May 25, 1948. H. W. SANFORD 2,441,978

LATCH TRIPPING MECHANISM

Filed Jan. 20, 1943 4 Sheets-Sheet 1

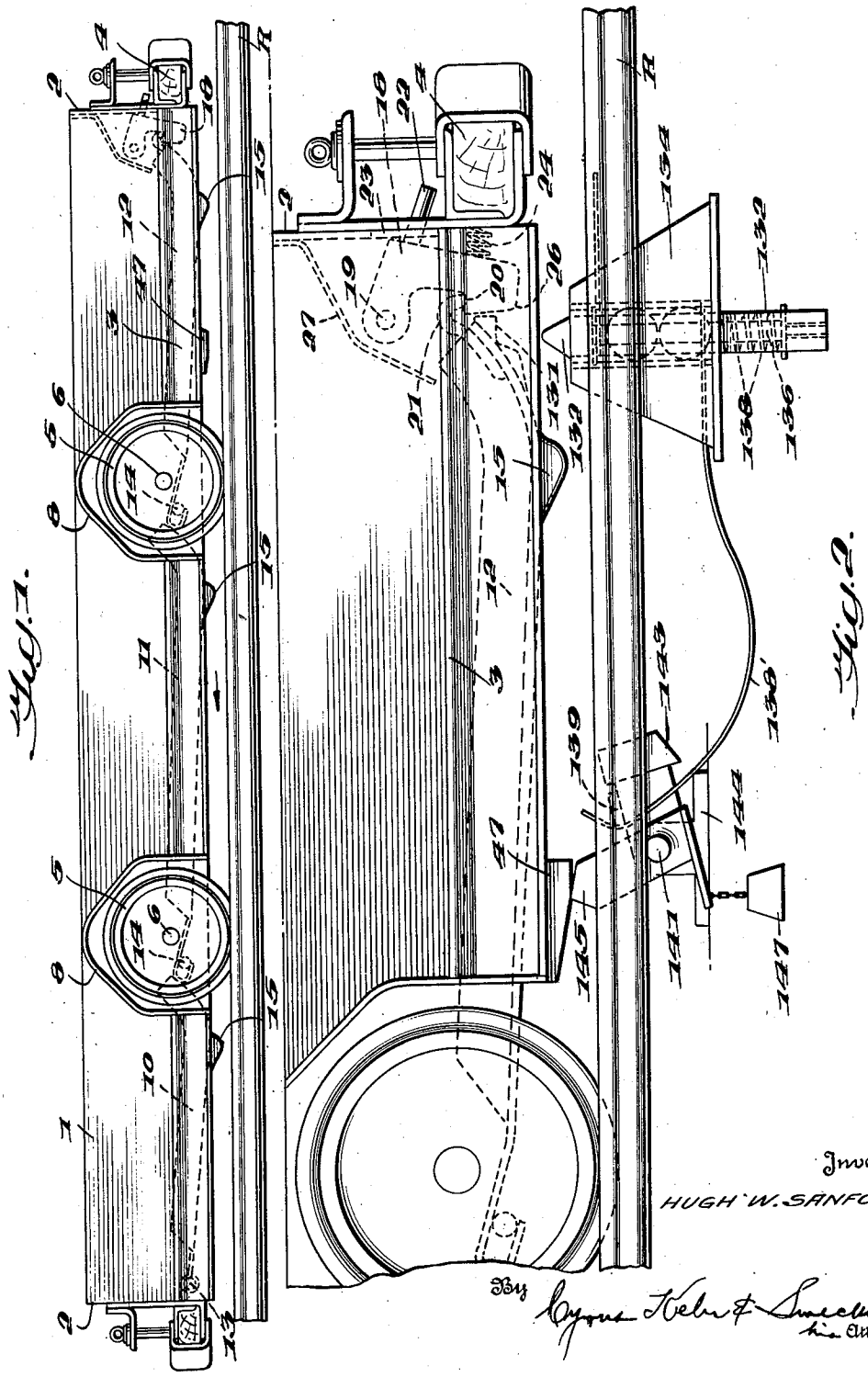


Fig. 1.

Fig. 2.

