

(No Model.)

3 Sheets—Sheet 1.

V. J. GOETZ.
SWITCH STAND.

No. 463,038.

Patented Nov. 10, 1891.

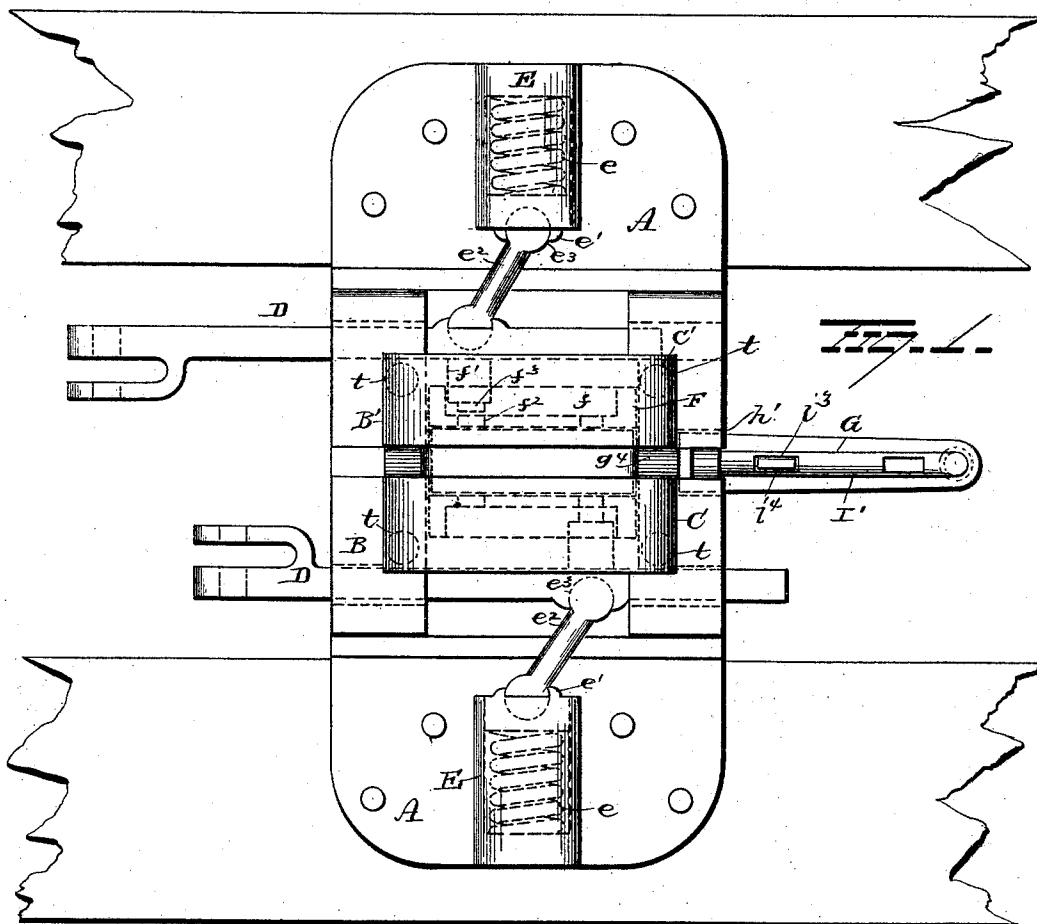
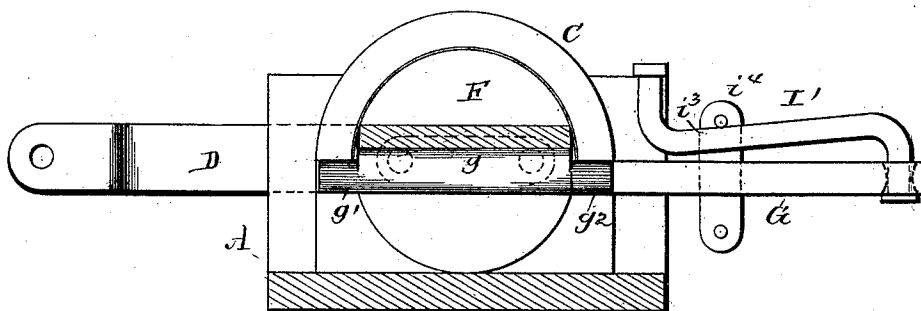


Fig. 2.



