Nov. 29, 1938. E. W. DUNCAN 2,138,695

DROP BOTTOM CAR

Filed April 26, 1938 2 Sheets-Sheet 1

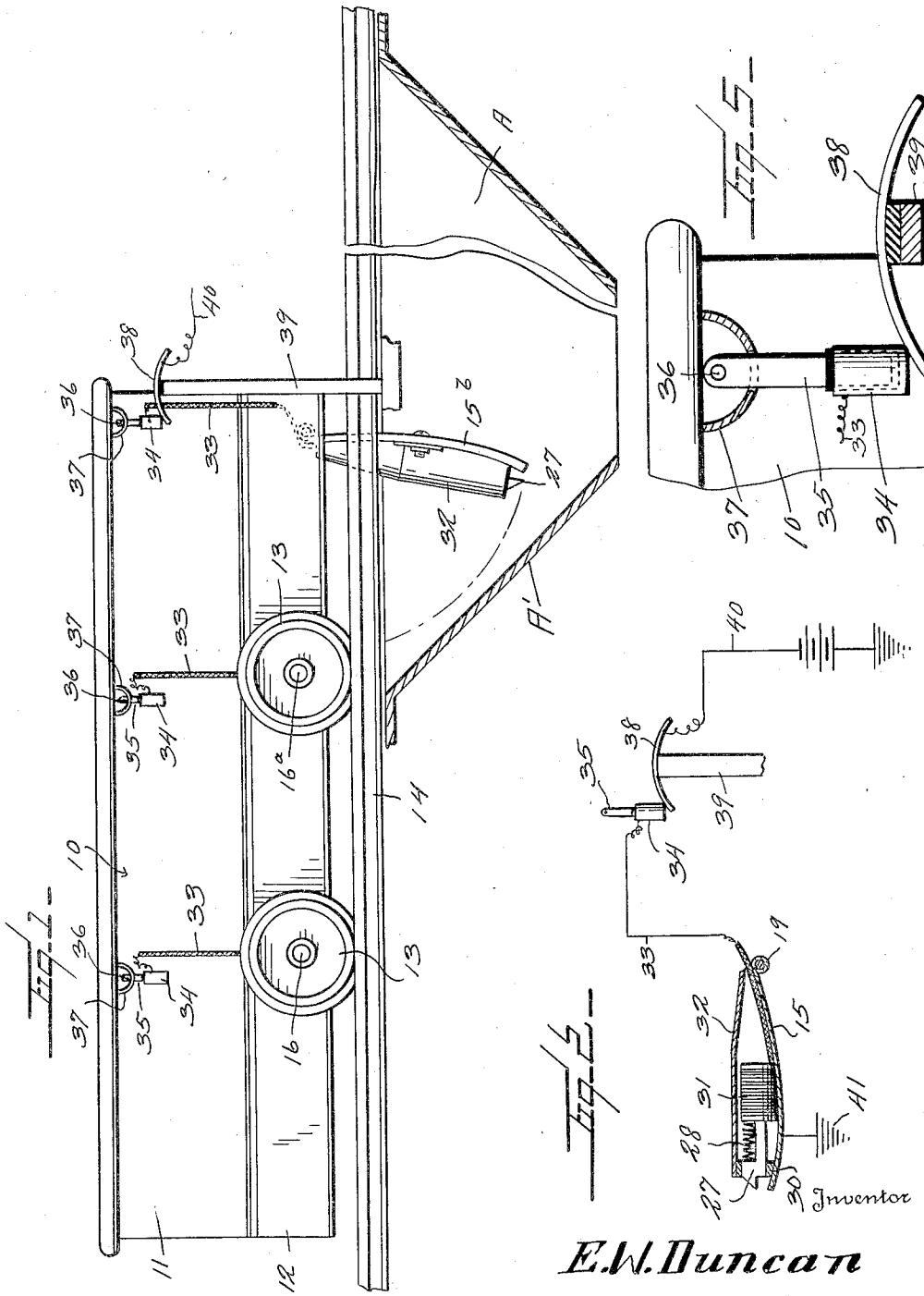


Fig. 1.

Fig. 3.

Fig. 2.

