Nov. 30, 1926. 1,608,610

F. H. MEYER

ELECTRIC SWITCH

Filed Oct. 1, 1925

Fig. 1.

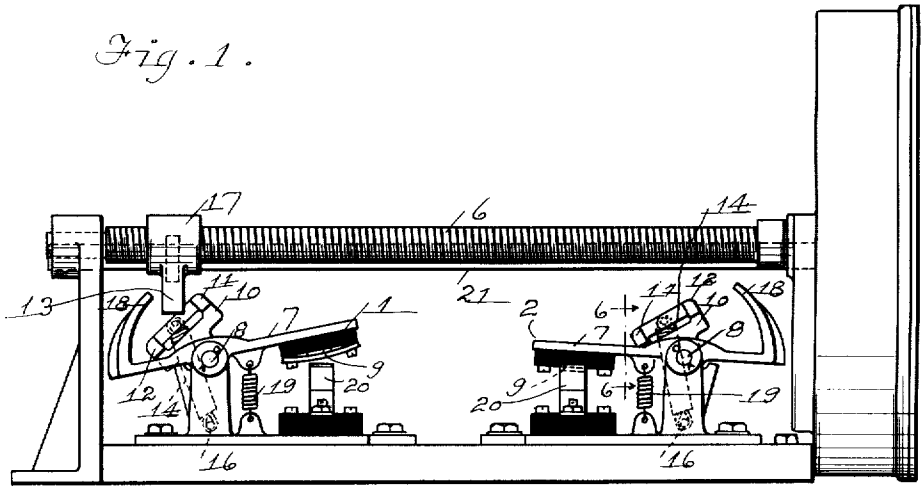


Fig. 2.

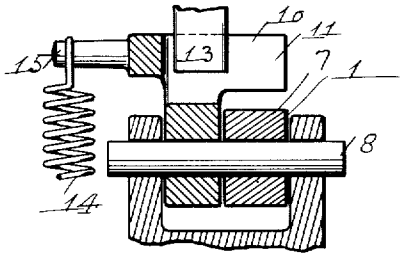


Fig. 4.

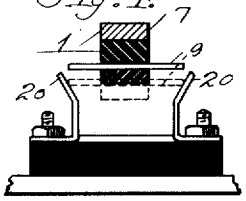
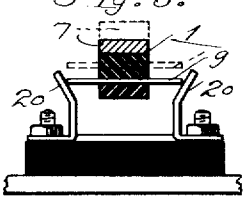


Fig. 5.



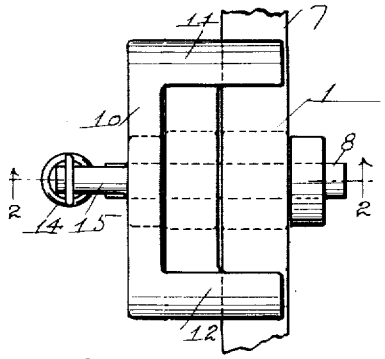


Fig. 3.

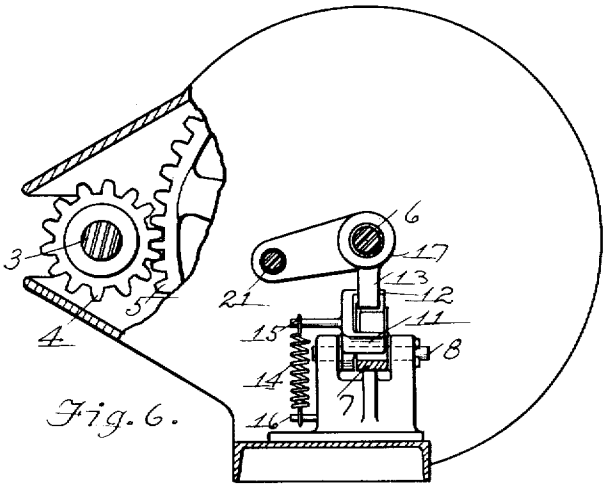


Fig. 6.

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Patented Nov. 30, 1926. 1,608,610

UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

Application filed October 1, 1925. Serial No. 59,878.

