

(No Model.)

G. WESTINGHOUSE, Jr.
Railway Switch Movement.

No. 237,149.

Patented Feb. 1, 1881.

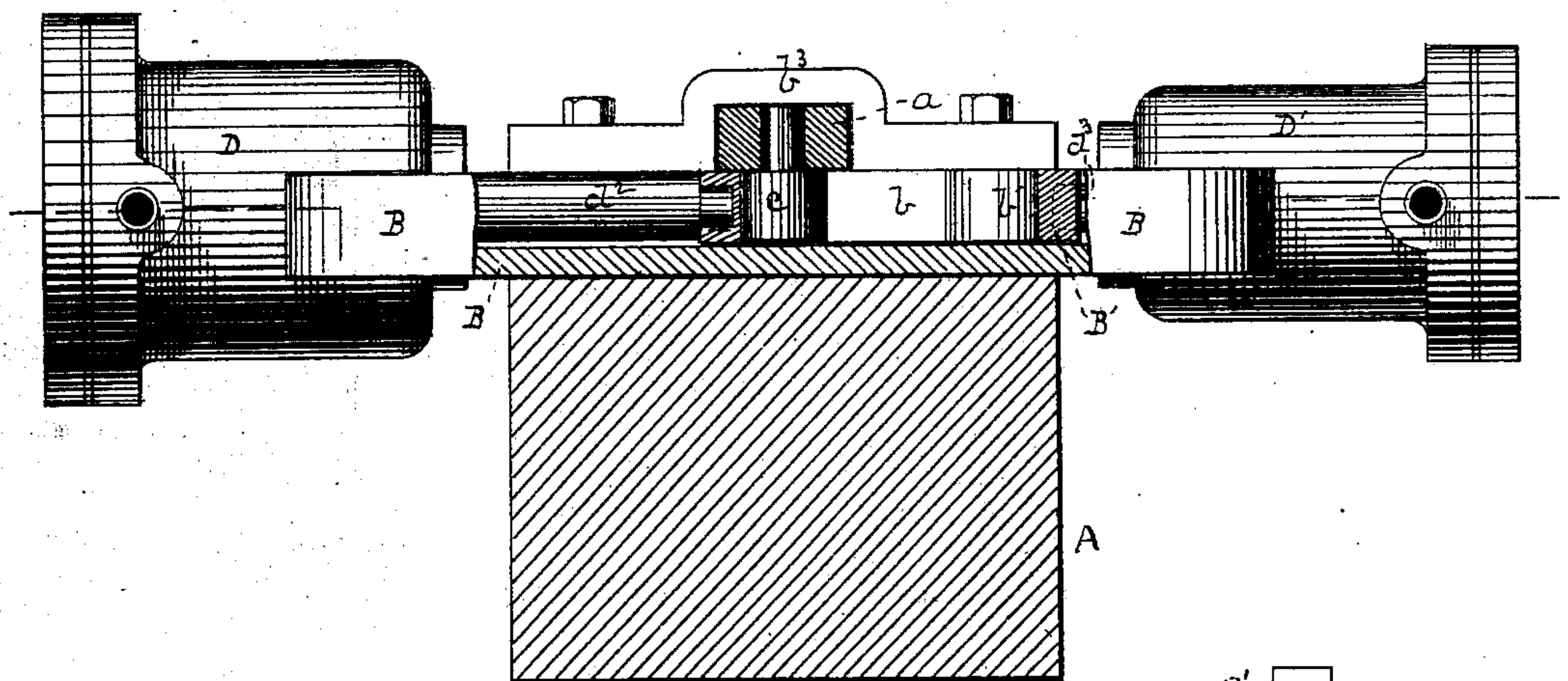


Fig. 1.

