(No Model.)

3 Sheets—Sheet 1.

C. E. FOSTER.

SWITCH STAND.

No. 570,390. Patented Oct. 27, 1896.

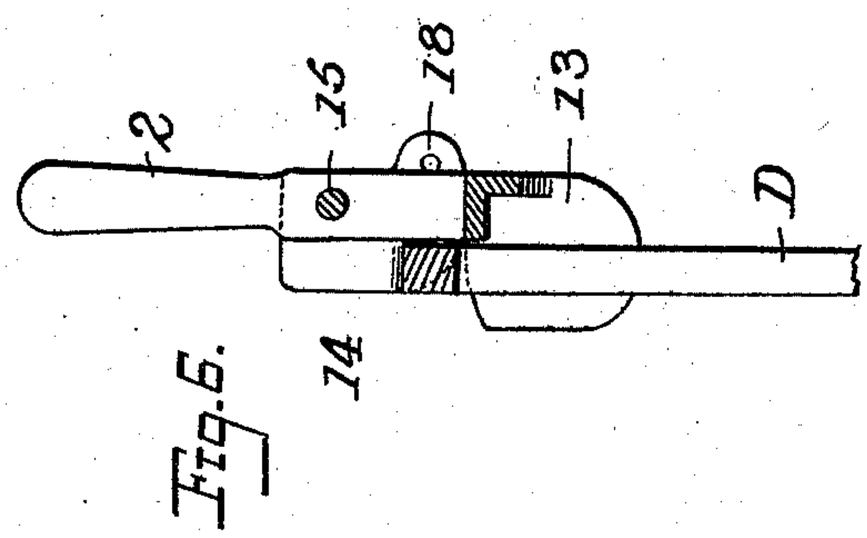

Fig. 6.

Fig. 1.

WITNESSES

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(No Model.)

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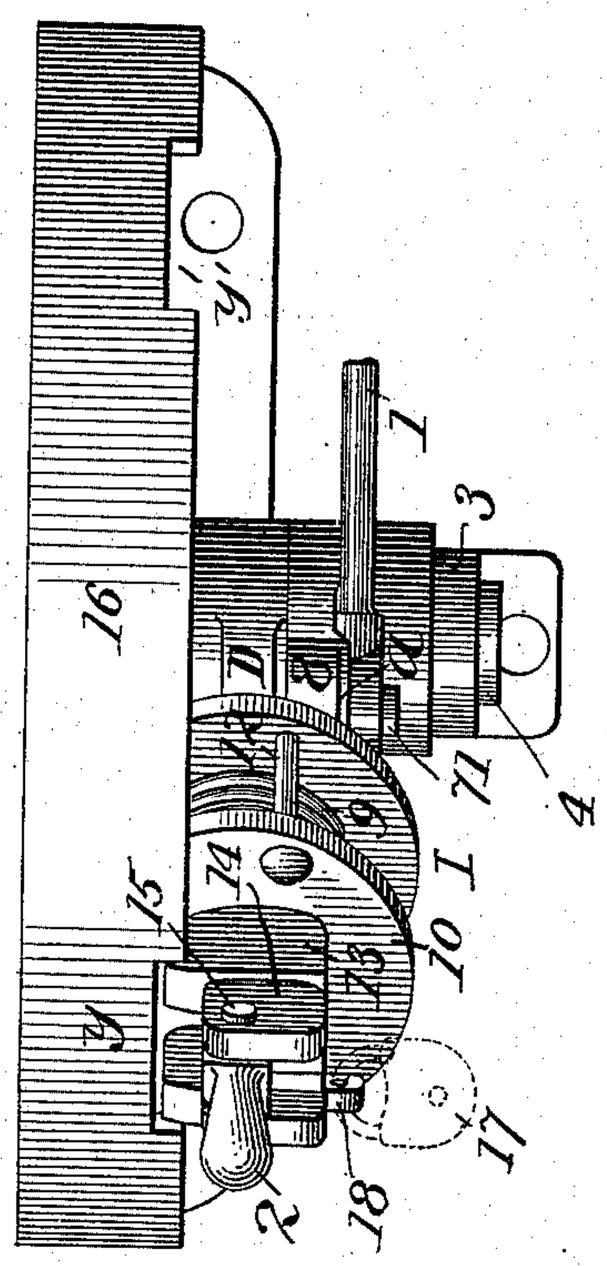

Fig. 3.

