

(No Model.)

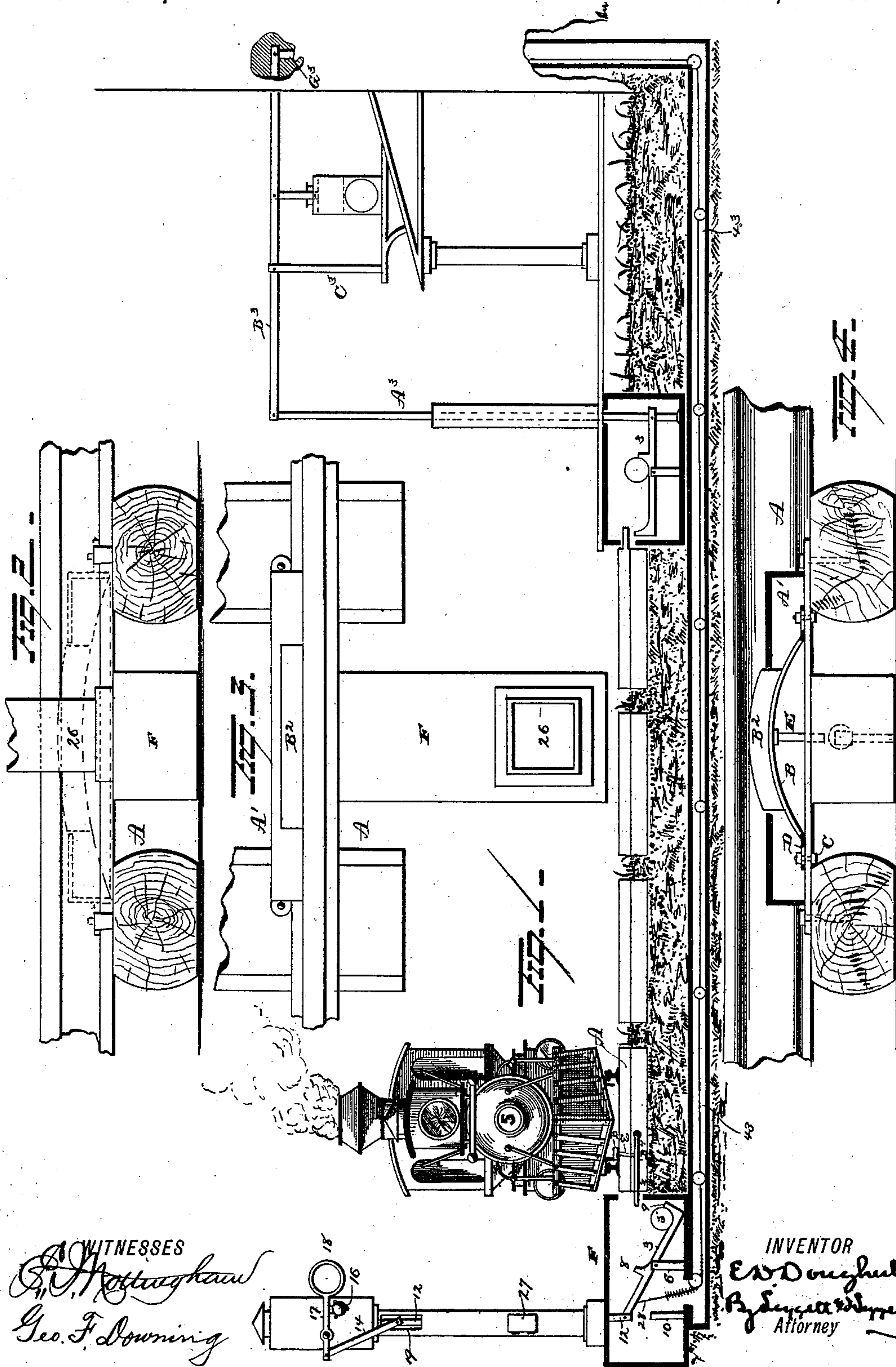
2 Sheets—Sheet 1.