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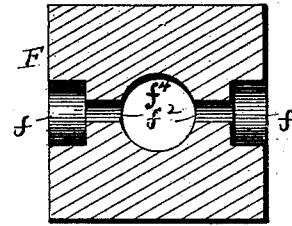
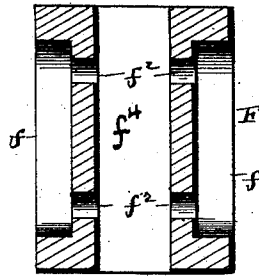
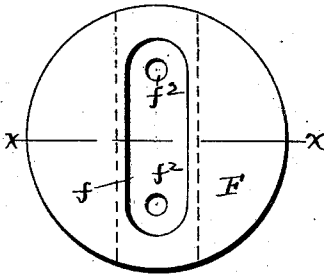


Fig. 3.

Fig. 4.

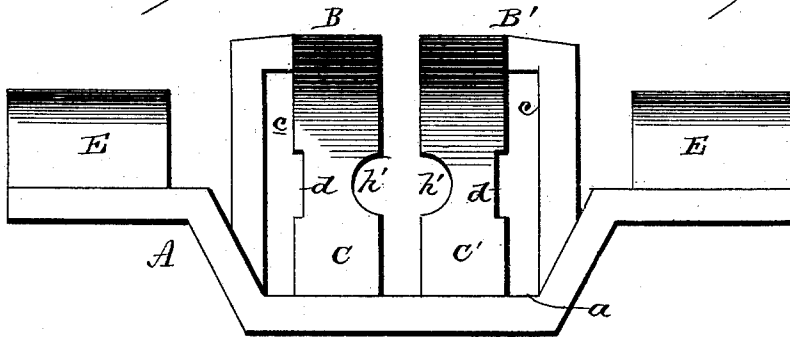


Fig. 5.



Fig. 6.

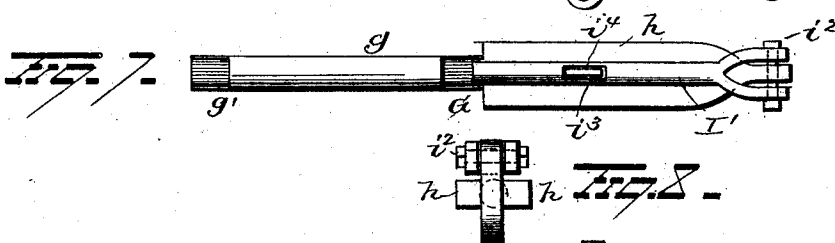


Fig. 7.

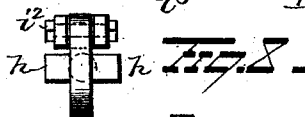


Fig. 8.

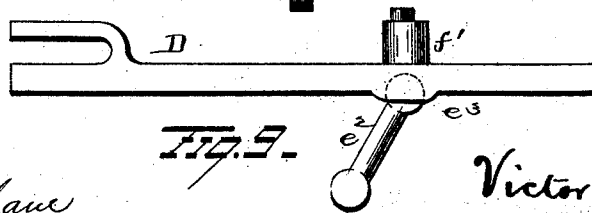


Fig. 9.

