F. E. QUEENEY.

DUMPING TRUCK.

APPLICATION FILED AUG. 3, 1915.

1,199,924. Patented Oct. 3, 1916.

Fig. 1.

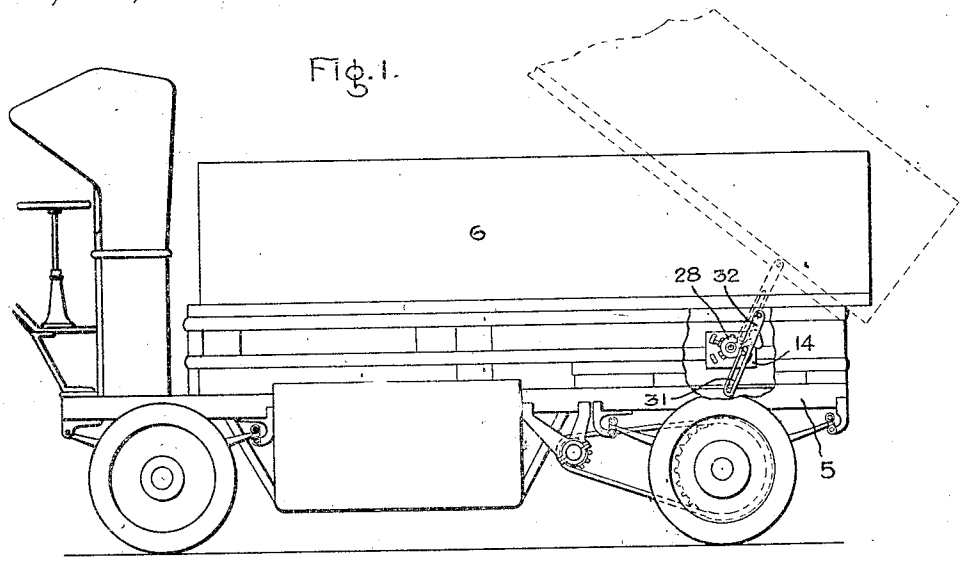


Fig. 2.

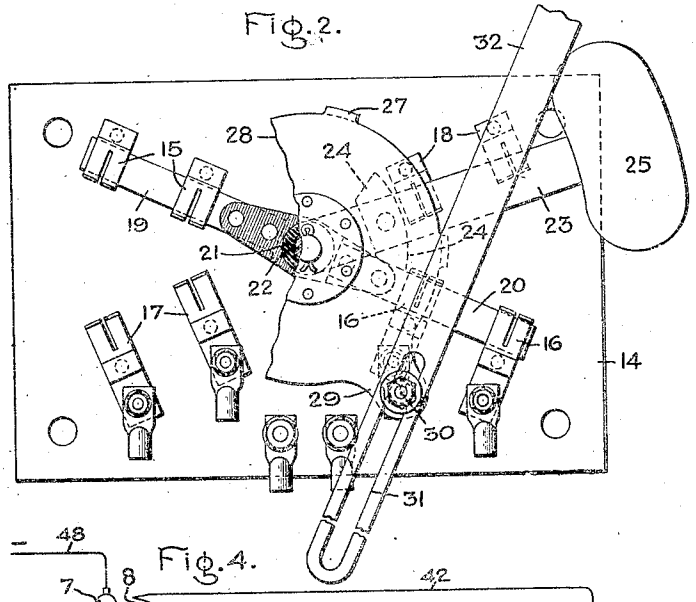


Fig. 3.