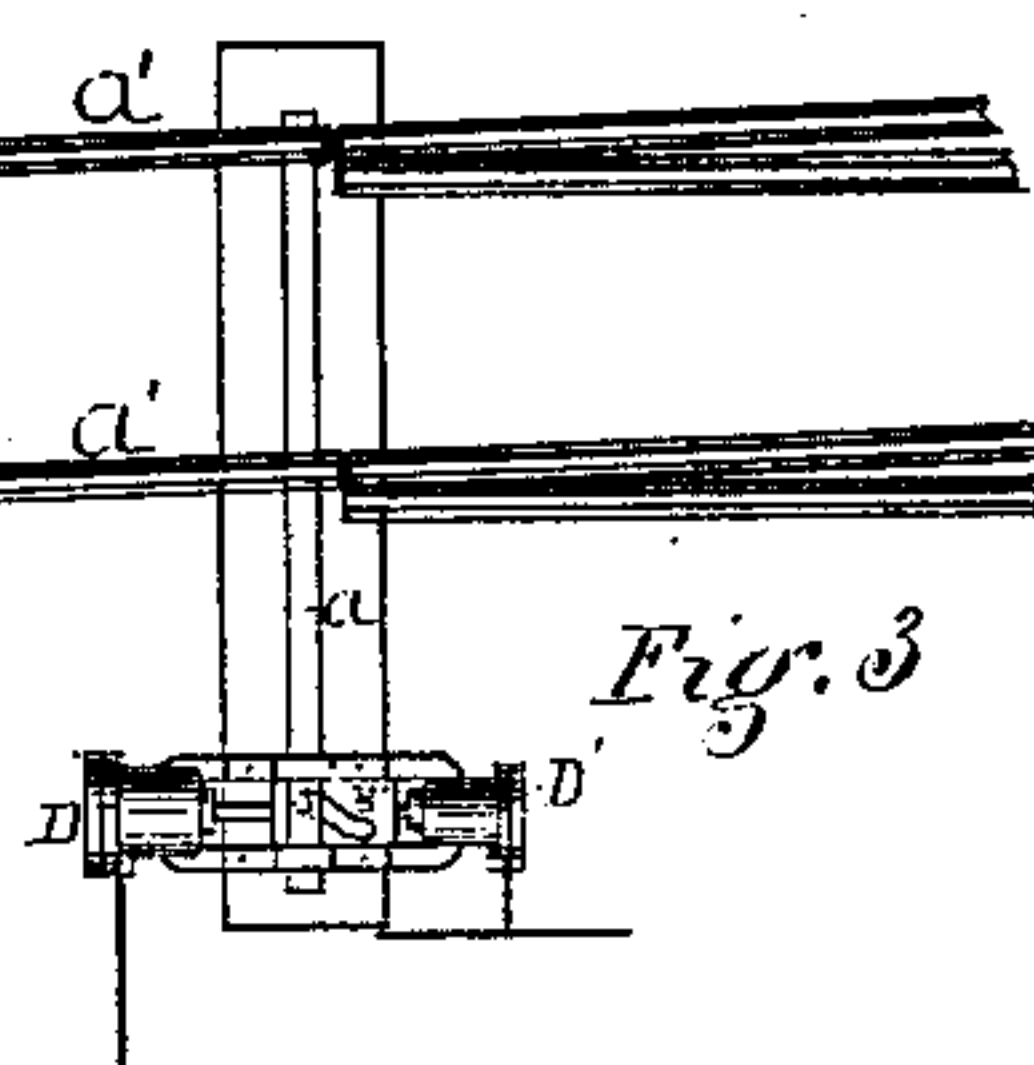


Fig. 3.

