

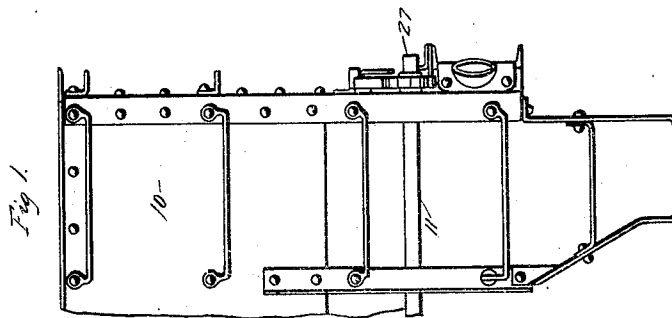
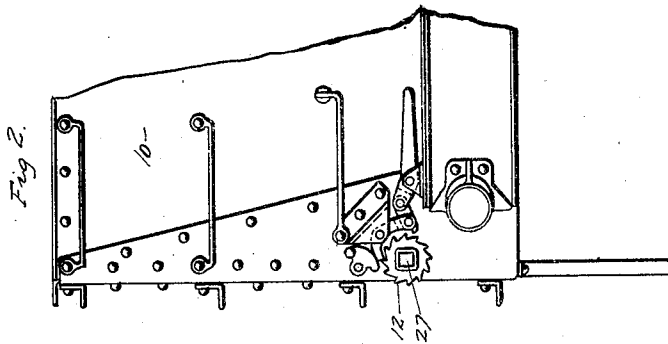
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A. CAMPBELL.
DUMP CAR DOOR OPERATING MECHANISM.
APPLICATION FILED AUG. 26, 1912.

1,052,128.

Patented Feb. 4, 1913.

2 SHEETS-SHEET 1.



WITNESSES

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Pearl Abrams

INVENTOR

Argyle Campbell

BY

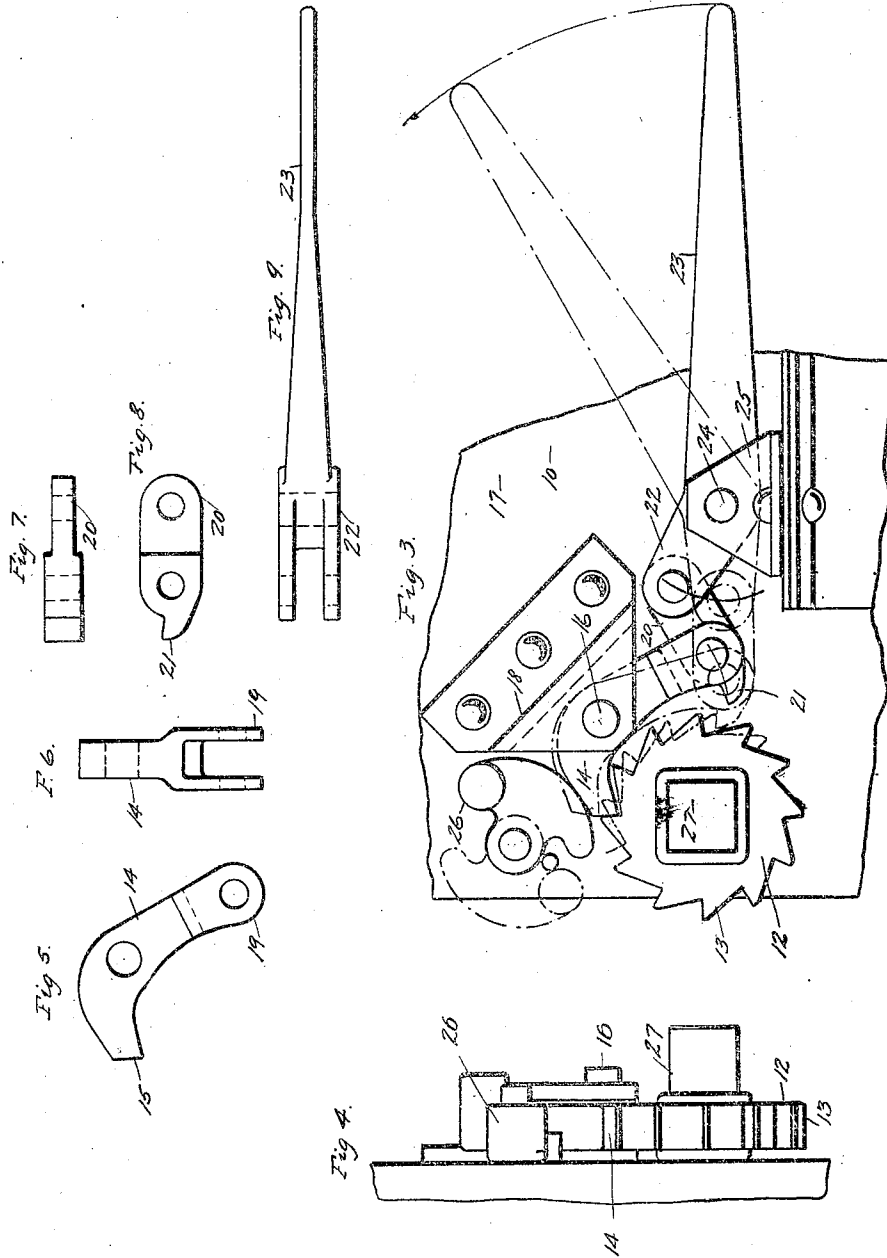
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WITNESSES