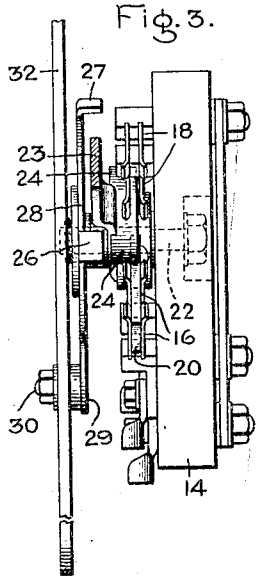
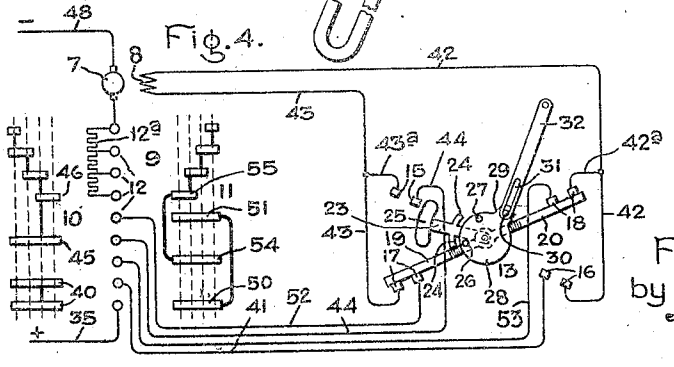


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DUMPING-TRUCK.

1,199,924. Specification of Letters Patent. Patented Oct. 3, 1916.

Application filed August 3, 1915. Serial No. 43,364.

To all whom it may concern:

Be it known that I, FRANK E. QUEENEY, a citizen of the United States, residing at New York, in the county of Queens, State of New York, have invented certain new and usuful Improvements in Dumping-Trucks, of which the following is a specification.

The present invention relates to dumping trucks which employ an electric motor and suitable mechanism for raising and lowering the body, and it has for its object to provide a controlling mechanism for the motor which is operated by the movements of the body at its extremes.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying specification and the claims appended thereto.

In the accompanying drawing Figure 1 is a side elevation of a truck embodying my invention; Fig. 2 is a face view of a reversing switch; Fig. 3 is a side elevation thereof, and Fig. 4 is a wiring diagram of the hoisting motor, its controller, and the reversing switch.

Referring to the drawing, 5 indicates the chassis of a truck upon which is mounted the body 6. This body is suitably hinged at its rear end and is adapted to be raised to the elevated position shown in dotted lines by means of an electric hoisting motor. The arrangement of the hoisting motor on the truck and its connections to the body for elevating it are not specifically illustrated in the drawing as this forms no part of the present invention. It will be understood that any suitable desired arrangement may be used. The hoisting motor is preferably of the series type and is diagrammatically shown in Fig. 4, wherein 7 indicates the armature and 8 the series field. 9 is the controller for the motor. It comprises two distinct sets of drum contacts 10 and 11, set 10 being used to regulate the motor for raising the body and set 11 for lowering it, and the fixed contacts 12. 12^a indicates the starting resistance. The motor field is connected to the controller through a reversing switch 13 which is operated by the movements of the body in being raised and lowered to automatically reverse the motor field and also to disconnect the field from the one side of the controller and connect it to the other. It comprises a base 14 upon which are mounted the two sets of contacts 15 and 16 which are utilized in raising the body, and the two sets of contacts 17 and 18 which are utilized in lowering the body. The respective contacts of each set are adapted to be bridged by contacting members 19 and 20 carried by a central hub 21 of insulating material, as fiber, which is pivoted on a spindle 22 fixed to the base 14. The contacting members have two positions; one where they bridge contacts 15 and 16 as shown in Fig. 2, and the other where they bridge contacts 17 and 18 as shown in Fig. 4. They are moved from the one position to the other by a weighted arm 23 which oscillates on the spindle 22 and carries projecting lugs 24 which engage members 19 and 20 on opposite sides of the spindle. 25 indicates a suitable weight on the arm 23. The weighted arm is moved from one side of the vertical to the other by the ears 26 and 27 carried by an actuator, in this illustration a plate 28 pivoted on the spindle 22, and said plate has a short arm 29 in which is fastened a stud 30 loosely engaging in a slot 31 in a link 32 fixed to the truck body. This forms a lost motion connection between the truck body and the switch.