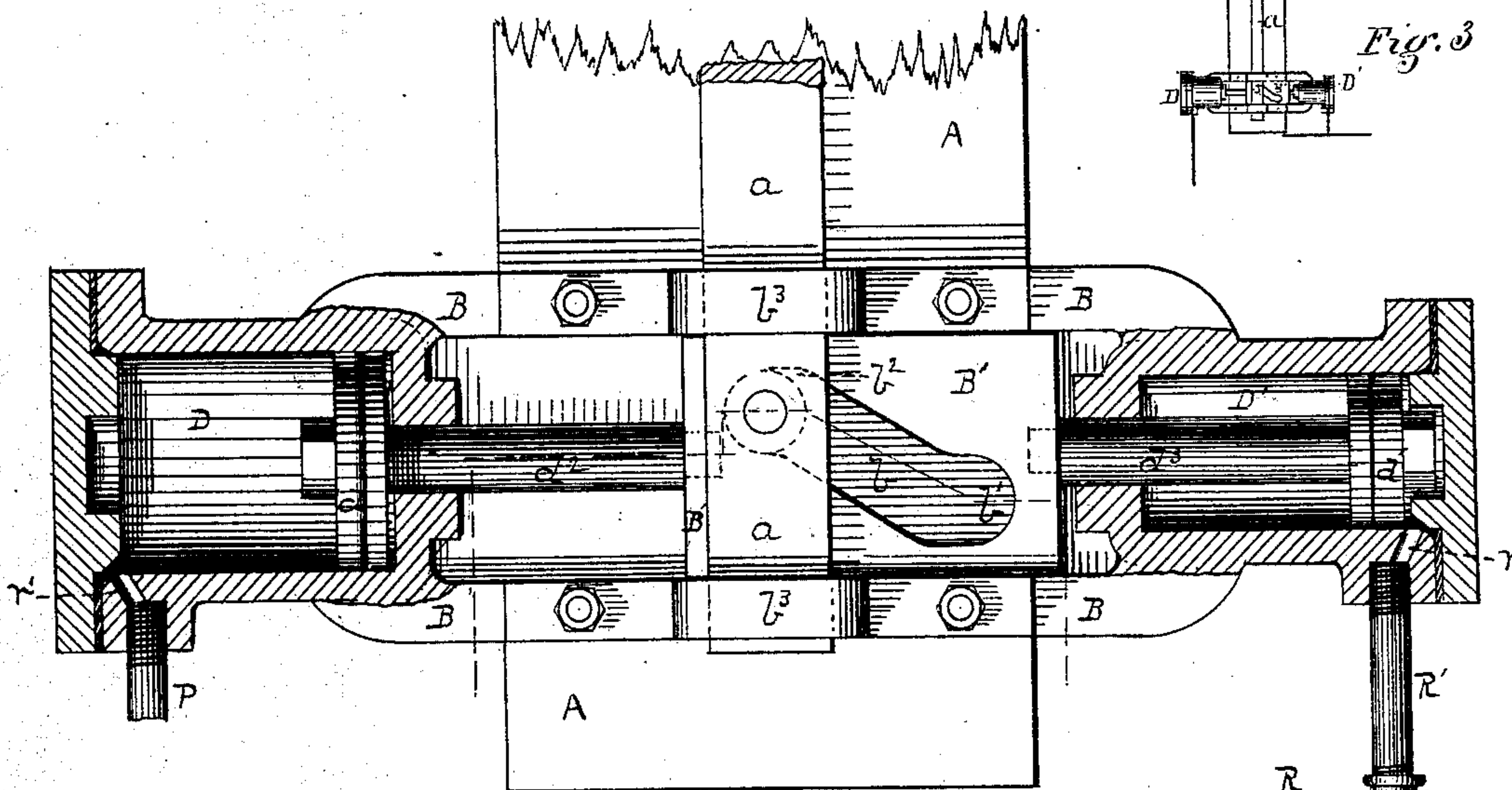
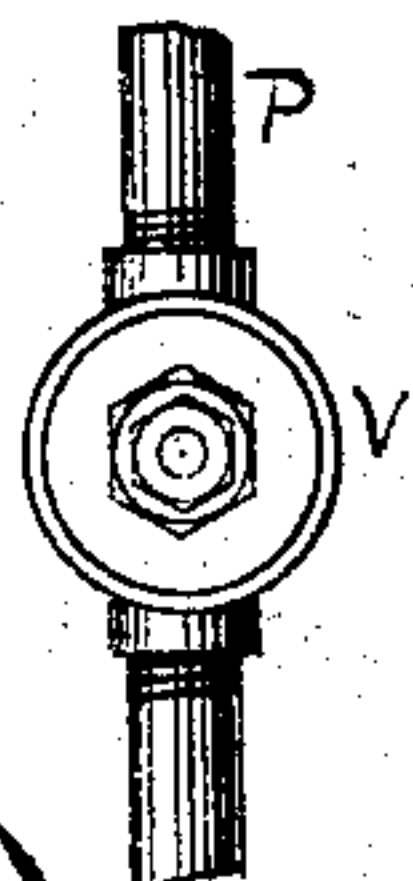


