E. V. RICHARDS.

CAR UNLOADER.

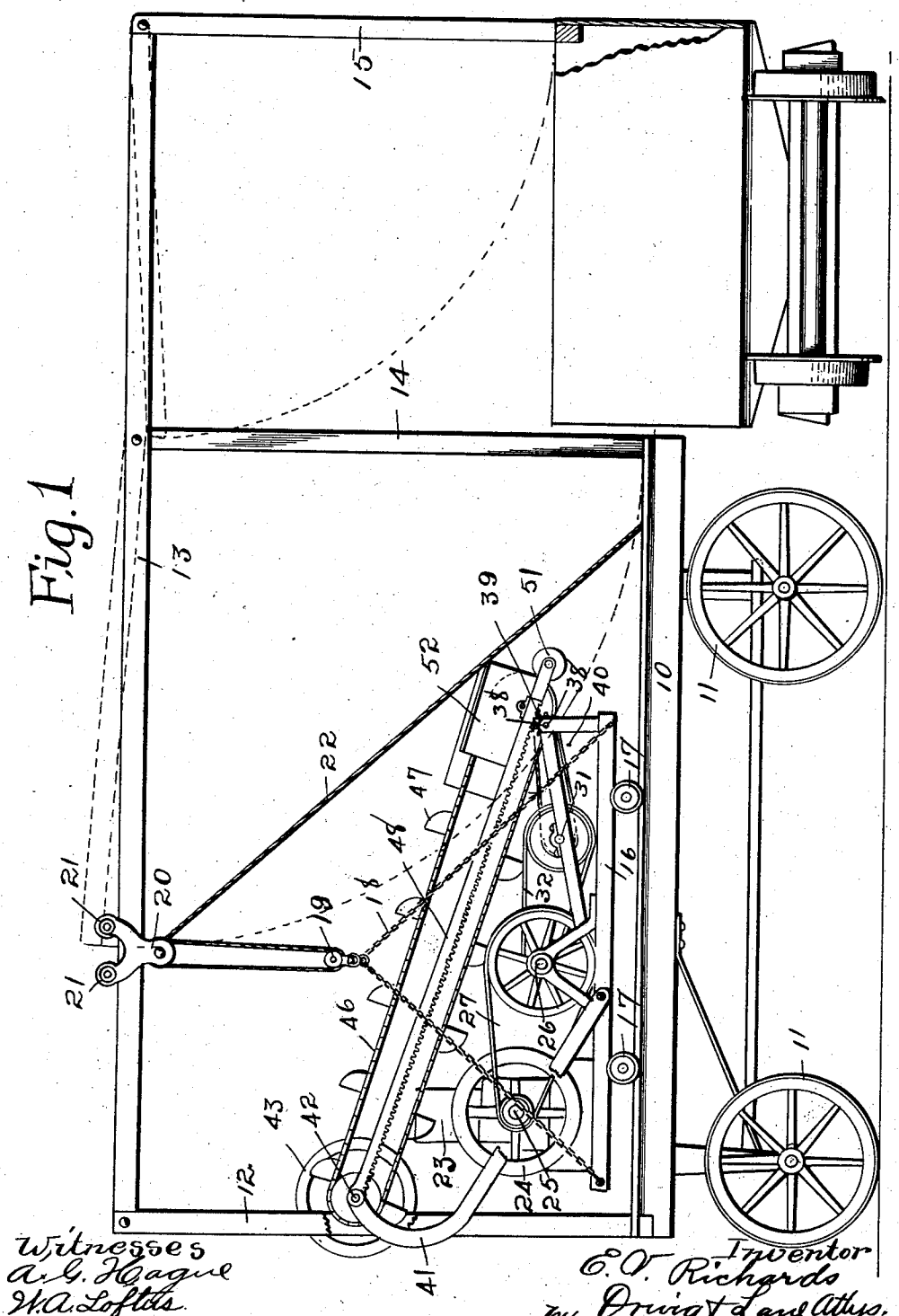
APPLICATION FILED OCT. 31, 1910.

