No. 825,084. PATENTED JULY 3, 1906.

P. SORENSEN.

WALL OR SNAP SWITCH.

APPLICATION FILED NOV. 27, 1903.

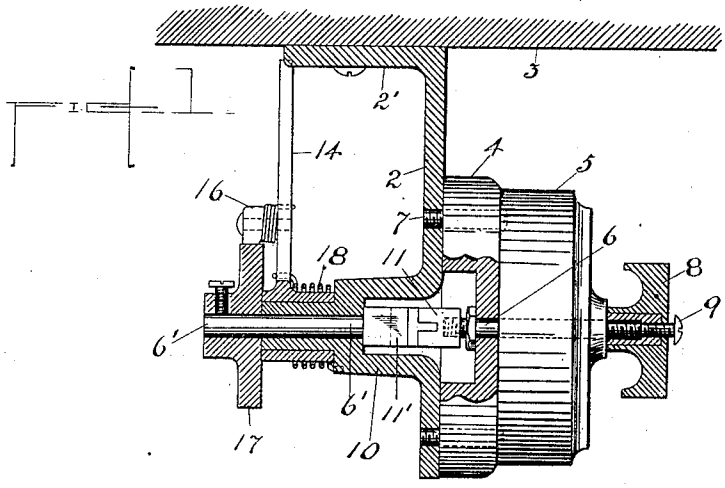


FIG. 1.

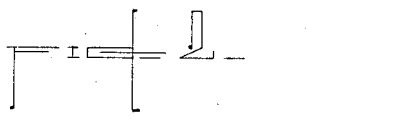


FIG. 2.

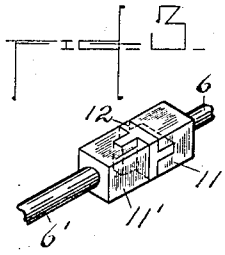
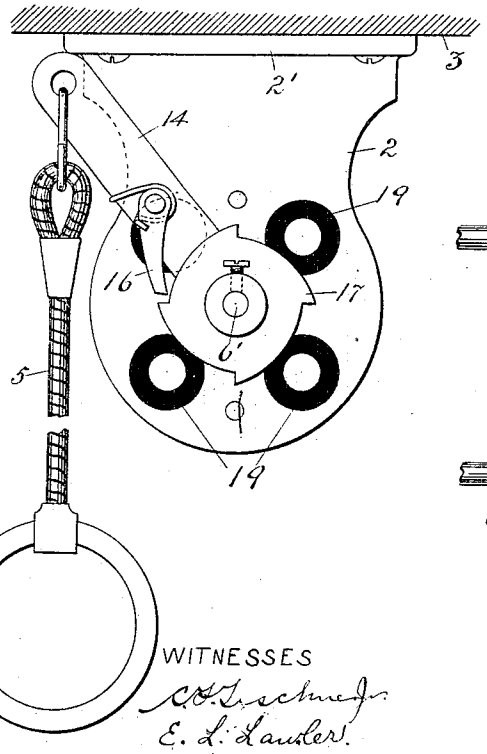


FIG. 3.



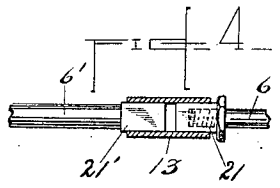


FIG. 4.

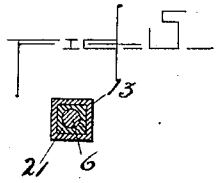


FIG. 5.

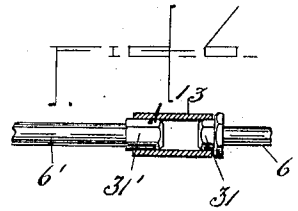


FIG. 6.

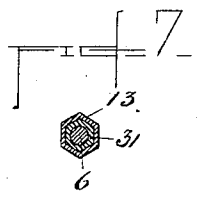


FIG. 7.

WITNESSES

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UNITED STATES PATENT OFFICE.

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WALL OR SNAP SWITCH.

No. 825,084. Specification of Letters Patent. Patented July 3, 1906.

Application filed November 27, 1903. Serial No. 182,714.

To all whom it may concern:

Be it known that I, PETER SORENSEN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Wall or Snap Switches, of which the following is a specification.

My invention relates to that class of electric switches which are suitably mounted so as to project from the wall, ceiling, or other support and in such position as to be not readily accessible or operable, excepting through connecting-cords or other devices extending from their actuating parts.

The object of my invention is to provide a simple and compact construction whereby the ordinary snap-switch of commerce may be employed as a part of the apparatus constituting a wall or ceiling switch of the general character above described.

My invention relates, primarily, to the construction of the supporting plate or frame of said switch, and is designed to provide means whereby a bearing may be furnished for a shaft extension forming a rearward extension of the stem or shaft of the rotary snap-switch, thereby securing compactness and strength of construction, as well as cheapness and other advantages that will be apparent to those skilled in the art.