Fig. 2.



Witnessed
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GEORGE WESTINGHOUSE, JR., OF PITTSBURG, PENNSYLVANIA.

RAILWAY-SWITCH MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 237,149, dated February 1, 1881.

Application filed December 13, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, Jr., of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Railway-Switch Movements; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a side elevation, sectioned, between the cylinders of the main part of the apparatus constituting my improved switch movement. Fig. 2 is a plan view thereof, and Fig. 3, by a diagram to a reduced scale, illustrates its manner of application.

My present invention relates to certain improvements in apparatus for the moving of railway-switches by fluid-pressure, in which the switch is shifted to and held to one position or the other, and preferably to its normal or usual position, by a fluid-pressure, and is shifted to its opposite position by an excess of or a greater pressure acting in the opposite direction; or, in other words, the switch movement in at least one direction is effected by changing from one direction to another the balance or excess of two pressures which act simultaneously in different directions.

In the drawings, *a* represents a switch bar or bridle, through the motion of which the movable rails *a' a'* are to be shifted for ordinary switching purposes. At about the usual position of the switch-stand, and supported on any suitable foundation, as on the end of a long tie, *A*, I arrange the cast or wrought metal bed-piece *B*, and at each outer end thereof I provide a cylinder, of which the one, *D*, is somewhat larger than the other, *D'*—say of double piston-area, more or less. Each cylinder is furnished with a piston, *d d'*, and the stems *d² d³* thereof are connected to the opposite ends of a slotted plate, *B'*, arranged to be moved by suitable guides or ways back and forth within and lengthwise of the bed-piece *B*. This plate has an inclined slot, *b*, terminating in straight-sided end seats, *b' b²*, said slot being the hypotenuse of a right-angled triangle, of which the length of motion of the plate less the length of the straight-sided seats is

the base and the length of the movement of the switch-rails is the altitude. The outer end of the switch-bridle *a* is carried out transversely across the bed-piece *B* and through guiding-loops *b³*, and on its under side is a friction-roller, *c*, properly secured by a wrist-pin, which roller plays in the slot *b* as the plate *B'* is moved back and forth.

This apparatus I intend for use chiefly as a part of a pneumatic or hydraulic apparatus, and in such use I keep the cylinder *D'* continually charged with suitable fluid-pressure, preferably compressed air, which may be introduced from any suitable supply-pipe or head—as, for example, a pipe, *R*, through a branch, *R'*, and port *r*.

By preference, the apparatus is so constructed as that this pressure shall, by pushing the piston *d'* forward and pushing the plate *B'* over, hold the movable switch-rails in their normal or usual position or adjustment, which will usually be such as to secure an unbroken main track. In this adjustment the friction-roller *c* will occupy the seat *b'*, and as the sides of this seat are at right angles to the only direction in which the switch-bridle can possibly move the switch is securely locked, and cannot be shifted except after the release of the pressure in *D'* or by the application of a more effective or greater pressure in *D*. The latter is the method which I adopt, and the application of pressure thereto is governed by any of the known appliances employed for kindred purposes in connection with pneumatic or hydraulic signal and switch apparatus.

