

J. F. McELROY.
 CONTROLLER FOR DOOR MOTORS.
 APPLICATION FILED SEPT. 23, 1908.

Patented May 30, 1911.

2 SHEETS-SHEET 1.

994,021.

Fig. 1.

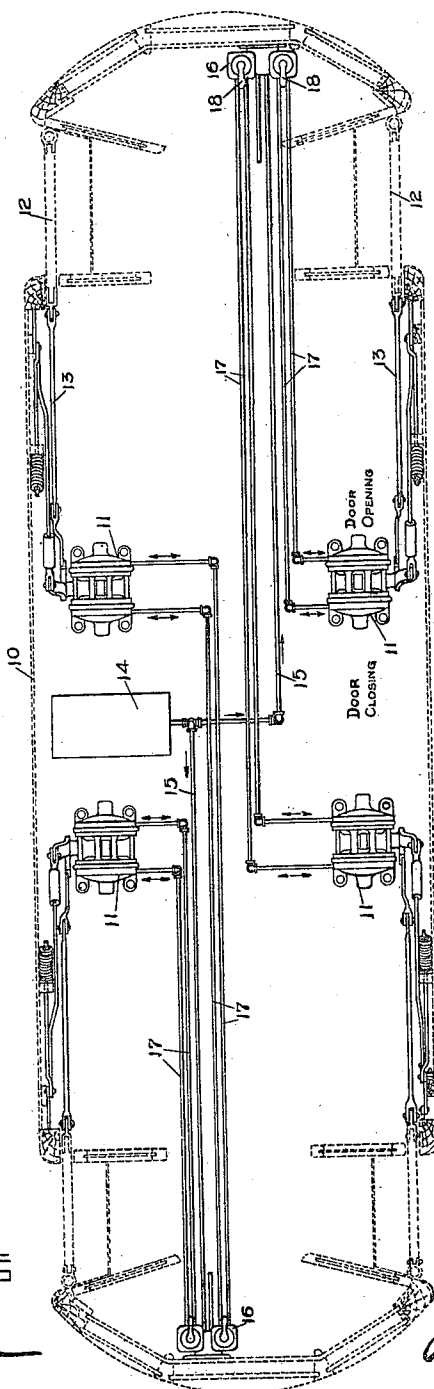
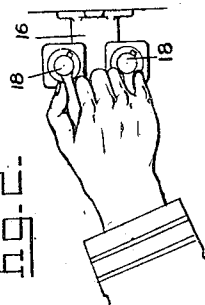


Fig. 2.



