

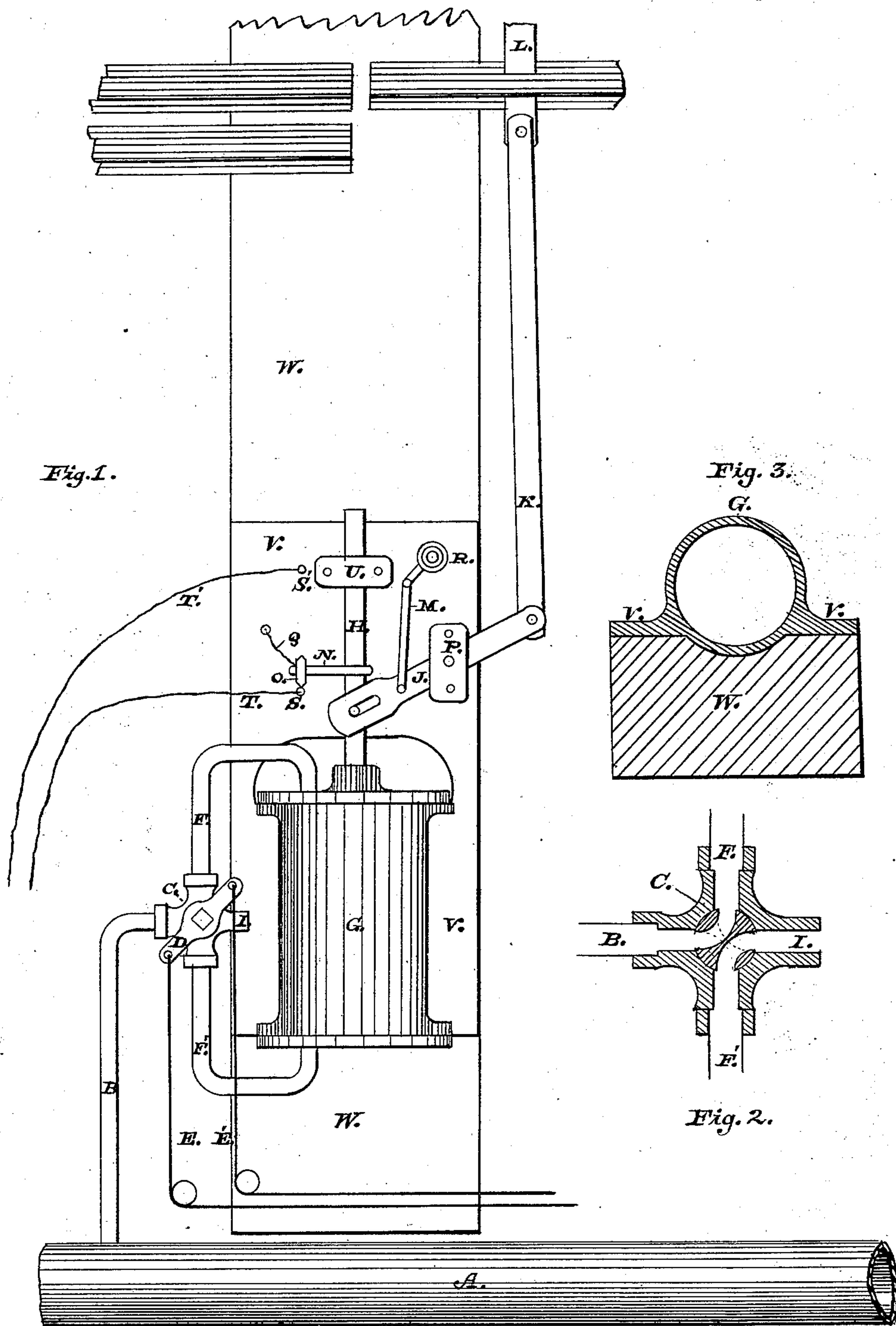
(No Model.)

C. A. COOPER.

RAILWAY PNEUMATIC SWITCH AND ELECTRIC INDICATOR.

No. 281,839.

Patented July 24, 1883.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES A. COOPER, OF PITTSBURG, PENNSYLVANIA.

RAILWAY PNEUMATIC SWITCH AND ELECTRIC INDICATOR.

SPECIFICATION forming part of Letters Patent No. 281,839, dated July 24, 1883.

Application filed June 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. COOPER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Method of Turning Railway-Switches and Indicating their Position, of which the following is a specification.

