

No. 890,784.

PATENTED JUNE 16, 1908.

R. R. MILLER.  
OPERATING DEVICE FOR AUTOMATIC SWITCHES.

APPLICATION FILED AUG. 3, 1907.

2 SHEETS—SHEET 1.

Fig. 2.

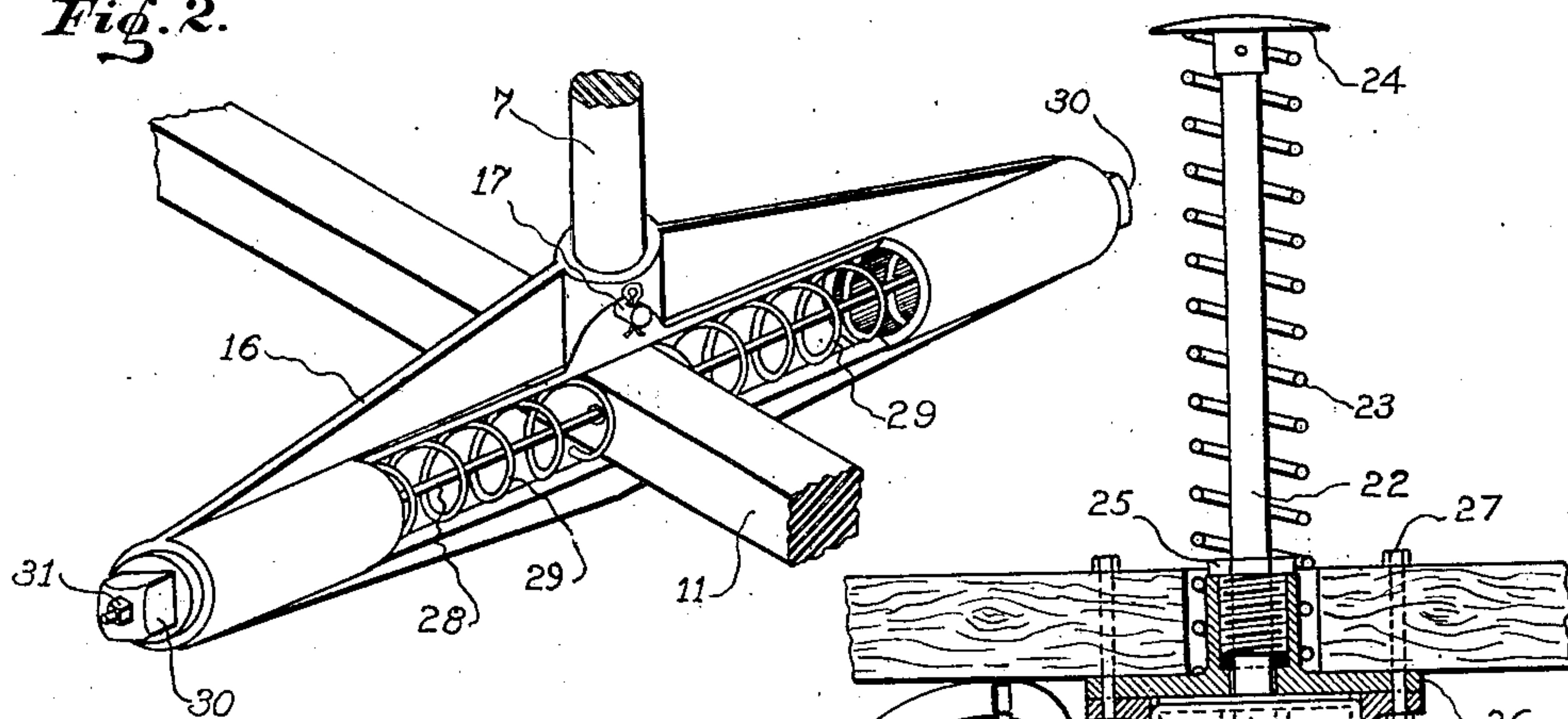
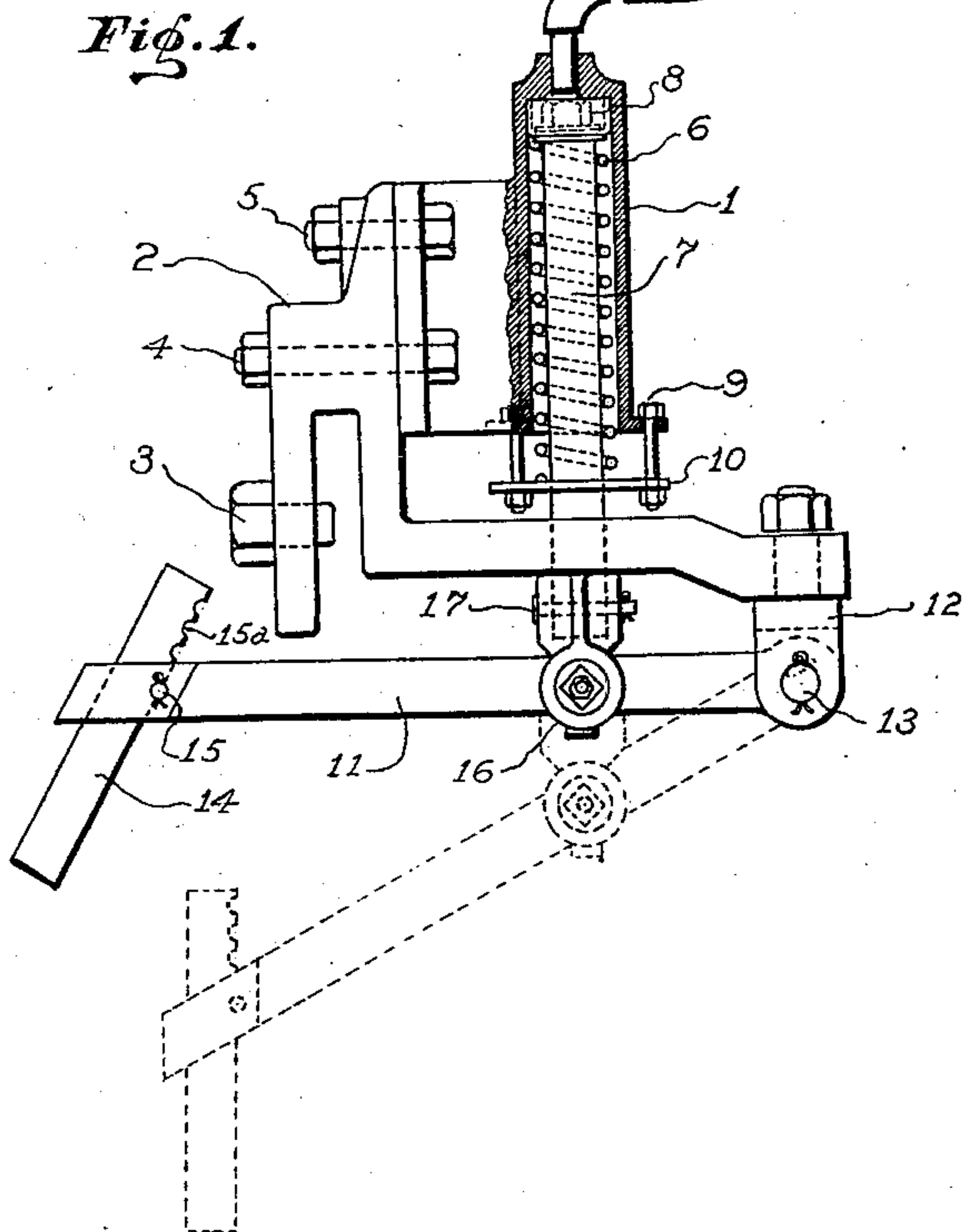