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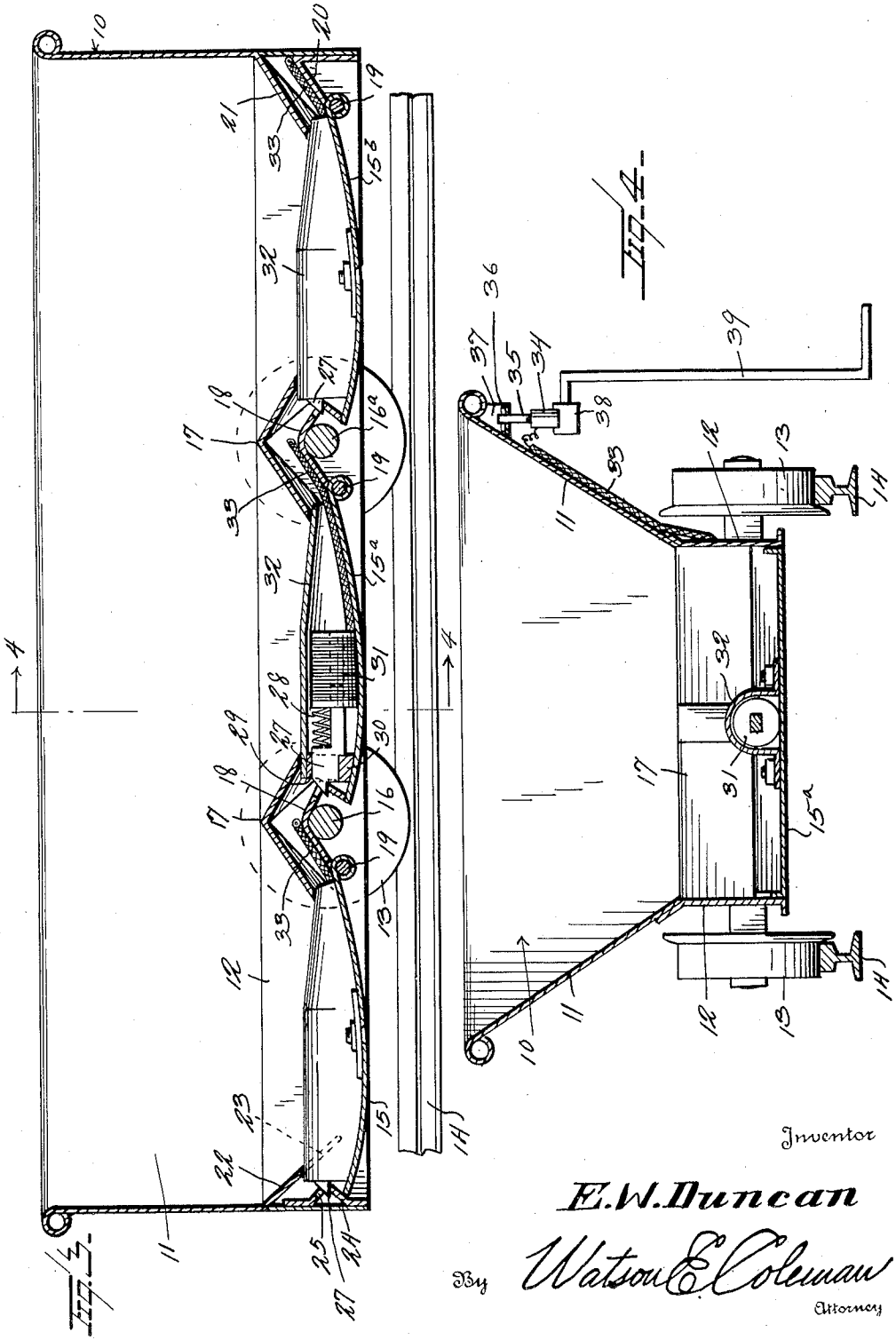


Fig. 3.

Fig. 4.

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DROP BOTTOM CAR

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Application April 26, 1938, Serial No. 204,455

1 Claim. (Cl. 105—286)

This invention relates to railway cars for use in carrying coal, ore and other material which may be discharged thru the bottom of the car, and particularly relates to a car of this character having drop bottoms or doors normally held closed but released in order to discharge the contents of the car.

The general object of the present invention is to provide a structure of this character in which the doors or drop bottoms are held up in closed position by a latch, and provide means whereby the latch may be electrically released when the car reaches a predetermined point, as for example, a predetermined point over a dump.

Another object is to provide a structure of this character in which the several drop bottoms or doors are serially released immediately that the car moves over the dump so that the first door is released when in proper position with relation to the dump, then as the car moves further on, the second door is released and discharges its load, etc.

A further object is to provide a structure of this character in which the doors may be released when any particular door is immediately above a downwardly inclined chute or floor, so that the coal or other material has only a little distance to fall instead of the coal or other material having to fall thru a relatively long distance to the bottom of the dump with consequent liability of the coal or other material being broken up into smaller pieces.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings wherein

Figure 1 is a side elevation of a drop bottom mining car with one of the doors dropped, the walls of the bin being shown in section.

Fig. 2 is an electrical diagram showing the electrical connections between the magnet, the contacts and the source of current.

Fig. 3 is a longitudinal section of the car shown in Fig. 1, housing for one of the magnets and latches being broken away.

Fig. 4 is a section on the line 4—4 of Fig. 3.

Fig. 5 is an enlarged view of the contact member and of the third rail with which it is adapted to engage, the housing for the upper portion of the contact member being in section.

Referring to the drawings, 10 designates generally the body of the car which may be constructed of metal or other suitable material and has sides 11 which extend downward and inward and then extend straight downward, as at 12. This car is provided with the usual wheels 13 operating on the rails 14 which extend across the dump A.

I have shown the car 10 as being provided with three drop bottoms designated generally 15. The forward bottom is hinged at its rear end adjacent to the front axle 16 of the car, the middle bottom or door 15a is hinged adjacent the rear axle but forward thereof, while the rearmost door 15b is hinged at its rear end adjacent the rear end of the car.