My invention relates to that class of mechanism for controlling railway-switches and automatically indicating the position thereof wherein compressed air or its equivalent is employed for actuating the switch and electrical connections made by the movement of the switch mechanism to signal or indicate the position of the switch, as will hereinafter more fully appear. The work of changing a number of switches can be done at a suitable switch-house, and the switchman will have a knowledge of the position of all switches and turn-outs. The device is intended, principally, for railway-yards, or where the sidings are contiguous.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a plan view embodying my invention. Fig. 2 is a cross-section through the four-way cock C. Fig. 3 is a cross-section of the cylinder and head-block.

The cylinder G is cast to the bed-plate V, which is securely bolted to an ordinary head-block, W. In cylinder G is placed an ordinary piston, H, working through a stuffing-box. The outer end of H is rectangular for a distance a little greater than the length of the stroke. This part slides through a rectangular box, U, thereby preventing the piston turning in the cylinder.

On a center in box P, which is fastened to bed-plate V, is a lever, J, having at one end a slot which works loosely on a pin in rod H. To the other end of this lever is a rod, K, connecting with the bridle L of a switch. A lever, M, is also attached to J, and to an arm which turns a suitable signal or target, R, the end of which rests on the bed-plate V.

On H an arm, N, is fastened, carrying an insulated bar, O, having attached a grounded wire, Q.

Insulated standards S and S' are fastened to

the bed-plate, and to these standards the wires T and T' are joined.

In the ends of the cylinder pipes F and F' are screwed, connecting the cylinder with the four-way cock C, on which there is a lever, D. To this lever D strong wires E and E' are fastened, and run over rollers or pulleys to a central switch-house. These wires are used in reversing the pressure of the air. The pipe B connects the four-way cock with the compressed-air main A, which is laid under ground.

The operation of the device is as follows: The air is compressed either in the main A, or in a tank with which the main may be connected. From this main A the air is carried through the pipe B to the cock C, and through it to the pipes F or F', and thence to the cylinder G, one of the pipes F or F' acting as an exhaust in connection with the vent I, while the other acts as a supply-pipe. The operation of reversing the force on the piston-head is by moving one of the wires E or E' and moving the lever D over an arc of ninety degrees. This motion allows the air to escape from one end of the cylinder and turns it on the other, the pressure of air remaining on the piston-head until the operation is reversed. The solid lines in the central part of Fig. 2 show the airways when the piston is in the position as shown in Fig. 1. The dotted lines show reversed position. The motion of the piston H moves the lever J, by which the force is transmitted to K, causing the switch-rails to be moved, and also, by means of the arm M, the signal at R is turned. When the piston is at rest, the bar O is in contact with one of the standards S or S'. An electric battery located at the switch-house and connected with the wires T and T' causes an electric current through one of these wires and the grounded wire Q. The wires T and T' run into the switch-house, and are attached to a magnet or other device and show a signal, thereby indicating the position of the switch.

The grounded wire Q is of sufficient length to allow oscillation between the standards S and S'.

I am aware that signals and switches have heretofore been operated by compressed air, and also that signals have been operated from

a switch by making and breaking an electrical connection by the movement of the switch, so as to indicate the position of the switch, or whether the main line was open or closed, and do not broadly claim the same; but

What I claim is—

1. The combination, with a switch and signal-target, of a cylinder provided with a piston-rod which actuates both the switch and the target, and supply-pipes and valve for reversing the movement of the piston, substantially as specified.

2. In switch-operating and signaling devices, the combination of a switch-rail, a cylinder provided with a piston, and piston-rod for actuating the rail, mechanism for reversing the piston, two line-wires, and an intermediate ground-wire moved by the piston-rod so as to close the circuit at each end of the stroke of the piston, substantially as and for the purpose specified.

3. The combination of a cylinder provided with a suitable piston and reversing mechanism, a pivoted lever actuated by the piston-rod, a signal-target actuated from the pivoted lever by a link or arm, M, and a switch actuated from said pivoted lever by a rod, K, substantially as and for the purpose specified.

4. The combination of a cylinder provided with a suitable piston and reversing mechanism, a pivoted lever actuated by the piston-rod, a switch actuated from the pivoted lever by an intermediate rod, a ground-wire one end of which is attached to and moves with the piston-rod, and two line-wires arranged at the opposite ends of the stroke of the piston-rod, substantially as and for the purpose specified.

CHARLES A. COOPER.

Witnesses:

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