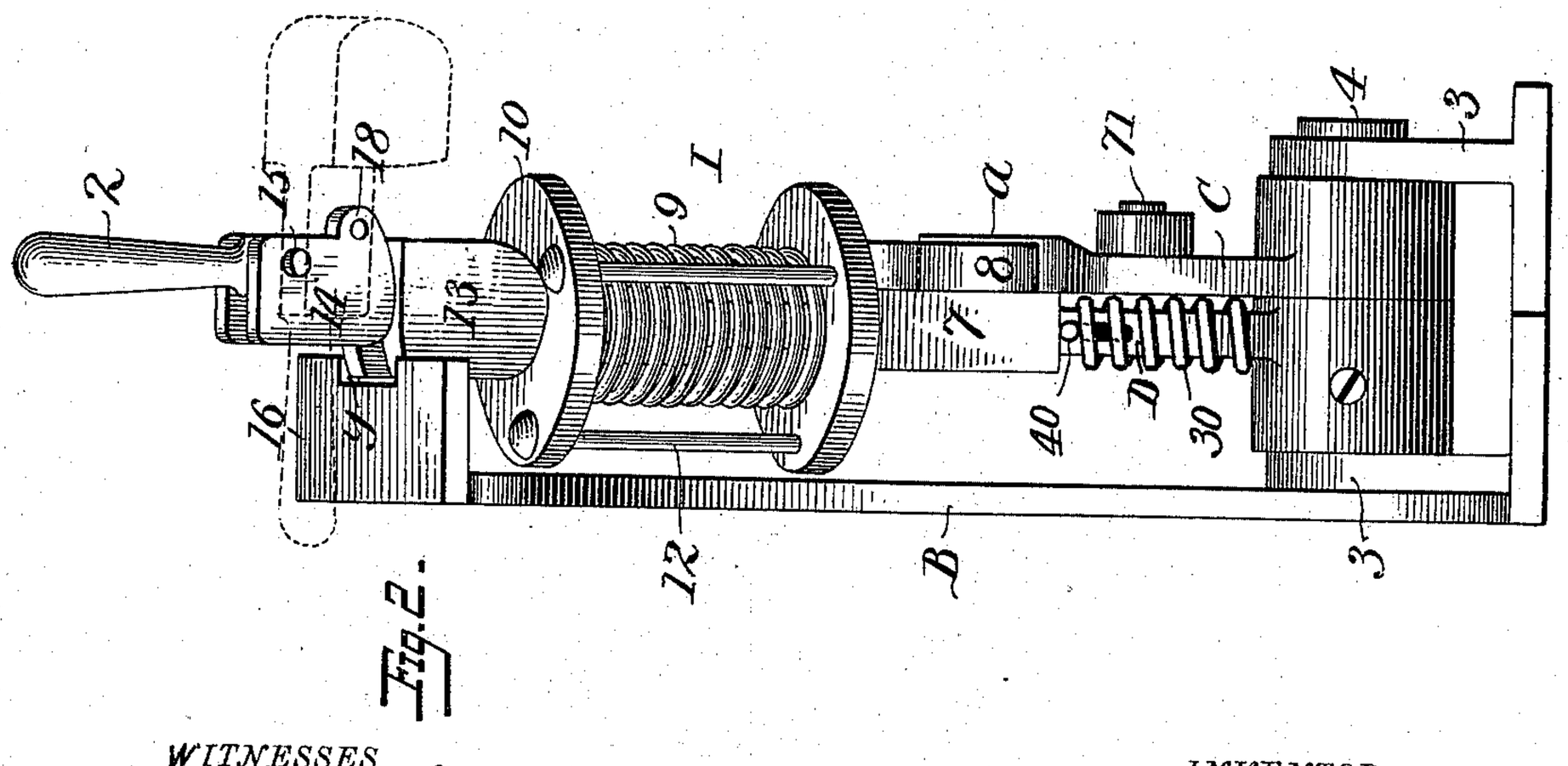

Fig. 2.

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Fig. 5.

