable reducing gearing 12 from a motor shaft, preferably the shaft of an electric motor 13, which is supported on a suitable base arranged within the skeleton structure of the base 5; and the rotation of the shaft 8 is at all times under the control of the operator by means of a brake band 14 cooperating with a drum 15 on said shaft

and operated, in the usual manner, by a lever which is connected by a link 16 to the rod of a piston (not shown) which operates in a cylinder 17. Steam, air, or any other fluid agent may be employed to operate the piston in the cylinder 17.

At the ends of the well 1 upright levers 18 may be provided to engage the ends of the unloader frame at the under side thereof for the purpose of providing a suitable support for said frame when it is in a normal position, as shown in Fig. 1. The levers 18 may be operated by any suitable connections from a hand lever or equivalent device for the purpose of disengaging the ends of the frame and permitting the operation of the unloader.

Except as in the construction shown in my said Patent No. 895,089, the rails for the car were carried by the tiltable frame, the construction thus far described is substantially similar to my patented construction.

The present car unloader includes end bumpers or grabbers which, together with their operating appurtenances, are substantially similar in their construction and operation to the end bumpers and operating appurtenances thereof shown in my said Patent No. 895,089. According to the present invention, however, the rails for the car and the operating appurtenances for the end bumpers or grabbers are not directly associated with the frame which is tiltable about a transverse axis, but are directly associated with a car-carrier which is supported by the said frame and is tiltable about a longitudinal axis.

The car-carrier comprises a bed 19 which carries at its sides longitudinal beams 20 and which supports other longitudinal beams 21 arranged between the beams 20 and in somewhat close association to one another. The beams 20 support the rails 22 upon which the wheels of the car engage in the usual manner. The end bumpers are, as stated, of the construction disclosed in my said Patent No. 895,089 and, therefore, require no detail description. It may be noted, however, that the end bumpers which are designated generally by the numeral 23 are normally arranged in end extensions 24 of the well 1 and have cupped engaging elements 25 which fit over and on all sides partly inclose the couplers at the ends of the car whereby to provide lateral support for the car in connection with the transverse tilting thereof.

The end bumpers operate in a longitudinal slot 26 in the upper platform of the car-carrier and the beams 21, which are preferably of I cross-section, are, like the beams 8 shown in my said Patent No. 895,089, utilized as supports or guide rails for the traveling rollers of the end bumpers. As in my patented construction the end bumpers are

operated by longitudinal bars, here designated as 27, which are provided with racks 28 and are arranged, respectively, above and below an operating pinion 29 on a transverse shaft 30. The shaft 30 is located at the transverse center of the unloader and certain of its bearings are supported by the beams 21 referred to. The shaft 30 projects beyond one of said beams and is driven by worm reduction gear 31 from an electric motor 32 which is suitably supported by the car-carrier at one side thereof. The motor 32 may be a reversible motor or its driving connections with the shaft 30 may include reversing gearing. In any event, the shaft 30 may be driven, at will, in one direction or the other to retract or project the bars 27 and thereby effect the operation of the end bumpers or grabbers in a manner described at length in my said Patent No. 895,089.

As above stated, the car-carrier is supported by the unloader frame and is tiltable transversely, *i. e.*, about a longitudinal axis, relatively to said frame. For these purposes, the unloader frame is provided at appropriate intervals with a number of transverse rails or saddle bars 33 which are fixed to or made rigid with said frame; and the car-carrier is provided along its under side with a number of similarly constructed bearers 34 provided with appropriately arranged rollers 35 which engage on the rails or saddle bars 33. The saddle bars 33 are curved through an arc of half a circle and are arranged in arch fashion on the unloader frame, that is to say, their convex sides are presented upward and their concave sides are presented downward. The bearers 34 have a curvature which conforms to the curvature of the rails or saddle bars 33 but extend through an arc which is somewhat less than half a circle whereby said bearers may be moved along the peripheries or outer circumferential faces of said rails or saddle bars within certain fixed limits. Normally, and as is shown in Fig. 2, the ends of the bearers at one side of the unloader will engage bars or parts of the unloader frame as stops, whereby the car-carrier will be supported in a horizontal plane or in a plane perpendicular to the longitudinal vertical plane of the unloader as a whole.

The bearers 34 may be operated by any suitable mechanism to effect transverse tilting movements of the car-carrier. Preferably, however, said bearers are operated by the mechanism disclosed which includes a rack 36 formed with each bearer, a pinion 37 engaging said rack, and a longitudinal shaft 38 carrying the pinions 37. As shown, the shaft 38 is driven by bevel and worm reduction gearing 39-40 from the shaft of an electric motor 41 suitably supported by the unloader frame. The motor 41 may be a re-

versible motor or the connections between its shaft and the shaft 38 may include suitable reversing gearing. In any event, the shaft 38 may be rotated, at will, in either direction, to effect movements of the bearers in a corresponding direction in planes transverse to the unloader. It will be obvious that these movements of the bearers 34 in transverse planes will be produced by the rotation of the shaft 38 in consequence of the engagement of the pinions 37 with the racks 36 and that the movements of said bearers in either direction will be limited by the engagement of their ends against parts of the unloader frame.

