S. BROWN.

DUMP CAR MECHANISM.

APPLICATION FILED APR. 17, 1918.

1,280,152.

Patented Oct. 1, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

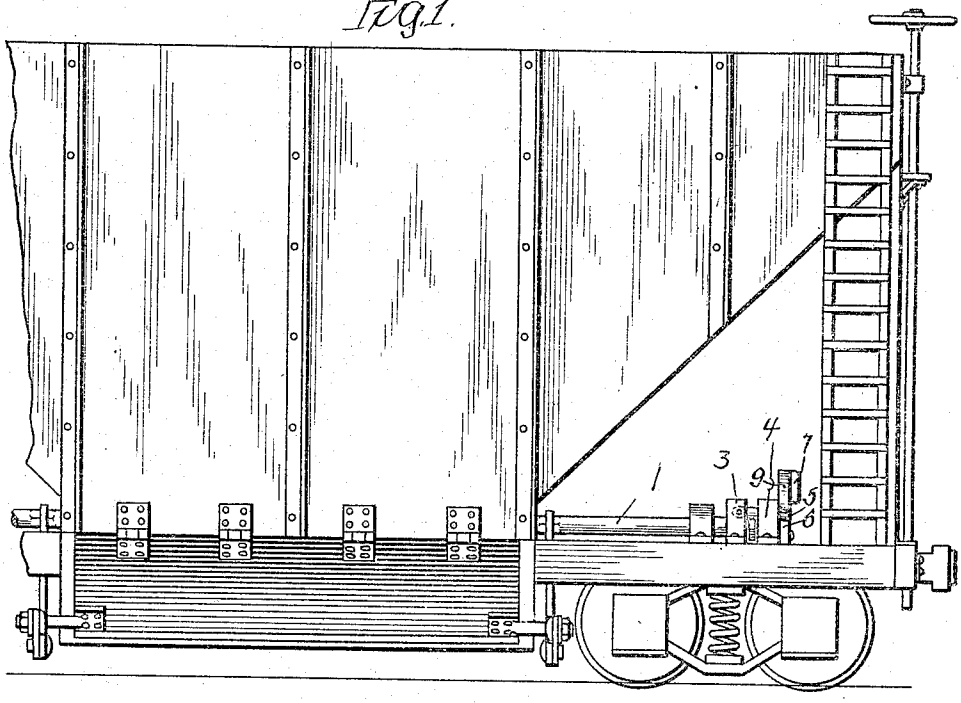
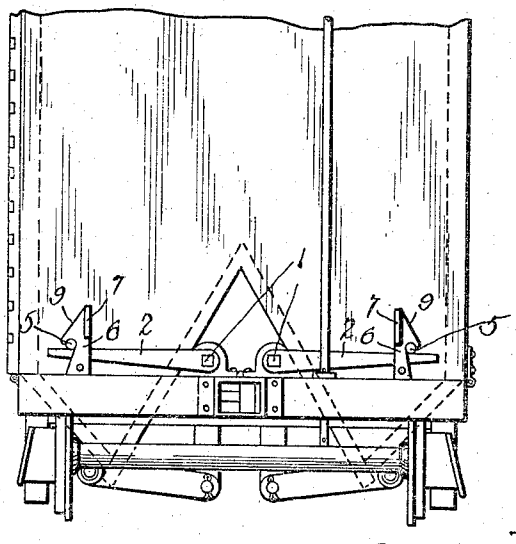


Fig. 2.



WITNESS

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2 SHEETS—SHEET 2.

Fig. 3.