E. D. DOUGHERTY.

AUTOMATIC RAILROAD SIGNAL.

No. 338,720.

Patented Mar. 30, 1886.



WITNESSES
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Geo. F. Downing

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(No Model.)

2 Sheets—Sheet 2.

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FIG. 5.

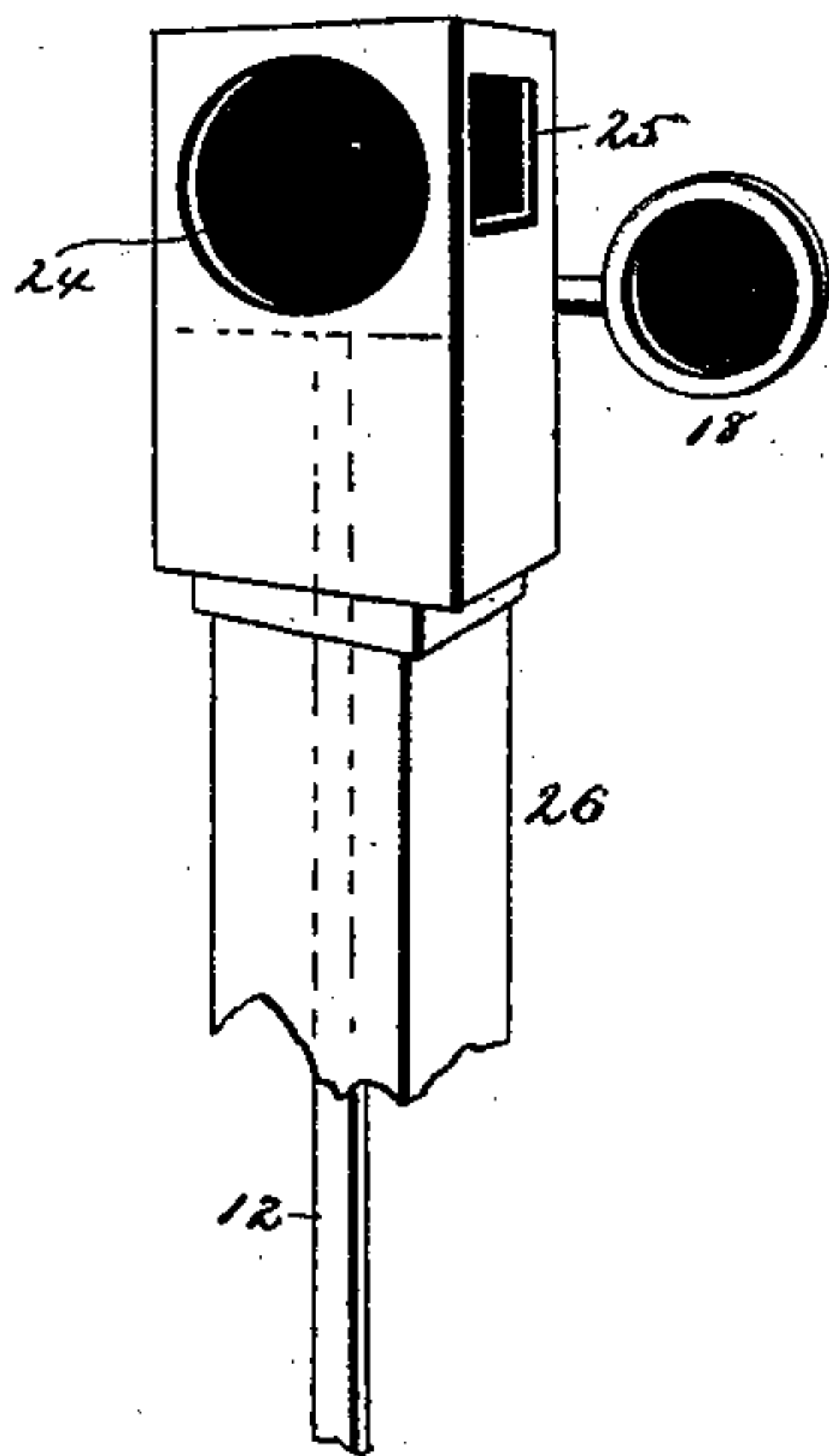


FIG. 7.