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LATCH TRIPPING MECHANISM

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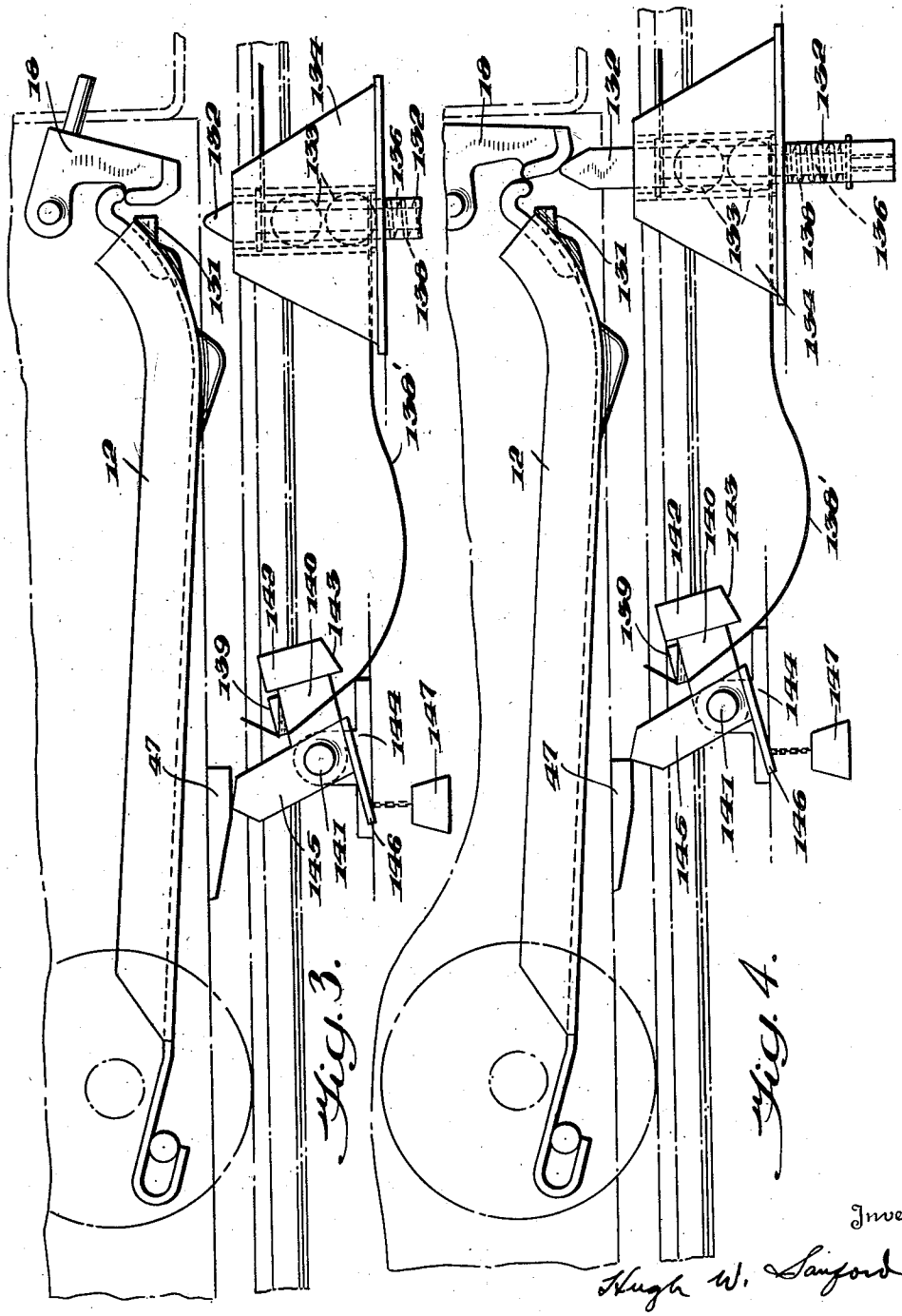


Fig. 3.

Fig. 4.

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Fig. 5.

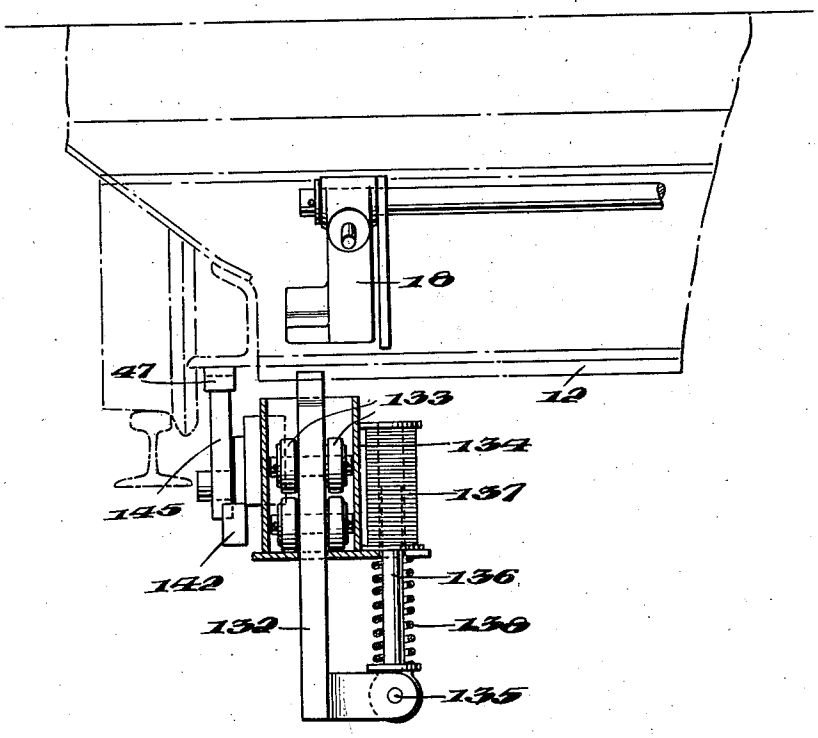


Fig. 6.