My invention consists, further, in the combination, with the snap-switch and an operating shaft or stem mounted in the frame or plate to which the snap-switch is attached, of a universal coupling block or piece joining the shaft extension and the switch-stem, thus affording a compensation or adjustment for any warping or irregularity in the porcelain or other base to which the parts of the snap-switch are ordinarily secured and which might tend to bring the stem of the snap-switch out of alinement with the bearing in the supporting plate or frame which carries the shaft or extension operated by the depending cord or other device.

My invention consists, further, in the special combinations of devices and features of construction hereinafter more particularly described and then specified in the claims.

In the accompanying drawings, Figure 1 is a general side elevation and partial vertical section of an apparatus embodying my invention. Fig. 2 is an end elevation of the apparatus at the end thereof, carrying the operating devices for the shaft extension. Fig. 3 is a perspective view of the preferred form of universal coupling. Fig. 4 is a side elevation and partial section of another form of coupling that might be employed. Fig. 5 is a transverse section through the same. Fig. 6 is a side elevation and partial section of another form of coupling, and Fig. 7 a transverse section through the same.

2 is a support plate, frame, or hanger of any suitable form or configuration, provided with a right-angle flange or extension 2′ of any suitable shape, or with other suitable means whereby it may be fastened to the face 3 of a wall, ceiling, or other support. One face of this support plate, frame, or hanger 2 is adapted to receive and support the rotary snap-switch of any form, the porcelain or other insulating base of which latter is indicated by the numeral 4, while 5 indicates the cover for closing the parts, and 6 the usual operating stem or shaft of said switch, mounted, as usual in the art, on the insulating-base 4.

As the construction of the switch itself forms no part of my invention, and as the same may be of any of the commercial forms of snap-switch present on the market, the details of the same are not illustrated in the accompanying drawings.

The base 4 of the rotary switch is, as usual in the art, provided with perforations adapted to receive screws, bolts, or other devices 7, by which it may be fastened to the face of the plate 2 or other supporting device. My invention, however, is not confined to any special means for securing the snap-switch itself to the face of the plate 2. The outer end of the snap-switch shaft is provided with the usual button 8, which may or may not be employed when the device is used for a ceiling-switch and as convenience may dictate. When such a button is used, however, and is attached to the shaft 6 by a screw-thread, it is liable to become unscrewed and loosened when the shaft is turned by the operating mechanism actuated by a cord or other device, to avoid which I provide a set nut or screw 9, which enters centrally through the button 8 and engages the end of the stem 6.

When the screw 9 is set up tightly, it operates after the manner of a set-nut to prevent the button 8 from unscrewing on the stem 6. Projecting rearwardly from the support plate, frame, or hanger 2 is a boss or extension 10, which by preference is cast or formed in one piece with the plate 2 and af-

fords a bearing for a shaft 6′, constituting a shaft extension of the shaft 6 of the rotary switch. If the rotary switch were specially constructed for use as a ceiling or wall switch in accordance with my invention, said shaft extension 6′ might be one piece with the shaft 6. In order, however, that the ordinary snap-switch of commerce may be utilized in carrying out my invention, I prefer to make the shaft 6′ as an independent piece and provide a suitable coupling for connecting the same with the stem 6. To provide for any want of alinement of the shaft 6 with the bearing which carries the shaft 6′, and which may arise from irregularities in the position of the openings in the base 4, by which the same is fastened to the plate 2, or from a warping or irregularity of shape in the base 4 itself, which frequently happens when the same is of porcelain, I provide a coupling, which may be of any desired form, adapted to compensate for want of alinement of the shaft 6 and the rearward extension 6′. This preferred form of coupling, as here illustrated, is composed of the blocks or pieces 11 11′, one of which is suitably fastened to the inner end of the shaft 6 and the other to the inner end of the shaft 6′. The inner faces of said blocks or pieces 11 are provided with transverse cuts, adapted to receive projecting ribs or flanges extending at right angles to one another from opposite faces of a coupling-plate 12, as clearly shown in the perspective view, Fig. 3. As will be seen, this coupling practically permits an adjustment laterally of one shaft with relation to the other in all directions, and thus provides a compensation for any want of alinement of the stems or shafts 6 6′ or their bearings.

As will be understood, the ordinary snap-switch of commerce has its stem 6 provided on its inner end with a screw-thread, and the block 11 may be readily attached by simply tapping it with a corresponding screw-thread and then screwing it in position. The block 11′ may be fastened to the shaft 6′ in any desired manner.

Another form of coupling that may be sometimes employed is shown in Fig. 4. This consists simply of a sleeve 13, adapted to fit over the blocks 21 21′. As shown in Fig. 6, the blocks 31 31′ might be of hexagonal form and the sleeve 13 of corresponding shape. In the latter instance it is possible to employ the ordinary hexagonal nut of commerce as the blocks or pieces 31 31′, the nut 31 being screwed directly on the inner end of the shaft 6.

