

(No Model.)

2 Sheets—Sheet 1.

A. G. CUMMINGS.

# APPARATUS FOR OPERATING RAILWAY SIGNALS.

No. 277,118.

Patented May 8, 1883.

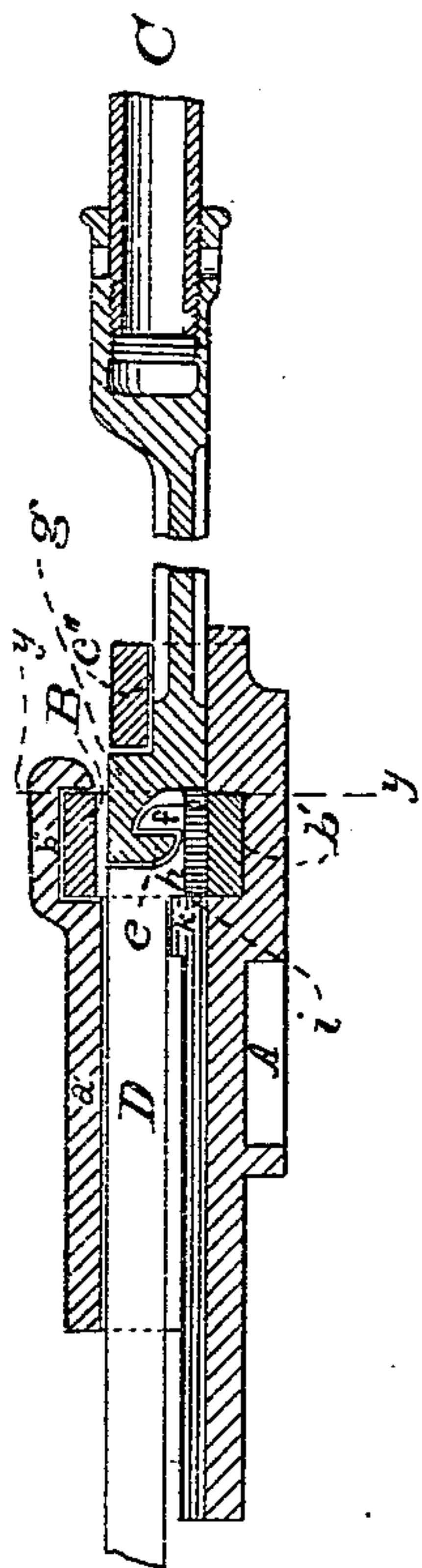


Fig. 3.