The present invention relates to limit switches for electrically controlled mechanisms such as elevators and the like; and its object is to provide such a device improved in various respects hereinafter appearing.

This object is attained by, and the invention finds preferable embodiment in, the structure hereinafter particularly described in body of this specification and illustrated by the accompanying drawings, in which:—

Figure 1 is a side view of limit switches and means for operating the same;

Figure 2 is a sectional view of parts of one of the switches taken on line 2—2 of Figure 3;

Figure 3 is a top plan view thereof;

Figures 4 and 5 are end views of parts of one of the switches, shown in open and closed positions respectively; and

Figure 6 is a sectional view of parts of the structure seen in Figure 1 taken on line 6—6 of said view.

In the accompanying drawings electric "limit switches" for controlling the reverse movements of elevators and the like are shown. A pair of electric-circuit closers and openers, or "switches" designated generally 1, 2, are spaced apart and are alternately operated to close or open the electric circuit containing an electric motor which either raises an elevator or the like (not shown) or lowers it. A rotatable shaft 3, driven by the motor, serves, through suitable mechanical connections (not shown) to raise or lower the elevator. The gear 4 on this shaft meshes with a speed-reducing gear 5 on the rotatable threaded shaft 6 which carries a nut 17 travelling therealong between the switches 1, 2. Each of these oppositely disposed switches comprises a member 7 mounted swingably on an axis 8 and carrying one of the electric contacts 9, the other contact being shown at 20. These switches have also the element 10 mounted swingably coaxially with said member and having oppositely dispose spaced lugs 11, 12. As the nut 17 is moved in either direction from a point between the switches, by the rotative movement of the shaft 3, it or its striker portion 13 engages the lug 12 of the closed switch toward which it travels and swings the element 10 outwardly until the spring 14, connected to said element's middle at 15 and to the base of the structure at 16, has passed the axis 8, whereupon said spring urges this element to the position seen at the left-hand side of Figure 1, thus causing said element to strike the member 7 and swing it suddenly to open said switch and leave its parts in the position seen at the left-hand side of Figure 1. This action effects, through suitable electric connections not shown, the stopping of the motor and of the elevator in either its raised or its lowered position as the case may be. If this element 10 may have been broken or for any reason is inoperative, the nut 17 continuing in its travel strikes the projection 18 extending upwardly from member 7 and swings it to switch-opening position. When the rotation of the shaft 3 is reversed to move the elevator oppositely, the nut 17 travels toward the right-hand side of Figure 1 and operating the closed switch 2 in the same manner to open it, stops the motor and the elevator in its opposite position. A spring 19, weaker than the spring 14, serves to yieldingly hold the contacts 9, 20 together to close the switch until it is opened by the nut 17 and element 10. A guide rod 21 along which this nut slides serves to hold the same from turning.

The invention being intended to be pointed out in the claims, is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings or hereinbefore described.

I claim:

1. In mechanism of the character described: alternately-operating spaced electric switches, each comprising a swingable member having a projection and carrying one of the switch's electric contacts; a swingable element spring-pressed to engage in one of its positions said member and swing the same to close the switch, and to engage in another of its positions said member and swing the same to open the switch; a striker having a travel between the switches and adapted to normally engage in its movement in either direction from between the switches said element of one of the switches to swing the same to switch-opening position and, in case of the non-opening of said switch, to engage in its continued movement the projection of said switch's said member and swing the same to switch-opening position, the striker being adapted to release in its reverse movement said projection and to engage said element and swing the same to switch-closing position.

2. In mechanism of the character described: alternately-operating spaced electric switches, each comprising a swingable member having a projection and carrying one of the switch's electric contacts; a swingable element spring-pressed to engage in one of its positions said member and swing the same to close the switch, and to engage in another of its positions said member and swing the same to open the switch; a threaded rotatable shaft; a nut thereon having a travel therealong between the switches and adapted to engage in its movements in either direction from between the switches said element of one of the switches to swing the same to switch-opening position, and to engage in its reverse movement said element to swing the same to switch-closing position.

In testimony whereof I have hereunto set my hand at Grand Rapids, Michigan, this 8th day of September, 1925.

FREDERICK H. MEYER.