

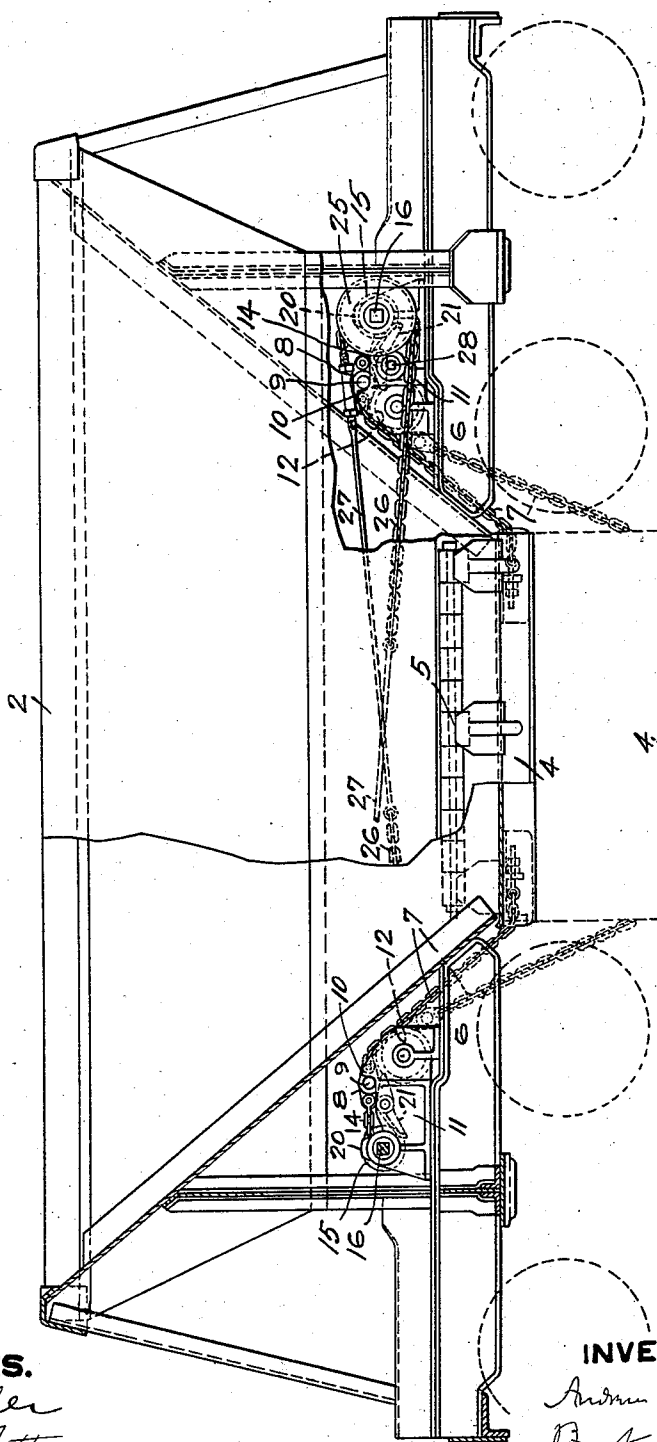
1,019,023.

A. CHRISTIANSON.
CAR DOOR OPERATING DEVICE.
APPLICATION FILED MAY 29, 1911.

Patented Mar. 5, 1912.

3 SHEETS—SHEET 1.

FIG. 1



WITNESSES.

J. R. Keller
Robert C. Totten

INVENTOR.