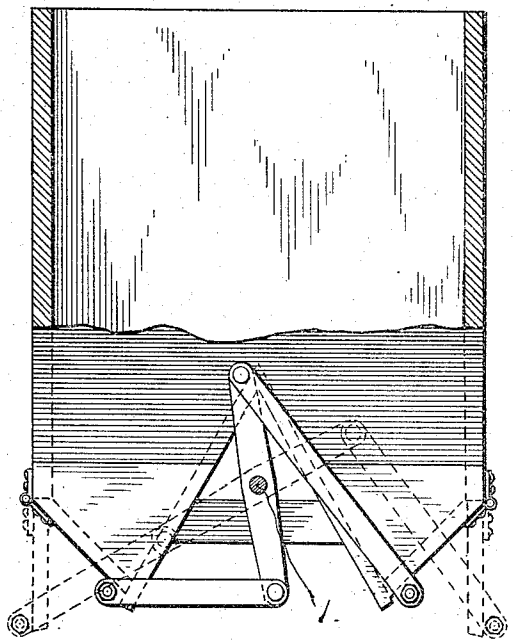


Fig. 4.

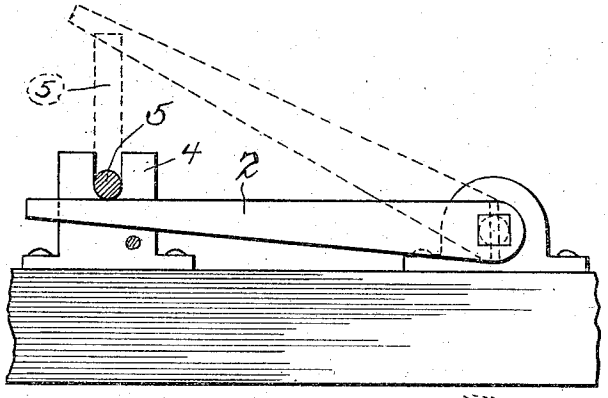


Fig. 5.

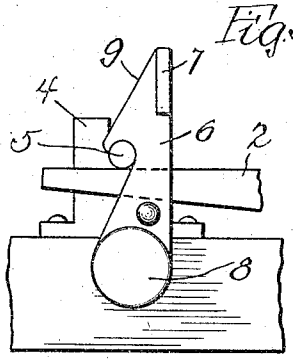
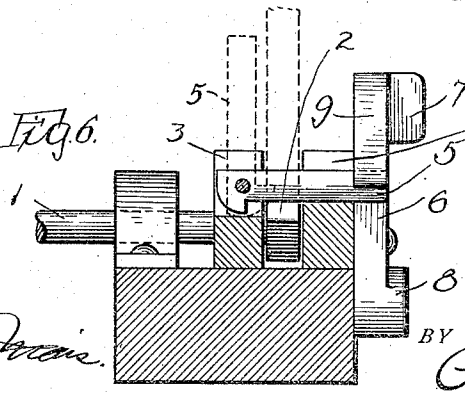


Fig. 6.



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DUMP-CAR MECHANISM.

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To all whom it may concern:

Be it known that I, STANLEY BROWN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dump-Car Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appears to make and use the same.

My invention relates to dump car mechanisms, and aims to provide a simple, strong and durable mechanism which will facilitate the opening and closing of the dumping doors, and which will enable both the opening and closing of the doors and the latching of the doors in their normal positions to be effected by a single person, and which will do this without unduly exposing him to the risk of accidents. More particularly, my invention relates to the class of dump cars in which the mechanism includes a rocking shaft, and aims to provide strong, simple, and easily operated means for latching such a shaft in a predetermined position, and for easily and speedily unlatching the shaft from the same position. Furthermore, I aim to provide a latching arrangement which may readily be unlatched without exposing anyone to the risk of accidents, and which will automatically latch itself when a single and easily reached lever is returned to its normal position.