**1,027,669.**

**Patented May 28, 1912.**

4 SHEETS—SHEET 1.

Fig. 1




Witnesses
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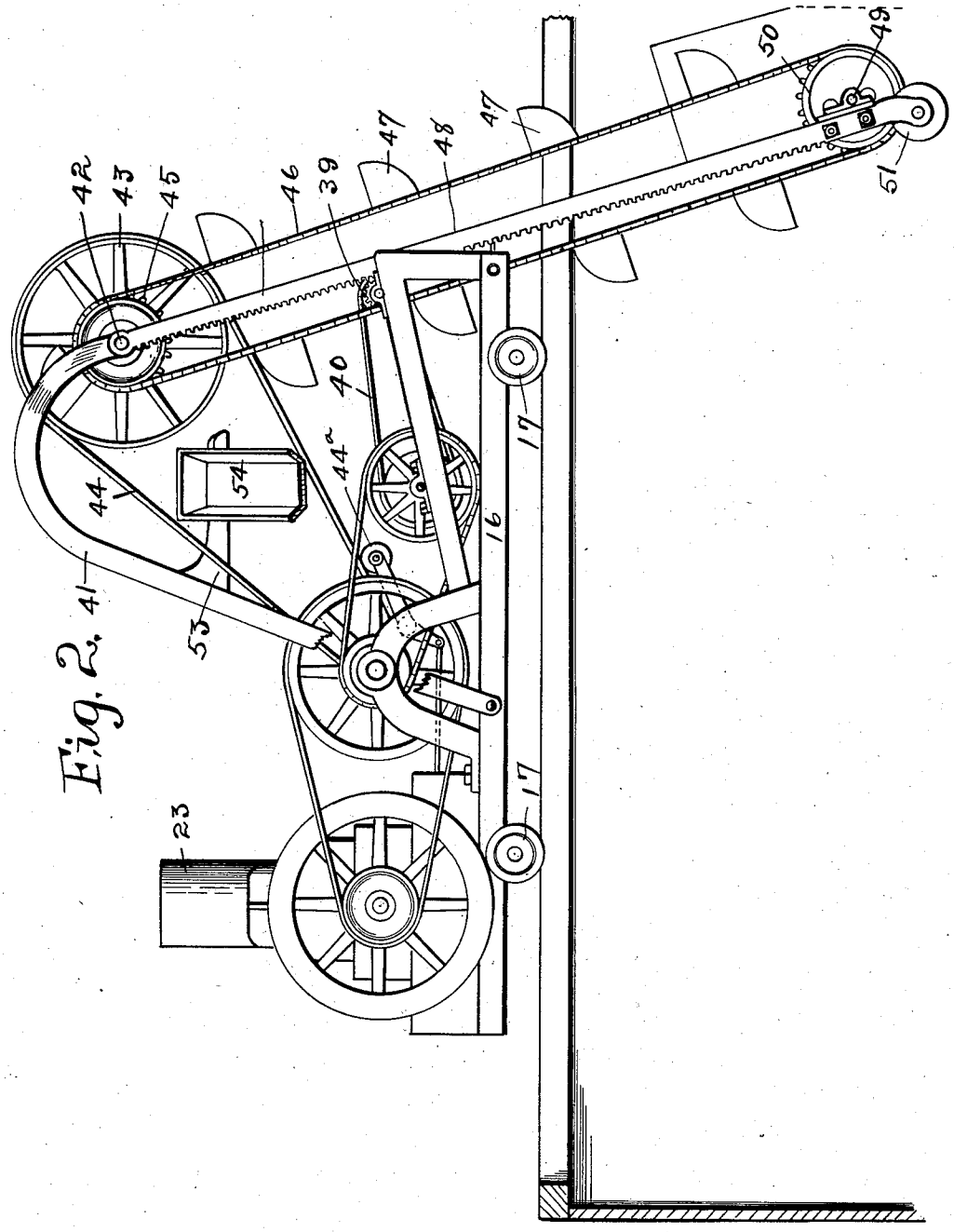


Fig. 2.