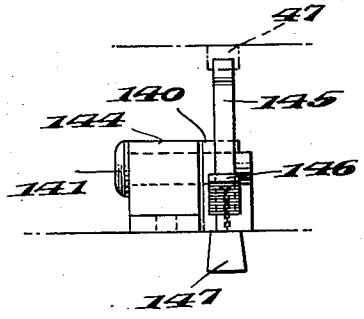
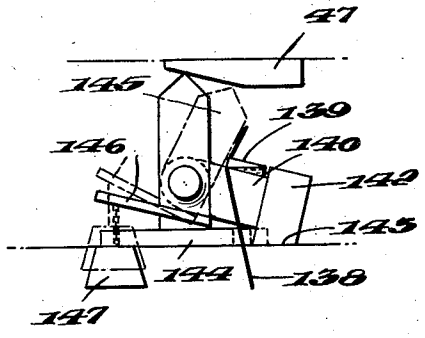


Fig. 7.



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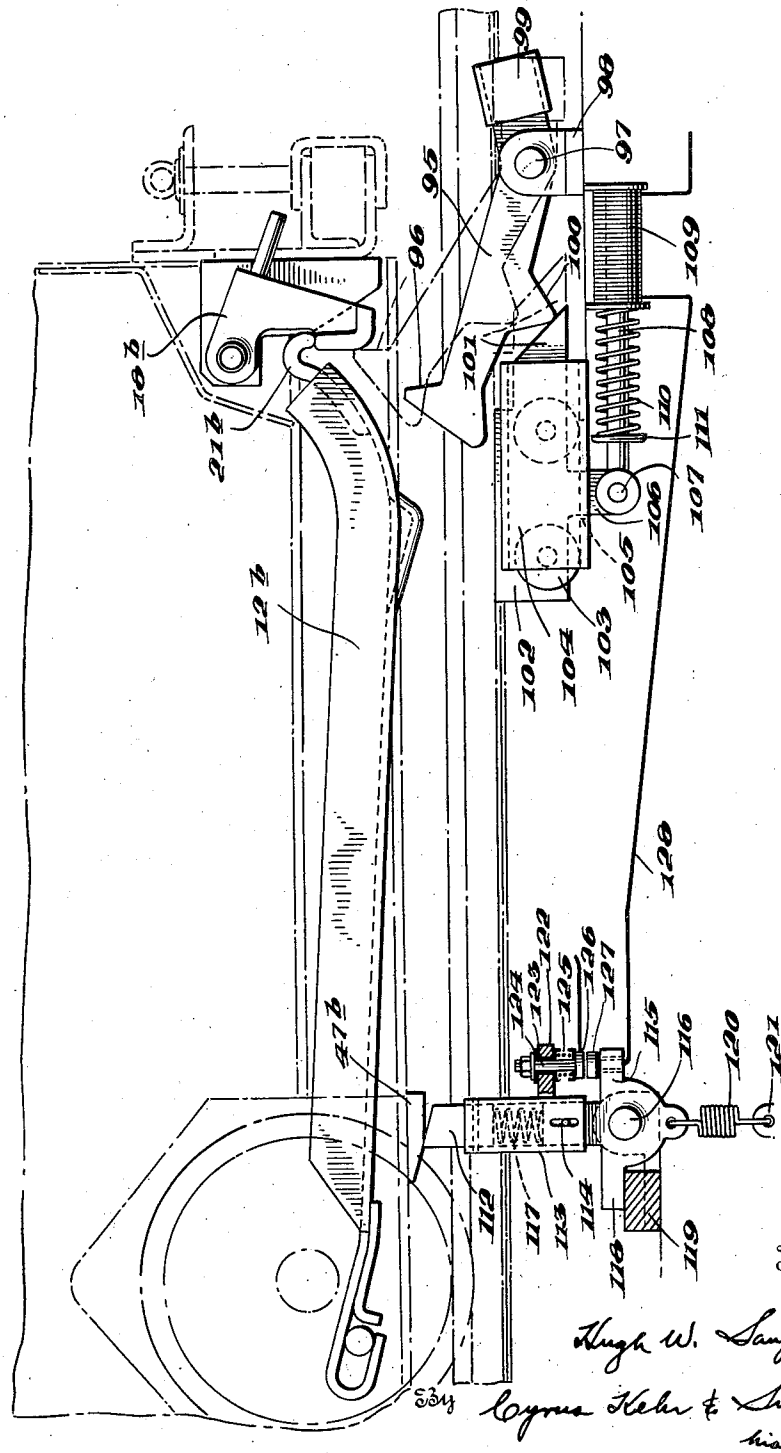


Fig. 8.

