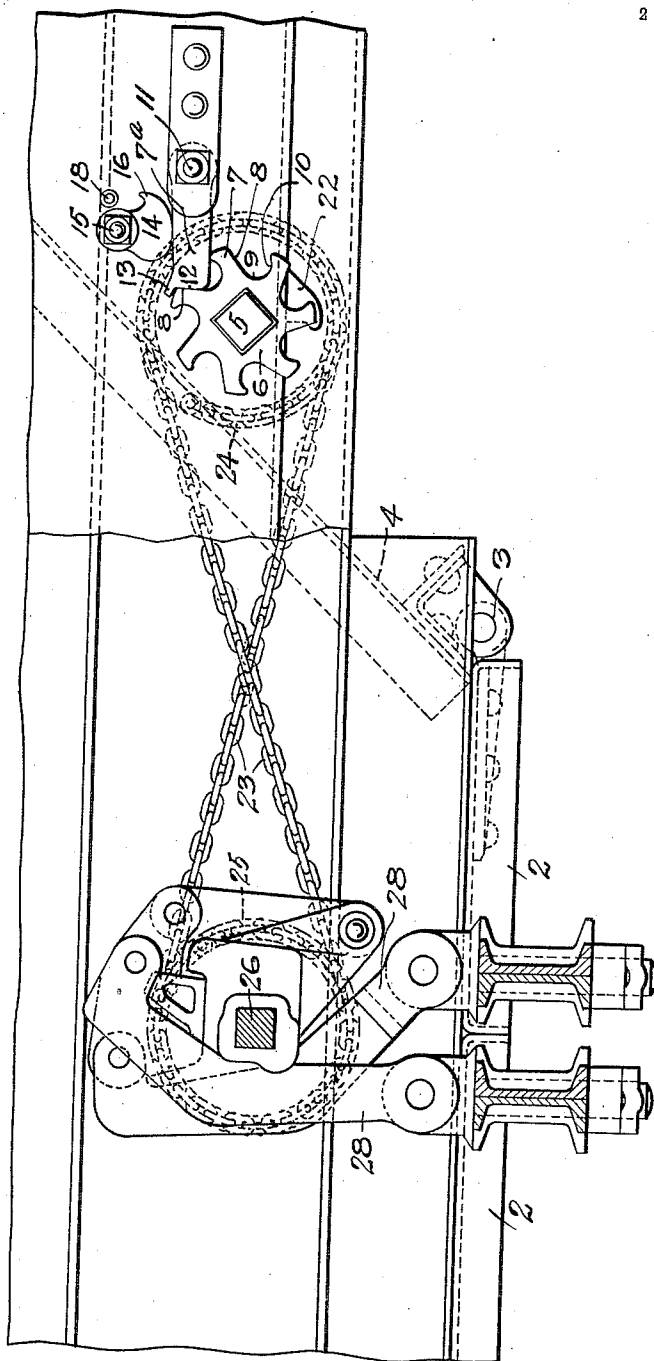


A. CHRISTIANSON.
DOOR RELEASING MECHANISM.
APPLICATION FILED FEB. 7, 1912.

1,044,491.

Patented Nov. 19, 1912.
2 SHEETS—SHEET 1.

FIG. 1



WITNESSES.

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2 SHEETS—SHEET 2.

