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C. A. LINDSTRÖM.
CAR DOOR MECHANISM.
APPLICATION FILED AUG. 28, 1908.

Patented Apr. 6, 1909.

2 SHEETS—SHEET 1.

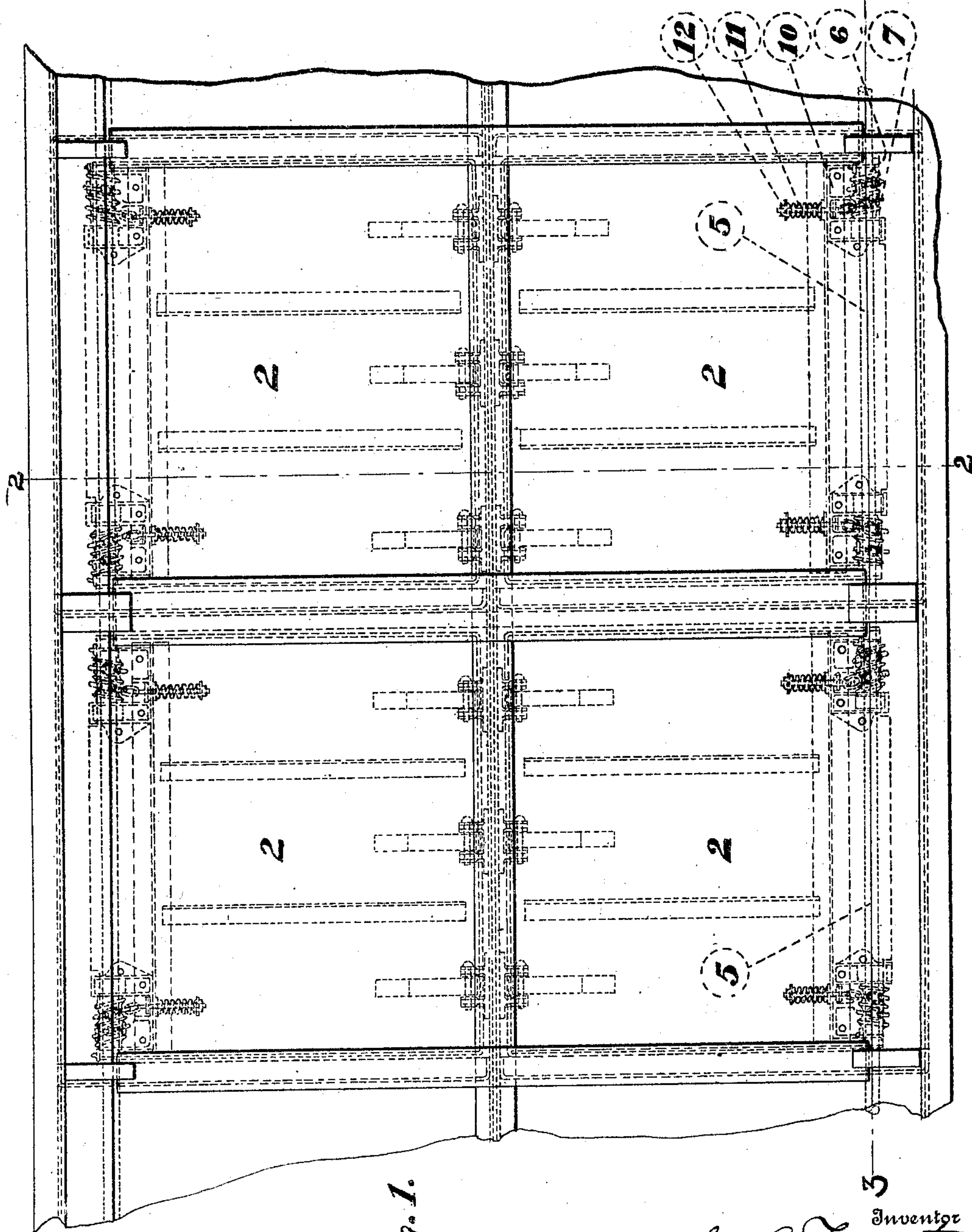


Fig. 1.

