

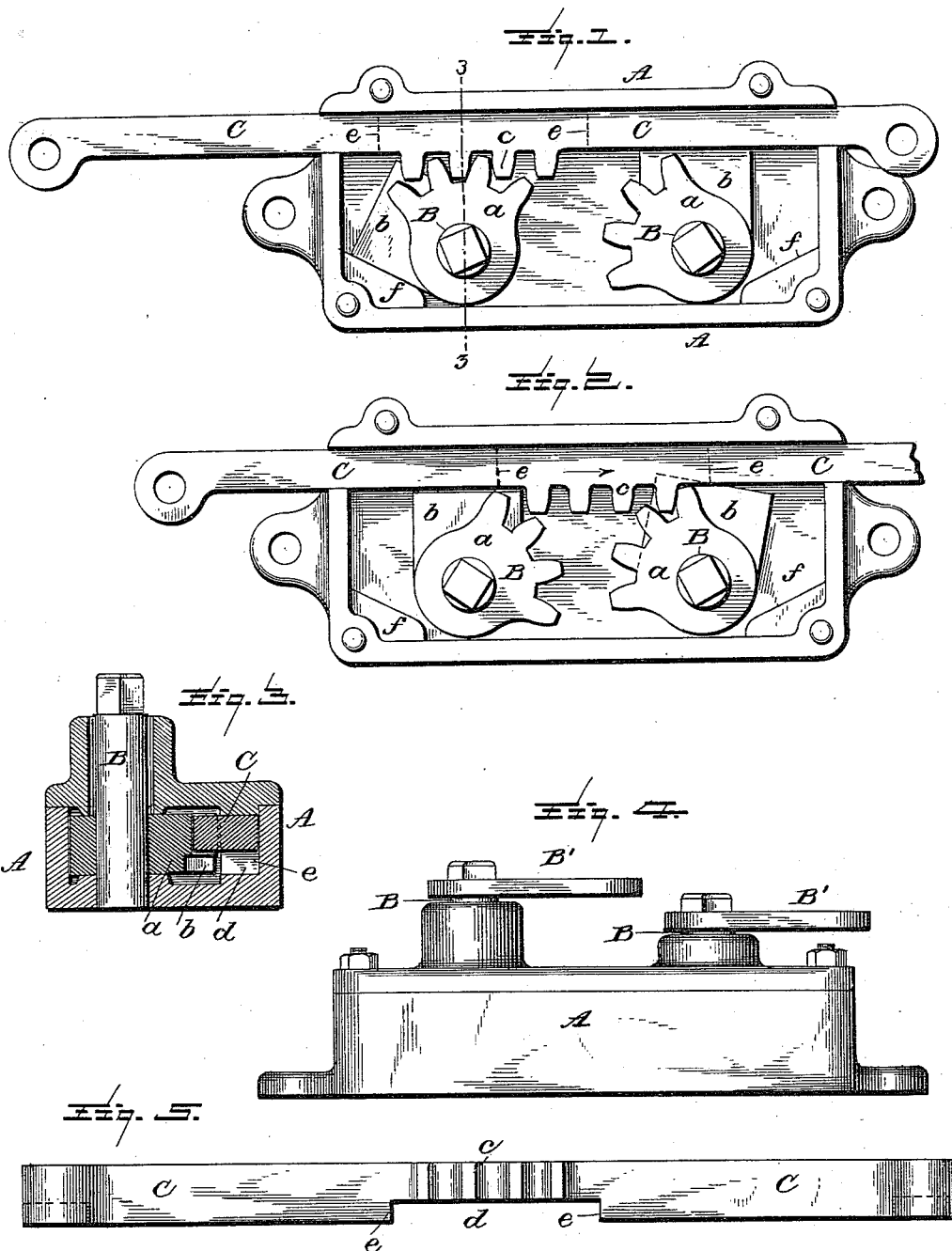
(No Model.)

G. N. REIFF.

MECHANISM FOR OPERATING RAILROAD SIGNALS, &c.

No. 419,996.

Patented Jan. 21, 1890.



WITNESSES

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MECHANISM FOR OPERATING RAILROAD-SIGNALS, &c.