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UNITED STATES PATENT OFFICE.

ARGYLE CAMPBELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO ENTERPRISE RAILWAY EQUIPMENT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DUMP-CAR-DOOR-OPERATING MECHANISM.

1,052,128.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed August 26, 1912. Serial No. 717,088.

To all whom it may concern:

Be it known that I, ARGYLE CAMPBELL, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Dump-Car-Door-Operating Mechanism, of which the following is a specification.

This invention relates to improvement in dump car door operating mechanism.

An object of the invention is to provide a shaft operating mechanism for doors of dump cars, which mechanism is so arranged that the winding windlass shaft is always completely under the control of the operator during the unwinding operation.

Another object of the invention is to provide a door operating mechanism having a pawl and ratchet device so arranged that the shaft may be unwound step by step without danger of breaking or stripping the ratchet wheel teeth.

The invention furthermore consists in the improvements in the parts and devices and in the novel combinations of parts and devices herein shown, described or claimed.

In dump cars employing door operating mechanism which includes a windlass shaft, it is highly desirable that the unwinding of the shaft may be completely under the control of the operator at all times, without danger to the operator at any time. In the type of dump cars employing a windlass shaft and chain, the load on the doors, which often amounts to several tons, has a tendency to unwind the shaft at great speed as soon as the locking mechanism on the shaft is released, thus rendering the operator liable to injury by the claw-bar which is caused to fly around with the shaft.

In my construction I employ a ratchet wheel secured to the operating shaft and having its teeth turned in one direction and a double-acting pawl mechanism which comprises a pivoted pawl, a pivoted link and an operating lever therefor, all so arranged that the operating shaft may be locked in any desired position and automatically throwing the pawl into locking engagement with the ratchet teeth at each step. This feature of being able to lock the windlass shaft in any desired position is especially valuable where the double acting pawl mechanism is used in connection with ballast dumping cars which have the door openings

adjusted to various degrees in dumping the ballast along the road bed.

In the drawing forming a part of this specification, Figure 1 is a side view of a corner portion of a car embodying my improvements. Fig. 2 is an end view of a corner of the car showing my improvements, Figs. 1 and 2 being taken approximately at right angles to each other. Fig. 3 is an enlarged, detail, elevational view, showing the operating mechanism. Fig. 4 is an elevation, taken substantially at right angles to that shown in Fig. 3. Figs. 5 and 6 are side and edge views, respectively, of the pawl member of the operating mechanism. Figs. 7 and 8 are top and side views, respectively, of the link employed in the operating mechanism, and Fig. 9 is a plan view of the operating lever.

