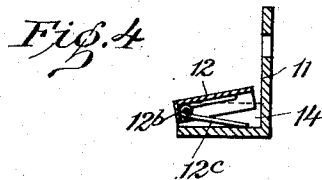
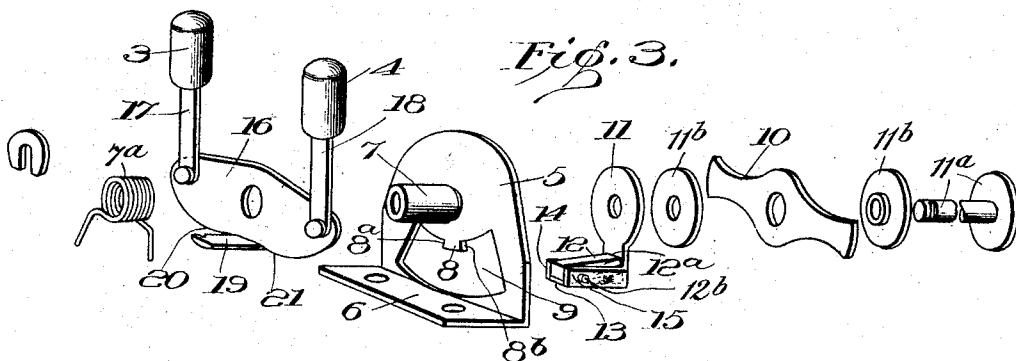
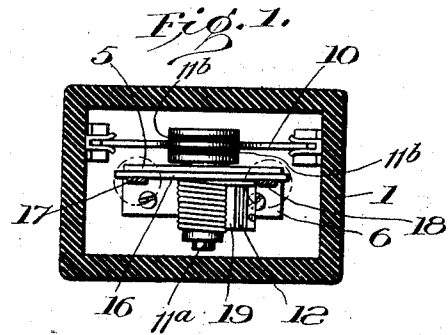
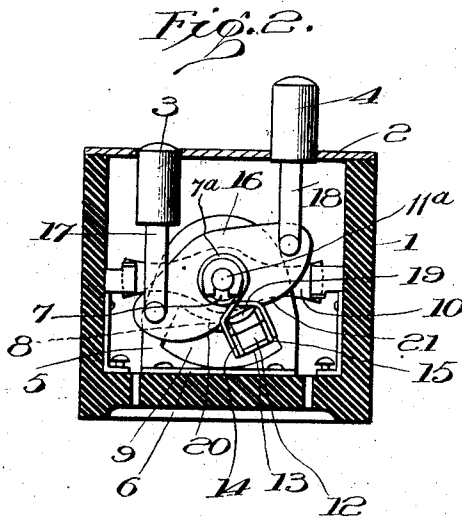


No. 878,586.

PATENTED FEB. 11, 1908.

H. C. WILLIAMSON.
PUSH BUTTON SWITCH.
APPLICATION FILED MAY 17, 1908.



Witnesses:
Alan H. Froese.
J. M. Millward.

Inventor:
Herbert C. Williamson
By W. A. Barker.
Attorney

UNITED STATES PATENT OFFICE.

HERBERT C. WILLIAMSON, OF NEW YORK, N. Y.

PUSH-BUTTON SWITCH.

No. 878,586.

Specification of Letters Patent.

Patented Feb. 11, 1908.

Application filed May 17, 1906. Serial No. 317,376.

To all whom it may concern:

Be it known that I, HERBERT C. WILLIAMSON, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, (whose post-office address is 203 West Fifty-second street, New York city, New York,) have invented certain new and useful Improvements in Push-Button Switches, of which the following is a full, clear, and exact description, whereby any one skilled in the art may make and use the same.

The invention relates to switches and more particularly to a quick brake switch of the type commonly known as two button switches.

The object of the invention is to provide an extremely strong, compact device which will operate with precision and may be manufactured at a comparatively cheap cost.

A further object is to secure a device in which the switch-bar and various parts will be positively locked at each limit of the throw of the switch.

A still further object is to secure a quick make and break switch of the type defined in which there will be no liability of sticking or arcing of the parts as the switch-blade is shifted from one limit of its throw to the other limit of its throw to secure the close and open circuit relation of the parts.