SPECIFICATION forming part of Letters Patent No. 419,996, dated January 21, 1890.

Application filed November 4, 1889. Serial No. 329,167. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVUS N. REIFF, of Easton, in the county of Northampton and State of Pennsylvania, have invented certain
5 new and useful Improvements in Mechanism for Operating Railroad Signals, Switches, Detector-Bars, &c., of which the following is a specification.

My invention was originally designed with
10 a view to successively operate by a single operating arm or bar the two semaphore-arms of the semaphore-signal described in my application for Letters Patent, Serial No. 321,589, filed August 22, 1889; but it is susceptible of a wide range of uses, being adapted
15 to serve in any connection where two bodies are to be operated in succession by or from one operating-bar. It is particularly adapted for use where home and distant signals for railway purposes are to be successively operated, or where a switch is to be first set and then locked and detector-bar operated, or where a switch, after having
20 been set, is to be locked and detector-bar operated and then the proper signal is to be displayed.

The mechanism in which my invention is comprehended comprises the combination, with two or more independently-movable pivoted arms, of a longitudinally-movable operating-bar which during its movement engages and moves each arm in succession, quitting the one arm by the time it engages the other arm or arms, and acting to cause
30 each arm to be locked in the position it occupied when quitted by the bar until again engaged by the bar. The means by which the intermittent and successive engagement of the bar with the arms is effected during
35 the longitudinal movement of said bar can be varied considerably by the skilled mechanic without departure from my invention. What I prefer is to form each arm as a segment-gear and to put on the operating-bar a rack, the number of teeth on the segment-gears and the rack being sufficient only to
40 cause the arms to vibrate or swing to the desired extent, and the distance between the centers of the two segment-gears being such that the rack will have quitted or been disengaged from one segment by the time it en-

gages the other. In conjunction with these instrumentalities I employ a locking mechanism, which is brought into action by the operating-bar, and which serves to lock each arm
55 immovably in place so long and only so long as it is out of engagement with the rack on the bar. This mechanism may be variously constituted without departure from my invention so long as it possesses the characteristics above noted. The form of mechanism which on the whole I find the simplest, cheapest, and most efficient is one in which the one part of the lock is furnished by the bar itself and the other part by the arm. For this purpose a portion of the face of the bar contiguous to each arm makes one part of the lock, and a square-faced locking-block on each pivoted arm furnishes the other part of the lock for that arm; and between the two locking
60 portions of the face of the operating-bar is a recess or slot, opposite which the locking-block on each arm will be brought when that arm is engaged with the bar. So long, however, as the arm is disengaged from the bar the square face of its locking-block will be opposite to and virtually in contact with the unrecessed locking-face of the bar, and will thus be held firmly from any movement.

In the accompanying drawings, to which
80 reference will now be made, I have illustrated a mechanism embodying the preferred form of my invention.

Figure 1 is a plan view of the mechanism with the cover of the box which contains the
85 same removed. In this view the operating-bar is at one of the extremes of its movement. Fig. 2 is a like view with the parts in the position which they occupy when the operating-bar has quitted one arm and has engaged and
90 commenced to move the other. Fig. 3 is a cross-section on line 3 3, Fig. 1, with the cover in place. Fig. 4 is a side elevation of the inclosing box and cover with the mechanism in place therein. Fig. 5 is an elevation of
95 that face of the operating-bar contiguous to the segment-gears and locking-blocks.

The box A is of suitable size and shape to contain the several parts of the mechanism.

B are cylindrical stems which take their
100 bearings in the bottom of the box and top of the cover, as seen in Figs. 3 and 4, in which

bearings they can revolve. Each stem at its outer end is squared to receive a lever-arm B', to which can be attached the rod or wire by which motion is to be communicated to some object at a distance—such, for example, as a switch-lock, a signal, &c. One of the stems is shorter than the other, so that the lever-arms B' can be in different planes. Within the box each stem has secured to it a segment-gear *a* and a lock-block *b*.