In the drawing, 10 denotes the body of the car, which may be of any well known form of dump car, and provided with an operating windlass shaft 11 adapted to open and close the car doors by means of chains or other flexible connection, not shown, the shaft having secured thereto at its end a ratchet wheel 12 having teeth 13 all pointed in the same direction. For releasing the operating shaft step by step, the following double-acting pawl mechanism is provided, the same comprising a pawl 14, having an engaging toothed end 15 and pivotally mounted on a pin 16, the latter being secured to the end 17 of the car and an angle plate 18. Pivotally mounted in the forked end 19 of the pawl 14 is a link 20, the same having a toothed end 21 adapted to engage the teeth 13, and pivotally secured at its opposite end to the short arm 22 of an operating lever 23, the latter being pivotally mounted on a pin 24 secured to the car end and an angle plate 25. For locking the mechanism in place, the usual form of pawl locking member 26 is provided, and for winding up the shaft the latter is provided with a squared end 27 adapted to be turned by a wrench or claw bar.

The operation is as follows: When the double-acting pawl mechanism is in the position shown by the full lines in Fig. 3, the tooth 15 will prevent the shaft from being rotated by the load on the car doors, but as the operating lever 23 is raised to the position shown in dotted line, the tooth 15

of the pawl will be disengaged from the ratchet wheel and the tooth 21 of the link will be projected into the path of another tooth of the ratchet wheel, but the load on the shaft will immediately throw the tooth 21 from engagement with the ratchet wheel and this movement of the link 20 will automatically throw the tooth 15 of the pawl into engagement with the next succeeding tooth of the ratchet wheel to that engaged by the pawl before the disengagement takes place. In this manner the shaft is automatically prevented from rotation after each disengagement of the pawl, and in order to open the doors or unwind the shaft it is necessary to repeat the above cycle of operations until the complete opening of the doors is effected. By making the operating lever long enough and properly arranging the various system of leverages in the double-acting pawl mechanism, it is possible for the operator to stop the rotation of the shaft by means of the tooth 21 of the link by holding the lever 23 in its proper position, but ordinarily the operation will be as first described. With the above construction it will be seen that the unwinding of the shaft is at all times under the perfect control of the operator, and that the shaft may be held in any desired position, and that the teeth of the ratchet wheel are never subjected to any severe shocks which might otherwise cause breaking or stripping of the teeth.

I claim:—

1. In a door operating mechanism of the class described, in combination: an operating shaft having a ratchet wheel thereon; a pair of members movable relatively to each other and adapted to engage the teeth of the ratchet wheel alternately; and means for operating said members, whereby the shaft may be rotated to unwind the same step by step, substantially as specified.

2. In a door operating mechanism of the class described, in combination: an operating shaft having a ratchet wheel thereon; a pivoted pawl; a pivoted toothed link; and means for operating said pawl and link so that they alternately engage the teeth of the

ratchet wheel to thereby allow the same to rotate step by step, substantially as specified.

3. In a door operating mechanism of the class described, in combination: an operating shaft having a ratchet wheel thereon; a pair of members movable relatively to each other and adapted to engage alternately the teeth of the ratchet wheel; and a pivoted lever, substantially as specified.

4. In a door operating mechanism of the class described, in combination: an operating shaft having a ratchet wheel thereon; a pivoted pawl; a pivoted toothed link; and a pivoted operating lever adapted to move said pawl from engagement with the teeth of the ratchet wheel, substantially as specified.

5. In a door operating mechanism for dump cars, in combination: an operating shaft having a ratchet wheel thereon; a pivoted pawl; a toothed link pivotally secured to said pawl; a pivotally mounted operating lever pivotally secured to said link, said lever being adapted to move the pawl from engagement with the teeth of the ratchet wheel and the link being adapted to automatically throw the pawl back into engagement with a succeeding tooth of the ratchet wheel; and means for locking the pawl in position, substantially as specified.

6. In a door operating mechanism for dump cars, in combination: a windlass shaft having a ratchet wheel thereon and adapted to be rotated by the load on the dump car doors to open the latter; a pivoted pawl co-operating with the teeth of said ratchet wheel to prevent the shaft from rotation in one direction; means for disengaging said pawl from the ratchet wheel teeth; and means automatically operated from the shaft for throwing said pawl back into engagement with a succeeding tooth of the ratchet wheel after each disengagement, whereby to automatically stop the shaft from rotating, substantially as specified.

ARGYLE CAMPBELL.

Witnesses:

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H. M. MUNDAY.