As will be seen, the base or projection 10 has an enlarged recess to receive the coupling parts beyond which it affords a shaft-bearing for the shaft extension 6′. On the outside of said base or projection 10 is mounted the operating-lever 14, which at its inner end has a sleeve or hub sleeved on the boss 10 and adapted to turn concentrically with the shaft 6′. To this lever 14 is attached the ordinary operating-cord 15 and an actuating-pawl 16, engaging the ratchet-wheel 17, fastened to the shaft 6′. A suitable spring 18 retracts the lever 14 after each operation by the cord 15 and brings it into position to engage a fresh tooth on ratchet-wheel 17, so that, as will be obvious to those skilled in the art, the consecutive operations of lever 14 by the cord 15 will cause the snap or rotary switch to alternately open and close the electric circuit.

It will be understood that the support plate, frame, or hanger 2 is provided with openings adapted to register with the usual openings in the porcelain or other base 4, through which the switch is wired to the circuits to be controlled. These openings in the support plate or frame 2 are provided with the usual insulating thimbles or bushings, as indicated at 19, Fig. 2. The ratchet 17 is fastened to the shaft extension 6′, as clearly shown.

It will be obvious that by the above construction great strength and compactness is secured, while at the same time the switch may be readily wired through the rear of the base-plate 4, as usual. It will also be seen that the parts of the rotary snap-switch itself are readily accessible for inspection and repair without detaching the switch from its support or disconnecting the cord-actuated devices.

What I claim as my invention is—

1. A supporting-frame for a rotary snap-switch, having a projection from a face thereof opposite that which receives the base of the switch, said projection having a bearing for a rotary shaft forming an extension of the switch-stem.

2. The combination with a rotary switch and its base of insulation, of a frame, means for securing said base to the frame, a rearward extension of the switch-shaft and a rearward extension of the frame having a bearing for said switch-shaft extension.

3. The combination of a frame, a snap-switch fastened to one face thereof, a projection from the opposite face, a rotary shaft mounted therein and means for coupling the said shaft to the switch.

4. The combination of a frame, a snap-switch fastened to one face thereof, a shaft-bearing at the opposite face of the frame, a rotary shaft mounted therein and a universal coupling for connecting the shaft to the inner end of the switch-stem.

5. The combination with the supporting-frame and a snap-switch fastened to one face thereof, of a shaft-supporting projection extending from the opposite face thereof and a shaft mounted in said projection for operating the switch, as and for the purpose described.

6. The combination with the supporting-frame and a snap-switch fastened to one face thereof, of an operating-shaft and a shaft-supporting projection extending from the opposite face of said frame and having a recess for a coupling device joining the shaft and the inner end of the switch-stem.

7. The combination with a support-plate and a snap-switch having an insulating-base, of means for fastening said insulating-base to one face of the plate, and an operating-shaft mounted in a bearing in the opposite face of the support-plate and connected with the inner end of the switch-stem.

8. A support-plate adapted to receive a snap-switch on one face and provided on its opposite face with a boss affording a bearing for a shaft passing through the boss and for an actuating-lever pivoted concentrically with said shaft.

9. The combination with the frame 2, and a snap-switch secured to one face thereof, of an operating-shaft mounted to turn in a bearing on the face of said frame opposite that to which the snap-switch is secured, and an operating-lever mounted concentrically with said shaft upon a bearing formed on a rearwardly-extending boss of the frame.

10. The combination of a frame, a snap-switch having its insulating-base secured to one face thereof, a rearwardly-extending projection from said frame, a shaft mounted therein and carrying a ratchet-wheel, a lever mounted concentrically with the shaft upon said rearwardly-extending projection, an actuating-pawl secured to said lever and a coupling connecting said shaft with the stem of the snap-switch.

11. The combination of a support-plate, a snap-switch provided with a stem and having its insulating-base secured to one face thereof, a rearwardly-extending projection from said plate, a shaft mounted therein and carrying a ratchet-wheel, a lever mounted concentrically with the shaft upon said rearwardly-extending projection, an actuating-pawl secured to said lever, and a coupling adapted to provide universal lateral adjustment of the shaft and stem with relation to one another.

12. The combination with a support-plate and snap-switch secured to one face thereof, of an operating-shaft mounted in a bearing at the rear of said plate, a block secured to the inner end of the snap-switch stem and means for coupling said block with the operating-shaft.

13. The combination with the snap-switch and supporting-frame, of a shaft in line with the rear end of the switch-stem and mounted in a bearing at the opposite side of the supporting-frame, a block secured upon the inner end of the switch-stem, a block secured to the inner end of the shaft and a coupling-sleeve for connecting said blocks.

14. The combination of a frame, a snap-switch, an operating-shaft mounted on the frame to which the snap-switch is attached, and a universal coupling block or piece joining said operating-shaft and the switch-stem.

15. The combination with the frame, of the snap-switch, the operating-shaft mounted on the frame to which the snap-switch is attached, and a universal coupling joining said operating-shaft and the inner end of the switch-stem.

16. The combination with the center rod of a snap-switch, and a slotted arm adjustably secured thereto, of a rotatably-supported head, having prongs which loosely enter the slots of the arm on the center rod of the switch and means for turning this head, whereby to operate the switch.

Signed at New York city, in the county of New York and State of New York, this 24th day of November, A. D. 1903.

PETER SORENSEN.

Witnesses:
C. F. TISCHNER, Jr.,
E. L. LAWLER.