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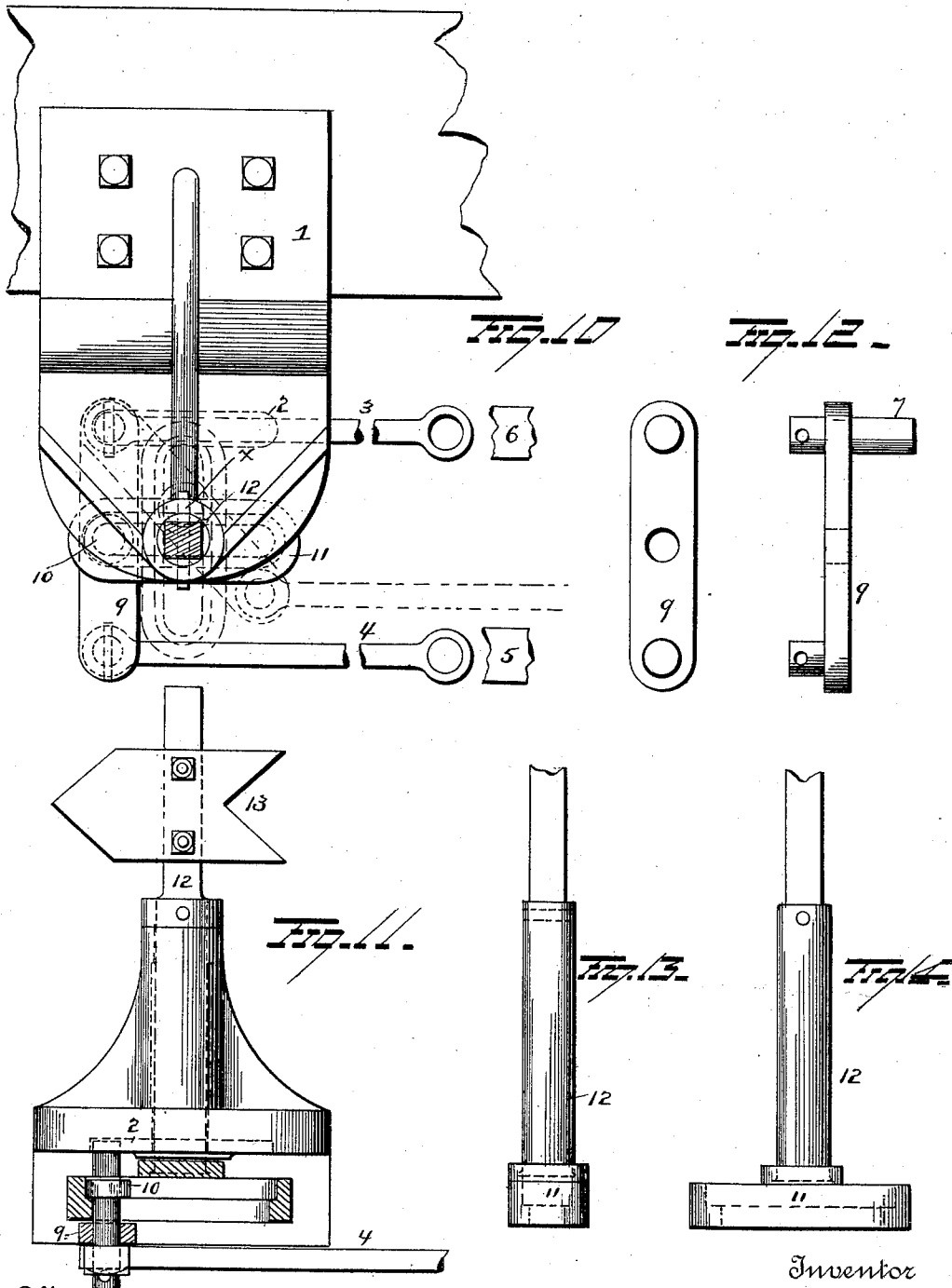
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3 Sheets—Sheet 3.

V. J. GOETZ.
SWITCH STAND.

No. 463,038.

Patented Nov. 10, 1891.



Witnesses
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UNITED STATES PATENT OFFICE.

VICTOR J. GOETZ, OF HILLBURN, NEW YORK, ASSIGNOR OF ONE-HALF TO
W. C. KIDD AND J. B. SUFFERN, OF SAME PLACE.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 463,038, dated November 10, 1891.

Application filed April 21, 1891. Serial No. 389,797. (No model.)

To all whom it may concern:

Be it known that I, VICTOR J. GOETZ, a citizen of Hillburn, in the county of Rockland and State of New York, have invented certain
5 new and useful Improvements in Switch-Stands; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and
10 use the same.

My invention relates to an improvement in switches, the object of the invention being to produce an improved three-throw switch-stand by means of which either switch may
15 be thrown independently of the other or both switches thrown automatically and simultaneously by the wheels of a train.

A further object is to produce a switch-stand for the purposes stated which shall be
20 simple in construction, easy to manipulate, and effectual in the performance of its functions.

With these objects in view the invention consists in the combination, with a switch-stand and switch-operating rods, of an engaging device held normally out of engagement
25 with both rods and means for locking one of said operating-rods with the engaging device independently of the other and moving said
30 operating-rod to throw the switch.