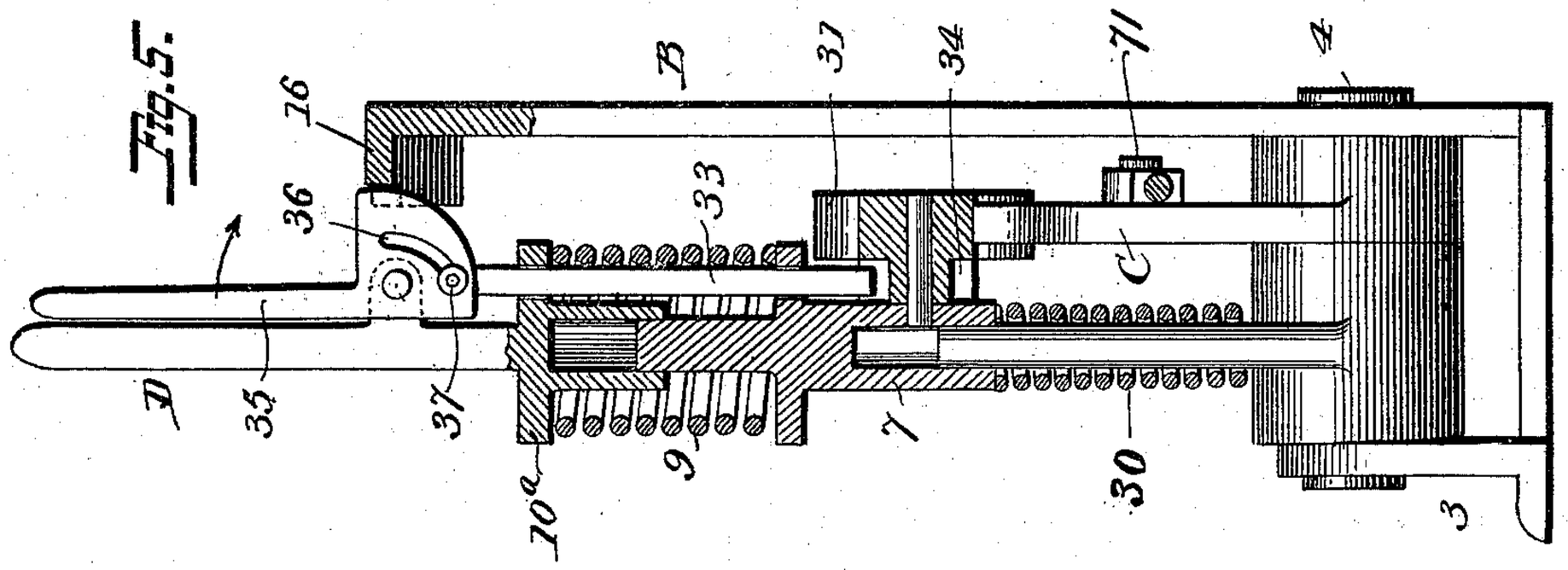
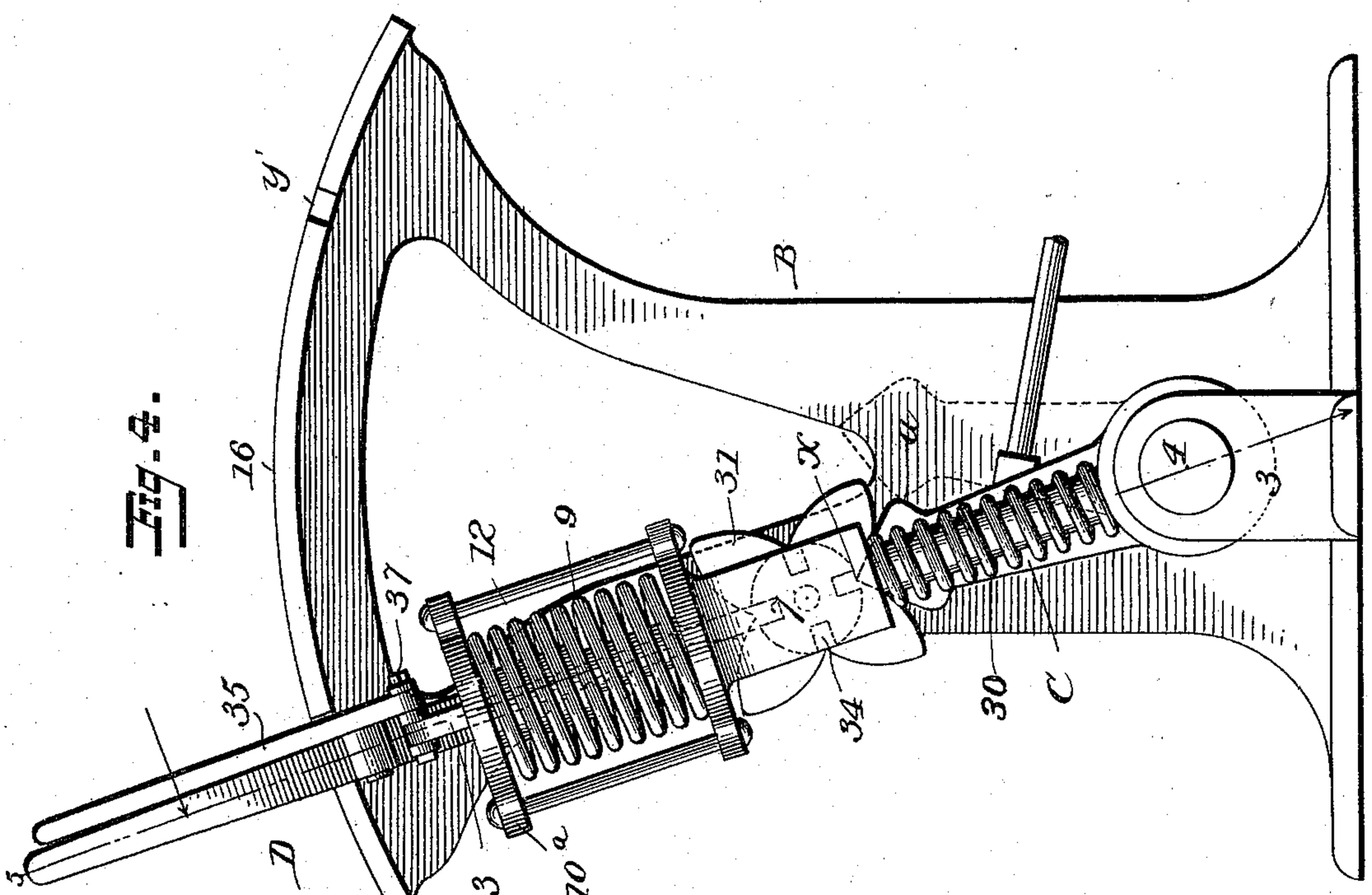


