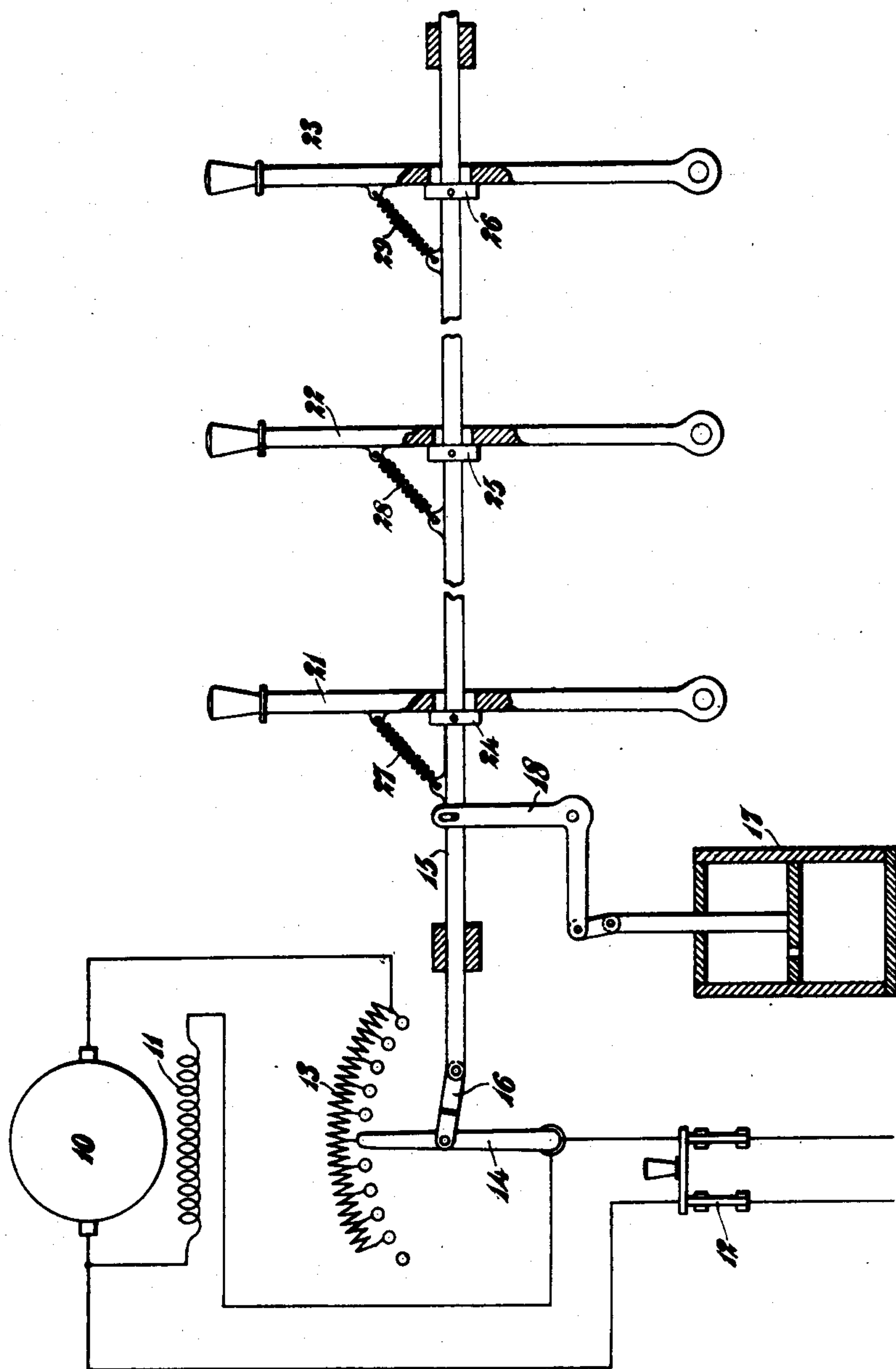


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W. J. RICHARDS.
MOTOR CONTROL SYSTEM.
APPLICATION FILED MAR. 1, 1907.



Witnesses

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MOTOR-CONTROL SYSTEM.

No. 867,155.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER J. RICHARDS, a citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Motor-Control Systems, of which the following is a full, clear, and exact specification.

My invention relates to controlling devices and especially to controllers for electric motors.

It is often desirable that a single controlling device be operable from a number of different points or stations. If the controlling device be directly connected mechanically to the operating handles at these different stations, in case conflicting operations are simultaneously sought by two or more operators at the respective stations the controller will move as directed by the greatest force. In other words with such a controller a stronger operator would prevail over a weaker regardless as to which has the better idea of the proper thing to be done.

It is the object of my present invention to provide a controller which may be operated from a number of different points or stations, and which is so arranged that in case different operators conflict in simultaneously attempting to move the controller, the one desiring the most conservative operation will prevail. With this object in view my invention comprises the combination of a controlling device, a plurality of operating handles therefor, and connections between the controlling device and the operating handles whereby in case more than one operating handle is moved at any time the one which normally causes the most conservative movement of the controller will alone be effective.

Many other features of my invention will appear from the description and drawings, and will be particularly pointed out in the claims.

The single figure of the drawing shows diagrammatically one embodiment of my invention.