The invention also consists in the combination, with a switch-stand and switch-operating-rods, each adapted to be connected with a switch, of engaging devices adapted to be
35 held normally out of engagement with the operating-rods and permit both of said rods to be moved automatically and simultaneously and means for locking said engaging device with either operating-rod to throw
40 either switch independently of the other.

The invention also consists in the combination, with a switch-stand and two switch-operating rods, of yielding devices so connected with said operating-rods that when both
45 switches are thrown the flanges of a wheel will operate to force them back a portion of their throw and said yielding devices complete the throw of said operating-rods.

The invention also consists in the combination, with a switch-stand and two switch-operating rods, of yielding devices connected

with said operating-rods, so that when both switches are thrown the flanges of a wheel will operate to force them back a portion of their throw and the yielding devices complete the throw of said operating devices, an
55 engaging device held normally out of locked engagement with both of said rods, and means for locking said engaging devices with either of said operating-rods independently of the
60 other and throwing said operating-rod independently of the yielding device; and the invention also consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth,
65 and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my invention. Fig. 2 is a sectional view of the same. Fig. 3 is an elevation and sectional view of the engaging device
70 vice. Fig. 4 is a view on the line xx of Fig. 3. Fig. 5 illustrates a side elevation of the base of the stand and bearings thereon. Fig. 6 is a face view of the operating-lever. Fig. 7 is an edge view of the same. Fig. 8 is an
75 end view of the same. Fig. 9 is a separate view of one of the operating-rods. Figs. 10, 11, 12, 13, and 14 illustrate the construction and arrangement of a target to be used in connection with my improved switch-stand.
80

A represents the base-plate of the stand, which is so formed as to produce a depression a at its center. Located in the depression a are two castings $B B'$, each casting being made to produce annular bearings $C C'$, and
85 with recesses c in rear of said bearings to serve as guides for the switch-operating rods D , which latter are adapted to normally rest in notches d in the bearings, for a purpose hereinafter explained. Cylinders or seats E are
90 cast with or located on the base-plate A and are adapted to receive coiled springs e . Inserted in each cylinder E and adapted to normally rest against the spring e is a block e' , having a socket therein to receive the
95 spherical end of a link e^2 . The other ends of the links e^2 are also made spherical and inserted in sockets e^3 in the switch-operating rods D . Thus it will be seen that the links e^2 are connected with the operating-rods D
100 and blocks e' by ball-and-socket joints, so that said links may have a horizontal move-

ment when the operating-rods D are forced rearwardly automatically by the engagement of the car-wheels with the switches attached to said rods, or so that they can move in the arc of a circle without compressing the springs when the device is operated by hand, as explained further on.

Mounted in the bearings C C' is a hub or engaging device F, adapted to have a sliding movement in said bearings. The hub F is provided at diametrically-opposite points with elongated slots f for the reception of pins f' on the switch-operating levers D, and in proximity to the ends of these elongated slots sockets or perforations f^2 are made in the hub for the reception of the contracted ends f^3 of the pins f' when the hub is moved toward one or the other of said operating-rods D. The hub F is also provided with an opening or perforation f^4 , extending through it from end to end, for the reception of an eccentric g , made on the operating-lever G. The lever G at each end of the eccentric is preferably contracted somewhat to produce bearings g' g^2 , adapted to enter the space g^4 between the bearings C C'. The operating-lever G is provided with wings h , of a thickness equal to the bearings g' g^2 and adapted to pass through the space g^4 between the bearings C C' when the stand is being operated by hand, and when the lever is in its normal position these wings h of the lever are adapted to enter notches h' in the bearings C C', and thus maintain the hub normally out of locked engagement with either of the pins of the switch-operating levers. Thus it will be seen that said flat portion of the lever will prevent said lever from releasing the connections during its travel to its destination, because the flat portions of wings h of the operating-lever, not being able to turn in the opening between the bearings C C', assure in this manner the full throw of the operating-lever. The lever can only be replaced to its normal position when it has arrived at the notches or grooves h' in the bearings, so that if anything be between the stock-rail and the switch-points the lever cannot be replaced or locked. The free end of the lever G is provided with an elongated slot i , and adapted to embrace the free end of said lever G is the bifurcated end of a bar I', said bar being pivotally connected with the lever by means of a pin i^2 , passing through the bifurcated end of the bar and the elongated slot i of the lever G. The bar I' is provided in proximity to its free end with a slot i^3 , adapted to receive a lock-eye i^4 , and when in this position and locked by an ordinary padlock the free end of said bar I' will enter the space g^4 between the bearings C C', and thus lock the lever G and prevent its being turned by an unauthorized party. It will be seen that when the lever G is thrown from one side of the switch-stand to the other the lock-eye i^4 will be on the under side of said lever, and to remedy this and make it convenient for the switchman to readily lock the bar I' another

lock-eye i^4 is located on the outer face of the lever, as shown in Fig. 6.