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES E. FOSTER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE STANDARD EQUIPMENT COMPANY, OF JERSEY CITY, NEW JERSEY.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 570,390, dated October 27, 1896.

Application filed June 2, 1891. Serial No. 394,821. (No model.) Patented in England July 20, 1891, No. 12,309, and in Germany June 2, 1893, No. 68,860.

To all whom it may concern:

Be it known that I, CHARLES E. FOSTER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Switch-Stands, (patented in Great Britain July 20, 1891, No. 12,309, and in Germany June 2, 1893, No. 68,860,) of which the following is a specification.

My invention relates to that class of switch-operating devices in which spring-actuated clutches are used to resist the movements of the switch-rails, except when they are subjected to excessive pressure; and my invention consists in a construction whereby the clutch-sections are maintained in contact and are held in their relative positions when the rail is shifted by hand and are released from the pressure of the spring when the parts are to be restored to position after they have been moved from position by excessive pressure upon the rail, and in certain details hereinafter fully set forth, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a switch-stand embodying my invention; Fig. 2, an edge elevation; Fig. 3, a plan view; Fig. 4, a side elevation showing a modification; Fig. 5, a sectional elevation on the line 5 5, Fig. 4. Fig. 6 is a detail sectional view.

The frame B of the stand is suitably constructed to support the operating parts, including an operating-lever D, provided with a handle 2, and an arm C, having a wrist or crank pin 71, connected with the rod 1, extending to the rail A to be shifted. These parts are so constructed and combined with such additional parts, as set forth hereinafter, that the switchman, by swinging the lever D, can set the rail A to either position and can lock the rail in either position by locking the lever D to the stand, and this shifting of the rail can be effected without the shifting or manipulation of other parts by the operator than those necessary to unlock the lever from the stand.