Assuming that the body is resting on the chassis and it is desired to elevate it, the controller 9 is moved in the proper direction to the first point which brings the drum contacts 10 for raising the body into engagement with the fixed contacts 12. The reversing switch will be standing in the position shown in Fig. 2, the sets of contacts 15 and 16 being bridged. Current will flow from the source of energy (as a storage battery on the truck) through lead wire 35, drum contacts 40, conductor 41, contacts 16, conductor 42, series field 8, conductors 43 and 43^a, contacts 15, conductor 44, drum contact 45, drum contact 46, starting resistance 12^a, armature 7, and lead wire 48, back to the source. This will start the motor and the controller will be moved in successive steps to gradually cut out the starting resistance 12^a as is well understood. As the body moves upward link 32 moves therewith and finally the lower end of the slot 31 engages the stud 30 and begins to turn the plate 28, causing ear 26 thereon to engage the weighted arm 23 and move it in an anti-clockwise direction. The lost motion connection between the body and the switch is so timed that just as the body reaches the desired limit of the

elevating movement the weighted lever 23 is moved beyond the vertical. It then falls, the lug 24 thereon engaging the switch blade and forcing it to a position to reverse the connections. The switch then assumes the position shown in Fig. 4. This action stops the motor without regard to the position of the controller. The controller may be then moved to the off or neutral position, or the operator may wait before doing so until ready to start the motor in the opposite direction. When it is desired to lower the body the movement of the controller is reversed, the drum contacts 11 for lowering the body being brought into engagement with the fixed contacts 12. Current now flows from the source through lead wire 35, drum contact 50, drum contact 51, conductor 52, contacts 17, conductor 43, series field 8, conductors 42 and 42ª, contacts 18, conductor 53, drum contact 54, drum contact 55, starting resistance 12ª, armature 7, and lead wire 48 back to the source of energy. The controller will then be turned to gradually cut out the starting resistance. When the body reaches its lowered position, the link 32 will operate to reverse the switch throwing it from the position as shown in Fig. 4 back to that shown in Figs. 1 and 2, in the manner already described except that it is in the reverse direction. This reverses the field of the motor and at the same time disconnects the lowering contacts of the controller and connects the elevating contacts. The body can then be again elevated when desired.

The above arrangement has for one of its principal advantages that the operator needs only to turn his controller on to elevate or lower the body, and does not have to take care to cut it off again, as the switch automatically cuts off the power and reverses the switch as soon as the body reaches either extreme position. This insures that the operator will not carelessly elevate the body too far, or that he will not start to elevate it farther when he intends to lower it. After the body is once elevated it is possible only to lower it. Owing to the automatic interruption of the electric circuit after the motor has done its work both in lifting and lowering, all danger of burning out the electrical apparatus or injuring the battery is eliminated. By having the vehicle body control the switch in the manner stated one action on the part of the operator is avoided *i. e.* throwing the reversing switch. It also insures the circuit being properly closed thus avoiding all danger of accidents. The apparatus is further relatively simple and easy to install and keep in operating condition, and is thoroughly reliable in operation.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In a truck, the combination of a chassis, a body thereon adapted to be elevated, an electric motor for elevating and lowering the body, a controller for the motor having two sets of contacts on its drum, one for controlling the motor to elevate the body and the other for controlling the motor to lower the body, a reversing switch through which the controller is connected to the motor, said switch acting to reverse the motor field and also to connect in one set of drum contacts and disconnect the other, and means connecting the body and switch for operating the switch when the body reaches the extremes of its movements.

2. The combination with a truck having a body which is adapted to be elevated, of an electric motor for elevating it, a controller for the motor having two sets of contacts on its drum, one for controlling the motor to elevate the body and the other for controlling the motor to lower the body, a reversing switch through which the controller is connected to the motor, said switch acting to reverse the motor field and also to connect in one set of drum contacts and disconnect the other, an operating arm for the switch, and a lost motion connection between the arm and body for reversing the switch when the body reaches the extremes of its movements.

In witness whereof, I have hereunto set my hand this 31st day of July, 1915.

FRANK E. QUEENEY