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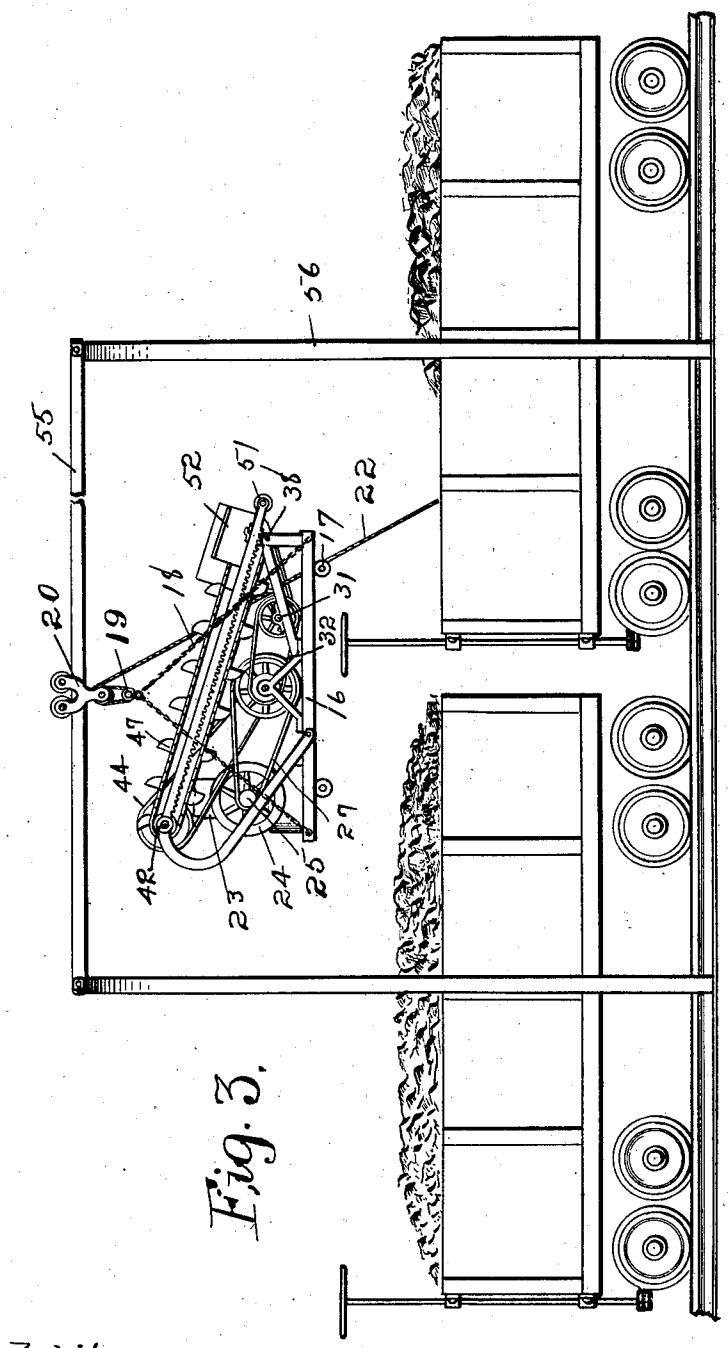


Fig. 3.

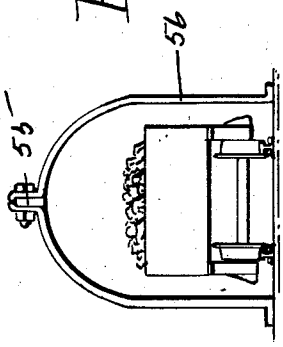


Fig. 4.

