

No. 648,897.

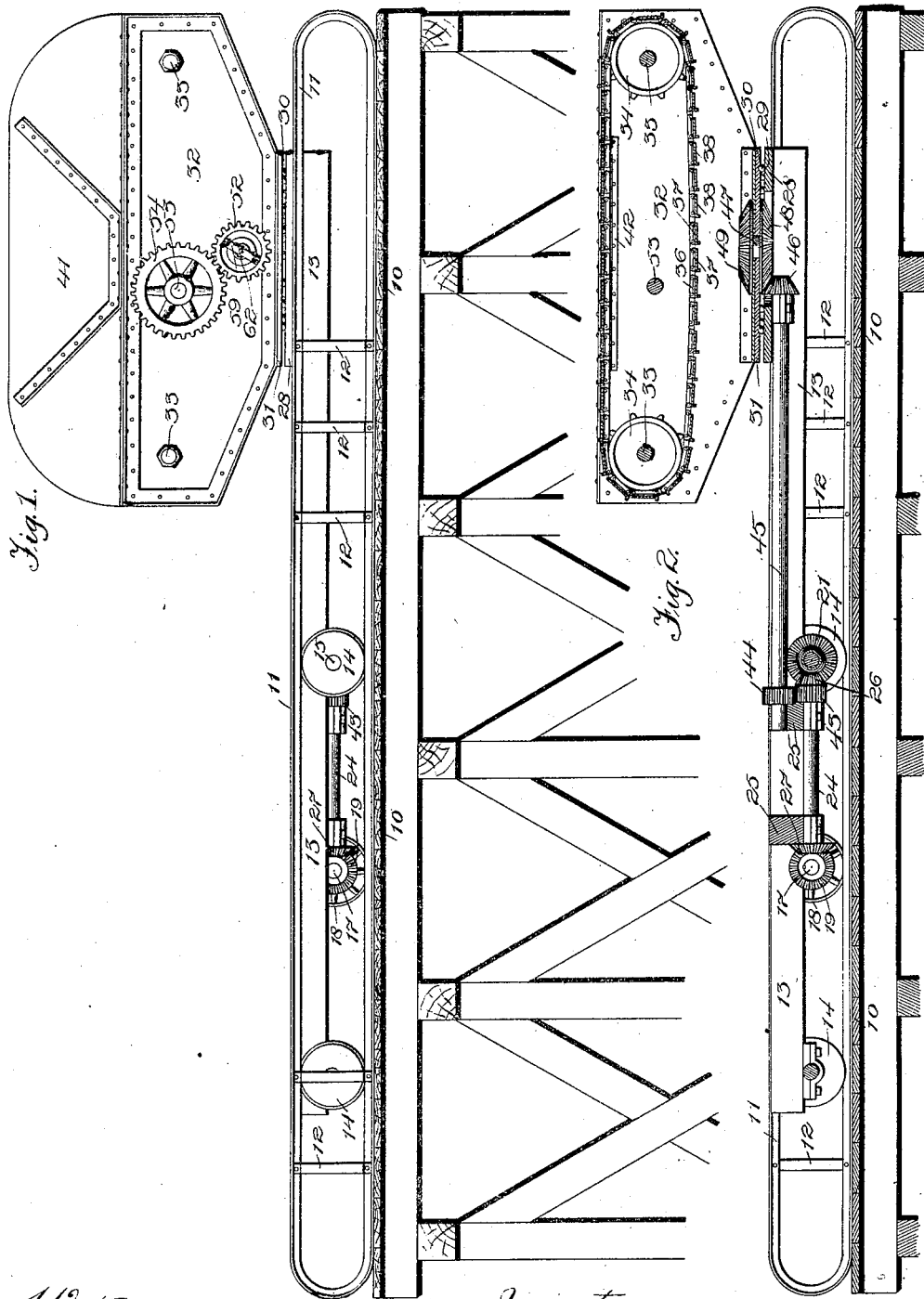
Patented May 1, 1900.