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UNITED STATES PATENT OFFICE

2,441,978

LATCH TRIPPING MECHANISM

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Application January 20, 1943, Serial No. 473,013

18 Claims. (Cl. 214—58)

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This invention relates to Latch tripping mechanisms, and more particularly for releasing the latches of drop bottom mine cars or other conveyors, of the type set forth in my prior application on Door latch mechanism, Ser. No. 432,341, filed February 25, 1942, now Patent No. 2,399,708, granted May 7, 1946.

In conveyors of the character used for hauling coal and other loose lading by means of cars or the like, particularly such as employ mine cars, provision is made for the automatic dumping of such conveyors by releasing the drop bottom doors when the conveyor reaches the bin or other point of discharge. It has been customary and desirable for a series of drop bottom doors to be interconnected for successive dropping in 1—2—3 order from front to rear of the car when the car reaches the point of dumping.

This has been accomplished usually by supporting a free edge of a forward door upon a hinged edge of the next rearward door in such manner that the opening of the latter will release automatically the forward door for dropping. The rearmost door of the car has its free edge supported by latch means adapted to be released when the car reaches the point of dumping.

Such automatic cars as generally used heretofore have required latch bar mechanism located outside the car for controlling the dropping of the doors. Such latch bar mechanism has been objectionable and expensive.

I have set forth in my prior application on Door latch mechanism, Ser. No. 432,341, Patent No. 2,399,708, improved latch mechanisms for controlling the release of the doors.

The object of this invention is to improve the construction of the tripping mechanism for the door latches, to facilitate the release of the latches by mechanism having improved characteristics, while enclosing the latches in protected positions on the car.

I have shown the invention in several modified forms in the accompanying drawings, in which:

Fig. 1 is a side elevation of a mine car and track, showing latches of the character here used;

Fig. 2 is an enlarged side elevation of an end portion of the car, showing one form of tripping device;

Fig. 3 is a diagrammatic view of a portion of the car and showing the tripping device in one position;

Fig. 4 is a similar view showing the tripping device in another position;

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Fig. 5 is a diagrammatic end elevation, partly in section therethrough;

Fig. 6 is an end elevation of the control switch for the tripping device;

Fig. 7 is a side elevation thereof; and

Fig. 8 is a diagrammatic view from the side of the car showing a modified form of tripping device.

The invention is shown as applied to a drop bottom mine car adapted for the conveying of coal or other loose lading from a receiving point to a pit or other point of discharge. The mine car is shown generally of the type set forth, for instance, in my prior patent, No. 2,001,471, granted May 14, 1935, representing a four-wheel mine car having three drop bottom doors, adapted to travel on a track formed by a pair of rails designated generally R.

The general structure of the car comprises side and end walls 1 and 2, respectively, the side walls 1 rising from a pair of oppositely disposed side sills 3 connected together at the ends of the car by means of combined end-sills and bumpers designated generally 4. The side and end sills 3 and 4 constitute the frame structure of the car for supporting the lading body of the car.

The car is supported on wheels 5 and axles 6 connected with the side sills 3 by axle boxes 7. The flaring sides 1 of the body are cut away to receive the wheels, which are deeply inserted therein beneath wheel hood coverings 8. Opposite hood coverings 8 are connected together by means of a combined tie plate and shroud which extends over the adjacent axle 6.

The car is shown as of the character provided with three drop bottom doors adapted for discharge in 1—2—3 order from front to rear of the car, which doors are designated respectively 10, 11 and 12. The forward door 10 is pivotally supported on a hinge rod 13, while each of the middle and rear doors 11 and 12 is slidably and pivotally mounted on a hinge rod 14, extending between opposed boxes, with the extreme forward edge of said door projecting laterally from the hinge rod and arranged to support the free edge of the next forward door. Thus upon release of the rear door it may drop sufficient to drag and move bodily rearward, thereby releasing the free edge of the middle door which will likewise move downward and rearward releasing the free edge of the forward door. This occurs usually just before the car reaches the bin and permits dropping of the forward door for discharge of the lading as soon as room enough is provided in the bin therebeneath, the other doors dropping

in succession during forward movement of the car over the bin, in 1—2—3 order from front to rear of the car.

After dumping in passing over the bin, the doors are adapted to be closed by the usual door-closing rails located in the track, said doors having indentations 15 to ride thereon, which successively swing them into their closed positions. The doors may be pushed forward into tightly engaged supporting positions by wedge blocks having upwardly and forwardly inclined front faces in position for engagement by lugs attached to the free edge of the rearward door 12 and projecting therefrom, as set forth more fully in my prior Patent No. 2,001,471 granted May 14, 1935.

As shown in Figs. 1 to 5, provision is made for latching the free edge of the rearward door 12 for thereby holding the doors 10, 11 and 12 in their closed positions, retaining the lading in the car until the latching means is released for dumping. For this purpose latches 18 are provided adjacent the rear end of the car pivotally supported by a shaft 19, extending transversely thereof on which said latches are mounted for joint or independent movement.