The armature 10 and field 11 of a motor are supplied with current from any desired source, preferably through a manually operated switch 12. In the circuit of the armature 10 is a resistance 13, variable by the movable arm 14 which also opens the armature circuit when it is in its extreme left position. The arm 14 is connected to a longitudinally sliding rod 15 by means of a link 16. If desired the rod 15 may be connected to a dash-pot 17 in any desired manner as by means of a bell-crank lever 18. This dash-pot may be omitted in many cases. The rod 15 may be moved by any one of a plurality of pivoted operating handles 21, 22 and 23, which may be located at any desired points or stations. These operating handles are not directly connected to the shaft 15, but are normally held against

collars 24, 25 and 26 respectively adjustably mounted on said shaft, by springs 27, 28 and 29 respectively, connecting the handles and the shaft. By moving any one of the handles 21, 22 and 23 to the left the rod 15 and arm 14 are likewise moved to the left by the positive engagement between said arm and its coöperating collar 24, 25 or 26. Movement of the arm 14 to the left allows the motor 10 to slow down, and, when the arm 14 reaches its extreme left position, to stop. By moving any one of the handles 21, 22 and 23 to the right, the rod 15 and arm 14 are likewise moved to the right, being pulled in such direction by the now unbalanced tension of the spring 27, 28 and 29. Movement of the arm 14 to the right causes the motor 10 to start or increase in speed. Both the right and left hand movements of the arm 14 are retarded by the dash-pot 17 if the latter is used. In case two or more of the operating handles 21, 22 and 23 are simultaneously moved dissimilarly, the arm 14 will move to the point determined by the handle which is moved farthest to the left, the movement of the other handle or handles merely putting under tension the spring or springs associated therewith. Suppose for instance that the handles 21 and 22 are moved to the right and left respectively. The handle 22, through its direct engagement with the collar 25 will positively move the arm 14 to the left as far as may be desired, while the handle 21 in its movement to the right will merely put the spring 27 under tension.

With the arrangement here shown the relative strengths of the different operators are of no importance in case of a conflict in opinion between them. The controller will always be moved in accordance with the most conservative movement of the controlling handles should these latter be dissimilarly moved.

Although for simplicity I have shown my controlling device merely as a rheostat controlling a single motor, my invention is not limited to this particular arrangement. Instead of the motor 10 any other translating device or devices may be used, while the controller may be of any desired type or construction.

Many modifications may be made in the arrangements here shown and described and all such which come within the spirit and scope of my invention I aim to cover in the following claims.

What I claim as new is:—

1. In combination, a controlling device, a plurality of operating handles therefor, and connections between the controlling device and the operating handle whereby in case more than one operating handle is moved at any time the one which normally causes the most conservative movement of the controller will alone be effective.

2. In combination, a motor, a controller therefor, a plurality of devices for operating said controller, and connections whereby in case more than one of said devices is op-

erated at a time that one which is moved to obtain the most conservative running of the motor will prevail.

- 5 3. In combination, a translating device, a controller therefor, a plurality of operating handles for said controller, said operating handles being connected to the controller in such a manner that in case different handles are dissimilarly moved simultaneously the controller will be moved in accordance with the most conservatively moved handle.
- 10 4. In combination, a controller, a plurality of operating handles therefor, and connections between said handles and the rheostat whereby in case of dissimilar movements of two or more of said handles the rheostat will respond to that handle which brings it nearest to "off" position.
- 15 5. In combination, a controlling device, and a plurality of devices so connected to said controlling device that they operate positively when moving it toward "off" position and through springs when moving it away from "off" position.
- 20 6. In combination, a controlling device, and a plurality of operating handles arranged to move said controller positively when themselves moved in one direction and to merely give a bias to the controller when themselves moved in the other direction.
- 25 7. In combination, a controller comprising fixed and movable members, a plurality of operating handles for said movable member, a positive connection between said movable member and each of said handles upon movement of the latter in one direction, and a flexible connection between said movable member and each of said handles upon movement of the latter in the opposite direction.
- 30 8. In combination, a translating device, a controller therefor, a plurality of operating handles for said controller, positive connections between said operating handles

and said controller for movement in one direction, and 35
springs connecting said operating handles and said controller for movement in the other direction.

9. In combination, a controller comprising fixed and movable members, a sliding rod connected to said movable member, collars on said rod, and a plurality of operating 40
handles which are normally held against said collars by springs which connect them with the rod.

10. In combination, a controlling device, a plurality of operating handles therefor, connections between the controlling device and the operating handle whereby in case 45
more than one operating handle is moved at any time the one which normally causes the most conservative movement of the controller will alone be effective, and means for retarding the movement of the controller.

11. In combination, a controller comprising fixed and movable members, a sliding rod connected to said movable member, collars on said rod, a plurality of operating 50
handles which are normally held against said collars by springs which connect them with the rod, and a dash-pot connected to said rod. 55

12. In combination, a motor, a controller therefor, a plurality of operating handles for said controller, and connections between the handles and the controller whereby upon conflicting movements of two or more of the handles the controller obeys the handle which was moved to cause the 60
slowest speed of the motor.

In testimony whereof I affix my signature, in the presence of two witnesses.

WALTER J. RICHARDS.

Witnesses:

GEO. B. SCHLEY,
FRED J. KINSEY.