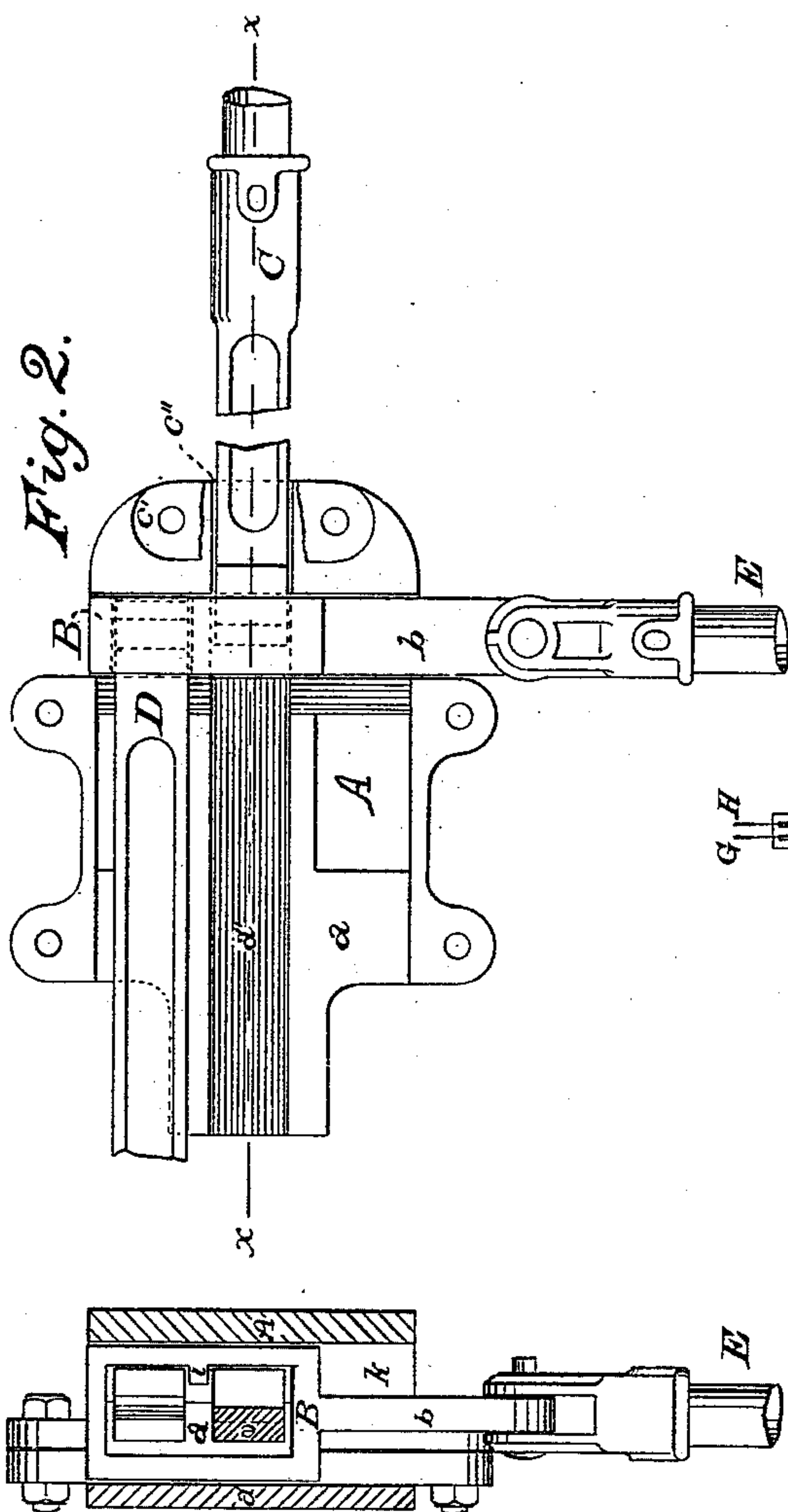


Fig. 2.

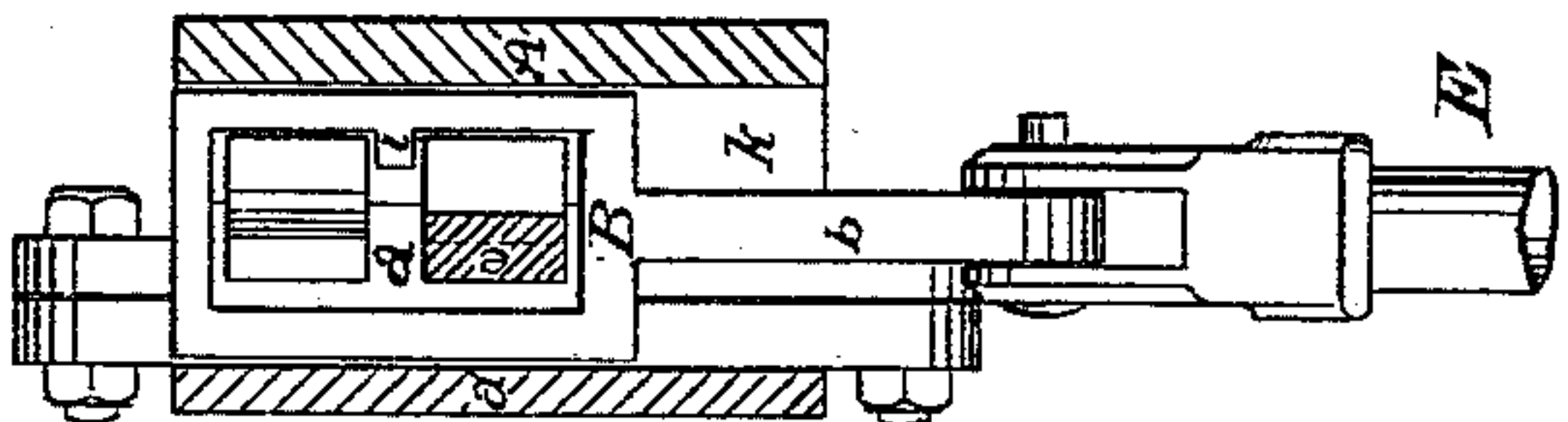


Fig. 4.