Witnesses

G. Blake
 J. E. Nares.

Inventor

James F. McElroy

by

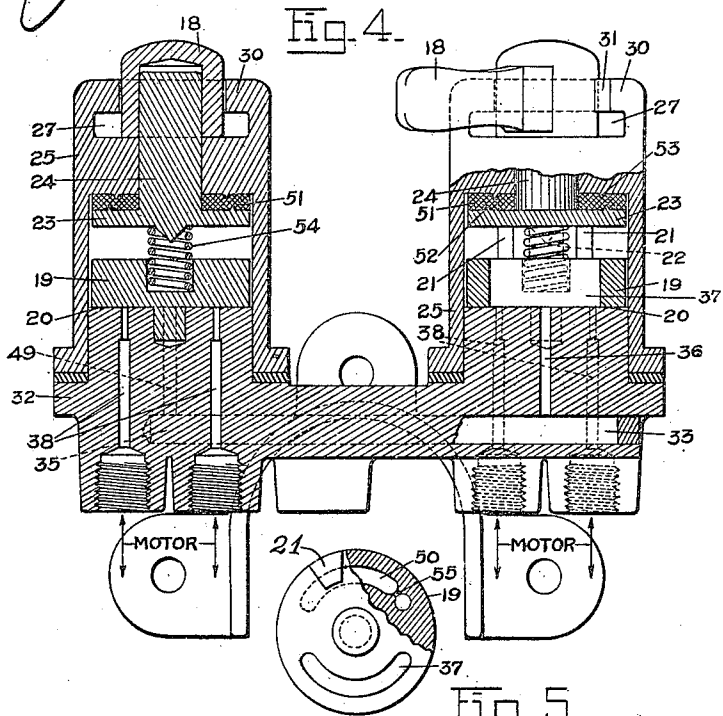
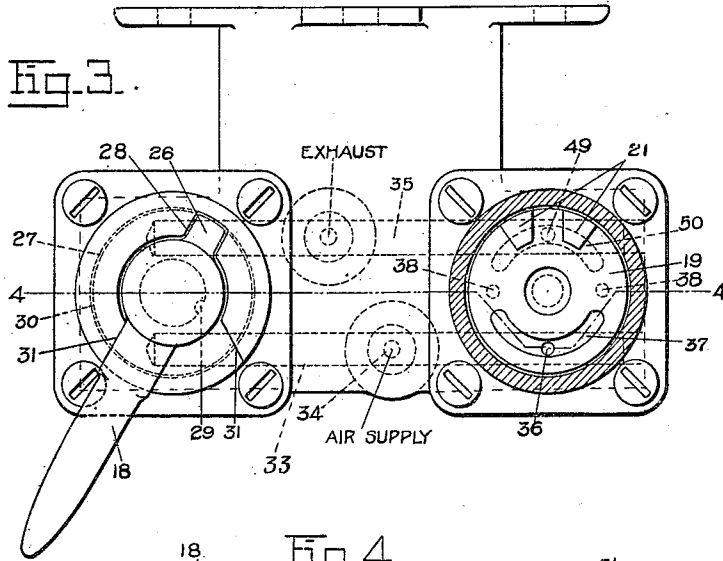
Robert W. Person
 Atty.

J. F. McELROY.
 CONTROLLER FOR DOOR MOTORS.
 APPLICATION FILED SEPT. 23, 1908.

994,021.

Patented May 30, 1911.

2 SHEETS—SHEET 2.



Witnesses

G. Blake
 J. E. Nares.

by

Fig. 5.

Inventor

James F. McElroy,

Robert W. Benson

Att.

UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO CONSOLIDATED CAR HEATING COMPANY, OF ALBANY, NEW YORK, A CORPORATION OF WEST VIRGINIA.

CONTROLLER FOR DOOR-MOTORS.

994,021.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed September 23, 1908. Serial No. 454,466.

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Controllers for Door-Motors, of which the following is a specification.

This invention relates to mechanism adapted to control a motor for operating a door or other moving member from a distant point, for example operating a railway-car door by compressed air with a controller valve located on the car platform.

The principal features of the invention relate to a duplex controller mechanism whereby doors at opposite ends or in different parts of the car may be simultaneously operated, and in this connection my object is to enable both doors to be controlled by one hand of a person if he so desires or to enable the doors to be controlled separately.

Parts of my invention also apply to the construction of a single controller mechanism and include the provision of means for causing the motive fluid to be admitted quickly through the valve but exhausted slowly, and means for permitting the detachment of the controller handle only in one position, that is preferably only when the door is closed.

Of the accompanying drawings, Figure 1 represents a plan showing the controllers and their relation to a car having door-operating motors. Fig. 2 illustrates the manner of operating two valves with one hand. Fig. 3 is a plan view partly in section showing the construction of the duplex valve mechanism. Fig. 4 is a vertical section of said mechanism on the line 4-4 of Fig. 3. Fig. 5 is a plan view partly in section, of one of the valve plates.

In Fig. 1, I have shown the outline of a car body 10 provided with four double-ended motors 11 for operating the four sliding doors 12. These motors may be of any suitable construction such as a pair of opposed reciprocating fluid-pressure diaphragms connected together and communicating motion to the door through intermediate connections 13 which may also be of any suitable character. Each motor can also operate one of the car steps although I have not shown the latter or its connections in detail. In Fig. 1, one end of one of the motors is designated as "Door opening" and the other

end of the same motor as "Door closing," the arrangement being such that compressed air is admitted to the door-opening end and simultaneously exhausted from the door-closing end to open the door, and when the door is closed this operation is reversed.