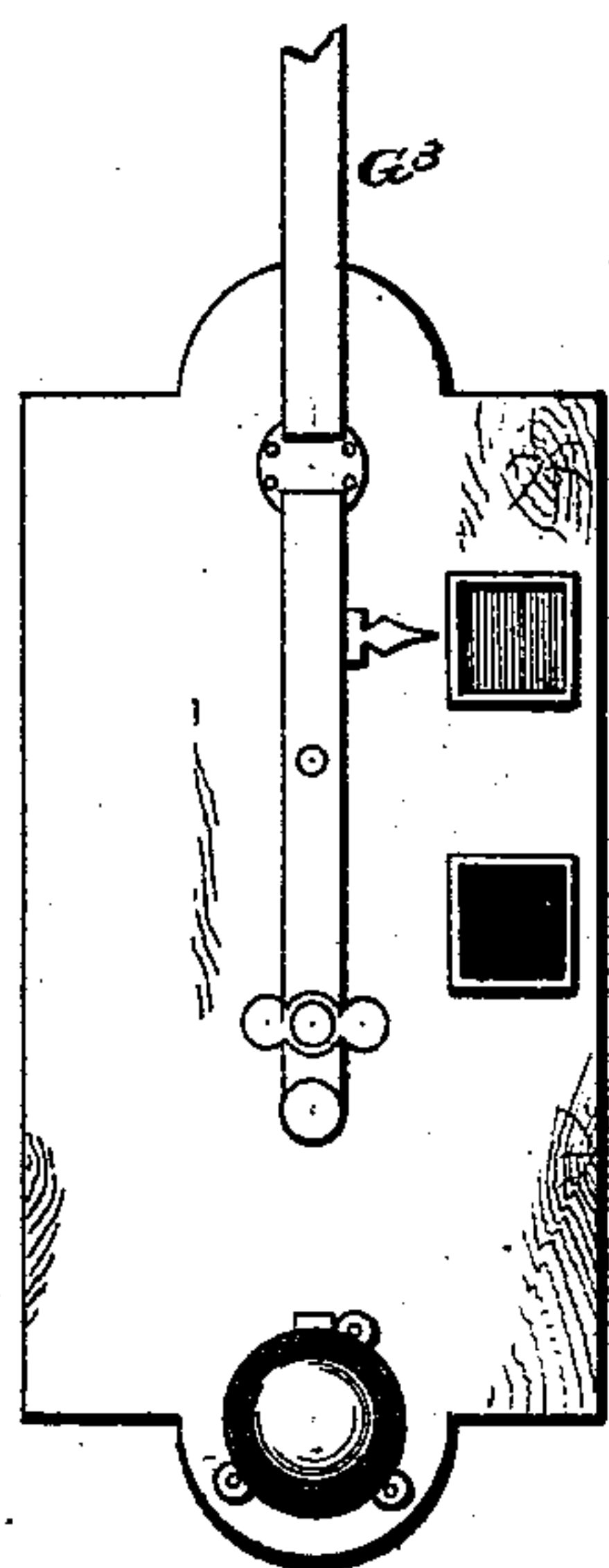


FIG. 8.

