

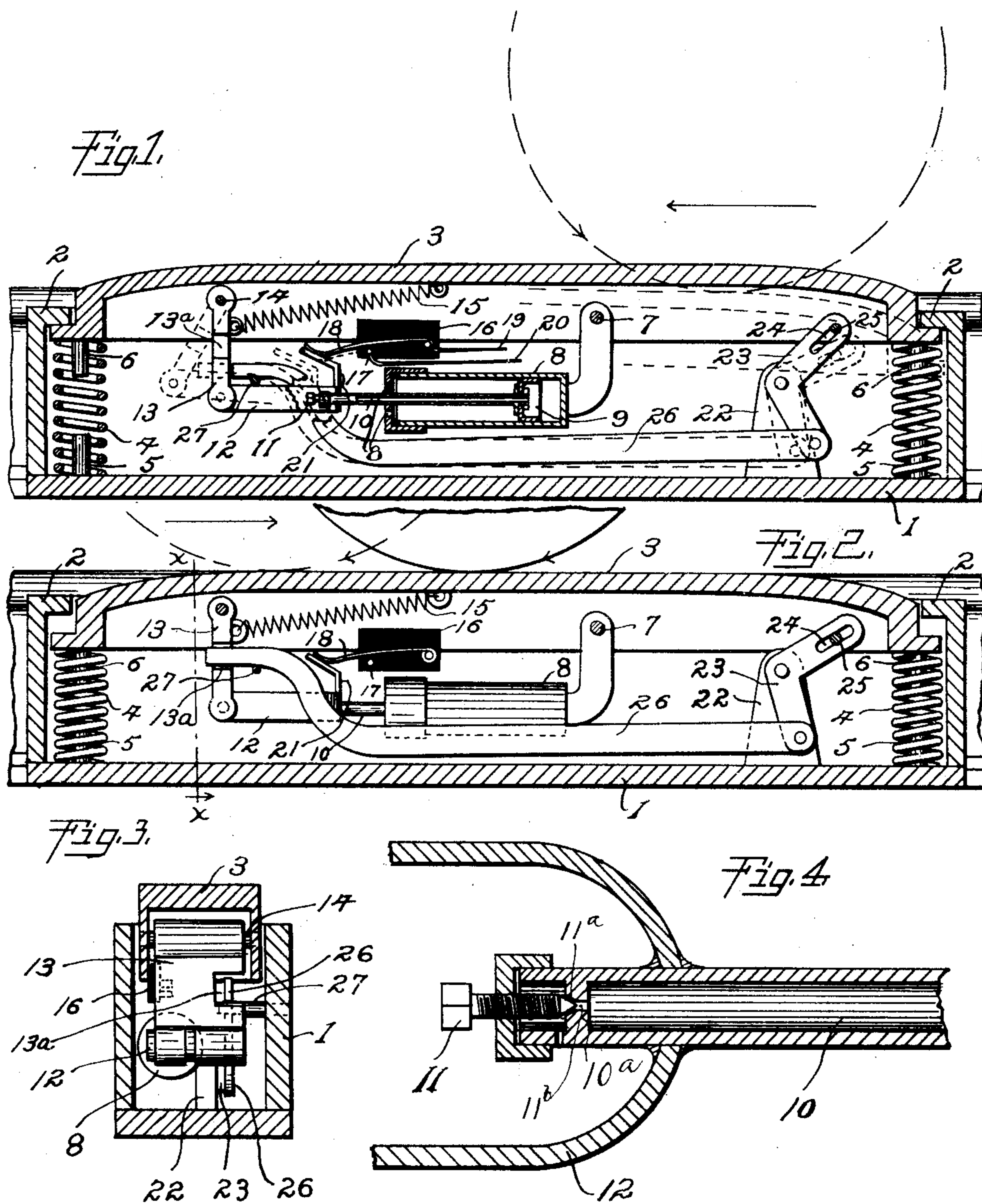
No. 686,974.

Patented Nov. 19, 1901.

L. C. KARR.
RAILWAY SIGNALING DEVICE.

(Application filed July 20, 1901.)

(No Model.)



WITNESSES:

D. O. Barnell.
H. J. Congill.

Lillian C. Karr
INVENTOR.

BY *Mason H. Lammie*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

LILLIAN C. KARR, OF COUNCIL BLUFFS, IOWA, ASSIGNOR TO THE KARR
SIGNAL AND POWER COMPANY, OF OMAHA, NEBRASKA.

RAILWAY SIGNALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 686,974, dated November 19, 1901.

Application filed July 20, 1901. Serial No. 69,144. (No model.)

To all whom it may concern:

Be it known that I, LILLIAN C. KARR, a citizen of the United States, residing at Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Railway Signaling Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in railway signaling devices, and particularly to track instruments for the same, in which an electric circuit for operating the signal is closed by a train passing in one direction over said instrument, while a train passing in the opposite direction will leave the circuit open and the signal unaffected.

It consists in a track instrument comprising a depressible bar, a suction-cylinder and piston moving therein, contacts connected with a signal-circuit controlled by the said piston, and means for actuating the said piston when the train passes in one direction over the said track instrument, the said mechanism not being affected when the train passes over the instrument in the other direction.