Andrew Christianson
By Kay & Totten
attorneys

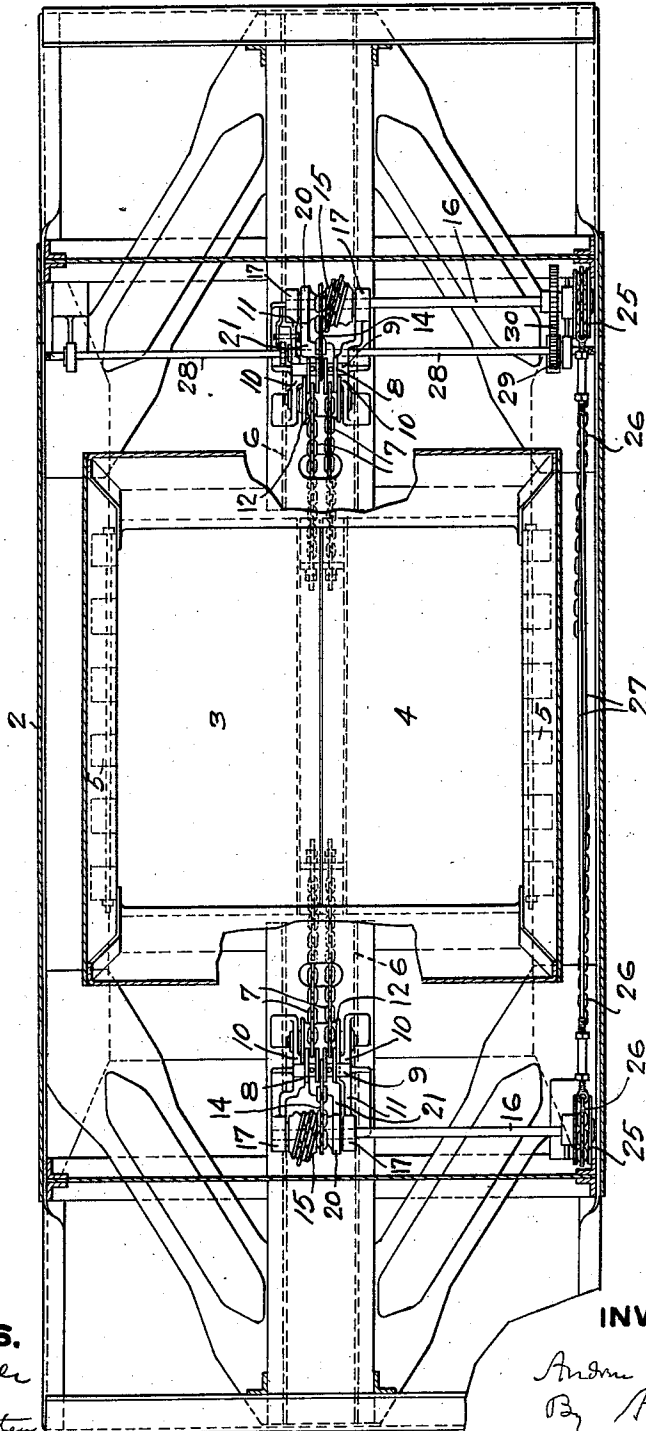
A. CHRISTIANSON.
CAR DOOR OPERATING DEVICE.
APPLICATION FILED MAY 29, 1911.

1,019,023.

Patented Mar. 5, 1912.

3 SHEETS—SHEET 2.

FIG. 2



WITNESSES.

