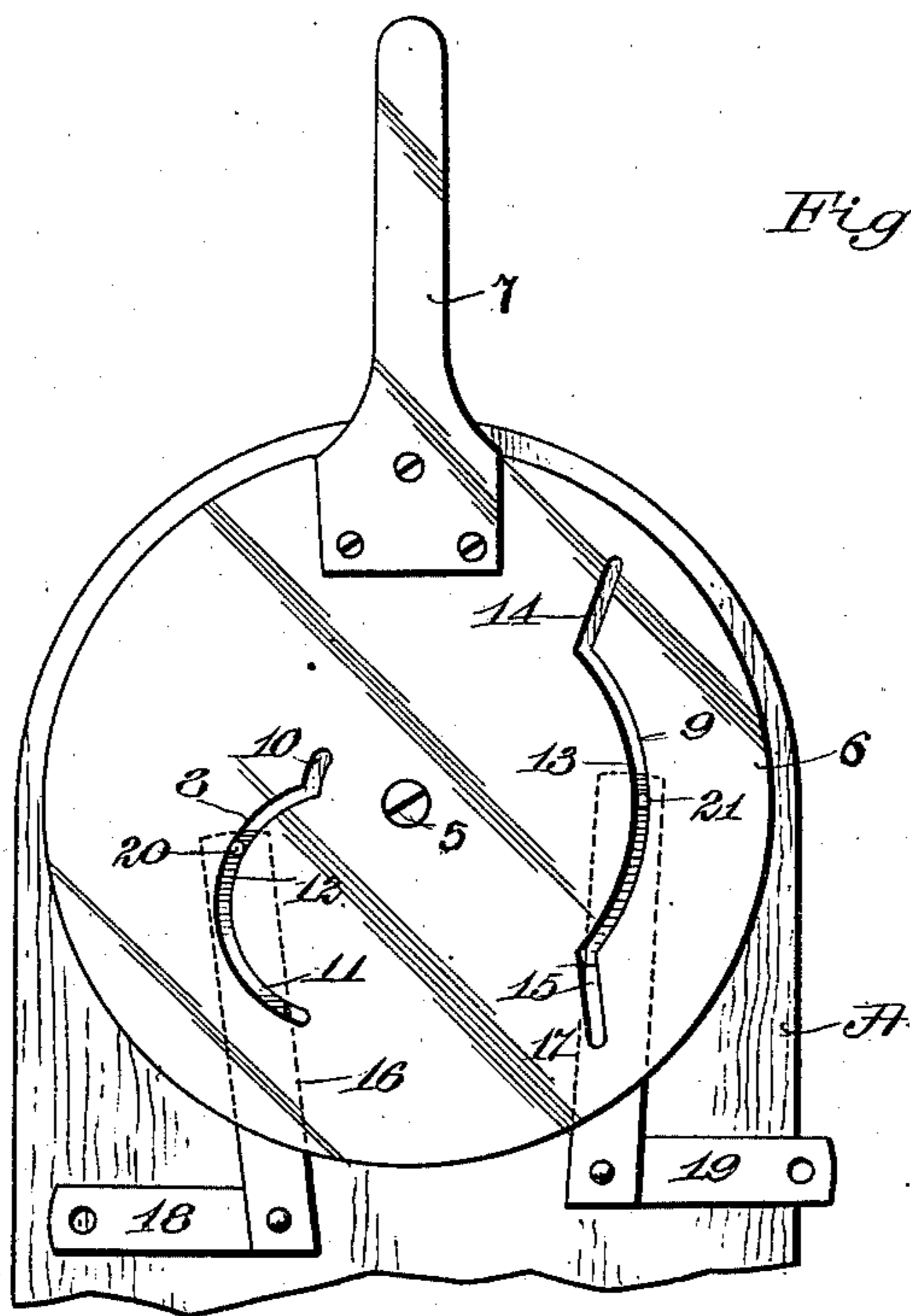


**No. 691,968.**

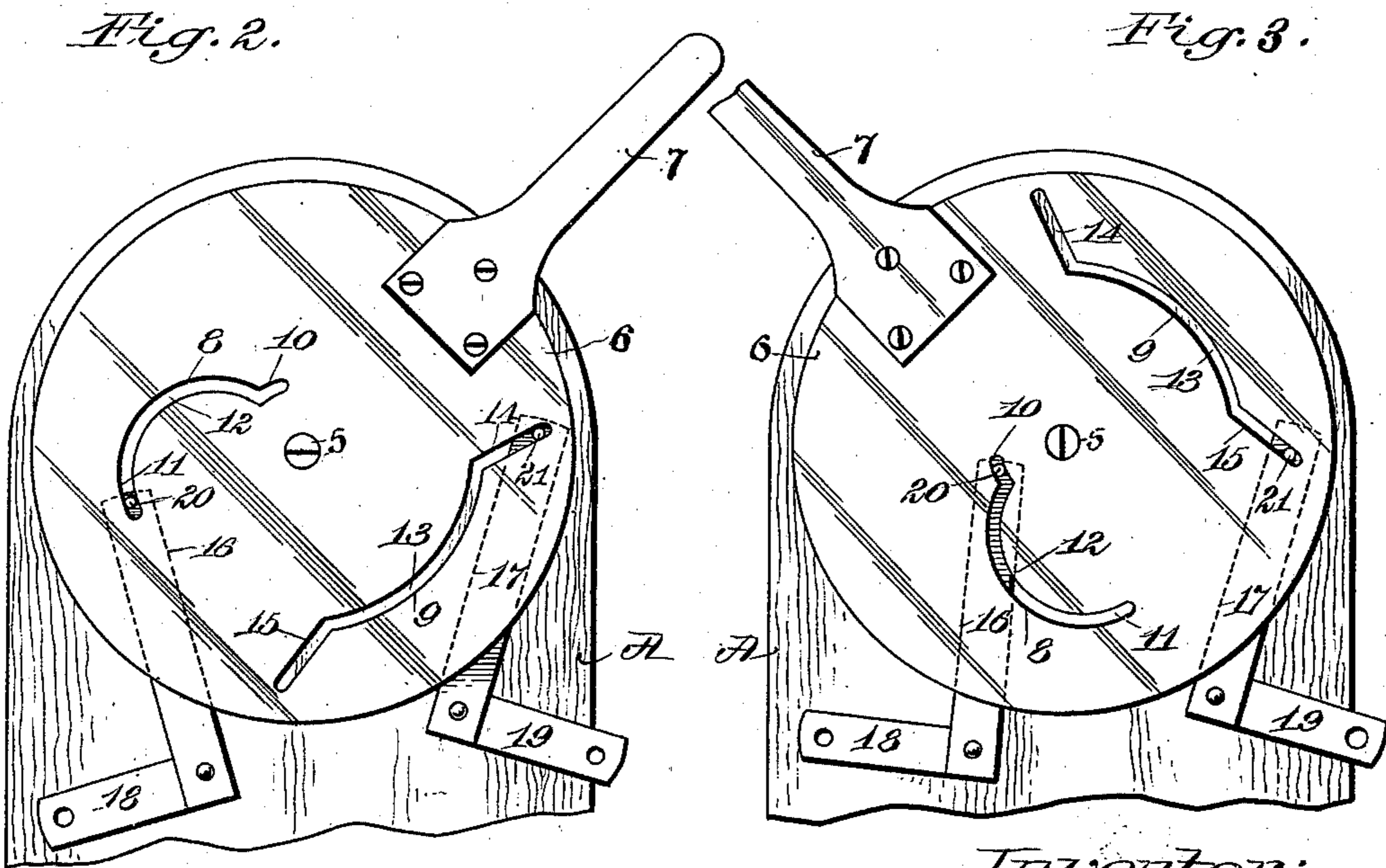
Patented Jan. 28, 1902.

**W. H. PAINE.**  
**CONTROLLING DEVICE.**  
(Application filed Mar. 20, 1901.)

(No Model.)



*Fig. 1.*



*Fig. 2.*

*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

WILLIAM HOWARD PAINE, OF PROVIDENCE, RHODE ISLAND.

## CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 691,968, dated January 28, 1902.

Application filed March 20, 1901. Serial No. 52,100. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HOWARD PAINE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in Controlling Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in controllers, and particularly in devices for controlling a plurality of interdependent mechanisms.

15 The object of the invention is to simultaneously control actuating means by which a plurality of interdependent mechanisms may be brought into related operation.

20 The object of the invention is also to so construct a controller for a driving mechanism provided with gear for changing the direction of drive that the power-supply may be controlled in relation and degree with the controlling of the direction-changing gear.

25 The invention consists in a direction-controlling lever and a power-controlling lever so connected that the direction-controlling lever may be actuated only during the limit of dwell in the power-controlling lever.

30 The invention also consists in an actuating device and direction and power controlling levers positively connected therewith whereby by the movement of the actuating device the power-lever is controlled to shut off the power during the movement of the direction-lever.

35 The invention also consists in a controller-plate mounted to move, a direction-lever connected with such plate for actuation only during the intermediate traverse of the plate, and a power-lever connected to such plate for actuation only at the end portions of the traverse of the plate.

40 The invention also consists in the plate mounted to rotate and having peculiar controlling ways or guides and in the levers pivotally mounted and having means for engaging the ways or guides.