It also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a track instrument constructed in accordance with this invention. Fig. 2 is a similar view, but showing the position of the parts when a train is passing over the instrument and yet not closing the circuit by the mechanism therein. Fig. 3 is a vertical transverse section through the said instrument on the line $x x$ of Fig. 2. Fig. 4 is an enlarged detail central section through the end of the piston-rod, showing the valve for controlling the suction of the suction-cylinder.

The invention is designed not only to complete a circuit when engaged by a train passing in one direction only and not complete said circuit when engaged by a train passing in the other direction, but is so constructed

and arranged as to cause the signal-circuit to be kept closed for a predetermined period of time.

In the drawings I have shown a practical embodiment of my invention, in which will be seen an inclosing casing 1 for receiving the parts of the track instrument. The casing 1 is open at the top and is provided at its ends with overhanging portions 2. A depressible bar 3 is arranged in the casing 1 and is limited in its upward movement by projecting at its ends beneath the overhanging portions 2 of the said casing. The bar 3 is preferably made hollow upon its under side, as clearly shown by reference to Figs. 1, 2, and 3 of the drawings, and rests at its ends upon springs 4, which are held in position by engaging studs 5 and 6, secured, respectively, to the casing 1 and bar 3. The bar 3 will thus be normally held in its elevated position, which brings its upper surface a little distance above the rail of the track by which it is secured. Suspended from the bar 3 is a suction-cylinder 8, which is pivotally secured to the said bar by pins 7. The suction-cylinder 8 drops below the bar 3 and extends well into the casing 1 of the mechanism. The suction-cylinder 8 is closed at one end, while at its other end apertures or openings 8^a are left for the free entrance of air. Moving in the cylinder 8 is a piston 9, formed of a flexible material, preferably leather, secured in place upon the end of a piston-rod 10. The piston-rod 10 passes out through the perforated end of the cylinder 8 and is hollow throughout, so that air may pass through the said piston-rod. The other end of the said piston-rod is, however, controlled by a needle-valve 11, which engages a valve-seat 11^a, formed in a transverse partition 10^a, arranged within the hollow piston near its outer end. Air from the surrounding atmosphere has ingress to the valve-opening through an aperture 11^b, formed in the side of the piston-rod. When the piston-rod 10 is drawn out of the cylinder 8, more or less air will force itself over past the flexible piston 9 into the closed end of the said cylinder 8. When the piston-rod is moved the other way, the air in the closed end of the cylinder will be entrapped therein, and

the speed with which it is permitted to pass out through the open piston-rod (the only outlet for the same) will depend on the adjustment of the needle-valve screw 11. By leaving a very slight opening at the valve-seat 11^a the piston may be made to consume considerable time in forcing its way back into the cylinder 8. The hollow piston-rod 10 carries a yoke 12 at its outer ends, which projects either side thereof and beyond the same and is pivoted to the lower end of a swinging arm or bar 13. The arm 13 is suspended at its upper end to the bar 3 by means of a pin 14. A spring 15, connecting the bar 3 and the arm 13, normally draws the said arm toward the cylinder 8 and tends to force the piston-rod and piston thereof into the said cylinder. An insulating block or plate 16 is also suspended from the bar 3 and carries a contact-pin 17, connected with a circuit-wire 20, and a contact-spring 18, connected with a circuit-wire 19, the said circuit-wires extending to any suitable signaling device. (Not shown.) The spring 18 is so arranged upon said insulating-block that when it is free to act it will rest with pressure against the contact-pin 17, completing the circuit through the wires 19 and 20. The yoke 12 of the piston-rod, however, carries an upwardly-extending projection 21, which when the piston-rod is forced into the cylinder as far as it can be engages the end of the spring 18 and lifts the same out of engagement with the contact-pin 17, thus holding the circuit open at this point.

The arm 13 is adapted to be actuated for pulling the piston-rod out of the cylinder 8 by a bar 26, arranged longitudinally of the casing 1 and pivotally connected to a bell-crank lever 23, which is mounted upon a standard 22 in the casing 1. The upper end of the bell-crank lever is slotted, as at 24, and engages a pin 25, carried by the bar 3. The free end of the bar 26 is bent upwardly and slides upon a supporting-pin 27 in the casing 1. The bar 26 normally rests in a position opposite a portion of arm 13, so that when it is moved longitudinally toward said arm it will force the arm to one side upon its pivot-point. The arm 13 is, however, provided with a notch or recess, as 13^a, which may be brought opposite the end of the said bar 26 by depressing the end of the bar 3 carrying said arm, so that when the bar 26 is actuated its end will pass through said recess and not have any effect upon the arm 13.

