

(No Model.)

J. T. POWERS.  
LOCKING SWITCH MOVEMENT.

No. 504,502.

Patented Sept. 5, 1893.

Fig. 7.

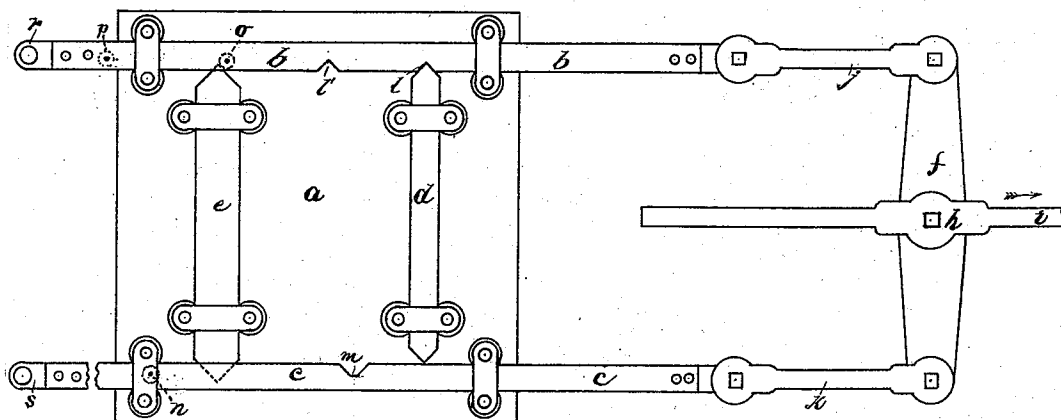
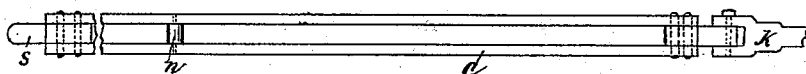
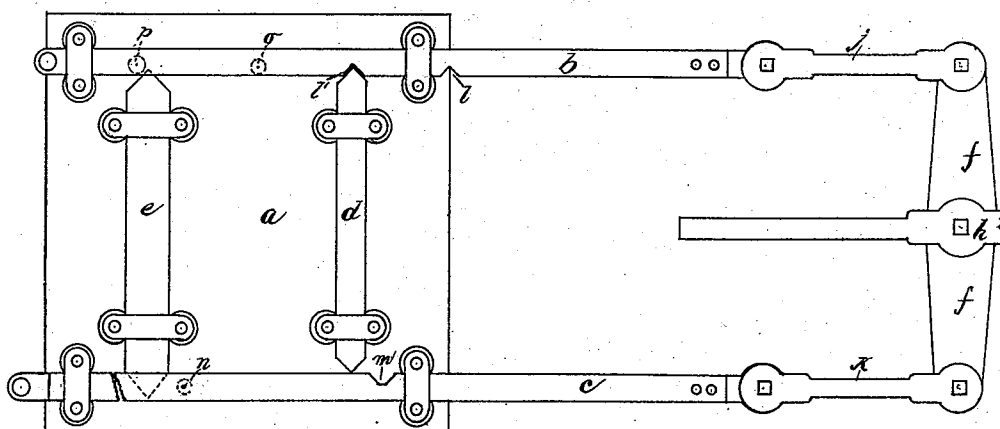


Fig. 2.



*Fig. 3.*



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## LOCKING-SWITCH MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 504,502, dated September 5, 1893.

Application filed December 29, 1892. Serial No. 456,682. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. POWERS, a citizen of the United States of America, residing in West Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Locking-Switch Movements, of which the following is a specification, reference being had to the accompanying drawings and letters of reference marked thereon.

In the drawings, like letters of reference indicate like parts.

Figure 1 is a plan view of my device, illustrating the position of the parts while the switch is thrown in one direction. Fig. 2 is an edge view of one of the sliding bars, and Fig. 3 is a plan view of my device illustrating the position of the parts when the switch is thrown in a direction opposite to the position occupied by it when the parts are in the position shown in Fig. 1.

In detail, *a* indicates the base, *b* and *c* sliding bars, *d* locking dog, *e* starter, *f* yoke, *h* double jaw, *i* operating rod, and *j* and *k* links.

The construction and operation of my device is as follows: A suitable base or plate *a* is provided, upon which are mounted in suitable guides or ways the sliding bars *b* and *c*, which sliding bars are provided with recesses *l* and *m*, whose function will be hereinafter described. The sliding bars are preferably constructed of two strips of metal arranged parallel with each other and separated a short distance. Mounted upon the base and sliding in a direction at right angles to the sliding bars, I arrange the locking-dog *d* and the starting device *e*, both of which are free to move longitudinally, but are restrained from lateral movement. The ends of the locking-dog are of a thickness greater than the space between the two pieces forming the body of the sliding bars, and the sliding-bar *c* is provided with a recess *m*, the walls of which recess are V-shaped or inclined as shown in the drawings. The sliding-bar *b* is provided with two such recesses, *l* and *l'*. The ends of the starter *e* are of a thickness to pass between the two parts forming the body of the sliding-bars, and mounted upon the sliding-bars at the desired position are suitable anti-friction rolls, *n*, *o*, *p*, mounted on suitable pins or bearings. Anti-friction rolls are also mounted