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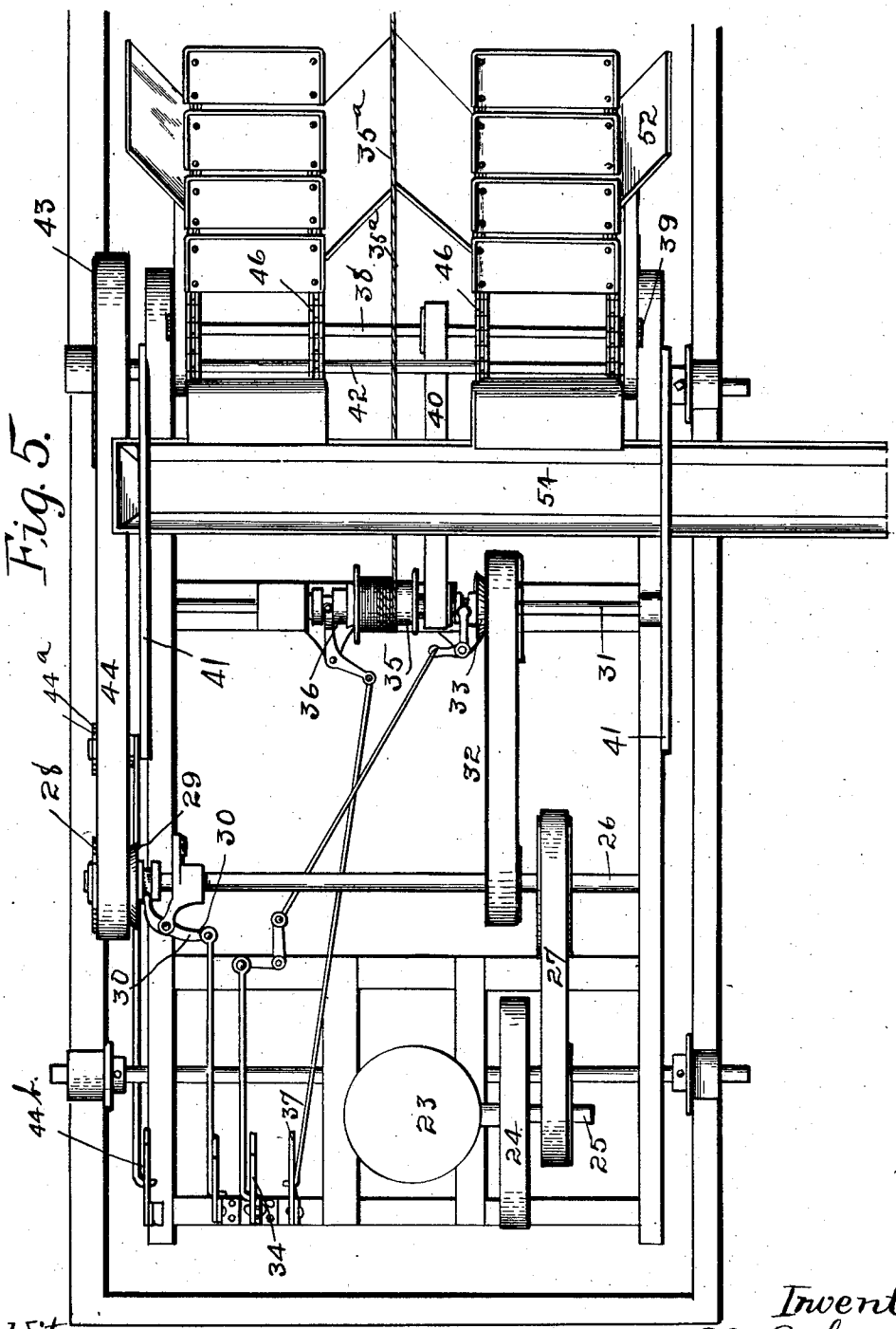
4 SHEETS—SHEET 4.

Fig. 5.

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# UNITED STATES PATENT OFFICE.

ELMO V. RICHARDS, OF DES MOINES, IOWA.

## CAR-UNLOADER.

1,027,669. Specification of Letters Patent. Patented May 28, 1912.

Application filed October 31, 1910. Serial No. 589,894.

*To all whom it may concern:*

Be it known that I, ELMO V. RICHARDS, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Car-Unloader, of which the following is a specification.

The object of my invention is to provide a device of simple, durable, and inexpensive construction, so arranged that it may be readily and quickly moved to position adjacent to a car to be unloaded and then may be quickly and easily swung to position resting on top of the side edges of the car to be unloaded, and then may be readily and easily moved to position for engaging the coal or other material in the car and for elevating it out of the car and delivering it to one side of the car.

A further object is to provide improved means whereby the device may be readily and easily moved from one car to another of a series of cars.

A further object is to provide an unloader of this class having two bucket conveyers spaced apart from each other and also designed to be spaced apart from the car, the unloading device being provided with means whereby the material in the car may be scraped from the center of the car and from the sides of the car toward said bucket conveyers.

My invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of the unloading device embodying my invention, said unloading device being supported in a truck by which it may be moved from place to place. Said view also shows a car in position adjacent to the truck with the elevated track for the unloading device in position resting on the car to be unloaded. The dotted lines in said figure show the position of the outer support for the elevated track folded and also the central support for the elevated track in its folded or elevated position. Fig. 2 shows a side elevation of my improved unloading device resting upon the sides of a car with the conveyer frame in position for engaging the contents of the car and elevating it to the discharge side. Fig. 3 shows a side elevation of two cars adjacent to each other and my improved elevated track for use in moving the unloader from one car to another of a series of cars. In said view, the unloading device is shown in position supported by the elevated track. Fig. 4 shows a detail view illustrating the elevated track and the supports for it, and Fig. 5 shows a top or plan view of the unloading device supported upon the sides of a car.

