

(No Model.)

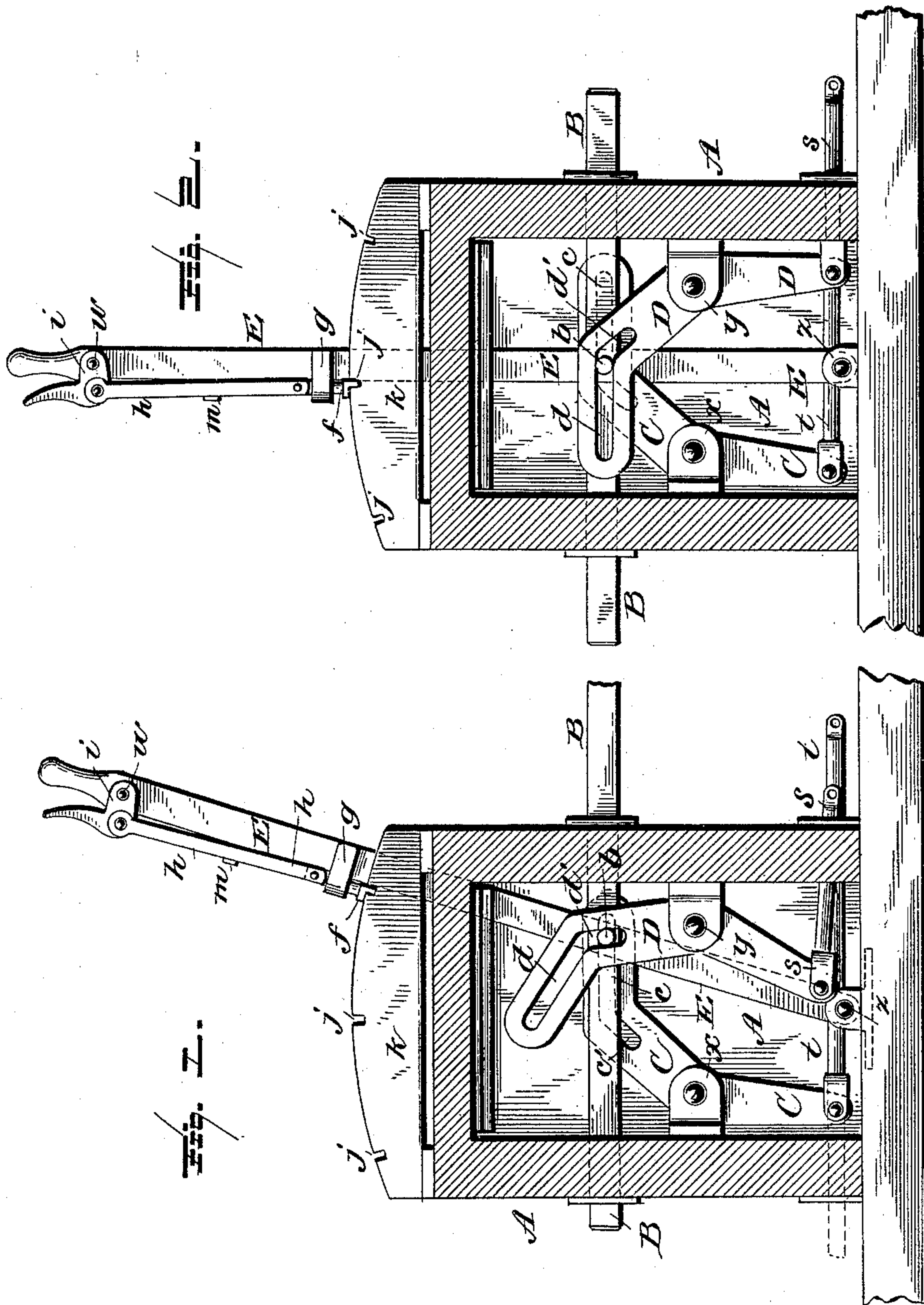
2 Sheets—Sheet 1.

J. W. RAUB.

APPARATUS FOR OPERATING RAILWAY SIGNALS.

No. 431,481.

Patented July 1, 1890.