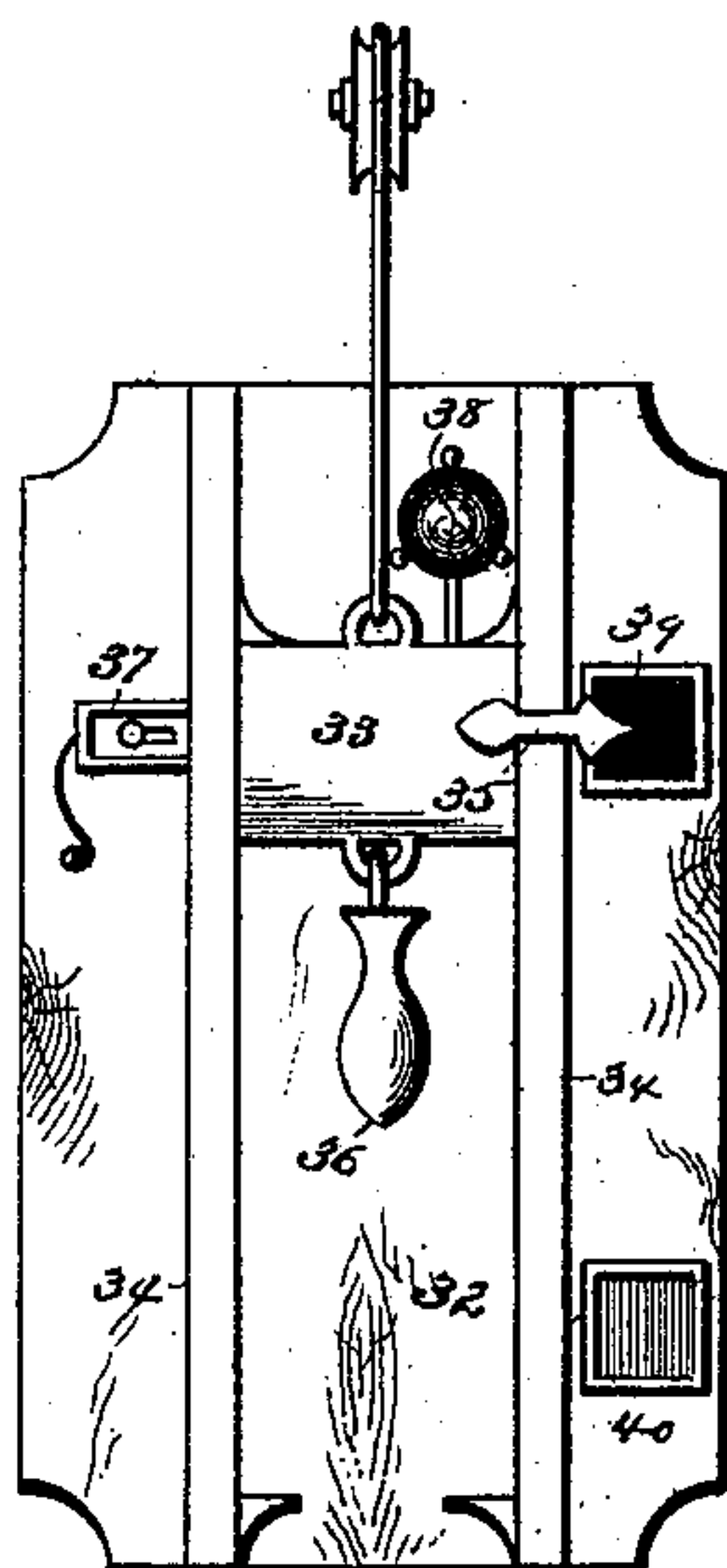