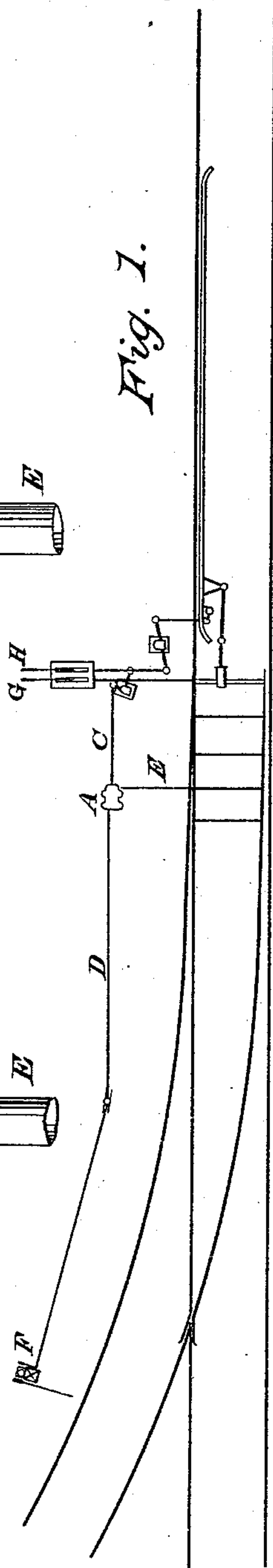


Fig. 1.

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(No Model.)

2 Sheets—Sheet 2.

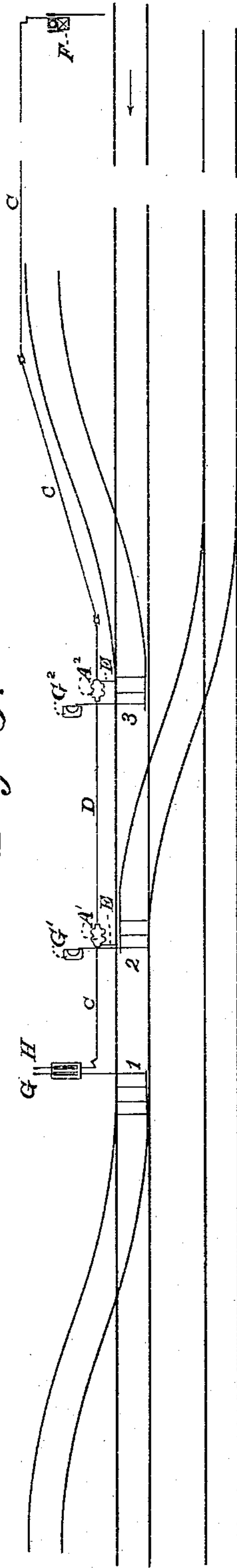
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Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR OPERATING RAILWAY-SIGNALS.

SPECIFICATION forming part of Letters Patent No. 277,118, dated May 8, 1883.

Application filed March 12, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT G. CUMMINGS, of Harrisburg, county of Dauphin, State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Operating Railway-Signals, of which improvement the following is a specification, reference being had to the accompanying drawings, which form a part hereof, and in which—

Figure 1 is a general plan view of a track, one switch, and one signal, showing the application thereto of my improvements in the apparatus for operating the signal. Fig. 2 is a plan view of so much of my improved apparatus as is necessary to illustrate its construction and operation, the cap-plate being removed. Fig. 3 is a longitudinal section of the same on the center line of Fig. 2, with the cap-plate in place. Fig. 4 is a cross-section on line *y y* of Fig. 3. Fig. 5, Sheet 2, is a plan of several switches in a line of track, showing an arrangement of several devices for making and breaking a signal-connection, as will be more fully explained hereinafter.

My present invention relates to the connections whereby signals or switches are operated from a distance, my object being to enable the position of a certain switch to control the movements of such connections, and render it impossible to operate such signals or switches by means of said connections in any case when the certain switch would be in a position contrary to that which the signal should indicate.

On a suitable foundation I fix a guide-box, A, which has a recess, as at *a''*, a broader open space, *a*, extending through it from end to end. Across one end I arrange a link, B. In the rear of the link is a boxed guide, *c*, formed by the cap-plate *c'* and recess *c''*. The link B is connected by bars or rods E to a switch. Lengthwise of the box A is a bar, D, which connects in the usual or any desired way with a signal or with another switch. Passing through the boxed guide *c* and the link B is a bar, C, which, at its rear end, will be attached to a connection leading to a lever, H, by which the signal F is operated. The bar C is arranged in line with the recess *a''* of the box A, and is so made that it may be operated forward and back therein. Its forward end and

the rear end of the bar D are made to engage with each other by any suitable joint, such that by the bar C longitudinal motion may be imparted to the bar D. One suitable form is shown in Figs. 2 and 3, where a hook, *e*, on the head *g* of C engages a counter-hook, *f*, on the head *h* of bar D. These heads are so shaped that vertically they fill the link B. The enlarged portion forming the head makes a shoulder, as shown at *i*, Fig. 3, of such shape that it will slip out of the recess *a''* and engage the end *k* of the side wall of the recess *b'* whenever it may be shifted out of engagement with the bar C by the movement of the link B. When so shifted the bar D will be locked and prevented from receiving any longitudinal movement.