Compressed air is led from a tank 14 through pipes 15 to a duplex valve mechanism 16 on each car platform, which has connection through pipes 17 with two of the door-operating motors 11. The two valve devices included in each controller are piped to the two motors for operating the doors at opposite ends but on the same side of the car, so that the motorman when on either platform can control both doors on the side which is then the entering side. The two valve devices comprising the duplex controller are capable of independent operation so that the motorman can open and close the door at either end of the car on the entering side independently of the door at the opposite end on that side, but in order to also enable him to operate both doors on the same side simultaneously I have located the two valve devices of the controller close together and have so arranged their operating levers or handles 18 as to enable both levers to be grasped and simultaneously swung in the same direction by one hand of the operator. These levers have parallel door-opening and parallel door-closing positions. The simultaneous manual operation is particularly indicated in Fig. 2 showing that one of the levers 18 can be grasped between the thumb and fore-finger and the other lever between the third finger and little finger. As here arranged, swinging the levers to the left or clockwise closes the doors, and swinging them to the right opens the doors.

The construction of the controller is set out in detail in Figs. 3, 4, and 5. 19 are the valve plates oscillating horizontally on flat seats 20, each plate carrying two driving horns or lugs 21 on its upper face adapted to embrace a complementary horn or lug 22 on a valve key 23 which is mounted above the valve and provided with a stem 24 projecting upwardly through the valve casing to receive the operating handle or lever 18. The latter is attached to stem 24 by a feather 29. The hub of the lever 18 has a radial lug 26 occupying an under-cut groove in the valve casing and adapted to leave

said groove only when the lug registers with a recess 28 in the upper wall of the groove. Thus the operating lever is detachable from the stem 24 only when the valve is in position for closing the door. Lever 18 operates in a recess between the ends of the segmental locking flange 30 forming the upper wall of groove 27, said ends constituting stops 31 for limiting the movement of the lever.

10 In the lower body 32 of the valve casing are formed a supply-duct 33 having an opening 34 which communicates with the compressed-air pipe 15, and an exhaust-duct 35 communicating with the atmosphere. Air reaches the valve seats 20 through ports 36 and is communicated to the space above the valve plates 19 through a segmental slot 37 in each valve plate. The end-walls of this slot form cut-offs for controlling the admission of air alternately to a pair of ports 38 in the valve seat connecting with the pipes 17 leading to opposite ends of one of the motors 11. Opposite port 36 in the valve seat is an exhaust-port 49 communicating with the exhaust-duct 35 and controlled by a segmental port 50 on the under side of the valve plate which is adapted to connect port 49 alternately with the respective ports 38. Thus when the valve is turned in one position it charges one end of the motor and discharges the opposite end, and when turned in the other position it exhausts the first end and charges the other end. Any suitable arrangement for effecting the charging and discharging functions may be adopted and

my invention is not concerned especially therewith except as hereinafter noted in connection with Fig. 5.

Preferably I provide a packing washer 51 between the key 23 and the opposed wall of the valve casing and ribs 52, 53 on said key and wall respectively. Between the valve plate and the key is interposed a valve-seating spring 54.

Fig. 5 shows an improvement in the construction of the valve plate 19 according to which the port 50 is made with a constriction at 55 so that when the door-opening end of the motor is exhausted the exhaust will be throttled and the door will close slowly.

I claim:—

The combination with a plurality of motors for operating car doors or similar elements, of a base provided with supply and exhaust ducts and spaced apart valve seats, a valve plate resting on each seat, a valve key arranged to operate each plate, and controlling members for said valve keys, said controlling members being capable of individual and simultaneous operation and relatively arranged to assume parallel positions in all steps of their simultaneous operation.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses, this 21st day of September 1908.

JAMES F. McELROY.

Witnesses:

BEULAH CARLE,
ERNEST D. JANSEN.