In dump car construction, it has long been customary to provide hoppers having bottom portions formed partly of pivoted doors, which doors were connected by suitable means to one or more shafts, so that each door could be swung into its closure position by a partial rotation of such a shaft. It has also been customary to provide a manually operable lever for thus rotating the shaft to close the door, and to provide some arrangement for locking the lever in a position in which it forcibly holds the door closed. However, this locking arrangement has commonly been of such a nature as to require the assistance of more than one man for releasing it when the contents of the car were to be dumped. For this purpose it has commonly been necessary for at least one of the men to get in between the cars, thereby making it dangerous to unlatch a dumping door and to effect the dumping while the car was in motion. Moreover, the latching arrangement has commonly been such that the two men required for releasing it, had to move out of their effective positions quickly as they might otherwise be struck and injured by some of the moving parts of the mechanism. This has been particularly true in cases where each dumping door has been connected to a rocking shaft, which shaft in turn could be moved by a lever, and where it has been necessary for one man to stand on this lever so as to press it downward while another man withdrew a latching pin from above the lever. Likewise, after the car had been dumped, it has either required the coöperation of two men to latch the mechanism in its door-closing position, or has required one man to work with both hands in such an inconvenient position that he could not do this with safety while the car was in motion. Consequently, such arrangements have caused delays in the moving of the cars, thereby considerably reducing the amount of service which could be secured from a given car per day, while also doubling the number of men required for attending such cars, and also increasing the expenditures due to accidents.

To overcome these various objections, my invention aims to provide a dump car mechanism including a hand lever so placed as to be conveniently reached by a man standing at one side of the track, thereby enabling a single attendant to return the dumping door to its closure position, and and to do so even while the car is in motion. My invention also aims to provide a latching mechanism which will automatically reset itself when the hand lever is thus returned to its normal position, and to arrange this latching mechanism so that it may easily be released by a single person without exposing him to the risk of accidents. In other words, I aim to arrange the latching mechanism so that it can be easily and safely released by one man, and so that the various parts will automatically return to their latching position when the attendant moves the hand lever back to its normal position.

While the mechanism of my invention may be employed with substantially equal facility in connection with any dump car mechanism employing lever actuated rock shafts, its operation will be understood from the two embodiments shown in the accom-

panying drawings, although it will be obvious that these might be modified in many respects without departing from the spirit of my invention.

In the drawings, Figure 1 is a partial side elevation of a dump car equipped with my invention and showing the mechanism in its latched position in which it holds the hopper door securely closed.

Fig. 2 is a fragmentary end view of the same car, showing the dumping mechanism for the door at each side of the car latched in its closure position.

Fig. 3 is a fragmentary transverse section of a car in which a single shaft controls the opening and closing of the dumping doors at both sides.

Fig. 4 is an enlarged fragmentary view of the latching mechanism, as viewed from the end of the car, but with the latching hook removed.

Fig. 5 is a similar view of the end portion only of the latched lever, taken with the hook in effective latching position.

Fig. 6 is a side view of the parts of Fig. 5.

In the embodiment of Figs. 1 and 2, each of the two hopper doors of the dump car is operatively connected to a rock shaft 1 projecting beyond the rear end of the car. Rigidly mounted on this rock shaft is a lever 2, desirably of such length as to afford ample leverage, so that one man can move the lever for swinging to its closure position the door associated with the shaft carrying this lever. When moved to this latter position, the lever 2 passes between a pair of jaws 3 and 4, and desirably projects also beyond these jaws for a sufficient distance to afford a good handhold. The jaws 3 and 4 have alined recesses extending transversely of the lever 2 when the latter is positioned between the jaws, and a latch pin 5 is pivoted in one of these recesses, and desirably in the jaw nearest to the hopper of the car. This latch pin is adapted to swing down by gravity so as to rest in the recess of the other jaw 4, and is of sufficient length so as to project beyond this latter jaw and afford a protruding end portion adapted to be engaged by a hook 6. This hook 6 is here illustrated as pivoted on the jaw 4 and desirably has the tip portion of the hook sloped to afford a cam surface 9, so that when the latch pin 5 is moved to its engagement with the recess in the jaw 4, this sloping surface will act as a cam for automatically swinging the hook out of the way. The hook 6 also desirably has a lug 7 extending laterally beyond the end of the latch-pin 5, which lug may be engaged by a crowbar or other suitable tool, so that considerable force may be applied to the hook for unlatching it, without having the latch-pin strike the crowbar and possibly slam the latter against the man who manipulated it.