Witnesses  
L. C. Gilles  
[Signature]

Inventor  
James Wilson Raub  
by Marcus Bailey  
his Attorney

(No Mod

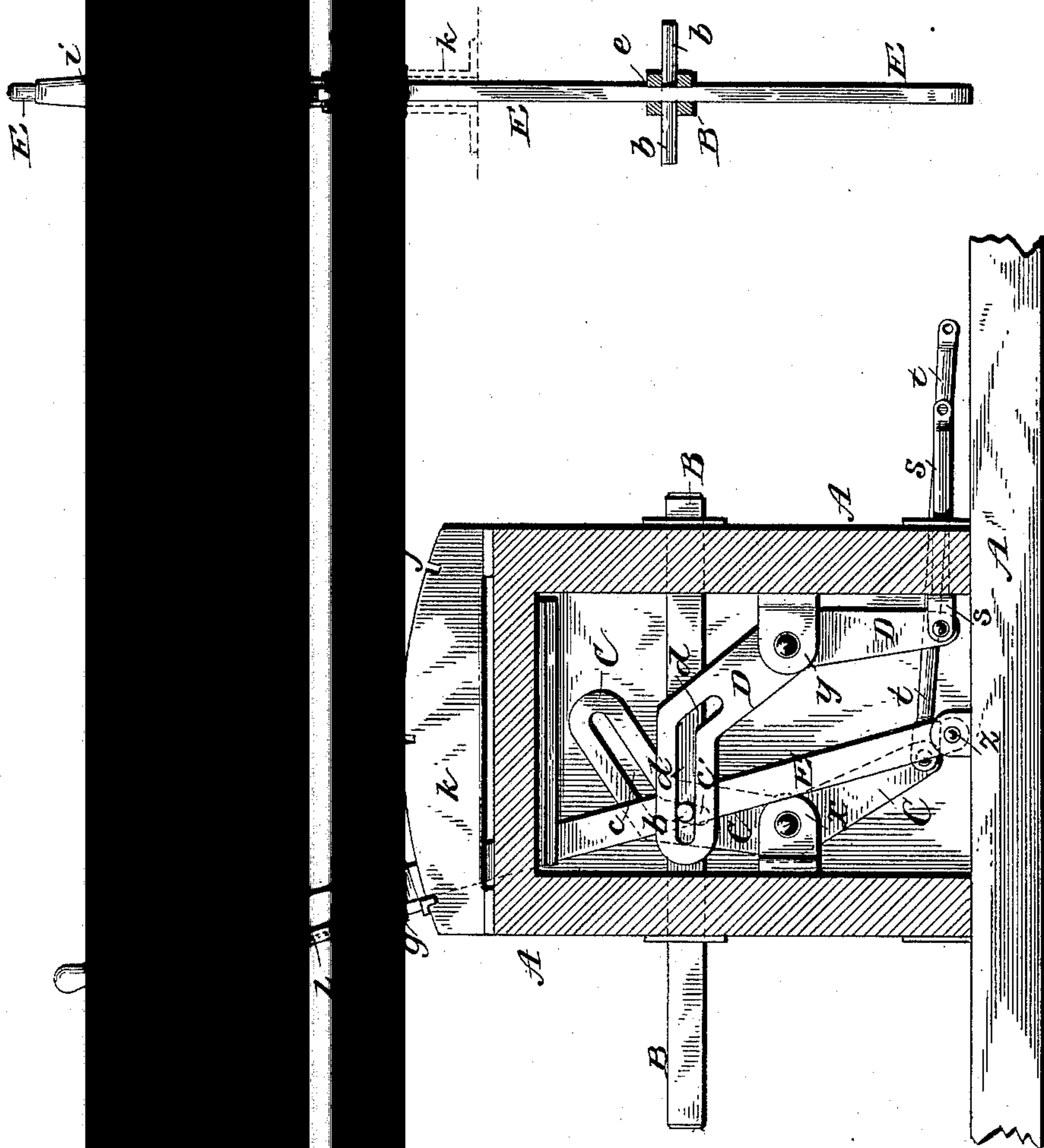
2 Sheets—Sheet 2.

J. W. RAUB.

OPERATING RAILWAY SIGNALS.

No. 4

Patented July 1, 1890.



Witness  
L. C.  
Ewel

Inventor  
James Wilson Raub  
by Marshall Bailey  
his Attorney



# UNITED STATES PATENT OFFICE.

JAMES V. RAUB, of SOUTH EASTON, PENNSYLVANIA, ASSIGNOR TO  
THE WESTINGHOUSE AND SIGNAL COMPANY, OF SAME PLACE.

## FOR OPERATING RAILWAY-SIGNALS.

SP. 111,111, part of Letters Patent No. 431,481, dated July 1, 1890.

Filed May 29, 1890. Serial No. 353,559. (No model.)

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the opposite extreme of its movement. Fig.  
4 is a front view of the operating-lever, show-  
ing the construction and arrangement of the  
lock or latch by which the lever is locked in  
either one of the three positions in which it  
is represented in Figs. 1, 2, and 3.

In the drawings, A is the box which in-  
closes the movement, with one of its sides re-  
moved to expose the parts within.

B is the longitudinally-sliding operating-  
bar, which extends through bearings or guides  
in the ends of the box, in which it can slide  
freely.