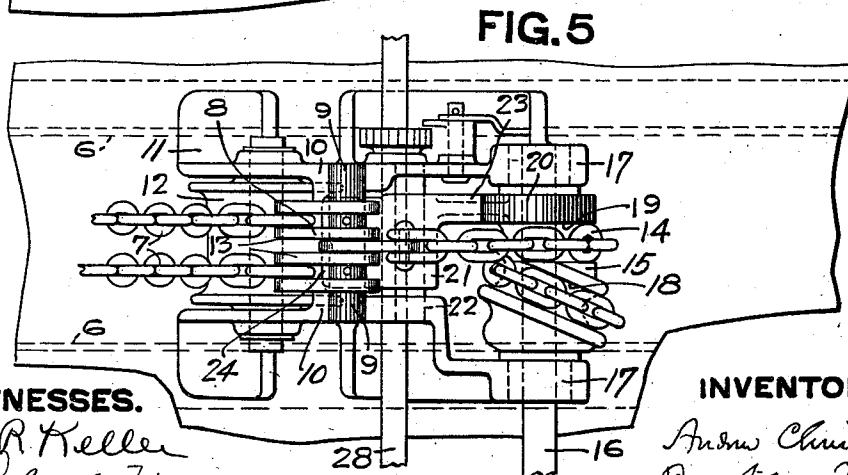
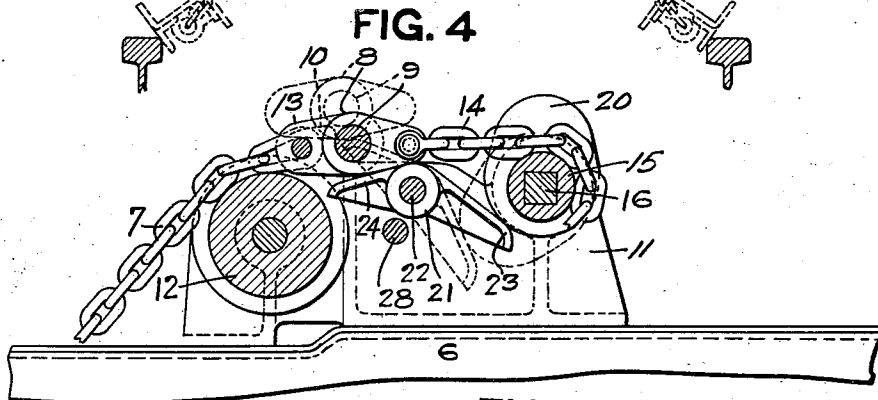
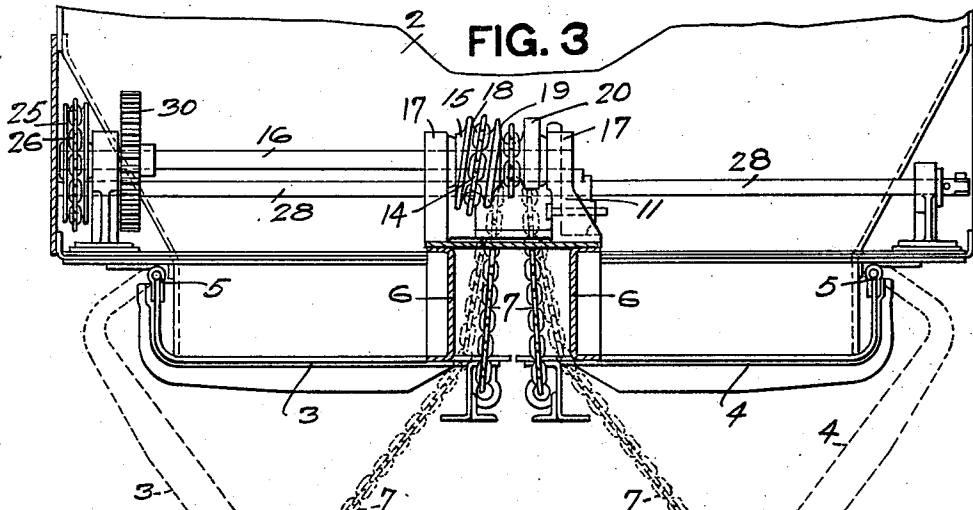
J. R. Keller
Robert C. Fother

INVENTOR.

Anders Christianson
By Kay & Fother
attorneys

1,019,023.

3 SHEETS—SHEET 3:



WITNESSES.

J. R. Keller
Robert C. Fother

INVENTOR.

Andrew Christianson
By Kay & Fottner
attorneys

UNITED STATES PATENT OFFICE.

ANDREW CHRISTIANSON, OF BUTLER, PENNSYLVANIA, ASSIGNOR TO STANDARD STEEL CAR CO., OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CAR-DOOR-OPERATING DEVICE.

1,019,023.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed May 29, 1911. Serial No. 630,211.

To all whom it may concern:

Be it known that I, ANDREW CHRISTIANSON, a citizen of the United States, and resident of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Car-Door-Operating Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to car-door operating mechanism.

The object of my invention is to provide a simple and efficient form of car-door operating mechanism in which the doors of hopper-bottom or other cars may be quickly released by hand from either side of the car and can be closed with but little exertion on the part of the operator.

To these ends my invention comprises, generally stated, a downwardly swinging door, a chain connected thereto, a sheave around which said chain is adapted to be wound, an abutment on the car body against which a member carried by the chain rests so as to relieve the strain on the chain when the door is closed, and a trip or trigger adapted to be operated by the turning of said sheave to release said member from its abutment whereby the contents of the car can then operate to open the door.

In the accompanying drawings Figure 1 is a longitudinal view of a car partly in section showing my invention applied thereto; Fig. 2 is a plan view with parts of the hopper broken away; Fig. 3 is a cross section of a portion of the car; and Figs. 4 and 5 are enlarged details.

Referring to the drawing the numeral 2 designates a suitable car, that illustrated being of the hopper bottom type provided with the doors 3 and 4 extending longitudinally of the car and suspended by suitable hinges 5. These doors are arranged on opposite sides of the center-sills 6 as shown in Fig. 3. Suitable chains or other flexible connections 7 are connected to the doors and said chains are connected up to the locking member 8. As the parts about to be described are in duplicate the same letters of reference will refer to both.