Fig. 1.



Witnesses.

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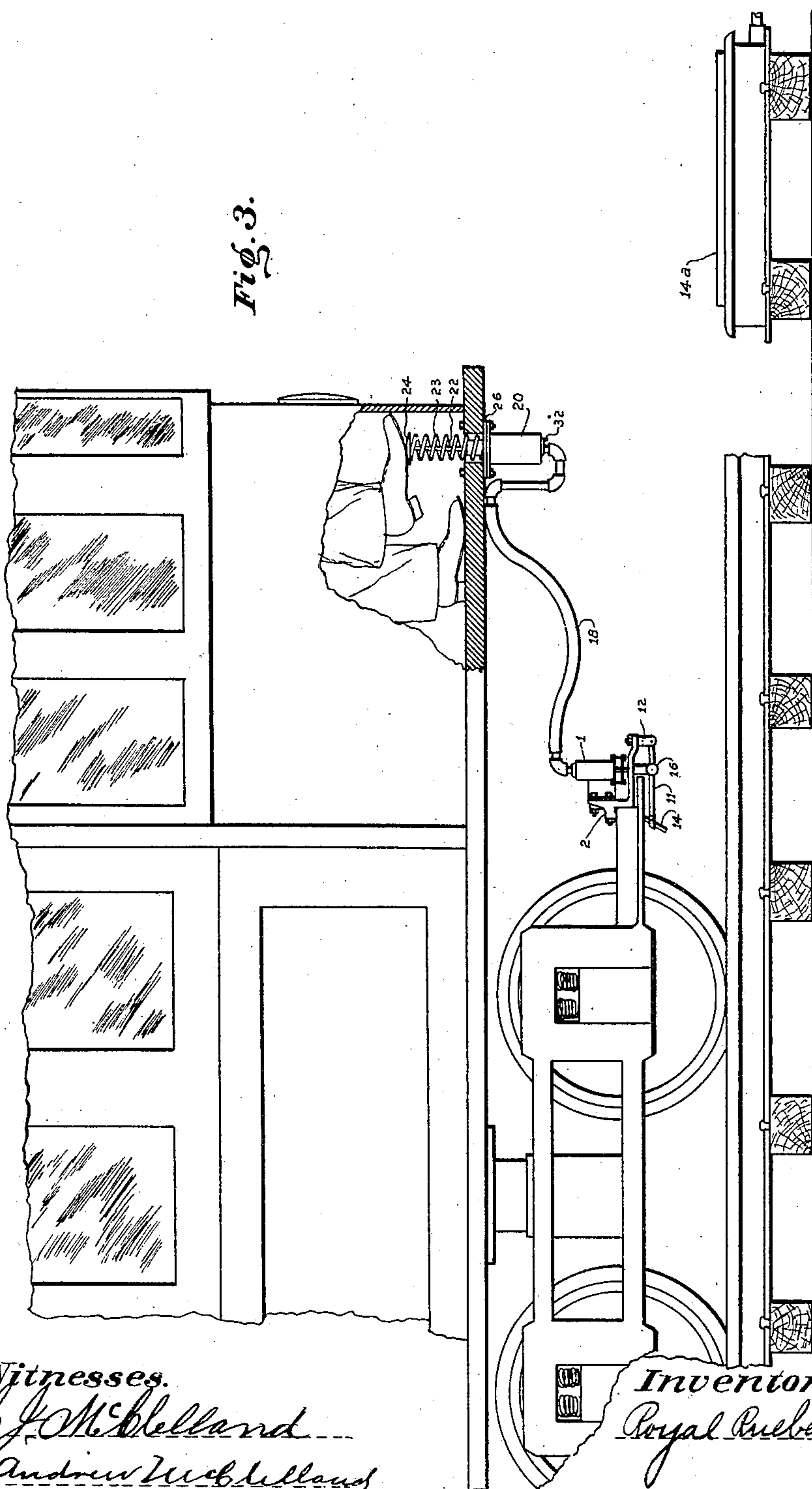
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2 SHEETS—SHEET 2.

Fig. 3.



Witnesses.

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# UNITED STATES PATENT OFFICE.

ROYAL RUEBEN MILLER, OF PUEBLO, COLORADO.

## OPERATING DEVICE FOR AUTOMATIC SWITCHES.

No. 890,784.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed August 3, 1907. Serial No. 386,992.

*To all whom it may concern:*

Be it known that I, ROYAL RUEBEN MILLER, a citizen of the United States, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented a new and useful Improvement in Automatic Switch-Operating Devices, of which the following is a specification.

My invention relates to improvements in automatic switch operating devices in which a spring adjusted switching arm carrying an adjustable switch pin, is operated by compressed air to be pressed into engagement with the track levers of an automatic railroad switch; and the objects of my improvement are; first, to provide a pneumatic means of operating a spring adjusted switching arm that carries an adjustable switching pin; and, second, to provide such switching arm with a cylinder containing a spring tensioned piston to be operative to press said arm to engagement with switch levers mounted on the track of a railroad, by compressed air that is generated by an air compressor, pump, or any suitable source that is controlled by the foot of the motorman; and, third, to provide such pneumatic means in such manner that a foot operated valve or pump, attached to the floor of the car, may be connected by gas pipe and flexible hose, to a cylinder containing a spring tensioned piston, that is mounted on the truck frame of the car, for operating a switching arm, in such manner that the flexible hose will accommodate the movements of the car floor and car trucks. I attain these objects by the mechanisms illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, in partial cross section, of my invention; Fig. 2 is a perspective view of a portion of the switching arm and the spring tensioned centering head; and Fig. 3 is a side elevation of a portion of a street car showing my invention mounted thereon, in position to be operated by a pump with the foot of a motorman.

Similar numbers refer to similar parts throughout the several views.