Referring to the accompanying drawings, I shall first describe the truck used in carrying the unloading device from place to place. This truck comprises a frame 10 mounted on supporting wheels 11 and having at one end a stationary upright 12. Fixed to this upright is an elevated track 13. At the other end of the frame is an upright 14 pivoted to the track 13 and detachably supported upon the base of the frame 10. This upright 14 is capable of swinging upwardly to position substantially parallel with the track 13 as shown by dotted lines in Fig. 1. The said track 13 projects a considerable distance beyond the upright 14 and is provided at its other end with a pivoted upright 15 designed to rest upon the side of a car to be unloaded. This latter upright is capable also of swinging upwardly to position approximately parallel with the track 13. The arrangement of the elevated track and its supports is such that the truck may be moved to position adjacent to a car, as shown in Fig. 1, and when in said position, the upright 15 serves to support the elevated track. Then the upright 15 may be swung downwardly to rest upon the top of the side of the car, and, when this has been done, the upright 14 is placed in its elevated position so that the track is firmly supported from one end of the truck to the opposite side of a car, and by means of said track, the unloading device hereinafter described may be moved from the truck to a point over the car.

The unloading device proper comprises a base or frame 16 mounted on flanged wheels 17 which are spaced apart far enough so that the said wheels will rest upon the sides of a car and be capable of longitudinal movement thereon. The said base or frame 16 is provided with chains 18 at its corners, which chains extend upwardly and toward each other and are attached to a pulley 19.

The numeral 20 indicates a traveling

hanger having supporting wheels 21 to rest upon the track 13 and also having a pulley therein. A rope or cable 22 is provided and is passed around said pulleys so that the entire base or frame 16 may be elevated and supported by said hanger to be moved longitudinally of the track 13.

Mounted upon the base or frame 16 is an engine 23 having a fly wheel 24 connected with the engine shaft 25. Mounted in the frame adjacent to the engine is a countershaft 26 connected with the shaft 25 by means of the belts and pulleys 27. Rotatably mounted on the shaft 26 is a pulley 28, and slidingly mounted on the shaft adjacent to the pulley is a friction clutch 29 operated by means of a lever 30. Adjacent to the shaft 26 is a second shaft 31 operatively connected with the shaft 26 by means of the belts and pulleys 32. A friction clutch device 33 is provided on the shaft 31 which may be operated by the lever 34 for throwing the shaft 31 into or out of operative engagement with the shaft 26. Rotatably mounted upon the shaft 31 is a drum 35 having a rope or cable 35[a] fixed to and wound upon it. I have provided for throwing the drum into or out of operative engagement with the shaft 31 by means of the friction clutch device 36 operated by the lever 37. Mounted in the frame 16 is a shaft 38 having cog wheels 39 on its ends, said shaft being connected with the shaft 31 by means of the belts and pulleys 40.

By the construction before described, it is obvious that the engine, when operating, may be arranged for driving either the pulley 28 or the shaft 38 or the drum 35. The results obtained by driving these elements will be hereinafter more fully set forth.

Pivoted to the sides of the frame 16 are the supporting arms 41. These arms extend upwardly and then curve rearwardly and downwardly, as clearly shown in Fig. 2. Mounted in the ends of said arms is a shaft 42, which shaft is provided with a pulley 43 and said pulley is connected by means of the belt 44 with the pulley 28. I have provided a belt tightener 44[a] of ordinary construction for this belt 44, which belt tightener is operated by means of a lever 44[b] controlled by the operator. Fixed to the shaft 42 are two pairs of sprocket wheels 45. Each pair is designed to receive the sprocket chains 46 of an endless conveyer and said sprocket chains support the buckets 47. Each of these endless conveyers is provided with a rack bar 48, which rack bar extends to the lower portion of the conveyer and serves to support the shaft 49 which is provided with sprocket wheels 50 for the sprocket chains 46. A supporting roller 51 is also attached to the lower end of the rack bar. Each of said rack bars is arranged in mesh with the adjacent cog wheel 39. The lower ends of both endless conveyers are connected by means of the sheet metal plates 52, which plates extend from one of the rack bars 48 to the other and are provided with wings extending laterally and forwardly from each side of each conveyer so that said wings will engage material in a car and force said material from the center of the car toward both conveyers and from the sides of the car toward the adjacent conveyer, said plates being clearly illustrated in Fig. 5. The said arms 41 also serve the purpose of supporting the lateral conveyer trough. For this purpose, they are provided with brackets 53 and said brackets have the trough 54 fixed to them and extended laterally and inclined downwardly toward one side of the frame.