Between the crank-arm C and the lever is interposed a clutch, the parts of which are held in engagement by a spring, which prevents the movement of one part independently of the other except when the pressure of a car-wheel upon the rail exerts sufficient force to move one part of the clutch against the action of the spring. The clutch may be constructed and arranged in different ways; but, as shown in Figs. 1 to 3, one part, *a*, is a part of the crank-arm C, constituting the head of said arm, with two beveled sides 5 6, while the other part, 7, of the clutch has two diverging arms 8 8, forming an intermediate socket *x* to receive the head *a*, and said part 7 bears against a spring 9, so that when excessive pressure is applied to swing the arm C the bevel edge 5 or 6, bearing upon the adjacent side of the notch *x*, will act as a cam to force back the part 7 against the pressure of the spring until the point of the head *a* passes the end of one of the arms 8, when the spring 9 will force downward the part 7 and the end of the arm 8 will bear upon one of the beveled sides of the head with a cam-like action and force the arm C farther in the direction in which it began its movement, thereby completing said movement and insuring the full throw of the switch-rail.

The part 7 and its spring are carried by the lever D, and the latter and the arm C are mounted to swing on lugs 3 3 of the stand and capable of swinging independently of each other, but so that the two parts of the clutch swing together in shifting the rail.

In the construction shown in Figs. 1 to 3 the part 7 of the clutch is part of a sliding frame containing the spring and capable of sliding upon the lever D without altering the tension of the spring. Thus the spring is confined between the head of the part 7 and a disk 10, which parts are connected by bolts 12, as shown, the lever D passing through an opening in said head and in said disk, and a stud 40 limits the downward movement of the part 7 on the lever. If, therefore, when the lever D is locked in the position shown in Fig. 1, sufficient pressure is brought from the rail A to carry it and the arm C to the right, the two parts of the clutch will move in engagement with each other, the part C swinging and the part 7 sliding first up and then downward, and when it is necessary to restore the parts of their clutch to the position with the head *a* in

the notch x this can be done by permitting the frame I to slide freely upon the lever D and swinging the latter to the right, when the part 7 will ride over the face 5 of the arm C until the socket x is brought above the head a and the latter enters said socket on the descent of the part 7. The two parts 6 7 of the clutch are therefore never disengaged. They move together, maintaining their relative positions and without compressing the spring when the rail is shifted by hand, and when the rail is forcibly shifted the parts of the clutch are not disengaged but change their position, compressing the spring, and when the parts of the clutch are restored to position by hand this is done without disengaging them and without compressing the spring.

In order that the spring may resist a tendency of one part of the clutch to move independently of the other when the lever D is locked to lock the switch, I provide means for preventing any sliding movement of the spring at such time, as, for instance, by a detent restraining the upward movement of the disk 10. As shown in Figs. 1 to 3, said detent consists of a wedge or block 13, capable of being drawn into and out of position above the disk 10, as, for instance, the said block 13 is connected to the handle 2, which is pivoted by a cross-pin 15 between arms or ears 14 14 in opposite sides of the lever D, at the end of the lever D, and a curved flange 16 of the frame has notches $y\,y'$, each in position to receive one corner of the block 13 when the lever D has been shifted to one of its extreme positions, and the parts may then be locked in place by passing the hasp of a lock through a perforation in an ear 18 upon the lever D, and any pressure applied to move the rail A would tend to swing the lever D and would shift the latter were it not for the locking of said lever in this position. When the rail A is to be shifted by hand, the lock is removed from the ear 18 and the handle 2 is swung sufficiently to carry the corner of the block 13 out of the notch and to a position below the flange 16, when the lever may be swung to its opposite position without so far shifting the position of the block 13 as to permit the frame I to move upward to any material extent. When, however, the part C has been shifted independently of the part 7 and the lever D is swung to restore the parts to their position, the handle 2 and block 13 are moved to the position shown in dotted lines, Fig. 2, to permit the frame I to slide freely, that the part 7 may ride easily over the part C and take its normal position in respect to the latter. To reduce the friction during the latter action, the part 7 may bear upon a spring 30, carried by the lever D, which spring is of such strength as to about counterbalance the weight of the part 7 and its attachment. In the construction shown in Figs. 4 and 5 the spring 9 has a bearing against a fixed disk 10^a and the sliding section 7 of the clutch is provided with a movable contact-piece 31, adapted to engage the part C of the clutch and capable of being locked in its position when the parts of the clutch are to be held frictionally in contact, and also capable of being unlocked to move freely when the lever D is moved to permit the parts to be brought into engagement without resistance. As shown, the contact-piece 31 consists of a toothed or armed wheel and when in the position shown in Fig. 5 is placed between the lower teeth and constitutes the socket or notch x to receive the head a of the part C. The contact-piece 31 is prevented from revolving by means of a locking-bolt 33, the end of which is adapted to radial slots 34 in the hub of the contact-piece 31 and of such depth that the said contact-piece can slide upward with the supporting part 7 when the pressure upon the rail is such as to swing the arm c. When it is necessary to bring the parts to the position shown in Fig. 5, after the arm c has swung to the position shown in dotted lines, Fig. 4, the bolt 33 is raised out of the notch 34, and the swinging of the lever D will then be effected without any resistance, the contact-piece 31 revolving on its pivot until the end of the arm c is in another notch, after which the bolt 33 again locks the contact-piece 31 in its position.