On a casting 2, formed to be held on the frame of the car truck by set screws 3, is bolted, by bolts 5 and 4, the cylinder 1, that contains a piston 8 mounted on piston rod 7 on the lower end of which the spring tensioned centering head 16 is attached by pin 17, through the elongated opening in which

arm 11 passes, the arm being held centrally in the said elongated opening by tension springs 29, the same being adjusted by means of plugs 30 that are screw threaded into the ends of head 16. The rod 28 passes through the plugs 30 and through arm 11, and having nuts 31 at its ends serves to hold springs 29 in place and to keep head 16 at right angles to arm 11. The elongated opening in head 16, through which arm 11 passes, is sufficiently large to allow the free downward movement of arm 11 as indicated by dotted lines in Fig. 1, as well as a side movement each way from the center of the head. Spring 29 may be strong and serve to hold arm 11 practically rigid, or they may be flexible to provide for a comparatively easy side movement of arm 11 to accommodate its use for operating ground switch levers around which the arm 11 should swing, or for use with ground levers that require a straight course of arm 11 along the center of the track. The pin 14 being notched at 15<sup>a</sup> is adjustable up and down in a suitable hole in arm 11, and is held in place by pin 15 in such manner that the pin 14 will properly engage the ground levers of a switch. Arm 11 is attached pivotally, by pin 13, in the swivel 12 which is easily turnable in the casting 2, which provides for the downward and sidewise movements of arm 11.

The spring 6 in cylinder 1 serves to raise the piston 8, rod 7, centering head 16, arm 11 and pin 14 upward, and is adjusted by means of plate 10 and bolts 9 to just lift these several parts in such manner that a slight pressure on piston 8 will suffice to overcome the spring 6 and press pin 14 down to engagement with the ground levers of a switch.

On the under side of the car floor the cylinder 20 is attached by bolts 27; the cap 26 being provided with a gland 25 to hold packing about rod 22 to prevent dirt, on the floor of the car, from entering the cylinder. On the ends of rod 22 the piston 21 and head 24 are secured, the spring 23 serving to hold piston 21 up in cylinder 20.

To operate the device, the motorman presses down on the head 24 and compresses the air in cylinder 20, which is larger than cylinder 1, out through small gas pipe 19 and flexible hose 18 into cylinder 1. The cylinder 20 containing about ten times as much air as cylinder 1 will hold, the air is thus raised to a pressure sufficient to move piston



8 downward till pin 14 engages the ground whereupon pin 14 will engage a lever to operate a switch as the car passes the same.

Should pistons 8 or 21 leak a portion of the compressed air out in the compressing operation just explained, the expansion of what air remains will not fill cylinder 20 when the motorman removes his foot and spring 23 returns piston 21, and to provide for refilling cylinder 20 a check-valve 32 is provided to allow air to be drawn into cylinder 20, refilling it so the next operation will be equal in power to the first one.

In Fig. 1 I show the pump method of producing air under compression, but cylinder 1 and its several connected parts are especially adapted to be operative by air pumped thus or by air under pressure from air-brake reservoirs; using the latter method cap 24 and rod 22 are connected to any suitable valve now in use, for admitting air under pressure into pipe 19 and hose 18 to cylinder 1.

Not confining myself to the exact form of the castings that are designed for attachment to the car truck or car floor, what I claim as new and desire to secure by Letters Patent is—

1. In operating devices for automatic switches, the combination with a foot operated piston, and a switching cylinder 1 carrying a spring tensioned piston that is connected in the manner described, to a spring tensioned centering head 16, operatively connected to a switch arm 11, carrying a switch pin 14, to accommodate a downward and sidewise movement of said arm and pin, of a

pneumatic means of operating said arm and pin, to bring said pin into engagement with ground levers of an automatic railroad switch, substantially as described.

2. In operating devices for automatic switches, the combination with a foot operated piston, gas pipe and flexible hose connections therewith to a switching cylinder 1, in such manner as to accommodate the movements of the car floor and car truck, and a suitably formed casting for attachment to the car truck on which is mounted the switching cylinder 1, of a spring tensioned centering head 16 subtended to piston rod 7 and carrying switch arm 11 in such manner as to accommodate a downward and sidewise movement of said arm, substantially as described.

3. In an operating device for automatic switches, the combination with a foot operated piston, attached to the car floor and connected by gas pipe and flexible hose, to a switching cylinder carrying a spring tensioned piston, and mounted on a suitable casting formed for attachment to the car truck, of a switching arm 11 that is swivel attached, by swivel 12, to casting 2, and carrying an adjustable switching pin 14, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROYAL RUEBEN MILLER.

Witnesses:

C. J. McCLELLAND,  
ANDREW McCLELLAND.