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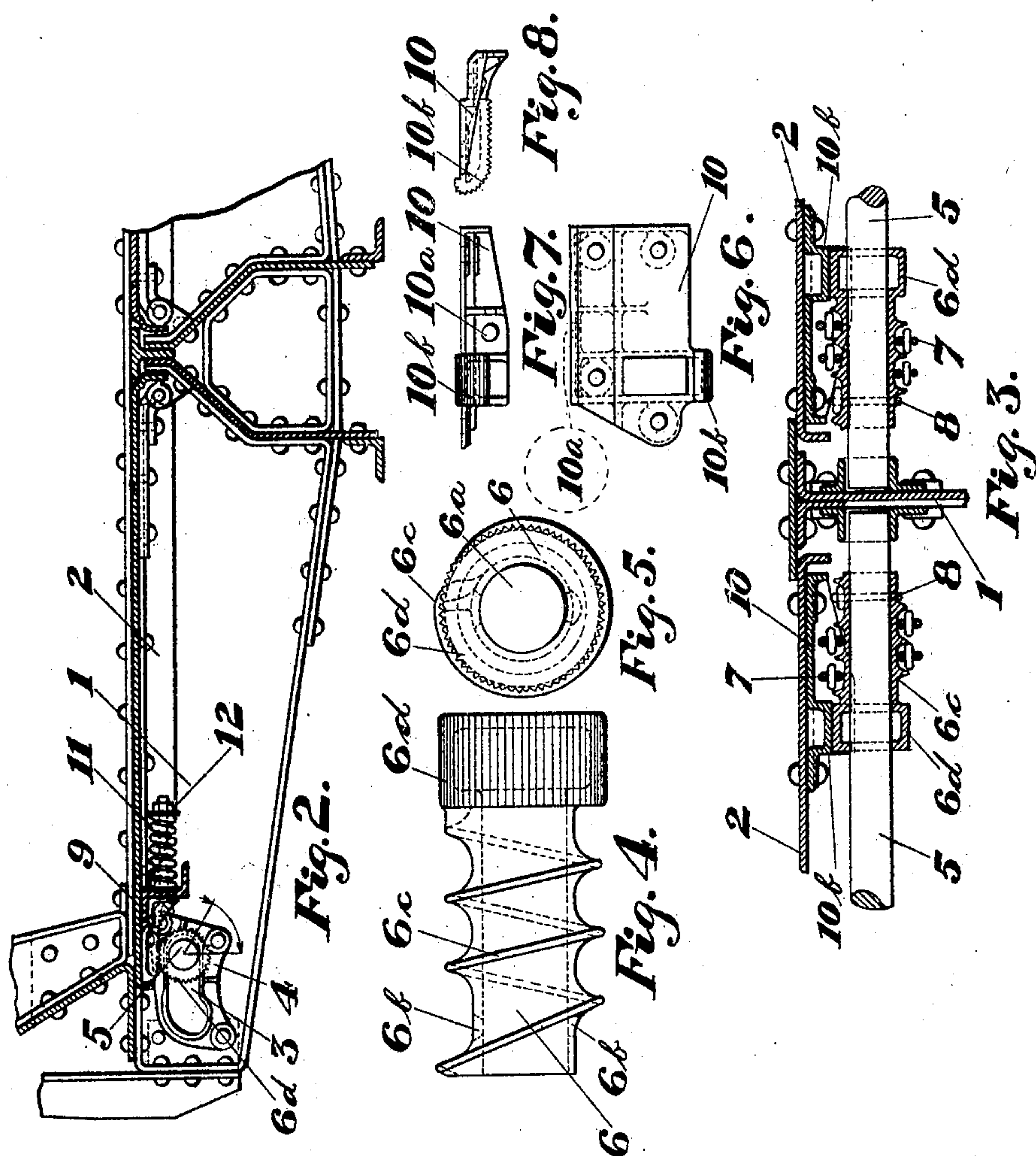
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UNITED STATES PATENT OFFICE.

CHARLES A. LINDSTRÖM, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

CAR-DOOR MECHANISM.

No. 917,321.

Specification of Letters Patent.

Patented April 6, 1909.

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To all whom it may concern:

Be it known that I, CHARLES A. LINDSTRÖM, residing at Pittsburg, north side, county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Door Mechanism, of which the following is a full, clear, and exact description.

An object of the present invention is to provide improvements in that class of door operating mechanism for dump cars in which a rotatable shaft and door-lifting chain are employed.

A specific object of the present invention is to provide a specific form of winding sheave for said chain which also forms a door-supporting connection between the lifting shaft and the door.

A further specific object of the present invention is to provide an improved arrangement of the chains relatively to the doors and the winding shafts where a plurality of chains winding about the shaft is employed for raising the door.

A further object of the present invention is to provide an improved yielding connection for the chain to compensate for stretching and wear of the links and take up shock due to opening the door, and further to provide a yield in the chain in the event of its door becoming jammed from lading or other causes.

The invention is clearly illustrated in the accompanying drawings in which like reference characters refer to like parts, and in which:

Figure 1 is a plan view of a portion of a car sufficient to illustrate the subject-matter of my invention; Fig. 2 is a sectional side elevation of a portion of the structure shown in Fig. 1 on the line 2—2, Fig. 1; Fig. 3 is a detail longitudinal sectional view of a portion of the structure shown in Fig. 1 on the line 3—3, Fig. 1; Fig. 4 is a detail view of one of the devices comprised in my invention; Fig. 5 is an end elevation of the same; Figs. 6, 7 and 8 are three different views of another device comprised in my invention.