The switch-operating rod D being connected with the switches in an obvious manner, and it is desired to throw one of the switches by hand, the devices would be operated as follows: The bar i^4 would be first released and then the operating-lever G turned in one direction or the other, according to the switch which it is desired to throw. When the lever is thus turned, the eccentric g will operate to slide the hub F and cause the contracted end of one of the pins on the operating-rod D to enter one of the sockets or perforations f^2 in the hub. During the turning of the lever G (which is about one-fourth revolution) the wings or widened portion h will align with the space g^4 between the bearings C C'. The parts being in these positions, the lever G is thrown to the other side of the stand, whereupon the operating-rod D, locked with the hub, will be thrown forward. When the hub F is moved as above explained to lock it with the pin of the rod D, said rod will be forced out of the notch d , so that during the outward movement of the rod D the link e^2 will be permitted to move in the arc of a circle without compressing the spring e . Should it happen that both switches be thrown to the siding at the same time, the switch-stand being in its normal position, the wheels of a train passing off the siding would operate to force both switches a portion of their throw. The switch-operating rods being in the notches d in the bearings C C' and the hub F being in its normal position and out of locked engagement with the rods D, said rods will be permitted to slide forwardly by the movement of the switches by the car-wheels, thus compressing the springs e until the links e^2 are slightly past the axes of said springs, whereupon said springs will be permitted to expand and complete the throw of the rods D, and thus open both switches.

It will be seen from the above description that when the device is operated by hand the operating-lever G will be thrown from one side to the other and effectually locked at either side of the stand and that either switch may be operated by hand independently of the other. If desired, a series of rollers t may be journaled in the bearings C C', on which the switch-operating rods D may run. It is evident that the stand may be used also as a single-throw device by merely removing one moving rod, spring, and connection—in fact, removing one-half of the stand—the main features remaining the same. The shaft of a target with such construction of stand would be provided with a crank-arm attached to the switch by a suitable rod.

To provide a target for my improved three-throw switch, a stand 1 is located, preferably, at the opposite side of the track from the switch-stand and is provided with a socket or recess 2 in its base. Rods 3 4 connect with switches 5 6 and are adapted to enter the stand

1 and are pivotally connected to a cross-bar 9, to which is also attached a pin 7, which enters recess 2 in the stand to prevent any other than lateral or rotary movement of the pin 7. In the center of the cross-bar 9 is a pin 10, made with a shoulder to enter an open link 11, said shoulder being adapted to prevent the displacement of the pin. Secured to and projecting upwardly from the link 11 is a target-shaft 12, to the upper end of which the target 13 is secured. When the switch is set for a siding, the connections will be in the position as shown in the drawings, with the bar 9 in a horizontal position and the target 13 pointed to "danger." Should the switch to which the rod 4 is connected be closed, arranging the switch-points for the main line, the target will make a quarter-turn and indicate "safety," the bar 9 being held in position by pin 7 from moving laterally by the rod 3 and to the side by the recess 2 in the stand. Bar 9 must take position as shown in dotted lines, and pin 10 moving with pin 7 as a center, describing an arc of a circle and coming to the position, as at X, carrying link 11 at right angles to its original position. If the other bar 3 be now moved, setting the opposite switch for the siding, cross-bar 9 will move in exactly the same position as originally, only exactly as far below center of spindle 12 as it was above spindle originally, and thus setting target again at "danger." In this case, the same as it was in the first instance, both points of the switches are on one side, and if they be both moved automatically at the same time pin 10 will slide in link 11 without turning target-shaft, thus leaving target at "danger" and bar 9 will remain in exactly the same position relatively to the other parts as originally. If the switches be both moved automatically back again, the action will be the same, the pin 10 sliding the entire length of the link 11 without turning the target. Thus the target 13 will always indicate "safety" for the main line and always indicate "danger" when the switches are to either side.