J. M. CHRISTY.
BOX CAR LOADER.

(Application filed July 26, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
Jas. Brels
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Inventor:
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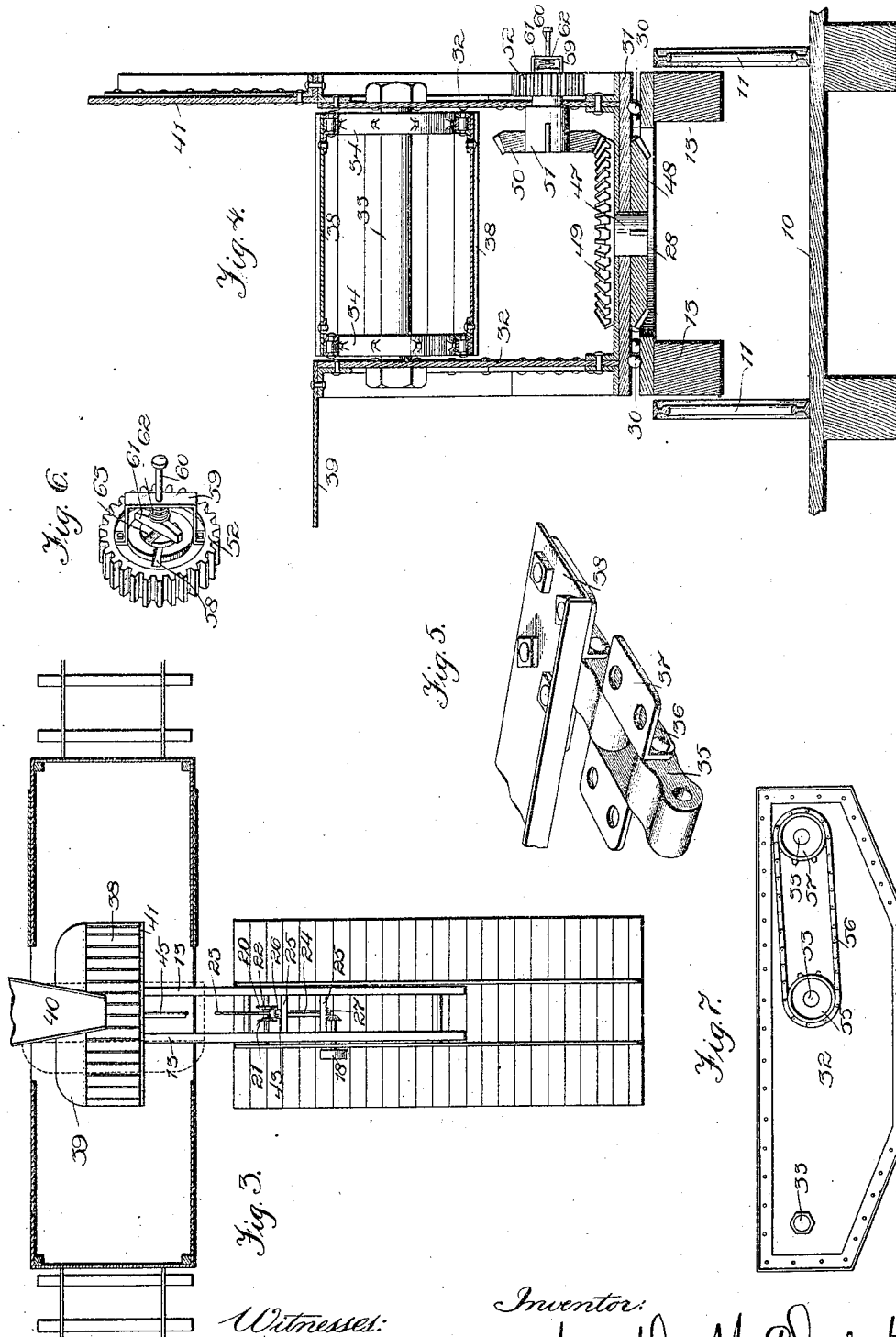
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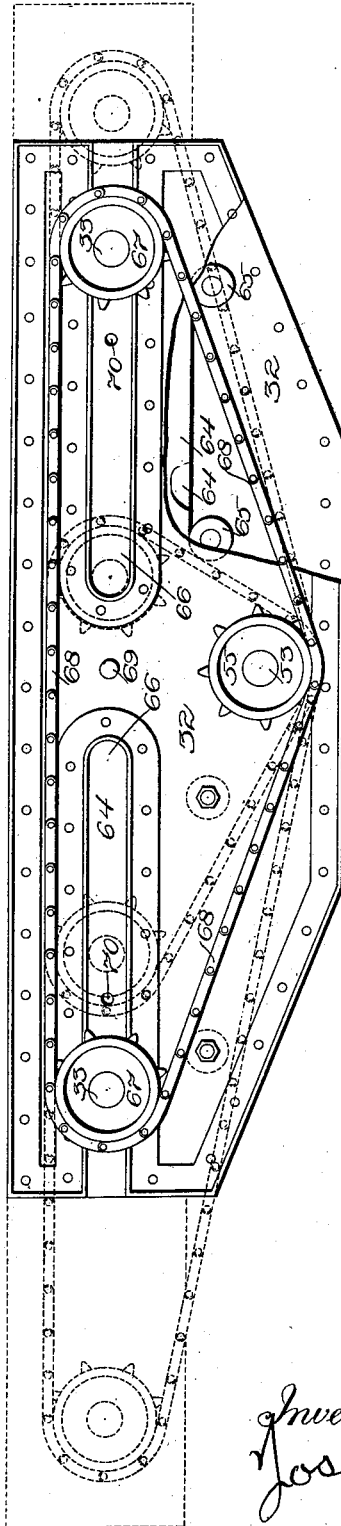
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3 Sheets—Sheet 3.

Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH M. CHRISTY, OF DES MOINES, IOWA.

BOX-CAR LOADER.

SPECIFICATION forming part of Letters Patent No. 648,897, dated May 1, 1900.

Application filed July 26, 1898. Serial No. 686,903. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. CHRISTY, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Box-Car Loader, of which the following is a specification.

One object of this invention is to provide a machine of simple, strong, durable, and inexpensive construction for loading coal or the like into box-cars.

A further object is to provide a machine of this class which may be positioned within a box-car very quickly and easily, so that no time is lost in starting the distribution of the coal or in withdrawing the machine from the car.

A further object is to provide a conveyer which may be quickly and easily reversed, so as to deposit coal near either end of the car, and that without breaking up the coal when it strikes the receiver or when it is discharged from the conveyer or breaking the car when it is deposited therein. This feature of my invention, whereby the coal may be alternately conveyed to the opposite ends of the car, provides means whereby a man may first remove the impurities from and properly distribute a portion of the coal in one end of the car while the coal is being deposited in the other, and when he has finished the movement of the conveyer is reversed and the coal discharged in the other end, so that he may work in the opposite end of the car on the newly-deposited pile without stopping the loading of the car.

A further object is to provide simple and easily-operated means whereby the conveyer may be lengthened at either end to adapt it for use in cars of more than the usual length.

My invention consists in the construction, arrangement, and combination of parts 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 in side elevation the complete device. Fig. 2 shows a vertical sectional view of the same. Fig. 3 illustrates diagrammatically the position which the loader would assume within a car and by dotted lines the position of the loader before be-

ing turned. Fig. 4 shows a vertical transverse sectional view through the complete loader on a central line. Fig. 5 shows a detail perspective view of a portion of the conveyer. Fig. 6 shows a like view of the device for throwing the conveyer in and out of gear. Fig. 7 shows a side view of the loader from the side opposite from that shown in Fig. 4. Fig. 8 shows a side view of a modified form of loader with parts taken away to show certain details of construction and with the positions of the conveyer when extended illustrated by dotted lines.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate the frame or platform upon which the device is mounted. This is located adjacent to the car-track and on the side opposite from the coal-chute. Mounted on the platform 10 is a track 11, formed by rails doubled backwardly over themselves to admit truck-wheels between the upper and lower portions, and thus prevent the wheels from moving upwardly. Braces 12 serve to hold the parts of the rails in their relative positions, and I have used the numeral 13 to indicate a frame for containing and supporting the parts of the loader proper. At its rear end it is supported on the wheels 14, which run on the rails 11. The axle of the forward wheel is indicated by the numeral 15 and is near the central portion of the frame. There is no support for the outer end of the frame, because said end must project into the car. The upper portions of the rails serve to hold the frames 13 in a horizontal position.

Power is applied to move the loader-frame in and out of a car as follows:

The numeral 17 indicates a shaft mounted in bearings in the frame 13 and having a belt-wheel 18 on one end and a bevel gear-wheel 19 on its other end. If desirable, an engine may be mounted on the rear end of the frame 13 and a belt connected direct with said belt-wheel, or power may be transmitted to the belt-wheel in any ordinary way. Mounted upon the said shaft 17 is a device comprising two bevel-gears 20 and 21 and an annularly-grooved hub 22 between them feathered to the shaft and capable of being moved longitudinally thereon by means of a lever 23, fulcrumed to a part of the frame 13 and having

its bifurcated end in said annular groove. 24 indicates a shaft extended longitudinally of the frame 13 and having its bearings in the cross-pieces 25 thereof. On its forward end is a bevel gear-wheel 26, which is designed to mesh with either one of the gears 20 and 21 when they are moved into engagement therewith or to stand between them and out of engagement. A bevel gear-wheel 27 is fixed to the rear of this shaft 24 and meshed with the bevel gear-wheel 19. By means of these parts it is obvious that, assuming that power were being constantly applied to the belt-wheel, the frame may be moved forward or back or stopped in any position by an operation of the lever 23.