Referring now in detail to the drawings, 1 represents a car cross-bearer, 2 a suitably hinged drop door, 3 an elongated slot in the cross-bearer 1, 4 a slotted casting providing a widened bearing for the shaft 5 which is adapted to move bodily through slot 3 and casting 4. Shaft 5 is operated through any

suitable means at its ends or elsewhere to rotate same. Shaft 5, as shown in the drawings, is provided with a pair of chain winding sheaves 6 provided with a central perforation 6^a to receive the shaft 5, and perforations 6^b to receive a pin for securing the sheave 6 to the shaft 5 and for securing the chain to the sheave and shaft and a spiral guideway 6^c extending substantially the entire length of sheave 6 up to a serrated roller 6^d. As mounted on the shaft 5, a pair of sheaves 6 for each drop door 2 are arranged with their serrated rollers 6^d facing each other and with their spiral guideways 6^c extending toward the side edges of the door.

7 is a chain secured at one end to a pin 8 passed through perforations 6^b and the shaft 5. At the end of the sheave 6 opposite the serrated rollers 6^d the opposite end of the chain 7 is connected to the door 2 by an eyebolt 9 passed through a perforation 10^a in a shoe bracket 10 riveted to the underside of the door 2. Bracket 10 is formed with a serrated inclined raised portion or shoe 10^b so formed on the bracket 10 as to be in line with the serrated roller 6^d of the sheave 6. When the bracket 10 and the sheave 6 are secured in position the intermediate portion of each chain 7 is wound about the spiral guideway 6^c of its respective sheave 6.

11 are springs mounted on eye-bolts 9 between the rear sides of brackets 10 and washers 12 on eye-bolts 9. The object of springs 11 is to provide against stretching of chains 7 by allowing the remaining chains 7 to give sufficiently to insure winding of a stretched chain or chains 7 on the shaft 5. Springs 11 also permit of further winding of shaft 5 when one or more of the doors becomes obstructed by lading, to close the remaining doors. Again, springs 11 cushion chains 7 against injurious jars or jolting due to sudden dropping of the doors upon discharge of the lading.

Assuming the parts to be in positions shown in the Figs. 1, 2 and 3, the shaft 5 is rotated in the direction of the arrow, Fig. 2, and is caused to move from beneath the door 2 by the action of the serrated roller 6^d on the shoe 10^b, the bottom of the shaft 5 sliding relatively to the lower edge of the slot 3. As this translation of the shaft 5 takes place the chain 7 is unwinding from the spiral guideway 6^c toward the end of the sheave 6 and the cross-bearer 1, and this unwinding con-

tinues as the doors drop after the shaft 5 has been moved from beneath them. It will thus be seen that the major portion of the chain 7 is fed from a position toward the center of the free edge of the door to a position, when the door is open, nearer the side edge of the door, so that the discharge outlet of the car is not obstructed to as great an extent as would be the case if the chain wound upon itself and its movement was strictly vertical.

The arrangement of the serrated rollers 6^d facing each other and toward the center of the free edge of the door gives support to the door where most needed, when in closed position, while the anchorage of the chain to the door at the point indicated in the drawings gives support to the door where most needed during its descent.

The spring or cushioning connection between the door and shaft may be located at any place between said devices.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:—

1. In a dump car, the combination with a drop door and a door-raising shaft, of a combined chain guide and door-engaging roller mounted on said shaft, a pin passed transversely through said roller and shaft and a cable secured at one end to the door and at its opposite end to said pin.

2. In a dump car, the combination with a drop door and a bodily movable shaft for raising said door, of a combined wearing shoe and cable anchor rigidly mounted on the underside of said door, a combined door-engaging roller and chain guide mounted on said shaft, an eye-bolt passed through said roller

and shaft and a cable secured at one end to said anchor and at its opposite end to said eye-bolt.

3. In a dump car, in combination with a drop door and an operating shaft for raising said door, of a cable secured to said door, a tubular door-engaging roller formed with a cable-engaging guide and having a transverse perforation, a transverse perforation in the shaft registering with the perforation in said roller and a pin passing through said roller and said shaft and secured to the opposite end of said cable.

4. In a dump car, in combination with a drop door and a winding device, a cable connected at one end to said winding device and a spring interposed between said door and cable and located beneath said door.

5. In a dump car, in combination with a drop door and a winding device, a bracket located on the underside of said door, a cable connected at one end to said winding device and a spring mounted on said bracket beneath the door and interposed between said cable and door.

6. In a dump car, the combination of a drop door and door-raising shaft, a chain guide mounted on said shaft, a pin passed transversely through said chain guide and a cable adapted to wind on said guide and connected to said door.

The foregoing specification signed at McKees Rocks, Allegheny county, Pennsylvania, this 13th day of August, 1908.

CHARLES A. LINDSTRÖM.

Witnesses:

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