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

1. The combination, with a switch-stand and switch-operating rods, of a hub or engaging device held normally out of engagement with both rods and means for locking either of said rods with the engaging device or hub independently of the other and moving said operating-rod to throw the switch, substantially as set forth.

2. The combination, with a switch-stand and switch-operating rods, of a hub or engaging device held normally out of engagement with the switch-operating rods, means for locking said hub in its normal position, and means for moving said hub and locking it with either of the switch-operating rods independently of the other and rotating said hub to operate the switch-rods, substantially as set forth.

3. The combination, with a switch-stand and switch-operating rods, each adapted to be connected with a switch, of engaging device or hub adapted to be held normally out of engagement with the operating-rods and permit both of said rods to be moved automatically and simultaneously, and means for locking said engaging device or hub with either operating-rod to throw either switch independently of the other, substantially as set forth.

4. The combination, with a switch-stand and two switch-operating rods, of yielding devices and links connected with said yielding devices and operating-rods, so that when both switches are thrown the flanges of a wheel will operate to force them back a portion of their throw and said yielding devices complete the throw of said switches, substantially as set forth.

5. The combination, with a switch-stand and two switch-operating rods, of yielding devices connected with said operating-rods, so that when both switches are thrown the flanges of the wheels will operate to force them back a portion of their throw and the yielding devices complete the throw of said levers, an engaging device held normally out of engagement with both of said rods, and means for locking the engaging device with either of the operating-rods independently of the other and throwing said operating-rod independently of the yielding device, substantially as set forth.

6. In a switch-stand, the combination, with a hub having an elongated slot therein, of an operating-rod adapted to be connected to a switch, a pin projecting from the operating-rod into the elongated slot in the hub, a spring, and a link connecting the operating-rod with the spring, substantially as set forth.

7. In a switch-stand, the combination, with a hub having an elongated slot and sockets therein, of a switch-operating rod, a pin projecting from said operating-rod into the elongated slot in the hub, and means for moving said hub to cause said pin to engage one of the sockets in the hub and to rotate said hub to throw the switch, substantially as set forth.

8. The combination, with a switch-stand and a hub revolubly mounted therein, having elongated slots and sockets at diametrically-opposite points, of switch-operating rods, pins projecting from said rods into the elongated slots in the hub, an operating-lever having an eccentric thereon adapted to enter said hub and adapted to slide the same to cause it to engage one or the other of the pins on the operating-rods, and means for locking said operating-lever, substantially as set forth.

9. The combination, with a switch-stand, of a hub mounted thereon, operating-rods, pins projecting from said operating-rods, an operating-lever, and an eccentric carried by said operating-lever and adapted to enter the hub whereby to move said hub in one direction or the other to engage one or the other of the

pins on the operating-rods and to rotate said hub to throw the switch, substantially as set forth.

10. The combination, with the base of a switch-stand, of bearings located thereon and spaced apart, said bearings having notches on their inner edges, a hub mounted in said bearings and adapted to rotate and also to have a sliding movement, an operating-lever adapted to extend through said hub and having bearings between the bearings on the base of the stand, and an eccentric on the lever for sliding the hub to cause it to engage the pin on one or the other of the switch-operating rods, substantially as set forth.

11. The combination, with the base of a switch-stand, of bearings located thereon, having notches in their outer faces, switch-operating rods adapted to enter said notches, springs located on the stand, links connecting said rods and springs, a hub mounted in said bearings and having elongated slots and sockets at diametrically-opposite points, pins

on the switch-rods to enter said slots, and means connected with the hub for causing it to engage the pin of one of the switch-rods and freeing said rod from the notch in the bearing and also rotating said hub to throw the switch; substantially as set forth.

12. In a switch-stand, the combination, with a revoluble hub and switch-rods, of an operating-lever for locking said hub with one of the switch-rods and operating said hub to throw the switch, and a bar pivotally connected to the operating-lever and adapted to be locked to either side of the lever, the free end of said bar being adapted to enter fixed projections on the stand, substantially as set forth.

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

VICTOR J. GOETZ.

Witnesses:

PETER B. MCGREGOR,
DAVID D. CUMMING.