The locking member has the trunnion shaft 9 which is adapted to engage the abutment or shoulder 10 on the casting 11 which is supported by the center-sills 6. The chains 7 pass up between the center-sills 6

over the idle-roller 12, as clearly indicated in Fig. 4, and are connected to the clevises 13 of the locking member. Connected to the locking member 8 is the chain 14 which passes around the sheave 15 on the shaft 16, said shaft being mounted in bearings 17 in the casting 11. The sheave 15 has the diagonally arranged groove 18 as well as the straight groove 19 at right angles to the axis of said sheave for the purpose more fully hereinafter set forth. The sheave 15 is further provided with the eccentric or cam portion 20.

A tripping member or trigger 21 is mounted on the shaft 22 and one end 23 of said tripping member is in the path of the cam 20 of the sheave 15, while the other end 24 of said member is adapted to engage the locking member 8, as clearly shown in Fig. 4. The shafts 16 extend out to the side of the car and said shafts carry the sprocket-wheels 25. These sprocket wheels are connected by the chains 26 and the rods 27 which cross each other as shown in Fig. 1.

The operating shaft 28 is located at one end of the car, said operating shaft extending across the car in position to be operated from either side by means of a crank handle to be applied thereto. A pinion 29 on the shaft 28 meshes with the gear wheel 30 on the sheave shaft 16 adjacent that end of the car and in this manner the power is transmitted to the shafts 16 for winding the sheaves 15.

When my improved door operating mechanism is in use and the doors are closed with a load resting thereon the parts will be in the position indicated in full lines in Figs. 1, 2 and 3. When, however, it is desired to unload, the operator turns the shaft 28 from either side of the car and by the turning of said shaft the shafts 16 will be turned so that the cam portions 20 of the sheaves will be brought around in position to engage the end 23 of the tripping members 21. This will throw the tripping member to the position indicated in dotted lines Fig. 4, and the opposite end 24 of said tripping member being in engagement with the locking member 8, said locking member will be lifted from engagement with the abutment 10. Immediately upon the release of the locking member the weight of the contents in the car will act to force the doors open and said doors will assume the

positions indicated in dotted lines in Fig. 3, the chains 7 unwinding from the sheaves 15. When the contents of the car have been discharged and it is desired to close the doors the operator again turns the shaft 28 in the proper direction, whereupon the sheaves 15 will be rotated, and owing to the diagonal grooves 18 in said sheaves the operation of winding the chains on the sheave will be facilitated and when the doors have been brought up almost to their closed position the chain will engage the straight groove 19 of the sheave and greater leverage will be obtained to pull the door up close so that the locking members 8 will be drawn over the abutment 10, and the trunnions 9 of said locking member will engage said abutment to hold the doors in their closed position as before.

From the above it will be apparent that when the load is resting on the doors the locking member will be held securely against its abutment so that the doors cannot accidentally drop open. When, however, the sheaves are turned slightly so as to bring the cams 20 into engagement with the tripping members the action of said tripping members will be to quickly lift the locking members and just as soon as they are lifted no further exertion is required in the opening of the doors on the part of the operator.

The present invention is intended to apply the principle set forth in patent previously granted to me No. 947,793, where the doors are opened by the movement of a sheave, and the present invention is designed to show how that same principle may be employed in connection with a hand operated device.

What I claim is:

1. In car door operating mechanism, the combination with the car body, of a down-

wardly swinging door, a sheave, flexible connections between said door and sheave, a locking member carried by the flexible connection, an abutment with which the locking member engages, a tripping member, and means for operating said tripping member by the engagement of the sheave therewith to release said locking member.

2. In car door operating mechanism, the combination with the car frame, of a downwardly swinging door, a sheave, flexible connections between said door and sheave, a locking member connected to said flexible connection, an abutment with which said locking member engages, a tripping member engaging said locking member, and a cam on said sheave adapted to engage said tripping member.

3. In car door operating mechanism, the combination with the car frame, of a downwardly opening door, a sheave, flexible connections between said door and sheave, a locking member carried by said flexible connection, an abutment with which said locking member is adapted to engage, a tripping member for releasing said locking member, and means for operating said tripping member by said sheave, said sheave having a diagonal groove and a straight groove engaged by said chain.

4. In car door operating mechanism, the combination with the car frame, of a downwardly opening door, a sheave having a diagonal groove and a straight groove, means for rotating said sheave, and flexible connections between said door and said sheave.

In testimony whereof, I the said ANDREW CHRISTIANSON have hereunto set my hand.

ANDREW CHRISTIANSON.

Witnesses:

ROBERT C. TOTTEN,
JOHN F. WILL.