Each of the latches has a concave seat 20 formed therein in position to engage a trunnion 21 attached to the free edge of the rearward door 12 to support said rearward door. As shown in Fig. 3, the seat 20 is located on the opposite side of the vertical plane passing through the axis of the shaft 19 from the door 12, so that the weight of the door and the lading thereon tends to maintain the latched relation without any tendency for this weight to push the latch to one side. This is particularly true because of the concave shape of the seat 20 engaged by the convex end of the trunnion 21, whereby any movement of the latch tending to release the door must first raise up the free edge of the door.

Each of the latches 18 has a lateral pin 22 attached thereto and projecting through a slot 23 in the adjacent portion of the end-sill 4, so that a lever can be inserted over said sill, beneath the pin 22, for the manual release of said latch.

A coiled spring 24 is interposed between the inner face of the end sill 4 and the latch 18, tending to help to return said latch to a position where it will engage and support the trunnion 21. The lower forward edge of each latch 18 is provided with a shoulder 26 to be engaged for releasing the latch, as hereinafter explained.

As shown in Figs. 2 and 3, the latches 18 are interposed between the free end of the rearward door 12 and the adjacent end-sill 4, beneath a guard plate 27, and are disposed wholly above the lower edge of said end-sill or bumper and also above the lower portion of the rear door in protected positions. This prevents disarrangement of the latches or accidental injury thereto in the event of wreckage of the car, as frequently occurs, thus insuring adequate protection of the latches to maintain the same in proper operative positions.

One form of electrically actuated tripping mechanism is shown in Figs. 2 to 7, in which however, the tripping arm is mounted for sliding movement to release each of the latches 18 which support the free edge of the door 12.

The free edge of the door 12 is provided with a shoulder 131 normally disposed immediately over the upper end of the tripping arm 132, as shown in Fig. 3. Said upper end of the tripping arm 132 is shown as substantially wedge-shaped

adapted to enter the space between the door and the forward edge of the latch 18 to move said latch to its released position, as shown in Fig. 4.

The tripping arm 132 is arranged vertically and slidably mounted by means of rollers 133 in a housing 134 mounted in a fixed position beneath the track. The lower end of the tripping arm 132 is pivotally connected at 135 with the free end of a plunger 136 which forms the core of a solenoid 137. A coiled spring 138 acts on the plunger 136 tending to move the latter to an extended position, as shown in Fig. 5.

Current is supplied to the solenoid 137 through a wire 138' from a gravity switch 139 which is shown as a mercury switch. The switch 139 is constructed in the usual manner of a tubular body of insulating material enclosing a pool of mercury, and having a pair of contacts at one end portion of the switch body which have electrical connection through the pool of mercury when the body is tilted in one direction as shown in Figs. 3 and 4, but are out of electrical connection with each other when the switch is tilted in another direction as shown in Fig. 7.

The mercury switch 139 is supported by an arm 140 pivotally mounted on a shaft 141 and provided with a counterweight 142 which normally acts to move the arm 140 to its lowered position, as shown in full lines in Fig. 7, where the counterweight 142 stops the downward swinging movement by the angular portion 143 thereof. The shaft 141 is supported in a bearing box 144, and also has mounted thereon an actuating arm 145 which has a shouldered connection with the arm 140, so as to lift the latter arm from the position shown in Fig. 7 to the position shown in Figs. 3 and 4, while the actuating arm 145 is nevertheless free for movement relative to the arm 140 to the dotted line position of Fig. 7. The arm 145 has an off-standing bracket 146 connected therewith from which a counterweight 147 is suspended to return the actuating arm 145 from the position shown in dotted lines in Fig. 7, to the full line position therein.

When the actuating arm 145 is engaged by the lug 47 on the bottom of the car side sill, and is moved thereby from the full line position in Fig. 7, which is its normal position as described, to the position shown in Fig. 3. This causes the pool or mercury to be tilted into engagement with the contacts in the switch, closing the electric circuit through the wire 138' to the solenoid 137, energizing the latter. The opposite side of the switch 139 and of the solenoid are connected to any suitable or desirable source of electrical current sufficient to actuate the solenoid. The energizing of the solenoid 137 retracts the plunger 136 against the tension of the spring 138 and slides the tripping arm 132 upwardly. The sliding movement of said tripping arm is stopped by the shoulder 131 where said arm remains until upon further forward movement of the car, it engages the forward face of the latch 18 and moves said latch from the position shown in Fig. 3, to the position shown in Fig. 4, thus releasing the door for dropping. Fig. 4 shows the actuating arm 145 substantially in its position where it drops off the lug 47, and immediately thereafter, when the lug has passed out of engagement with the actuating arm, the counterweight 142 returns said arm to its normal upright position as shown in Fig. 7. This immediately breaks the circuit at the switch and deenergizes the solenoid 137, allowing the spring 138 to move the tripping arm 132 to its lowered position (Fig. 3), where it is

below the end sill structure and the bottom of the door.

It will be noted that the wedging end of the arm 132 is so sloped that there will be no tendency for the engagement thereof by the latch 18 to push the arm 132 downward against the force of the solenoid. Therefore, the only required function of the solenoid is to raise the tripping arm up to its operating position at the proper time, and to permit it to be lowered at the proper time, where the latch has been released and before the end-sill strikes the upper end of the tripping arm.