In suitable guides in the box is supported the longitudinally-movable operating-bar C, whose ends project out through guide-slots in the ends of the box. This bar is provided with a short rack *c* to engage the two segment-gears in succession. The bar thus far described is the operating-bar—that is to say, the bar by which each arm is successively engaged and moved. The special locking devices to operate in connection with the lock-blocks are carried by the bar, and may be described as follows: At a point beneath the rack *c* is a recess or slot or open space *d*, and on each side of this recess *d* are locking-faces *e*, which serve as locking-faces in conjunction with the square faces of the respective locking-blocks *b*. The function of the intermediate recess *d* will be presently described.

In the box at each end are stop-shoulders *f* for arresting the movement of their respective lock-blocks.

The operation of the parts is as follows: In Fig. 1 the operating-bar is at one extreme of its movement. In this position the stem B, whose segment-gear engages the rack on the operating-bar, has been rotated until the stop-block *b* attached to that stem has brought up against its stop-shoulder *f*. The other stem B is locked in place against any movement by the square face of its stop-block *b*, which is parallel to and virtually in contact with its appropriate locking-face *e* on the operating-bar, and the segment-gear of this stem is not only disengaged from the rack *c* on the operating-bar, but is separated from that rack by a distance equal to that which the rack must travel in order to quit the one with which it is now in engagement by the time it engages the other. The position of the recess or slot *d* is indicated by dotted lines. If now the operating-bar be moved in the direction indicated by the arrow on it in Fig. 2, it will return the parts with which it is engaged in Fig. 1 to the position shown in Fig. 2 before it engages and actuates the other stem and segment-gear, the recess *d* permitting this movement by furnishing a space into which the contiguous corner of the locking-block which it is moving can enter during this movement. By the time the locking-block thus moved has been brought back with its square face parallel with and close to the operating-bar the recess *d* has passed beyond it, and the parts with which it (the locking-block) is connected are thereby locked

in place. The operating-bar, continuing in movement, then engages the other segment-gear and moves the parts with which that gear is connected, just as in the other case, the recess *d* affording a space in which the square corner of the tilted lock-block of this gear can move, as shown in Fig. 2 by dotted lines, which represent the position assumed by the lock-block relatively to the slot *d* when the operating-bar has partly completed its movement. Each arm is thus engaged and operated in succession by one and the same operating-bar during its movement in either direction, and each arm is locked in the position which it occupies at the time it is quit- ted by the operating-bar, and remains so locked until and only until it is again engaged by said bar.

In order to more clearly define what I believe to be the scope of my invention, I may state in this connection that the arm is "engaged" by the operating-bar (in the sense in which I here use the word "engaged") when the two stand in such relation to each other that the movement of the operating-bar will cause movement of the arm, and in the same sense the arm is "quitted" by, or "disengaged" from, the operating-bar so long as the operating-bar, when in motion, does not actuate or move the arm.

Manifestly, three or more arms might be successively operated in like manner, all that is needed being to increase the range of movement of the operating-bar.

By the use of this simple mechanism I am enabled by one operating-bar to successively operate two separate and independent devices—such as home and distant signals, switches, and switch-locks, with detector-bar, &c.—during its movement in either direction, a feature which is of great advantage in systems for operating railway switches and signals.

Having described my improvements and the best way now known to me of carrying the same into effect, what I claim, and desire to secure by Letters Patent, is—

1. In apparatus for operating railway signals, switches, and the like, the combination, with two or more independently-movable pivoted arms adapted to be connected to the parts which are to be successively operated, of a longitudinally-movable operating-bar which during its movement in either direction engages and moves each arm in succession, quitting the one arm by the time it engages the other, and locking devices actuated by the operating-bar to lock each arm in position whenever and so long as said arm is disengaged from said bar, whereby the part to be first operated is fully set before the succeeding part begins to move, and each part, except the one which is being operated, is locked immovably in position, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the independently-pivoted stems or axles and the segment-gears and lock-blocks fixed to the same, of the operating-bar provided with a rack to
5 successively engage said segment-gears, and locking-faces with an intermediate recess or slot carried by said operating-bar and adapted to operate in connection with the lock-blocks,

substantially as and for the purposes hereinbefore set forth.

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

GUSTAVUS N. REIFF.

Witnesses:

THOMAS J. SWIFT,
WM. W. RANDOLPH.