FIG. 2

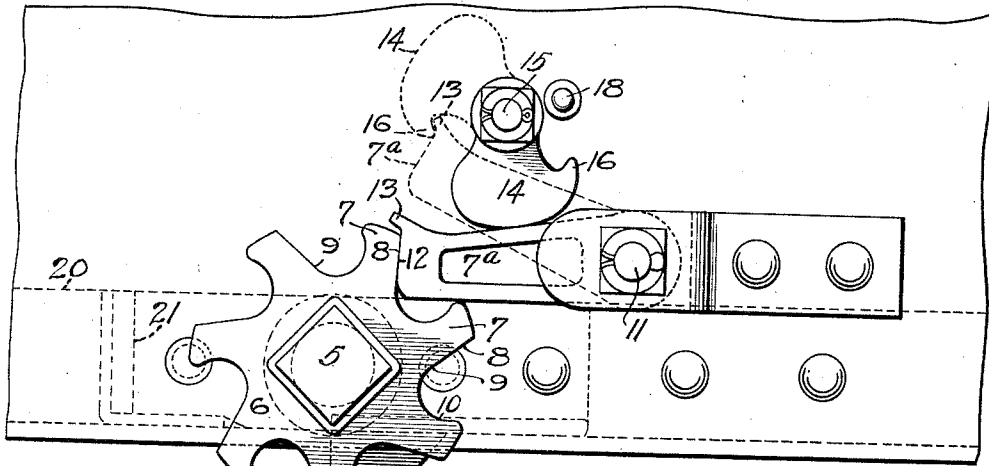


FIG. 3

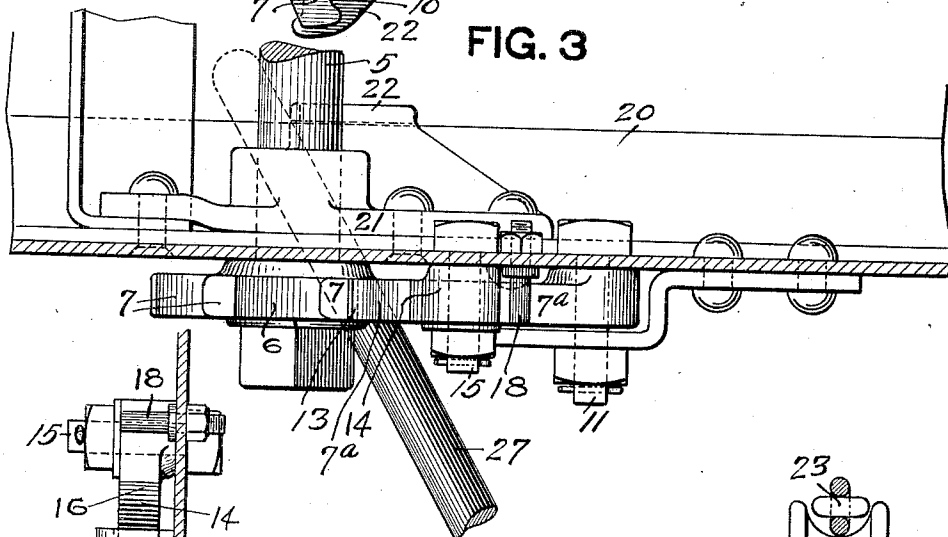
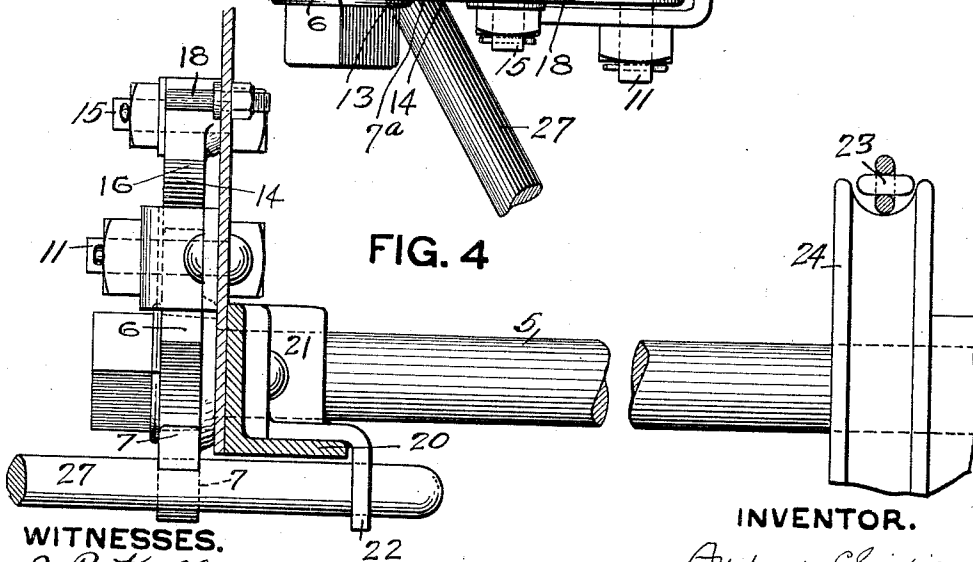


FIG. 4



WITNESSES.

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UNITED STATES PATENT OFFICE.

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DOOR-RELEASING MECHANISM.

1,044,491.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed February 7, 1912. Serial No. 675,985.

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 Door-Releasing Mechanism; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to door-releasing mechanism.

In that class of cars where the contents are discharged from the bottom by downwardly swinging doors it is customary to provide for the opening and closing of said doors by having a shaft which extends out through the side of the car to which a wrench or arm is applied to turn the shaft, thereby releasing the doors or drawing them up into closed position. This operation of turning the shaft is attended with some danger where the shaft has to rotate until the doors are in their open position, for the reason that when the locking-mechanism is released the weight of material in the car will force the doors open and as soon as the doors start to open, they will cause a sudden start of the shaft and if the operator is holding the wrench or handle at the end of the shaft, he is liable to be severely injured by the sudden rapid turning of the wrench. Accordingly devices have been devised for turning the releasing mechanism by the shaft so that when the mechanism is released there will be a certain amount of lost motion between said mechanism and the shaft, whereby the doors can open without any further movement on the part of the shaft, thereby doing away with the danger of the operator being struck by the rapidly whirling wrench or handle on said shaft. These mechanism however, have been more or less of a complicated character, and the object of my invention is to provide a simple form of mechanism by means of which the operator can start the shaft to release the doors without the employment of a lost motion device, and at the same time without any danger to the operator.

To these ends my invention comprises the novel features hereinafter set forth and claimed.