When the car moves over the tripping mechanism in the reverse direction, the lug 47 will engage the actuating arm 145 and move it to the dotted line position in Fig. 7, but such movement is relative to the arm 140 carrying the mercury switch, and therefore the circuit is not closed through the switch. Thus the reverse movement of the car does not cause a raising movement of the tripping arm 132.

The design illustrated has provision for supporting the free edge of the door by two latches on respectively opposite sides of the center line of the car, and each arranged for release by a solenoid-actuated tripping arm. However, if desired, the construction may utilize one solenoid for actuating two separate tripping arms, and if two separate solenoids be provided, both of those may be controlled from a single switch.

The circuit controller shown in Fig. 8 may be substituted for that shown in Fig. 3, if desired, or vice versa, inasmuch as each controls the operation of a solenoid, and may be used to control the operation of either type of tripping arm.

It will be obvious also that the tripping arm may be actuated pneumatically, instead of by the electrical solenoid, by connecting the piston of a pneumatic power device therewith and controlling by the lug on the car a valve which regulates the movement of the piston in the cylinder. In that event, the tilting of the actuating arm would move the valve to admit air to the cylinder so that the tripping arm would be raised, and when the actuating arm was returned to its vertical position, the exhaust would take place and the tripping arm would be lowered, by the spring provided therefor, out of the path of movement of the end sill structure and the bottom of the door.

All of the different forms embody the feature that the latch hooks do not project below the bumper sill and are protected between the bottom door and the bumper sill in such fashion that they will not be interfered with by obstructions on the track. All of the different devices likewise provide for raising the unlatching arm so that it will come up to the point of engaging the hooks for unlatching at the proper time and without contact with the normal drop bottom door and without possible contact with the end sill. The release of the unlatching mechanism always takes place in time to permit it to drop away from the latch hooks themselves immediately after these latch hooks have been rotated around the pivot far enough to release the latch hooks from their supporting engagement with the drop bottom door.

In the form shown in Fig. 8, a tripping arm 95 has a head 96 in position to be moved into engagement with a forward face of the door supporting latch 18b which normally supports the free edge of the door 12b by means of a trunnion 21b, as described above. The tripping arm 95 is

pivotally supported at 97 on a bracket 98, and has a counterweight 99 on the opposite end thereof from the head 96. This counterweight 99 reduces the amount of power required to raise the tripping arm 95, but does not prevent it from falling promptly when released.

The tripping arm 95 has a shoulder 100 in position for engagement by a wedge 101 carried at the forward end of a member 102, slidably mounted upon rollers 103 within a guide member 104. The guide 104 has a slot 105 in the under side thereof through which an arm 106 projects, which arm is rigidly formed on the wedge member 102. The arm 106 is pivotally connected at 107 with a plunger 108 on an electrical solenoid 109. A coiled spring 110 is sleeved over the plunger 108 and has a bearing engagement therewith at its outer end at 111, tending to move the plunger in an outer direction relative to the solenoid 109.

The solenoid is controlled by a switch which is actuated by a shoe 112 in position for engagement with a lug 47b secured to the under face of the side sill of the car as described. The shoe 112 is secured to a sleeve 113 slidably connected at 114 with a rocker member 115 which is pivotally supported at 116.

A coiled spring 117 is housed within the sleeve 113 and tends to extend the shoe 112 relative to the rocker member 115. The rocker member 115 is free to turn in a clockwise direction in Fig. 8 about the pivot 116, but has its movement in the opposite direction limited by an arm 118 adapted to engage a rigid stop 119 mounted in a fixed position beneath the track. A spring 120 is connected between the rocker member 115 and a stationary anchor 121, tending to restore the rocker member and the shoe 112 to a central position, as shown, if moved out of said position.

The sleeve 113 has an arm 122 projecting laterally therefrom and supporting a plunger 123 slidably mounted therein through an insulating bushing 124. A coiled spring 125 tends to move the plunger 123 in one direction. The free end of the plunger 123 carries a contact 126 in position to engage a contact 127 secured to the rocker member 115 but insulated therefrom. The contact 127 is connected through a wire 128 with the solenoid 109. The contact 126 and opposite side of the solenoid coil may be connected with a track circuit or other source of electrical supply through suitable connections as shown, adapted to energize the solenoid upon the closing of the switch 126—127.

When the shoe 112 is engaged by the lug 47b and depressed, this will close the contacts 126, 127, sufficiently to energize the solenoid 109. When the solenoid is thus energized, the plunger 108 is moved to the right in Fig. 8, thereby moving the wedge 101 to its dotted line position, pressing upward on the shoulder 100 and raising the tripping arm 95 to the dotted line position illustrated. This moves the head 96 in position to engage the forward face of the latch 18b upon further forward movement of the car to release the door for dropping. As soon as the lug 47b passes over the shoe 112 the latter is raised by the spring 117 disengaging the contacts 126, 127, which causes deenergizing of the solenoid coil 109. This allows the spring 110 to move the wedge 101 back to the full line position, and allowing the tripping arm 5 to be lowered out of the path of the latch 18b, and the end sill of the car, for dumping of the doors in the manner described above.