45 The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described, and pointed out in the claims.

Figure 1 represents an elevation of the im-

proved controller when the mechanism controlled thereby is stopped. Fig. 2 represents a similar view, the actuating device being in position where the direction control is entirely released and the power control is swung to supply power to the driving mechanism. Fig. 3 represents a similar view, in which the direction control is reversed to the greatest extent and the power control is swung to supply power to the driving mechanism.

Similar numbers of reference designate corresponding parts throughout.

This controller is particularly adapted for use in steam-driven vehicles in which the steam-supply is controlled through a throttle-valve and the direction of the driving device is controlled through a "reversing mechanism," so called. The invention is, however, applicable to other forms of driving mechanisms which include reversing mechanism and a power-supply control.

In the drawings, A represents a substantial support formed in part with or fixed to the body of any vehicle and constructed of suitable material. In this support A is mounted the stud-shaft or pivot 5, and on this shaft is journaled the plate 6, provided with the handle 7 and having the slots 8 and 9. The slot 8 comprises the end portions 10 and 11, concentric to the axis of the plate 6, and the intermediate eccentric portion 12. The slot 9 comprises the intermediate portion or dwell 13, concentric to said axis, and the wings 14 and 15, angularly disposed to said intermediate portion or dwell.

Adjacent to the plate 5 and to any suitable support are pivotally mounted the direction-controlling lever 16 and the power-controlling lever 17 of bell-crank shape, the respective arms 18 and 19 of which levers connect with the direction mechanism and with the throttle-valve through connections of well-known construction. The lever 16 has the pin 20, which is engaged in the slot 8, and the lever 17 has the pin 21 engaged in the slot 9, so that when the plate 5 is rotated on its pivot the levers 16 and 17 are caused to swing by the movement of the pins 20 and 21 through their respective slots in related degree and time, determined by the shape of the slots. The levers 16 and 17 are herein shown as working at the farther side of the plate 5 to

more clearly show the slots 8 and 9; but the position of these levers is immaterial, except so far as relates to their pivoting and their engagement with the slots.

5 When the handle 7 is in the position shown in Fig. 1, the lever 17 will be in a position where the steam will be shut off from the engine, while the lever 16 will have brought the reversing-gear to an intermediate position.  
 10 As the handle 7 is moved forward, Fig. 2, the dwell 13 of the slot 9 will work over the pin 21 until the entrance to the part 14 of this slot reaches the pin 21. During this move-  
 15 has worked against the pin 20 to swing the lever 16 to fully engage the reversing-gear to enable the mechanism to be driven in the forward direction and the pin 20 is at the entrance to the concentric portion 11 of its  
 20 slot. The portion 11 of this slot now working over the pin 20 locks the lever 16 in this position, while the angular end 14 of the slot 9 so directs the pin 21 that the lever 17 is swung to open the steam-supply, the amount of such  
 25 opening being determined by the position of such tangential slot on the pin 21. In reversing from the position shown in Fig. 2 the portion 14 of the slot 9 directs the pin 21 backward to swing the lever 17 for shutting  
 30 off the steam-supply. As the pin 21 works into the dwell 13, steam being off, the pin 20 works into the eccentric portion of the slot 8 and the lever 16 is swung to bring the reversing-gear into action. When the pin 20  
 35 works to the entrance of the end 10 of its slot, the reversing-gear is wholly in place, but the pin 21 has not yet left the dwell 13. A continued movement of the handle 7 backward now locks the pin 20 in the end 10 of its slot,  
 40 while the pin 21 works into the tangential end 15 of its slot and causes the swinging of the lever 17 to open the steam-supply. Dur-

ing the actuation of the lever 16 in either direction the steam is shut off and lever 17 is locked, and when the steam is on lever 16 is 45 locked by its pin against movement.

It is obvious that a reciprocating plate may be substituted for the plate 6 and that the form of this plate may be changed without departing from the spirit of this invention. 50

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A controller comprising a movable member having a power-control way or guide consisting of end actuating portions and an intermediate dwell portion, and a direction-control way or guide having an actuating portion corresponding to the dwell of the power-control way and end dwells corresponding to 60 the end actuating portions of the power-control way, a power-lever movably mounted and having means engaged with the power-control way, and a direction-lever movably mounted and having means engaged with the 65 direction-control way.

2. The combination with the plate 5 pivotally mounted and having the handle 7, the slot 8 having the end dwells 10 and 11 and the intermediate actuating portion, and the 70 slot 9 having the end actuating portions 14 and 15 and the intermediate dwell, of the direction-control lever 16 pivotally mounted and having the pin 20 engaged with the slot 8, and the power-control lever pivotally 75 mounted and having the pin 21 engaged with the slot 9, as and for the purpose described.

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

WILLIAM HOWARD PAINE.

Witnesses:

OTIS N. MASON,  
C. E. JENCKS.