Above each of the axles there is disposed a protector or guard plate 17 of heavy sheet metal which is attached at its ends to the downwardly extending side walls 12 of the car body. Also disposed between each axle 16 or 16a and the guard plate 17 is a second approximately V-shaped plate 18.

The fore-door 15 is hinged at 19 to the forward edge of this intermediate plate 18, and the door 15a is also hinged at 19 to the corresponding intermediate plate 18. The door 15b is hinged at 19 to a plate 20, and extending over this plate 20 and downward and forward nearly to the hinge is a protector plate 21.

Extending downward and rearward at the front end of the portion 12 of the car is a plate 22 cut away at 23. Attached to the end of the portion 12 of the car is a keeper 24 having an indented portion 25. The plate 18 over the axle 16 is also formed upon its rear face with an indented keeper 25 and the same is true of the plate 18 which extends over the axle 16a. Each of the protector plates 17 are outwardly bulged on each edge at the middle thereof, as at 26.

Mounted upon the inner face of each door is a latch 27 which is projected by a spring 28 and which is guided within the guides 29 and 30 attached to the inner face of the door. The latch is projected by the spring 28 but is adapted to be retracted by the electro-magnet 31. The electro-magnet and the body of the latch are disposed within a housing 32 which is open at its forward end and is detachably carried upon the door, the rear end of this housing being somewhat tapered for the passage of an electric conductor 33 which is suitably insulated and extends laterally out thru the side wall of the car and then upward and forward to a contact 34. The nose of each latch 27 is adapted to engage with the corresponding keeper 25 and hold the door closed until the electro-magnet is energized whereupon, of course, the latch is released from the keeper and the door will fall, by reason of the weight of material thereon, or thru its own weight.

I have illustrated three contacts **34**, one for each door. These contacts are each carried by a shank **35** having a T-shaped head **36** supported for rocking movement in an approximately U-shaped bracket **37**. This is to secure a certain amount of flexibility in the contact **34** so that the contact may easily ride over and electrically engage with a conductor rail **38** mounted upon and insulated from a support **39**. A conductor **40** leads from a source of electrical potential to this rail **38** and when a contact **34** engages this rail, the corresponding magnet is immediately energized, thus releasing the latch and causing the door to drop. The magnet **31** is electrically connected on one side to a ground **41** having metallic connection to the car frame, axle or other part, and the other side of the magnet is connected by the conductor **33** as previously explained, to the contact **34**.

The bin A is illustrated as having an upwardly inclined side wall A' and preferably the third rail **38** will be so disposed that when the fore-door is just over this inclined wall A', this door will be automatically opened, so that the coal is discharged upon this inclined wall A' and thus has only a short distance to fall and will not be broken in its fall, but the coal will roll down the incline to the bottom of the bin. If the door opened above the middle portion of the bin A, the coal would have a long distance to fall and would be broken into relatively small pieces and its value reduced. When all the coal has been discharged from the front portion of the car, the car is again moved until the second or intermediate door is over the inclined portion A' of the bin and then this intermediate door is automatically opened to discharge the coal thereover and then, of course, the rear door is successively opened.

While I have illustrated a car with three drop bottoms or doors, I do not wish to be limited thereto as obviously a greater number of drop bottoms might be used, depending upon the length of the car. It will be seen that the magnets and the latches are fully protected by the housings **32** and that the keepers and the axles are fully protected by the protecting plates **17** and that when the doors are closed, the projected latches engaging the several keepers are protected by the bulges **26**.

While I have illustrated certain details of construction and arrangement of parts, it is obvious that many minor changes might be made therein without departing from the spirit of the invention as defined in the appended claim.

I claim:

A drop bottom car, including a body having side walls and front and rear walls, axles operatively engaged with the body intermediate the ends thereof and having wheels, front, rear and intermediate drop bottom doors operatively hinged each at its rear end to the car body, one of said drop bottom doors being hinged at its rear end adjacent the rear end wall of the car body, spring-projected latches mounted upon the inner face of each drop bottom door and an electromagnet associated with each latch for retracting the same and carried by said drop bottom door on the inner face thereof, a lading protecting housing extending over each latch and its associated magnet and attached to the corresponding door, keeper plates extending over each axle and formed with keepers for the rear and intermediate doors, a keeper plate mounted at the forward end of the car and having a keeper coacting with the latch of the forward door, V-shaped protective plates attached to the side walls of the car and extending over the axles and over the corresponding keeper plates and the hinges of the forward and intermediate doors, a protective plate extending downward from the front wall over the forward latch, a protective plate extending downward from the rear wall and over the hinge for the rear door, conductors connected to said magnets and extending out thru the side walls of the car, swingingly mounted contacts carried by one side wall of the car, one for each of said magnets and to which the respective conductors are connected, and a third rail with which said contacts are adapted to engage whereby the magnets are energized to retract the latches to release the several bottoms whereby the same may move to drop position.

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