On the forward end of the frame 13 is a small platform 28, provided with a circular groove 29 in its top for the reception of the ball 30. The conveyer-frame is composed of the base 31, designed to rest upon the balls 30, so that it may turn with a minimum of applied power. The sides 32 are fixed to the base and are of as great a length as may be conveniently run through a side door of a box-car and then turned longitudinally of the car. At the opposite ends of the frame the two shafts 33 are rotatably mounted and the sprocket-wheels 34 are fixed thereon. The conveyer proper is composed of two or more chains of a length and construction designed to run over the sprockets 34 and each composed of solid links 35 and side piece 36, provided with lateral extensions 37. To these extension-pieces are bolted the steel cross-pieces 38, of a length corresponding to that of the width between the side pieces and of such a width as to almost engage with the next adjoining cross-piece, and one edge of each cross-piece is turned upwardly to engage the coal. It is obvious as this conveyer moves in either direction the coal will be discharged from one or the other end of the conveyer-frame. At one side of the conveyer-frame a small platform 39 is fixed to support the end of a coal-chute 40, and at the opposite side the top is extended upwardly at 41 to contain the coal within the frame. On the inner surfaces of the side pieces I have fixed the guides 42, which serve to prevent the conveyer from sagging at its central portion.

Motion is imparted to the conveyer by means of the following mechanism:

The numeral 43 indicates a cog-wheel on the shaft 24, which is meshed with a like wheel 44. This wheel is fixed to a shaft 45, mounted in bearings in the frame 13 and extended to a point near the central portion of the conveyer-frame and provided with a bevel gear-wheel 46 on its forward end. A short shaft 47 is mounted in the bottom of the conveyer-frame and provided with bevel gear-wheels on each end, the lower one, 48, being meshed with the bevel-wheel 46, and the upper one, 49, being meshed with the bevel gear-wheel 50, which in turn is fixed to a shaft 51. This shaft extends longitudinally through the side

of the conveyer-frame. On the outer end of this shaft is a cog-wheel 52, which is connected with the shaft by means of a clutch device that will be described hereinafter. A shaft 53 extends through the conveyer-frame transversely, and a cog-wheel 54 on its one end meshes with said cog-wheel 52, and finally a sprocket-wheel 55 on the other end of the shaft 53 serves to transmit power to one of the conveyer-shafts through the chain 56 and sprocket-wheel 57. By means of the mechanism just described it is obvious that power is transmitted to the conveyer, and upon a reversal of the operating-engine the movements of the conveyer may be changed.

I have provided a device whereby the conveyer may be thrown in and out of gear, so that it may be stopped or started by a person within the car, as follows: The cog-wheel 52 is loosely mounted on the shaft 51 and has a slot 58 in its outer face. 59 indicates a frame fixed to the sprocket-wheel, and 60 a rod slidingly mounted in the frame to move longitudinally of the shaft in the direction of its center, and on the inner end of this rod is a pawl. A spring 62 serves to normally force the pawl against the end of the shaft, which is also slotted at 63 to receive the pawl. It is obvious that when the pawl is resting in both of the slots the cog-wheel must rotate in unison with the shaft, and, further, that when it is desirable to stop the conveyer it is only necessary for the operator to pull the rod 60 out and place the pawl 61 against the end of the shaft, as shown in Fig. 6, whereupon the pawl 61 will be held out of the slot and will rotate with the shaft.