By the arrangement just described, of the supporting arms 41, the rack bars 48, and the mechanism for operating the pinions 39, the following desirable results are accomplished: Assuming that the device is in its folded position as shown in Fig. 1, and that it is desired to move it to the position shown in Fig. 2, then the engine is operated in the manner required for operating the cog wheels 39 in the direction required for moving the rack bars downwardly. This will cause the said rack bars and the conveyers to move downwardly and the pivoted arms 41 will cause the upper end of the conveyers to move upwardly and then toward the forward end of the frame to the position shown in Fig. 2, whereupon the supporting rollers may rest upon the material in the car or upon the floor of the car, and when the conveyers are to be moved from the position shown in Fig. 2 to the folded position as shown in Fig. 1, the movement of the cog wheels 39 is reversed, thus elevating the conveyers and causing the arms 41 to assume a folded position.

In the device shown in Figs. 3 and 4, I have illustrated a means for conveniently and easily moving the unloader from one car to another. This means comprises an elevated track 55 having at both ends the supporting legs 56, the lower ends thereof being shaped to fit against the sides of a car. Assuming that the unloading device is in position at one end of a car, then the operator places the elevated track on said car and on the car adjacent to it, and then places the hanger 20 on the elevated track. Then, by pulling upon the rope or cable 22, the unloading device is elevated to position where it will clear the brake-wheels of the cars, and it is then moved longitudinally of the elevated track to the adjacent car and also to position with the flanged wheels 17 of the frame resting upon the sides of said car, after which the elevated track and its supporting legs may be removed.

In practical operation and assuming the

device to be in the position shown in Fig. 1, the unloader can be moved to position in the car by raising it by means of the rope 22 and then sliding it on its hanger over the track 13. It is then turned to position longitudinally of the car and supported on the sides of the car by means of the flanged wheels 17. Then the hanger 20 is removed from the track. The engine is then operated and the proper lever manipulated for rotating the shaft 38 in such a direction as to move the conveyer frame to the position shown in Fig. 2. When this is done, the device is ready for its unloading operation and the proper clutch device is manipulated for operating the shaft 42. This will cause the buckets to fill with material and to carry the material upwardly and to discharge it into the trough or chute 54 where it will be delivered at the side of the car into wagons or the like. If it is desired to move the device longitudinally of the car to engage the material to be unloaded, I attach the rope or cable 35ª, which is wound upon the drum 35, to the opposite end of the car and then by manipulating the proper lever, the drum 35 is operated to thereby move the unloading device longitudinally of the car and thus keep the conveyers in constant engagement with the material. This longitudinal movement of the unloader relative to the car will cause the wings 52 to engage said material and move it toward the buckets. In this way, the operation of unloading a complete car may be carried on. When it is desired to move the unloading device from one car to another, the operator may either return the unloading device to the truck 10 by means of the elevated track carried by said truck and then replace it on another car in the manner before described, or he may employ the elevated track 55 as desired.

I claim as my invention:

1. In a device of the class described, the combination of a frame, a prime mover carried by the frame, a conveyer frame supported upon said frame, a bucket conveyer carried by said conveyer frame, and wings fixed to the conveyer frame and extended outwardly and forwardly from it for gathering material toward the conveyer buckets.

2. In a device of the class described, the combination of a frame, a prime mover carried by the frame, a conveyer frame supported upon said frame, a bucket conveyer carried by said conveyer frame, wings fixed to the conveyer frame and extended outwardly and forwardly from it for gathering material toward the conveyer buckets, and means for advancing the frame so that said wings and the conveyer frame may be moved toward the material to be loaded.

3. A device of the class described, comprising a frame, a prime mover carried by the frame, arms pivotally supported by the frame, a detachable conveyer frame mounted on said arms and capable of moving to a folded position over the frame, and also to a position for use in a substantially upright position at one end of the frame, two bucket conveyers carried by the conveyer frame, a side delivery chute carried by said arms to receive the discharge from the bucket conveyers, and means operated by the prime mover for moving the conveyer frame to its various positions of adjustment.

4. A device of the class described, comprising a frame, a prime mover carried by the frame, arms pivotally supported by the frame, a detachable conveyer frame mounted on said arms and capable of moving to a folded position over the frame, and also to a position for use in a substantially upright position at one end of the frame, two bucket conveyers carried by the conveyer frame, a side delivery chute carried by said arms to receive the discharge from the bucket conveyers, and means operated by the prime mover for moving the conveyer frame to its various positions of adjustment, and means operated by the prime mover for advancing the frame to move it toward the material to be loaded.

Des Moines, Iowa, June 18, 1909.

ELMO V. RICHARDS.

Witnesses:

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