By virtue of the arch form of the rails or saddle bars 33, the axis of tilting movement of the car in a transverse plane is located at a substantial distance below the car-carrier and at a very considerable distance below the floor of the car. It follows that the car may move through a relatively long arc without impairing the compendiousness of the unloader organization and that its transverse tilting movement may be effected with a certain measure of speed which promotes the discharge of its contents. By virtue of the features of organization described, the point of discharge may, as best shown in Fig. 5, be located substantially at one side of or beyond the unloader structure whereby the material discharged may be initially delivered into a suitable adjustably mounted chute 42 by which the discharged material is guided or spouted into the boot 43 of the conveying apparatus usual or suitable for the particular kind of material being discharged.

The bearers 34 may be of any desired detail construction but they preferably consist each of a pair of angle irons 44 (Figs. 6, 7 and 8) between which the rollers 35 operate and which are connected at appropriate intervals by bolts 45 provided with spacing sleeves or blocks 46. The bolts 45 may extend through the hubs or shafts of the rollers 35 and they may, by their arrangement in suitable close association, be utilized to provide the rack 36, as shown in Figs. 5, 6 and 7.

The operation of the unloader is under the control of a single operator who occupies a stand or parapet 47 located at one side of the machine (Fig. 2) wherein are the necessary controllers for the various electric motors which are preferably used as power agencies.

The operation will be readily apparent from the foregoing description. As the first steps in the operation, the end bumpers are engaged with the car to retain and center it; the levers 18 are then retracted, *i. e.* moved to disengage or release the ends of the unloader frame; and the car is then tilted in a longitudinal plane. This tilting

of the car is effected by a longitudinal tilting movement of the unloader platform in the manner described. While thus tilted in a longitudinal plane, the car is thereafter tilted transversely and the material runs from the upper end thereof through the open door and into the chute 42 by which it is delivered to the conveyer boot or bin 43. When as much material as possible has been discharged from the car, the car-carrier is tilted into a plane perpendicular to the longitudinal vertical plane of the unloader and thereupon the unloader frame is tilted about a transverse axis to bring the car into a longitudinally tilted position wherein its ends are reversed. Thereupon, the car is again tilted transversely and the material is discharged from the opposite and now upper end of the car into the chute 42 until the discharge of material from the car has been completed. When the unloading operation has been completed, the car-carrier is returned to its normal plane relative to the unloader frame and the unloader frame is brought into its normal position wherein the car-carrier occupies a horizontal plane, as shown in Fig. 1, and the rails 22 aline and are co-planar with the fixed rails 48 which adjoin the ends of the unloader frame and project over the well extensions 24.

It is to be understood that the present disclosure is of what is now considered a preferred embodiment, but that certain minor changes within the legitimate scope of the appended claims may be resorted to without departing from the spirit or substance of the invention; and, therefore, that no specific description herein contained is intended to impose any restriction upon the scope of the claims not inherent in their language or plain intent.

I claim—

1. In a car unloader, in combination, a frame tiltable in a longitudinal plane, a plurality of transversely arranged rails carried by said frame, said rails being of arched form and presenting their convex sides upward, a car-carrier, and a plurality of transverse bearers secured to said carrier and conformably fitting upon said rails for transverse movement along the peripheries thereof.

2. In a car unloader, in combination, a frame tiltable in a longitudinal plane, a plurality of transversely arranged rails carried by said frame, said rails being of arched form and presenting their convex sides upward, a car-carrier, a plurality of transverse bearers secured to said carrier and conformably fitting upon said rails for transverse movement along the peripheries thereof, rollers carried by said bearers engaging said rails, racks formed with said bearers, and a longitudinal shaft at one side of said carrier having pinions engaging said racks.

3. In a car unloader, in combination, a frame tiltable in a longitudinal plane, a plurality of transversely arranged rails carried by said frame, said rails being of arched form and presenting their convex sides upward, a car-carrier and a plurality of transverse bearers secured to said carrier and conformably fitting upon said rails for transverse movement along the peripheries thereof, said bearers having less extent than said rails whereby the ends of said bearers may engage parts of the unloader frame adjacent the ends of said rails to limit the transverse tilting movements of said carrier.

4. In a car unloader, in combination, a well having end extensions, an unloader frame mounted in the well for tilting movement in a longitudinal frame, end bumpers normally arranged in said extensions, a plurality of transversely arranged rails carried by said frame, said rails being of arched form and presenting their convex sides upward, a car-carrier having a longitudinally slotted top platform, a plurality of transverse bearers secured to said carrier and conformably fitting upon said rails for transverse movement along the peripheries

thereof, a pair of bars operating in the slot of said platform for withdrawing said end bumpers from said well extensions upon said carrier or projecting said end bumpers from said carrier into said well extensions, a motor mounted upon said carrier, and gearing operatively connecting said motor and said bars.

5. In a car unloader, in combination, a frame tiltable in a longitudinal plane, a car carrier, a plurality of transversely arranged supporting means for said carrier mounted on said frame and transversely arranged parts carried by said carrier and having tractive engagement on said supporting means, said supporting means and transversely arranged parts being formed to cooperate in providing for a transverse movement of said carrier through an arched path of arched outline whose arc is disposed above its radial center.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses:

WILLIAM E. HUNT.

Witnesses:

WALTER L. MIER,
PHILIP P. PHILLIPS.