In the modified form shown in Fig. 8 I have provided means whereby the conveyer may be extended a considerable distance on either side of the machine, to thereby deposit the coal nearer to the end of the car. As heretofore stated, the frame of the device is of as great a length as may be placed in a box-car and then turned. Hence a device must be provided that may be extended after it is in position within the car. In my modification I use a frame and driving-gear of the same construction and the conveyer is identical also, save that its shafts are mounted in an auxiliary frame 64, which is placed upon the rollers 65 to be capable of a longitudinal movement within the main frame. One end of each of the conveyer-shafts is extended outwardly through a horizontal slot 66 in the main frame and a sprocket-wheel 67, fixed thereto, and 68 indicates a sprocket-chain passed over said sprocket-wheels and also under the sprocket-wheel 55, which serves to drive the chain 68. It is obvious that the auxiliary conveyer-frame may be easily moved, so as to project beyond the main frame in either direction, limited only by the length of the slots 66, and that the driving-chain 68 will not be materially slackened or tightened at any point throughout the range of movement, but will operate the conveyer

equally well at any point. When the auxiliary frame is extended in either direction, it may be held from moving toward the center of the main frame by placing a pin 69 in the opening 70 in the main frame and through an opening in the auxiliary frame. (Not shown.) When it is desired to move this auxiliary frame, the pin is drawn out and the frame moved by hand to the desired position.

In practical use and assuming that a car is standing on a track adjacent to the loader it is obvious that the loader may be run into the car by a manipulation of the lever 23 and then easily turned by hand to a position lengthwise of the car. Then the clutch device at the side of the loader is operated and the conveyer started to move. It is obvious that the coal from the chute will be deposited on a pile near the end of the car, and then by a reversal of the engine the coal is carried to the opposite end of the car, giving an operator time and opportunity to sort over the coal and remove the impurities therefrom. When the car is filled, the conveyer may be stopped and the loading device turned and then the entire device withdrawn from the car by the operating-engine, all of which operations may be quickly and easily accomplished and a box-car loaded in substantially the same time that an open car could be.

The advantage of having the endless conveyer located in the center of the car directly under the chute is that the coal may come from the chute continuously or at any time while the loader is within a car, and the advantage of having the speed of the conveyer variable is that a very short conveyer may be used—that is, one that may be freely turned within a car—and yet the coal may be loaded uniformly within the car by throwing the coal any distance desired. In use I prefer to first run the conveyer slowly, so as to load the coal near the conveyer, and then as the bottom of the car becomes covered with coal increase the speed to throw the coal to the end of the car.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States therefor, is—

1. A box-car loader, comprising in combination, a device capable of movement into or out of a box-car, a frame on said device pivotally mounted to be capable of turning in a horizontal plane, an endless conveyer on the frame provided with suitable cross-pieces to thereby form a platform for receiving coal and carrying it to either end of the frame, and means for driving said conveyer in either

direction so that coal may be thrown to any desirable distance within the car.

2. A box-car loader, comprising a device capable of movement into or out of a box-car, a frame on said device pivotally mounted to swing in a horizontal plane, one or more endless chains on said frame, a platform on the chain or chains extending to the ends of the frame and in position to receive coal from a chute introduced in the opposite side of a box-car, and means for driving the platform in either direction, for the purposes stated.

3. A box-car-loading apparatus, comprising in combination, a track to be arranged at right angles to a railway-track, a truck mounted on the track and capable of movement so that its one end may enter a car on the track, a plate on one end of the truck, a second plate mounted on the first and capable of turning in a horizontal plane, a frame fixed to the upper plate, a shaft passed centrally through said plate, a bevel gear-wheel on each end of said shaft, a shaft carried by said truck, a bevel gear-wheel thereon meshed with the lower one of the aforesaid bevel gear-wheels, an endless conveyer on the frame, a short shaft in the frame, a bevel gear-wheel on its lower end meshed with the upper one of the aforesaid bevel gear-wheels, a cog-wheel on the outer end of this shaft, a clutch device whereby said cog-wheel may be thrown in or out of engagement with its shaft, a second shaft above the first, a cog-wheel thereon meshed with the first cog-wheel, and means for driving the conveyer from this upper shaft, for the purposes stated.

4. In a box-car-loading apparatus, the combination, of a truck designed to be run into or out of a box-car, a frame mounted thereon and capable of turning in a horizontal plane, an auxiliary frame within the said frame, rollers for supporting the auxiliary frame and permitting its longitudinal movement with said frame, an endless conveyer carried by said auxiliary frame, and having the ends of its shafts projected laterally through the main frame, sprocket-wheels on said shafts, a sprocket-wheel at side of the main frame, means for driving it, a sprocket-chain connected with the sprocket-wheel of the conveyer and also with the said latter sprocket-wheel, and means for holding the auxiliary frame in its extended position, substantially and as for the purposes stated.

JOSEPH M. CHRISTY.

Witnesses:

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