The hook 6 preferably has at its lower end a counterweight 8 so disposed that it will always tend to swing the hook into its latching position of Fig. 5, and will therefore return the hook to this position after the hook has been swung out of place by means of a crowbar or the like. When in service, the lever 2 normally extends as in Fig. 4 with the latched pin 5 engaging it not far from its end, and this pin 5 is held substantially horizontal by the hook 6 as shown in Fig. 5. Thus arranged, the upward pressure of the lever 2 against the pin 5, which pressure is due to the tendency of the weight of the door to swing open, will keep the pin 5 firmly interlocked with the hook 6, in spite of such jarring as may be due to the movement of the car. To dump the car, the attendant merely slams a crowbar or the like against the lug 7 so as to swing the pivoted hook out of its locking engagement, whereupon the continued upward pressure or tension on the lever 2 will cause this to move substantially to the position shown in dotted lines in Fig. 4. In doing so, the lever 2 raises the pin 5 to a substantially vertical position, but still remains partly in front of the tip of this pin, so that the pin cannot drop back under the lever. To insure a prompt returning of the pin to its horizontal position without requiring the attendant to move the same by hand, I may equip the pin near its pivot with a projecting toe as shown in Fig. 6, which toe is engaged by the underside of the lever when the latter is being swung back to its normal position, thus forcing the pin out of its former substantially vertical position. Then when returning to its horizontal position, the pin engages the sloping surface 9 of the hook as shown in Fig. 5, which surface acts as a cam to swing the hook to one side and permit the pin to reach its normal position, after which the weight 8 automatically swings the hook back into its latching position.

With the parts thus arranged, it will be obvious that the dumping mechanism is released by the single operation of moving the hook 6 out of its latching position, and that this can readily be done by a man standing or walking along the side of the track and reaching to the lug on the hook with a crowbar. Then, when the dumping has been effected, the single operation of pressing the lever 2 down to its normal position automatically restores the parts of the locking mechanism to their latching position, without requiring the assistance of another person, or any particular attention on the part of the attendant. As this can easily be done by a man standing or walking along one side of the track, the dumping can readily be effected while the train is in motion without exposing the attendant to accidents, so that

the daily service of the car can be considerably increased over that heretofore attained.

However, I do not wish to be limited to the details of the construction and arrangement above described, it being obvious that the same might be modified in many ways without departing from the spirit of my invention as shown in the appended claims. For example, instead of employing a separate shaft for moving the door or doors at each side of the car, a single shaft might be connected to the doors at both sides of the car, as shown in the fragmentary view of Fig. 3.

I claim as my invention:

1. In combination with a shaft controlling a door of a dump car, a lever fast upon the shaft and continuously pressed in one direction by the weight of the door, a pivoted latch normally extending across the path of the lever, and a pivoted hook normally engaging the latch to hold the latter in its said position.

2. In combination with a shaft controlling a door of a dump car, a lever fast upon the shaft and continuously pressed in one direction by the weight of the door, a pivoted latch normally extending across the path of the lever, a pivoted hook normally engaging the latch to hold the latter in its said position, and means associated with the hook and continuously tending to hold it in its said locking position.

3. In combination with a shaft controlling a door of a dump car, a lever fast upon the shaft and continuously pressed in one direction by the weight of the door, a pair of jaws between which the lever normally extends, a latching member pivoted to one of the jaws and normally extending across the path of the lever, and a member pivoted to the other jaw and normally holding the latching member in its said position.

4. Dump car mechanism as per claim 3, in which the last named member comprises a hook having an engaging portion substantially flush with the tip of the latching member and having a portion projecting beyond the said tip and adapted to receive a thrust for releasing the hook from the latching member.

5. Dump car mechanism as per claim 1, in which the hook has a tip portion formed for acting as a cam engaged by the latch to move the hook out of its normal position when the latch is being moved to its normal position.

Signed at Chicago, Illinois, April 5th, 1918.

STANLEY BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."