At *V*, I have represented a valve such as is so used, and which may be arranged at the switchman's stand or cabin or at other convenient point. The operator, by manipulating this valve when he wishes to shift the switch, turns on the pressure through pipe *P* and port *r'* back of the piston *d*. This pressure may be taken from the head or pipe *R* or from any other source. If taken from the same source as that which supplies the cylinder *D'*, the piston *d* must be larger than *d'*, so that in consequence of the excess of piston-area the effective pressure in *D* shall be greater than in *D'*, as a result of which the plate *B'* will be shifted back, the bridle *a* shifted, and the switch-rails set to the siding. As the roller *c* will then oc-

5 cupy the other seat, b^2 , the switch will again
 be locked. On the reduction or release of the
 pressure in D, by again shifting the valve V
 the pressure in D' will again become effective
 10 in throwing the switch back again. But the
 apparatus may, if preferred, be so organized
 that when the pressure is applied in D the
 movable rails shall be set for the main-track
 line, in which case they will be shifted for a
 15 siding-connection by lowering the pressure in
 D until that in D' so far exceeds it as to be ef-
 fective in moving the plate B' and thereby
 shifting the switch, and it will also be possible
 (though usually less practicable) to employ dif-
 20 ferent degrees of pressure in the two cylinders,
 in which case both may be of the same piston-
 area; but in such case one at least of the two
 cylinders is to be charged and kept charged
 with a fluid-pressure at all times sufficient in
 25 amount to shift the movable switch in the ab-
 sence of pressure in the other cylinder; and it
 will be within my invention to arrange both
 pistons on a single stem in a cylinder having a
 greater diameter at one end than at the other,
 30 corresponding to the diameter of the pistons,
 and so applying the pressures that one shall act
 continuously to hold, press, or shift the mov-
 able rails in one direction and the other press-
 ure shall act intermittently, at the pleasure of
 35 the operator, to press, hold, or shift them in
 the reverse direction. Also, the slotted plate
 may be dispensed with, and the double cylinder
 and piston device thus made may be arranged
 with its stem in line with the throw or motion
 40 of the switch-bridle, so that, the two being con-
 nected together, the latter may be operated by
 a direct thrust or pull. Such cylinders and
 pistons need not be further described, as they
 are well known in other branches of the arts;
 nor do I limit myself to the described devices

for changing the direction of motion—viz., by
 a slotted plate, B'—since a bell-crank or other
 known device suitable for the purpose may be
 substituted.

I claim herein as my invention—

1. In combination with a switch bar or bridle 45
 and a device for transmitting a reciprocating
 motion thereto, a double cylinder and pistons,
 and appliances for supplying a continuously-
 acting pressure to one of said pistons in one 50
 direction and an intermittently-acting press-
 ure to the other in the other direction, sub-
 stantially as set forth.

2. The cylinders D D', containing pistons of 55
 different areas subject to pressure, in combi-
 nation with slotted plate B' and switch bar or
 bridle a, substantially as set forth.

3. The combination of a cylinder, D', having 60
 a piston subject to a continuous pressure, a cyl-
 inder, D, having a piston of larger area sub-
 ject to an intermittent pressure, a valve de-
 vice for governing such latter pressure, and
 suitable means for transmitting the motions of
 such pistons to a switch bar or bridle, whereby
 to shift the movable rails of a switch, substan- 65
 tially as set forth.

4. In combination with a switch bar or bridle,
 a double cylinder and pistons, and means for
 supplying a continuously-acting pressure to
 such pistons in one direction, and, at the pleas- 70
 ure of the operator, an intermittently-acting
 but greater effective pressure in the other di-
 rection, substantially as set forth.

In testimony whereof I have hereunto set my hand.

GEORGE WESTINGHOUSE, JR.

Witnesses:

R. H. WHITTLESEY,
 GEORGE H. CHRISTY.