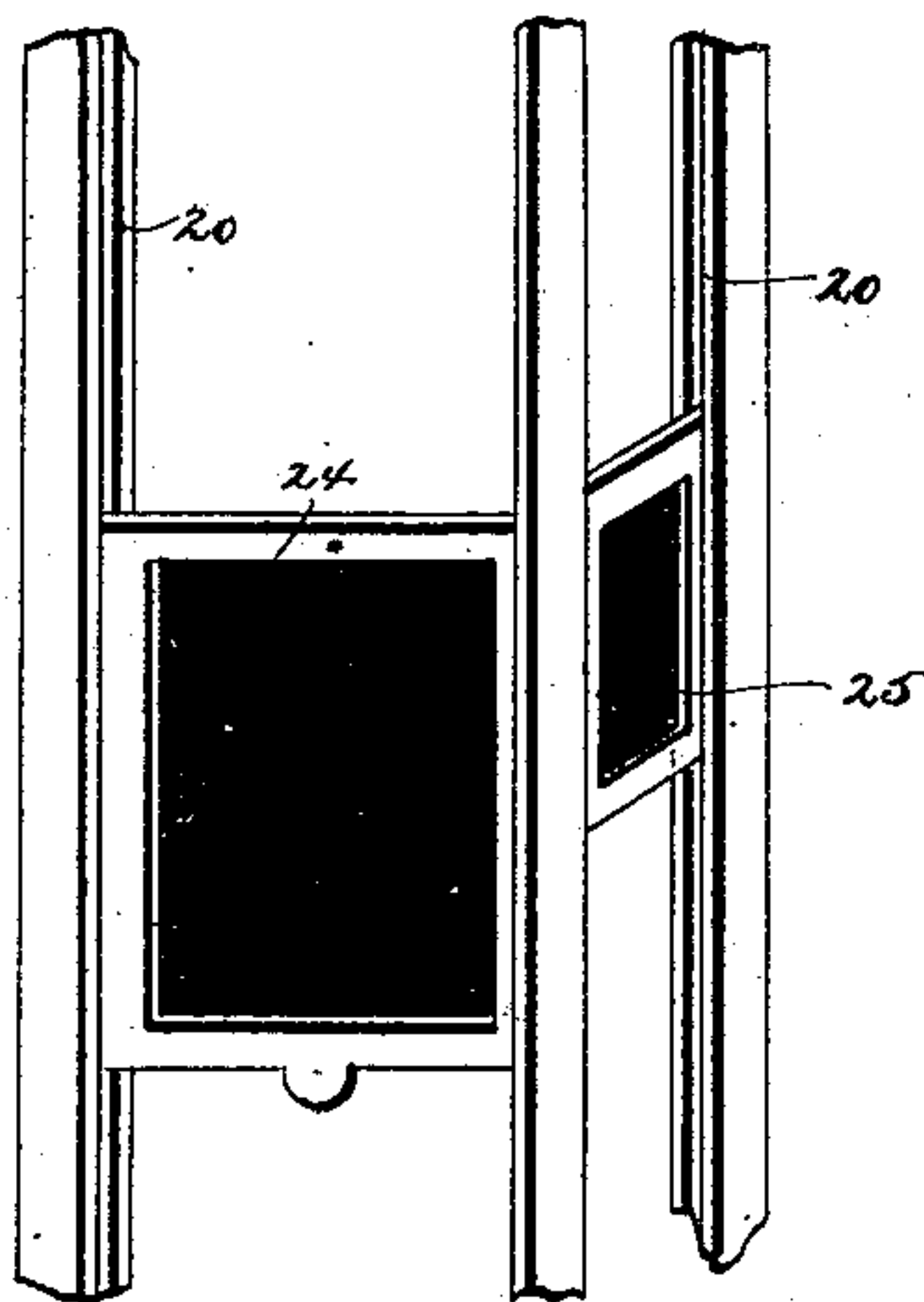