Although I show the box A with recess *a* wider than is required for the movement of the bar D, it is not necessary to have recess *a* wider than twice the width of the bar D; but to make the box A available for both right-hand and left-hand connections, I prefer to make the box A of the width shown.

It will be observed that as the device is represented in Figs. 1, 2, 3, and 4, the two bars C and D are shown out of engagement, and that any movement given to the bar C would simply slide said bar along the recess *a''*, and prevent the changing of the switch until its return to the normal position, by reason of the upward-projecting rib *l* of the lower portion of the link B. Said rib divides the link into two spaces, one of which contains the head of the bar D. The other space is in line with the recess *a''* and the bar C, and, as already shown, the function of the rib *l* is to hold the switch in either position whenever the bar C is moved forward out of its normal position; also to impart the lateral movement of the link B to the bar D, and thus remove it from engagement with bar C, and into the position shown in Figs. 2 and 3, as above stated.

Assuming that bar D is connected to a signal, as in Fig. 1, and that bar C is connected to a lever, H, by which the signal is to be operated, the signal will be operated by giving a forward stroke to the bar. This motion is, however, possible only when the switch to which the link B has been connected is set so



that a train proceeding in accordance with the signal and passing over said switch will proceed in the safe route indicated by the signal.

The switch may be operated by a hand-lever 5 attached directly to it, as at G in Fig. 1, or may be operated by a connection leading to a distant lever, and the signal may be operated by a connection leading from a switch-locking mechanism, as shown in Fig. 1, or be operated 10 by a connection leading to a distant lever, which, by its movement, will actuate the signal; or, still further, by a connection leading from another switch, which may be so arranged that its movement will operate the 15 signal.

As shown, my device for connecting and disconnecting the connection is arranged to be operated directly from the switch; but it is obvious that it may also be arranged to be op- 20 erated from the connection with which the switch is moved.

In Fig. 5, Sheet 2, I show a number of switches leading out of a main-line track, on which "through trains" will proceed in the di- 25 rection indicated by the arrow. Whenever the signal F indicates "safety," as shown, the signal F will be actuated by the lever H, (or may be operated from a distant interlocking apparatus.) The switches 1 2 3 are operated by le- 30 vers G G' G<sup>2</sup>, placed as, usual, near the switch; but the switches can be operated from a distance without departing from the purposes of my invention. So long as the signal F stands in the normal position indicating "danger," 35 the switches 1, 2, and 3 may either of them be opened to let trains onto the side tracks, or vice versa, and the switches used as hand-operated switches; but whenever either of said switches are opened the signal-connection is 40 locked, so that the signal cannot be made to indicate "safety" while the switch is open. If the switches 1 2 3 are all closed and correct for the main line, the signal may be operated by means of the connection C, precisely the 45 same as by a solid unbroken connection.

It will thus be seen that in a system of tracks where certain signals will be operated to control the movements of trains, I make the position of the switches control the signals and 50 secure the safety of trains, inasmuch as while the switches may be freely operated so long as the signal stands at "danger," and through

trains are thus prevented from approaching whenever the signal is operated to allow pas- 55 sage of through trains, the switches are held to safe position for the said line.

The details of connections between levers and switches and their compensating devices, &c., are so well known that they need not be 60 shown in this specification.

Referring to my former Patent No. 216,510, it will be seen that in said patent I use a similar device to operate two or more signals by one connection, and by the position of a switch control the particular signal to be operated; 65 but in this case I use a similar device to connect and disconnect a signal-operating rod. It will readily be seen that the operation of this interlocking device can be obtained in various ways within the skill of a constructor without 70 departing from the principles of my invention. For instance, the box A, instead of being fixed, may be made to slide to and fro with the bar C, the bars C and D changed to a form that will allow them to pass over or by each other 75 freely, except when by the presence of a device similar in function to the link B they are locked or caused to engage and move as one bar. The device used in place of link B may be shifted simultaneous with the movement of 80 the switch, and produce an engagement of the bars C and D, for the purpose hereinbefore described.

What I claim, and desire to secure by Letters Patent of the United States, is— 85

1. The combination of a switch and the connection to a signal or another switch with a device for connecting and disconnecting said signal or switch-connection simultaneously with the movement of and in accordance with 90 the position of the first-mentioned switch.

2. The combination and arrangement of disconnecting devices in a line of signal or switch connection with switches along said line of connection, whereby each switch must be in a 95 certain prescribed position to allow the said line of connection to be complete from its actuating mechanism, and free to move, substantially as and for the purpose specified.

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Witnesses:

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