C and D are the pivoted arms, adapted to  
be connected to the parts to be successively  
operated. These arms are pivoted to the box,  
the one at  $x$  and the other at  $y$ , intermediate  
of their ends. At their lower ends they are  
jointed, the one to a rod  $s$  and the other to a  
rod  $t$ , which rods pass out through the box  
and are to be connected in any usual or suit-  
able manner to the switch semaphore-signals  
or the like, which they are to successively op-  
erate. At their upper ends the arms have  
formed in them slots  $c c' d d'$ , each the coun-  
terpart of the other, consisting each of a com-  
paratively long portion  $c$  or  $d$ , which when  
the operating-bar of the particular apparatus  
represented in the drawing is in its middle  
position is horizontal, and a shorter portion  $c'$   
or  $d'$ , which stands at an angle of forty-five  
degrees, or thereabout, to the longer por-  
tion. The particular angle at which the two  
portions of each slot stand to each other is  
not, however, material. What is desirable is  
an angle of such degree that the pin  $b$  on the  
operating-bar B, which engages the slot, will  
move in the angular portion of the slot with  
ease and will throw the arm without undue  
friction and exertion. While the slots are  
the same in each arm, they occupy reverse po-  
sitions in the box, inasmuch as the arms are  
pivoted to opposite ends of the box, the ar-  
rangement being such that while the pin  $b$  is  
traversing the horizontal portion of one slot  
it will be traversing the angular portion of  
the other slot. It is only while the pin trav-  
erses the angular portion of the slot that mo-  
tion is imparted to the arm. So long as it trav-  
erses the horizontal part of the slot the arm  
is held motionless. Consequently the arms



must move in either direction successively, and whenever and so long as one arm is in motion the other arm is at rest and is locked against movement.

5 The arms C D are placed one on each side of the operating-bar. The pin *b* in the operating-bar extends crosswise through it and enters the slots of the two arms.

10 E is the operating-lever, which is pivoted to the bottom of the box A at *z*, extends up through a slot in the operating-bar B, and projects from the top of the box through a longitudinal slot therein of such length as to allow the needed range of movement to the operating-lever. The engagement of the lever with 15 the operating-bar is effected by the cross-pin *b*, which passes through a longitudinal slot *e* in the lever. The operating-lever is provided with the usual spring lock or latch, consisting of the downwardly spring-pressed detent *f*, the 20 stem of which slides in a guide *g* on the operating-lever and is jointed above this guide to connecting-rods *h*, which are at their upper ends jointed to the elbow of an angle-lever *i*, 25 having its forked lower end pivoted to the operating-lever at *w*, with its upper end in proximity to the handle of the operating-lever, so that it, together with the handle, may be grasped by the operator. Pressure upon 30 this portion of the angle-lever raises the detent *f*, so as to disengage it from any one of the three notches *j* in the segment-plate *k*, over which the detent moves when the operating-lever is actuated. Projecting upwardly 35 from the detent-stem is a rod *l*, the upper end of which plays through a guide *m* on the operating-lever. This rod is surrounded by a spiral spring *s*, confined between the guide *m* above and a shoulder on the detent-stem below. This spring presses the detent downward. 40

When the parts are in the position shown in Fig. 1, the arm D is thrown forward, with the pin *b* in the angular portion *d'* of its slot. In moving the operating-lever E from the position shown in Fig. 1 to the opposite extreme 45 the arm D is first operated by the pin *b* moving in the angular portion *d'* of its slot, with

the effect of retracting the lower end of this arm, the arm C meanwhile remaining at rest and motionless by reason of the pin *b* passing 50 through the horizontal portion *c* of its slot. This continues until the operating-lever has reached the middle of its movement, as seen in Fig. 2, at which time the pin *b* has just reached the horizontal portion *d* of the slot 55 in arm D and is just about to quit the horizontal portion *c* of the slot in arm C. Further movement of the operating-lever in the same direction to the extreme position shown in Fig. 3 will have the effect of throwing the arm 60 C to the position indicated in that figure by reason of the pin *b* traversing the angular portion *c'* of the slot of that arm, while the lever D is still held motionless in the position it occupies in Fig. 2, because of the passage of pin 65 *b* through the horizontal portion *d* of its slot. Thus each arm is operated successively and each is locked firmly against movement while the other is being operated.

Having now described my invention and 70 the best way now known to me for carrying the same into effect, what I claim herein as new and of my own invention is as follows:

In apparatus for operating railway signals, switches, and the like, the combination, with 75 two independent vibrating pivoted levers to be connected to the parts which are to be successively operated, each lever being provided with a slot having a longitudinal and an angular or oblique portion, of a longitudinally- 80 movable operating-bar having a pin to engage each of said slots, the arrangement being such that whenever and so long as the pin is traversing the angular portion of the one slot it shall be in the longitudinal portion of 85 the other slot, as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 26th day of May, A. D. 1890.

JAMES WILSON RAUB.

Witnesses:

JOHN J. SEIP,  
W. F. PASCOE.