FIG. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD D. DOUGHERTY, OF PHILADELPHIA, PENNSYLVANIA.

AUTOMATIC RAILROAD-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 338,720, dated March 30, 1886.

Application filed November 20, 1885. Serial No. 183,431. (No model.)

To all whom it may concern:

Be it known that I, EDWARD D. DOUGHERTY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Railroad-Signals; 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 automatic signals for railroads, the object of the same being to provide devices for automatically setting the danger-signals by a passing train, and for locking the danger-signal against accidental movement.

A further object is to provide devices within the office for indicating to the operator the condition of his signal.

A further object is to provide means within the station or operator's office for releasing the signals.

With these ends in view my invention consists in the parts and combination of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation, partly in section, of a double track showing my mechanism applied thereto. Fig. 2 is a view in side elevation of the devices located alongside of the track for operating the signal-setting mechanism. Fig. 3 is a plan view; Fig. 4, a sectional view of the same; Fig. 5, a detached view of a section of the signal-standard. Fig. 6 is a similar view of the signal slides and guides. Figs. 7 and 8 are views of the indicators located inside of the operator's room.

A represents a railroad-track, and A' a box located alongside of one of the rails at a point opposite the signal-standard 26. This box is secured to the ties and provided with an open or slotted top, through which the lug B², formed on the upper face of the semi-elliptic spring B, projects. This spring B is provided with straight ends, having elongated slots D therein, and is secured to the bottom of the box by bolts C. The elongated slots permit the spring to expand freely, and consequently operate or depress the pin E, which latter rests against the under face of the spring B. This pin E is guided in its vertical movement and actuates

by actual contact with the upper surface of the lever, or through the intervention of a lever or bar, B¹, the lever 3, pivoted on the post 6 within the box F, located alongside of the track and at the base of the hollow standard 26. The lever 3 is provided on its upper surface with the lugs 8 and 9, the former being located a slight distance outside of the post 6 and the latter on the extreme inner end of the lever. The upper surface of the lever between lugs 8 and 9 is grooved or channeled to form a guideway for the weighted roller 5, which latter is mounted on said lever 3, and adapted to travel thereon between the lugs 8 and 9. When the roller rests against the lug 9, the lever is held in the position shown in Fig. 1, and when the lever is drawn down to a horizontal position the roller is moved along the same until it strikes the lug 8. When the parts are in this position, the center of the roller is beyond the post 6, and the weight of said roller is sufficient to hold the lever 3 in a horizontal position, with the end thereof under or in contact with the pin E, or in contact with devices operated by the pin. When a train passes the signal-standard, the flange of the first wheel passing over the spring B compresses the same, and consequently depresses the pin E, the pin or the mechanism connecting the pin and lever 3, and causes the lever to slant slightly. This inclination of the lever is sufficient to cause the roller 5 to start toward the lug 9, and after the roller passes over the post 6 the lever is moved down to the position shown in Fig. 1, and remains in such position until moved by the operator. The lever is held in a horizontal position by the stop 10.

While I have described the mechanism preferred by me for operating the lever 3, I would have it understood that I do not confine myself to such mechanism, as it is evident that electricity could be the agent employed for tilting the lever, or a spring-rail could be employed for the same purpose. The outer end of the lever 3 is connected to the rod 12, which latter is located within the hollow standard 26, to the top of which latter the lantern-case is secured. This rod 12 is connected to danger-signal slide 24 and the side curtain, 25, which latter moves in the grooved ways 20, located within the lantern-case.

The standard 26 is provided near its upper end with an elongated slot, 19, through which a wrist-pin secured to the lever 12 projects. This pin is connected to the rod 14, to the upper end of which is pivotally secured one end of the pivoted lever 17, carrying the disk or day-signal 18.

From the foregoing it will be seen that the upward movement of the outer end of the lever 3 throws both night and day signals into view, while a reverse movement of said lever carries the slides down out of sight and elevates the disk until it rests in a line with the lantern-case. I prefer to secure a bell, 16, to the outer face of the lantern-case, in a position to be operated by a lug secured to the lever 17. When the lever 17 falls, the bell rings and notifies the engineer that the signal has operated properly.

28 is a wire secured at one end to the lever 3, and extending downwardly and passing through the pipe or trough 43 to the office of the operator, where it is secured to the slide 33, mounted on the base 32. This base is provided with guides 34, in which the slide moves, with the automatic catch 37, for locking the slide when the pointer 35 is opposite the danger-signal 39, with the bell 38, which is rung by contact with a projection on the slide when the latter is drawn upwardly, and with the danger and safety signals 39 and 40, respectively. The slide is provided with a handle, 36, by which the same is drawn down.