The bolt 33 may be moved by means of a cam-lever 35, having a groove 36, receiving a pin 37 on the bolt 33, said cam-lever being pivoted to the side of the lever D, as shown, so that a portion of the head of the cam-lever may enter the notch in the flange 16 of the stand when the lever D is in its terminal position in either direction and when the part 31 is locked from turning.

In the modifications shown in Figs. 4 and 5, as in the construction shown in Figs. 1 to 3, both parts of the clutch move with the lever D when the switch-rail is shifted by hand, and without resistance from the spring the said parts are never actually separated from each other. The switch-rail is locked in position by locking the lever D and the parts of the clutch are not moved with respect to each other in order to set the rail by hand, and the spring is only thrown out of action upon one part of the clutch when the two parts are brought into engagement after being separated.

It will be evident that the forms of the clutches may be varied and that other locking devices and detents may be employed and other means of locking the lever to the stand may be used without departing from the main features of my invention.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. The combination in a switch-stand, of an arm connected with the switch-rod, a switch-operating lever, an intermediate spring-clutch one part thereof connected with the said arm and the other carried by said lever, substantially as set forth.

2. The combination with an arm connected

with the switch-rail, and with a switch-operating lever, of an intermediate spring-clutch the parts of which are carried by the arm and lever, and means for locking the lever in its different positions, substantially as set forth.

3. The combination with the arm connected with the switch-operated rod and with a switch-lever, said arm being movable independently of the switch-lever, a spring-clutch intermediate of the arm and switch-lever, and means for holding the parts of the clutch in engagement and relatively stationary positions when the lever is swung by hand, substantially as set forth.

4. The combination with the arm connected with the switch and the switch-lever, of a two-part spring-clutch the parts of which are carried by the arm and switch-lever, said clutch having inclined engaging faces arranged substantially as described to secure a movement of one part by the other to complete the throw of the switch-rail, substantially as set forth.

5. The combination of the switch-operating arm, switch-lever, two-part clutch, the parts of which are carried by the arm and switch-lever, a spring for holding the said parts together, of means for shifting the position of one of the parts without compressing the spring and means for preventing the movement of said part without compressing the spring, substantially as set forth.

6. The combination with the switch-lever of a switch-stand, of a sliding clutch-section, a spring arranged to slide with said section on the lever, a pivoted handle connected with the lever and with the detent for limiting the movement of the spring and for permitting said movement according to the position of the handle, substantially as set forth.

7. The combination with the lever, handle, and switch-arm, a two-part clutch carried by said lever and switch-arm, and a detent for controlling the movement of one part of the clutch, of a frame having notches for receiving one of the movable parts when the lever is at the limit of its position in either direction, substantially as set forth.

8. The combination with the switch-lever, of an independent arm connected with the switch-rail and having oppositely-inclined faces 5, 6, and a clutch-section carried by the lever, with a notch for receiving the end of said arm, and a spring for retarding the movement of the clutch-section, substantially as described.

9. The combination with the clutch-section connected with the switch-rail and the clutch-section carried by the switch-lever, of a spring for resisting the movements of one section independently of the other and a spring 30, for counterbalancing the weight of one of said sections, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. FOSTER.

Witnesses:
J. S. BARKER,
W. S. MCARTHUR.