In the drawings Figure 1 is a side elevation of a car broken away to show the door operating mechanism; Fig. 2 is an enlarged

detail of the releasing shaft and the mechanism combined therewith. Fig. 3 is a plan view; and Fig. 4 is an end view.

I have illustrated my invention in connection with a common form of door-locking mechanism known as the Simonton device, and as this is a form in common use, I have not deemed it necessary to describe or refer to the same in detail.

In the drawings the numeral 2 designates the downwardly swinging doors pivoted at 3 to the hoppers 4.

The shaft 5 extends transversely of the car and at its outer end it is provided with the ratchet-wheel 6 which is adapted to be engaged by the pawl 7^a. The ratchet-wheel 6 is not constructed like the ordinary ratchet-wheel, but is provided with the teeth 7 having straight portions 8 which gradually merge with the curved portions 9 between the teeth, while the opposite sides of said teeth have the curved recess 10. By this construction the pawl 7^a which is mounted on the pin 11 bears against the straight face 8 of the teeth, and accordingly said pawl has a straight front face 12 which engages the face 8 of the teeth 7. In this manner the strain or force brought against the pawl 7^a is on a horizontal line, and greater strength is obtained, while at the same time there is less liability of the pawl working loose and becoming disengaged from the ratchet-wheel. The front end of the pawl 7^a has the projecting lug 13.

A locking cam 14 is mounted to swing on the pin 15 and said cam is adapted to engage the pawl 7^a and prevent its upward movement. The locking-cam 14 is provided with the hooked portion 16 which is adapted to engage the projecting lug 13 of the pawl 7^a when the pawl is lifted as indicated in dotted lines Fig. 2. The stop 18 is provided to control the movement of the locking-cam 14.

The side of the car is provided with the angle 20 and to said angle is riveted or otherwise secured the bracket 21 which has the downwardly projecting abutment 22.

The chain 23 passes around the sheaves 24 and said chain is crossed and passed around the sheaves 25 on the shaft 26. When the doors are closed the parts will be in the position indicated in Fig. 1 and the shaft 5 will be held from rotating by the pawl 7^a engaging the ratchet-wheel 6. When it is

desired to open the doors the locking cam 14 is first moved back to the position indicated in dotted lines Fig. 2 and the operator then moves the ratchet-wheel 6 sufficiently to release the pawl 7^a, which is then thrown up into the position indicated in Fig. 2 where it is engaged by the hooked portion 16 of the locking-cam. The operator then takes a bar or other suitable instrument 27 and inserts it between the teeth of the ratchet-wheel 6, said bar being forced in until its inner end passes the abutment 22 as indicated in Fig. 3. This abutment 22 affords a fulcrum for the bar 27 and in this way the operator is enabled to move the ratchet-wheel sufficiently to operate the chain 23 to throw the arms 28 beyond the center of the shaft 26, whereupon the weight of the contents of the car will act to open the doors. The operator, however, having once started the ratchet-wheel 6 in the manner above described is in no danger from the rapid rotation of the shaft 5, as the bar 27 is not connected in any way to the shaft, and as said shaft rotates the bar will simply be thrown out of engagement with the tooth of the ratchet-wheel and no further movement is imparted to said bar. In this way I provide a very simple and efficient means for releasing the door operating mechanism and dispense with any complicated mechanism such as clutches, etc., which have been heretofore employed for giving the necessary lost motion to allow the shaft 5 to remain stationary when once the door operating mechanism has been thrown past the center.

What I claim is:

1. In door operating mechanism the combination of a shaft, means operated from said shaft for closing the door, a ratchet-wheel on said shaft having spaces between

the teeth for the insertion of a bar or like instrument, a pawl engaging said ratchet, and an abutment on the car forming a fulcrum for said bar inserted in the space between said teeth. 45

2. In door operating mechanism, the combination of a shaft, means operated from said shaft for closing the door, a ratchet-wheel on said shaft having spaces between the teeth for the insertion of a bar or like instrument, a pawl engaging said ratchet-wheel, and a downwardly extending abutment on said car forming a fulcrum for said bar or like instrument. 55

3. In door operating mechanism, the combination of a shaft, connections from said shaft for closing the door, a ratchet-wheel on said shaft having spaces between the teeth for the insertion of a bar or like instrument, and a bracket on said car having a downwardly extending projection forming a fulcrum for said bar or like instrument. 60

4. In door operating mechanism, the combination of a winding shaft, a ratchet-wheel thereon, a pawl engaging said ratchet-wheel, a locking device for said pawl, and means for engaging said pawl by said locking device when said pawl is raised. 65 70

5. In door operating mechanism, the combination of a winding shaft, a ratchet-wheel thereon, a pawl engaging said ratchet-wheel, said pawl having a projection at its outer end, a locking device for said pawl, and a hooked portion on said locking device adapted to engage said projection on said pawl. 75

In testimony whereof, I, the said ANDREW CHRISTIANSON, have hereunto set my hand. 80
ANDREW CHRISTIANSON.

Witnesses:

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JOHN F. WILL.