From the foregoing it will be seen that when a train operates the signal the condition of the signal—that is, the position of the slides and disk—is indicated in the office by the pointer 35, which moves simultaneously with the slide, and the operator, if he be asleep, is notified by the ringing of the bell 38. After the signals are set they can only be released by the operator, and the danger-signals being set brings all trains to a stop and prevents accident. When the operator receives word that the train has passed out of his block, he simply unlocks the slide 33 and pulls the same down until the pointer thereon is opposite the safety-signal 40. This operation moves the lever 3 to a horizontal position, which causes the roller 5 to move up to the lug 8 and hold the lever in said horizontal position.

The device shown on the right hand of Fig. 2 is employed on the track B nearer the operator's office, and when there is but a single track this device alone is employed. The lever 3 and rod A³ are precisely like the corresponding parts previously described. The upper end of this rod A³ is pivotally secured to the lever B³, which latter is in turn pivotally secured to the upper end of the post C³. This lever is connected with a signal-slide, (shown in dotted lines in the figure,) and extends into the operator's room and is connected to the upper end of the rod G³. The danger-slide, instead of moving up to an operative position, falls down and covers the

openings in the lantern-case. The rod G³ is provided with a pointer similar to the slide 33, and the block 32 is provided with the danger and safety signals. In this latter device the rod G³ moves down to set the danger-signal, and hence the danger-signal on the base 32, connected with the track B, would be below the safety-signal, and not above it, as previously described in connection with the mechanism of track A.

The standard 26 is provided with a door, 27, by means of which access can be had to the rod 12 for operating the same in case the other parts should for any cause become inoperative.

By this improved device the passage of a train automatically sets the danger-signals, and the latter are held in a locked position until released by the operator.

It is evident that slight changes might be resorted to without departing from the spirit and scope of my invention; hence I would have it understood that I do not limit myself, strictly, to the construction herein set forth; but,

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

1. In a railroad-signal, the combination, with a signal slide or disk and devices located alongside of one of the rails of the track and adapted to be engaged by the wheels of a passing train for automatically operating the slide or disk, of an indicator and devices connecting the slide and indicator, whereby the position of the former is indicated on the latter, substantially as set forth.

2. In a railroad-signal, the combination, with a signal slide or disk and devices for operating the same, of an indicator, a bell, and devices connecting the slide and indicator for indicating on the latter the position of the former, and for sounding the bell as the danger-signal is set, substantially as set forth.

3. In a railroad-signal, the combination, with a slide, a lever located alongside of the track and adapted to be moved by the passage of a train over the same, and devices connecting in the lever and slide, of an indicator and devices connecting the lever and indicator, substantially as set forth.

4. The combination, with a slide or disk, a lever, and a movable weight adapted to travel on said lever, of an indicator and devices connecting the lever and indicator.

5. The combination, with a slide or disk, a lever, and a roller adapted to move on said lever, of an indicator having an alarm-bell thereon, and devices connecting the lever and indicator, substantially as set forth.

6. The combination, with a standard, a lamp-case, a disk secured to a lever, and a bell secured to the lamp-case and adapted to be operated by the movement of said lever, of a pivoted lever, a weight adapted to move thereon, and a rod connecting the pivoted lever and the lever carrying the disk.

7. The combination, with a slide or disk
and a rod connected thereto, of a pivoted le-
ver having a groove or channel therein, the
lugs formed on said lever at the ends of said
5 groove or channel, and a roller mounted on
the lever and adapted to travel between the
lugs.

8. The combination, with a slide or disk, a
pivoted lever, and a movable device mounted
10 on said lever, of a semi-elliptic spring lo-

cated in a position to be engaged by the wheel
of a passing train, and a pin connected with
said spring for operating the lever.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

EDWARD D. DOUGHERTY.

Witnesses:

SAMUEL L. TAYLOR,

JOHN S. KNIGHT.