adjacent to the edges of all of the sliding parts of the device. The bell-crank-lever or other switch operating mechanism is connected in a suitable manner with the plate *r* which is mounted in the free end of the sliding-bar *b*, while the detector is connected by suitable mechanism to the part *s*, which is mounted in the end of the sliding-bar *c*. If now it is desired to throw the switch to a position different from that in which it is locked by the device as illustrated in Fig. 1, the operative lever is thrown to draw the operating rod *i* in the direction indicated by the arrow, and this operating through the double jaws *h* mounted upon the center of the yoke *f*, operates to move the yoke in the same direction, thus drawing by means of the links *j* and *k* upon both the sliding-bars *b* and *c*. As the sliding-bar *b*, however, is restrained from longitudinal movement because of the fact that the locking-dog *d* is in engagement therewith, (its end being within the recess *l*) this sliding-bar cannot be moved, but as the sliding-bar *c* is not locked the result will be that it will be drawn in the direction indicated by the arrow until the end of the locking-dog *d* is opposite the recess *m*, at which time the roller *n* mounted in the sliding-bar *c* is brought into engagement with the inclined end of the starter *e*, which operates to force the starter *e* toward the sliding-bar *b*, causing the incline of the starting-bar at that end which bears against the friction roll *o* mounted in the sliding-bar *b* to force the sliding-bar *b* forward, thus operating to force the locking-bar *d* from its engaging recess in the sliding-bar *b* and causing the opposite end of the locking-bar *d* to engage the sliding-bar *c* in the recess *m*, thus effectually preventing further longitudinal movement of the sliding-bar *c* until it is free to move by disengagement of the locking-bar from said recess, and the sliding-bar *b* continues to move toward the right until the recess *l'* in it has reached a position opposite the end of the locking-dog *d*, at which time the pulley *p* in the sliding-bar *b* engages the inclined end of the starter *e*, forcing it toward the sliding-bar *c* and causing its end to engage the pulley *n*, thus operating to start the sliding-bar *c* again, and thus forcing the locking-dog out of engagement with it and into the recess *l'* in

the sliding bar *b*, at which time the switch will have been thrown to the desired position and the detector-bar operated sufficiently to indicate the position of the switch, and  
 5 it will readily be seen that the switch cannot be moved from its position until these sliding-bars have been operated in the reverse direction to that above described, thus providing a simple, easily operative, and positive  
 10 device for moving and locking the switch in the desired position. In the reverse movement the sliding-bar *c* will first move to the left until the recess *m* is opposite the locking-bar *d*, at which time the pulley *n* will have  
 15 forced the starter *e* toward the sliding-bar *b*, causing the incline bearing against the pulley *p* to force the sliding-bar *b* to the left, thus forcing the locking-bar *d* out of the recess *l'* and into the recess *m* in the sliding-bar *c*, thus  
 20 stopping the sliding-bar *c*, but allowing the sliding-bar *b* to continue to move to the left until the pulley *o* engages the starter, forcing it toward the sliding-bar *c*, and as the pulley *n* is now past the center line of the starter the  
 25 moving of the starter now operates to force the sliding-bar *c* to the left, thus forcing the locking-bar out of the recess *m* and forcing its opposite end into the recess *l*, at which time the pulley *o* will have forced the starter  
 30 back to its normal position as indicated in Fig. 1.

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

35 1. In combination with a switch mechanism, the combination of a base, two sliding-bars

arranged therein, a locking-bar operating substantially at right angles therewith and engaging the sliding-bars alternately, and a starter arranged to start the sliding-bars alternately, each sliding-bar in turn operating through the starter to force the opposite one forward, substantially as shown.

2. In combination with a switch, a suitable base, two sliding-bars *b*, *c*, arranged thereon, the sliding-bar *b* having two locking recesses *l* and *l'* and the sliding-bar *c* having a locking-recess *m*, a locking-bar *d* arranged to enter said recesses alternately, and a starter *e* arranged to engage the sliding-bars and start the same alternately, substantially as shown. 50

3. The combination of a suitable base, sliding-bars *b*, *c*, mounted thereon, anti-friction rolls arranged to bear against the edges of said bars, a locking-bar *d* arranged to engage the sliding-bars alternately, and a starter *e* arranged to start said bars alternately, and anti-friction pulleys arranged at the edges of both the starter and lock, substantially as shown. 55

4. The combination of a suitable base, sliding-bars *b*, *c*, mounted thereon, a yoke *f* connected in its central portion with an operating rod *i*, links *j*, *k*, connecting the yoke and sliding-bars, a locking-bar *d* adapted to lock one bar as it releases the other, and a starter *e* arranged to start said bars alternately, substantially as shown. 65

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