The operation of the instrument will be quite apparent from the above description and is as follows: When a train passes over the track instrument in the direction indicated by an arrow in Fig. 1, the end of the bar 3 which engages the bell-crank lever 23 will be depressed first and the bar 26 will be so actuated as to engage the suspended arm 13 and force it away from the cylinder 8, drawing the piston-rod 10 and the piston 9 with it and also carrying the projection 21 in the

same direction, so as to leave the spring 18 unsupported and in condition to make contact with the pin 17. After the wheels of the train have passed beyond the bar 3 the springs 4 will raise the same again and the spring 15 will tend to force the piston 9 toward the opposite end of the cylinder 8. The speed with which this is accomplished will depend upon the amount of air permitted to escape past the needle-valve 11. As the piston-rod 10 returns into the cylinder 8 the projection 21 will be gradually brought back toward the spring 18 and will finally engage and raise the same, so as to break the circuit before completed with it by the contact-pin 17. When a train approaches and engages the track instrument from the opposite direction, as indicated by arrow in Fig. 2, the end of the bar 3 which carries the arm 13 will be depressed first, and thus the recess 13^a in said arm will be brought opposite the end of the bar 26 before the said bar is moved longitudinally by the wheels of the train reaching the central portion of the bar 3 and completely depressing the same. Thus trains passing in this direction will not operate the track instrument in such a way as to complete a circuit through the signaling mechanism with which the said instrument may be connected. The parts will, however, be returned to their normal positions by the action of the springs employed in the mechanism and will be ready to put the said signal into operation again when a train from the opposite direction passes over the same.

The parts of the mechanism are exceedingly simple in structure, though very effective for the purpose for which they are employed, and will not get out of order easily.

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

1. A track instrument for completing a circuit through a signaling device, comprising a depressible bar, a suction-cylinder pivoted to and carried by said bar, a piston-rod and piston working in said cylinder, a circuit-closing contact carried by the piston-rod, means for moving the piston in one direction for closing a circuit, and means for regulating the return of the piston by suction so that the signal mechanism will be operated for a proper length of time before the circuit is broken, substantially as described.

2. A track instrument for a signaling device, comprising a depressible bar, a suction-cylinder connected therewith, a piston and piston-rod working in said cylinder, the piston-rod being so connected with the depressible bar that it will be moved in the cylinder only when a train passes over the depressible bar in one direction and not in the other, substantially as described.

3. A track instrument for signaling devices, comprising a depressible bar, a suction-cylinder controlled thereby, means for actuating

the suction mechanism when the bar is depressed at one end first, and means for preventing the operation of said suction mechanism when the bar is depressed at the other end first, substantially as described.

4. A track instrument for signaling, comprising a depressible bar, a suction-cylinder, a piston and piston-rod moving in the same, an arm pivotally connected with one end of the said piston-rod and suspended from the depressible bar, means for moving the said arm in one direction for completing a circuit and actuating the said piston-rod, and means for returning the said arm to its normal position for closing the said circuit again and forcing the piston-rod into the cylinder, substantially as described.

5. A track instrument for signals, comprising a spring-supported bar, a suction-cylinder pivoted thereto and carried thereby, a hollow piston-rod extending into said cylinder and carrying a piston, a pivoted arm connecting the outer end of said piston-rod with the depressible bar, the piston-rod being made hollow so that air may pass through the same, and a valve arranged in the hollow piston-rod so as to control the passage of air through the same, and means for adjusting the said valve so that the time required for the piston to return into the suction-cylinder may be regulated thereby, substantially as described.

6. A track instrument for signaling devices, comprising a spring-supported depressible bar, contact-pieces suspended from said bar, means for insulating the same therefrom, the said contact-pieces being connected with the wires of a signal-circuit, means for opening and closing said circuit comprising a suction-cylinder, and means for controlling the movement of said piston-rod in each direction, the structure being such that when the rod is moved downwardly the contacts will be permitted to come together for closing the said circuit and when the rod is moved in the other direction the contacts will be separated again

for breaking the said circuit, substantially as described.

7. A track instrument, comprising a depressible bar, a suction device suspended from the said depressible bar comprising a cylinder and a piston moving therein, a hollow piston-rod connected with said piston and projecting outwardly through one end of said cylinder, a yoke carried by the outer end of the piston-rod, an arm for pivotally suspending said yoke from the depressible bar, means carried by said yoke for opening and closing a circuit through a signaling mechanism, means for moving the pivoted arm in one direction, comprising a longitudinally-moving bar, a bell-crank lever connected therewith at one end and connected with the depressible bar by a pin-and-slot connection at its other end, and a spring for returning the pivoted arm to its normal position and breaking the said circuit again, substantially as described.

8. A track instrument for signaling devices, comprising a depressible bar, a suction mechanism for making and breaking a circuit through said signaling device, an arm for operating said suction mechanism, a longitudinally-moving bar for moving the said arm in one direction when one end of the depressible bar is depressed first, means interposed between said longitudinally-moving bar, and said depressible bar for operating the former, the said pivoted arm being provided with an aperture which is adapted to be brought opposite the end of the longitudinally-moving bar when the end of the depressible bar supporting said arm is lowered first, whereby the said arm will not be actuated, and the circuit through the signaling device will not be closed, substantially as described.

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

LILLIAN C. KARR.

Witnesses:

O. B. MCCLINTOCK,
E. C. PODDER.