It will be noted that the position of the shoe 112 is centralized in a vertical position by the action of the spring 120, so that it tends to return to its vertical position when out of engagement with the lug 47b. Normally, the lug merely depresses the shoe in said vertical position, but when the car moves over the dumping bin and the tripping mechanism in a reverse direction (toward the right in Fig. 8), the shoe 112 will be rotated toward the right by the engagement of the lug 47b. The switch will rotate with the shoe since it is carried by the rocker member 115 and will not be closed by this rotary movement because of the lack of movement of the shoe 112 and its sleeve 113 relative to the rocker member 115. Thus the solenoid 109 will not be energized to raise the tripping arm 95. After the car thus passes over the tripping mechanism in the reverse direction described, the spring 120 will return the shoe 112 to its vertical position, where it is held by the stop 119.

As described above, one or more latches may be used for supporting the free edge of the door, and, if desired, the tripping arm 95 may be provided for each latch. One solenoid could be used, if desired, to operate several tripping arms which correspond with the respective latches, or separate solenoids provided for the respective tripping arms, all of which may be controlled from a single switch or shoe.

I claim:

1. In conveying mechanism, the combination with a trackway, a dumping vehicle mounted on the trackway and including a frame structure having a drop bottom dumping door, and latch means for holding the door closed and movable to release said door for dropping, of tripping mechanism mounted at the trackway for upward movement relative thereto in position to actuate the latch means, said tripping mechanism including an actuating arm having an end portion in position for engaging the latch means to release the same, means mounting said tripping arm for sliding movement, electro-magnetic means for actuating said arm, switch means for controlling said electro-magnetic means, and swingable means actuated in response to movement of the dumping vehicle to a predetermined position for operating said switch means.

2. In conveying mechanism, latch tripping mechanism adapted to be mounted at a trackway to release latch means of a drop bottom door, said latch tripping mechanism comprising a tripping member, means mounting said member for upward movement to a latch release position, electro-magnetic means operatively connected with said tripping member for actuating said member, switch means for controlling said electro-magnetic means, and swingable means adapted to be actuated by movement of a vehicle along the trackway for operating said switch means.

3. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, said latch means being located wholly above the lowest portion of the end-sill structure in the same longitudinal vertical plane of the conveyance, of tripping mechanism including means mounted at the trackway and movable to release the latch means, electrically actuated means operatively connected with the latch release means for moving the latch tripping mechanism to engaging position, and means actuated in response to movement of the dumping conveyance to a predetermined position on the trackway for controlling the engaging of the electrically-actuated means.

4. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, said latch means being located wholly above the lowest portion of the end-sill structure in the same longitudinal vertical plane of the conveyance, of tripping mechanism including means mounted at the trackway and movable to release the latch means, electrically actuated means mounted at the trackway in position to be disposed directly under the drop bottom door when the dumping conveyance passes thereover and connected with said latch release means for moving the latch tripping mechanism to engaging position, and means for controlling the action of the electrically-actuated means and operated by the movement of the dumping conveyance thereover.

5. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, of tripping mechanism including means mounted at the trackway and movable into operating relation with the latch means, and electro-magnetic means mounted at the trackway in position to be disposed directly under the drop bottom door when the dumping conveyance is passing thereover and operatively connected with the tripping means for moving said tripping means into operative relation with the latch means to release the door, and means for controlling the action of the electro-magnetic means and operated by the movement of the dumping conveyance thereover.

6. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, said latch means being located wholly above the lowest portion of the end-sill structure in the same longitudinal vertical plane of the conveyance, of tripping mechanism including means mounted at the trackway and movable into actuating engagement with the latch means, electro-magnetic means connected with said latch actuating means for moving the latch actuating means to engaging position, and means actuated in response to movement of the dumping conveyance for controlling the electro-magnetic means.

7. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, of tripping mechanism including means mounted at the trackway and movable into operating rela-

tion with the latch means, electro-magnetic means for moving said tripping means into operative relation with the latch means to release the door and a switch electrically connected with said electro-magnetic means and having operating means therefor in position for operation by the movement of the dumping conveyance along the trackway to a predetermined position relative thereto.

8. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, of tripping mechanism including means mounted at the trackway and movable into operating relation with the latch means, power means constructed for operation by a source of power externally of the conveyance itself and mounted at the trackway for moving the tripping means into operative relation with the latch means causing release of the door for dropping, and means for controlling the action of said power means and operated by the movement of the dumping conveyance to a predetermined position in the trackway.

9. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, of tripping mechanism including means mounted at the trackway and movable into operating relation with the latch means, power means constructed for operation by a source of power externally of the conveyance itself and mounted at the trackway for moving the tripping means into operative relation with the latch means causing release of the door for dropping, and means actuated in response to movement of the dumping conveyance to a predetermined position on the trackway for controlling said actuation of the power means.

10. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, said latch means being located wholly above the lowest portion of the end-sill structure in the same longitudinal vertical plane of the conveyance, of tripping mechanism including means mounted at the trackway and movable to release the latch means, electrically actuated means for moving the latch tripping mechanism to engaging position, and means actuated in response to movement of the dumping conveyance to a predetermined position on the trackway for causing energizing of said electrically actuated means and movement of said latch tripping mechanism.

11. In conveying mechanism, the combination with a trackway adapted to receive thereon a dumping conveyance for movement along the trackway and having a drop bottom door with latch means for holding the door closed and movable to release the door for dropping, of tripping mechanism including means mounted at the trackway for movement into operative relation with the latch means to release said latch means,

and electro-magnetic means connected with the latch tripping means for moving the tripping means into said operating position, and a switch electrically connected with said electro-magnetic means and having operating means therefor in position for operation by the movement of the dumping conveyance along the trackway to a predetermined position relative thereto.

12. In conveying mechanism, the combination with a trackway adapted to receive thereon a dumping conveyance for movement along the trackway and having a drop bottom door with latch means for holding the door closed and movable to release the door for dropping, of tripping mechanism including means mounted at the trackway for movement into operative relation with the latch means to release said latch means, and electro-magnetic means connected with the latch tripping means for moving the tripping means into said operating position, and means in position for actuation in response to movement of the dumping conveyance to a predetermined position on the trackway for causing said actuation of the electro-magnetic means.

13. In conveying mechanism, the combination with a trackway adapted to receive thereon a dumping conveyance for movement along the trackway and having a drop bottom door with latch means for holding the door closed and movable to release the door for dropping, of tripping mechanism including means mounted at the trackway for movement into operative relation with the latch means to release said latch means, power means constructed for operation by a source of power externally of the conveyance itself mounted at the trackway connected with the latch tripping means, for causing said movement of the tripping means to a latch releasing position, and means for controlling the action of said power means and operated by the movement of the dumping conveyance to a predetermined position in the trackway.

14. In conveying mechanism, the combination with a trackway adapted to receive thereon a dumping conveyance for movement along the trackway and having a drop bottom door with latch means for holding the door closed and movable to release the door for dropping, of tripping mechanism including means mounted at the trackway for movement into operative relation with the latch means to release said latch means, and power means mounted at the trackway connected with the latch tripping means, for causing said movement of the tripping means to a latch releasing position, and means mounted at the trackway in position for actuation by the dumping conveyance when moved to a predetermined position on the trackway for controlling said actuation of the power means.

15. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, of tripping mechanism including means mounted at the trackway and movable into operating relation with the latch means, and power means mounted at the trackway operatively connected with said movable means for moving the tripping means into operative relation with the latch means causing release of the door for dropping, and means actuated by the dumping conveyance in response to movement of the

dumping conveyance in one direction only along the trackway to a predetermined position on the trackway and operatively connected with said power means for causing said actuation of the power means.

16. In conveying mechanism, the combination with a trackway, a dumping conveyance movable along the trackway and including a frame structure having transverse end-sill structure and having a lading body with a drop bottom door, latch means for holding the door in closed position and movable to release the door for opening, said latch means being located wholly above the lowest portion of the end-sill structure in the same longitudinal vertical plane of the conveyance, of tripping mechanism including means mounted at the trackway and movable to release the latch means, electrically actuated means operatively connected with said movable means for moving the latch tripping mechanism to engaging position, and means mounted for swinging movement lengthwise of the trackway and constructed for circuit closing action upon movement in one direction only relative thereto and actuated by the dumping conveyance in response to movement of the dumping conveyance to a predetermined position on the trackway, said circuit closing means being electrically connected with the electrically actuated means for causing energizing of said electrically actuated means and movement of said latch tripping mechanism upon said movement of the said circuit closing means.

17. In conveying mechanism, the combination of a trackway adapted to receive thereon a dumping conveyance for movement along the trackway and having a drop bottom door with latch means for holding the door closed and movable to release the door for dropping, tripping mechanism including means mounted at the trackway for movement into operative relation with the latch means to release said latch means, electromagnetic means operatively connected with said tripping means for moving the tripping means into said operating position, and means in position for actuation by the dumping conveyance in response to movement of the dumping conveyance in one direction only to a predetermined position on the trackway for causing said actuation of the electro-magnetic means.

18. In conveying mechanism, the combination of a trackway adapted to receive thereon a dumping conveyance for movement along the trackway and having a drop bottom door with latch means for holding the door closed and movable to release the door for dropping, tripping mechanism including means mounted at the trackway for movement into operative relation with the latch means to release said latch means, and power means mounted at the trackway and operatively connected with said latch release means for causing said movement of the tripping means to a latch releasing position, and means mounted at the trackway in position for actuation by the dumping conveyance when moved in one direction only to a predetermined position on the trackway for causing said actuation of the power means.

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