Referring to the drawings:—Figure 1 is a plan view of the switch and receptacle with the face-plate removed. Fig. 2 is a cross-sectional view through the parts shown in Fig. 1. Fig. 3 is a detailed view of the various mechanical parts of the switch mechanism, separated and shown in perspective to better illustrate the construction. Fig. 4 is a detail sectional view of the pawl plate and spring pawl.

In the accompanying drawing the numeral 1 denotes the receptacle which is ordinarily made of insulating material and is adapted to contain the various parts of the switch mechanism, supporting the contacts and providing ample means for the attachment of the circuit or line wires to said contacts. This receptacle may be made in various forms to suit the exigencies of any particular case, and, of course, may be modified to form the proper inclosure for switch parts of various designs. It is provided with an ordinary form of face-plate 2 through which the push buttons 3—4 project, where-

by the operator may depress either of said buttons to actuate the switch mechanism.

Suitably mounted within the receptacle 1 is a main frame or supporting plate 5, preferably formed with a base 6 by which it may be secured within the receptacle. This base piece is provided with a supporting stud or bearing 7 upon which the oscillatory parts of the mechanism are mounted and has formed upon it a ratchet or locking lug for the purposes hereinafter described.

As shown herein, a convenient form of locking lug or ratchet 8 is provided by cutting away a portion of the plate 5 as indicated at 9, leaving the projection or ratchet lug 8 adjacent to the pivot support 7.

Pivotally supported with reference to the plate 5 is a contact bar 10 which provides the movable contact of the switch mechanism and, as shown herein, is secured to a pawl plate 11, through the medium of a clamp bolt 11^a and insulating washers or bushings 11^b. This pawl plate 11 is pivoted to the supporting frame 5 and has at or near its lower end a pawl or spring detent 12 which passes through the opening 9 and normally engages one or the other of the sides of the ratchet lug or stop 8. The pawl plate 11 is of peculiar construction and is preferably formed of sheet metal stamped to form, to provide at its lower end a box-like structure within which the pivoted pawl 12 is pivoted as at 12^b. In practice it is formed by pressing up the metal with a bottom 13 and side members 14—15. Between the side members the pawl 12 is pivoted and a spring 12^a shown in Fig. 4, normally holds the inner end 12^a of the pawl in position to engage either of the sides 8^a or 8^b of the ratchet stop 8.

Pivotally arranged upon the plate 5 is a releasing plate 16. This plate at opposite ends is pivotally connected through links 17—18 with the push buttons 3—4 that project through the face plate 2. An oscillatory movement of the releasing plate 16 is secured by depressing one or the other of said push buttons toward the face of the plate. The oscillatory plate 16 is provided with a spring lug 19, at or near its center and upon either side of this spring lug is a cam surface 20—21, which upon a depression of the push buttons ride over the surface of the spring pawl 12, depressing said pawl and permitting the pawl plate 11 to swing in the opening 9 of the supporting plate 5.

Encircling the pivotal support 7 is a coiled spring 7^a the opposite ends of which straddle the spring lug 19 and the sides 14—15 of the pawl box which bears the pawl 12. It will thus be seen that the pawl plate is of the simplest construction, and not only bears the spring pawl 12 but through its box-like arrangement of parts, provides a suitable lug to cooperate with the lug 19 of the actuating plate. It really performs a double function, and all of the parts may be pressed up from sheet metal.

The operation of the device is apparent. As the push button which projects through the plate is depressed, the plate 16 is oscillated and separates the ends of the spring coiled about the pivotal support 7; the lug 19 bearing against one end of the spring while the other is held against the side of the pawl box. Thus the spring is tensioned and a considerable pressure is exerted upon the pawl plate 11 tending to oscillate it with the contact plate 10. It is, of course, held against movement through the engagement of the pawl 12 and ratchet stud 8 until the actuating plate 16 has been depressed sufficiently to bring one of its cam surfaces into contact with the spring 12 to a sufficient degree to depress said pawl and release the pawl plate 11 from the ratchet stud 8. Thereupon, the pawl plate 11 is rapidly rotated by its spring and the contact plate 10 is shifted either into or out of contact position with reference to the stationary contacts 20—21.

Obviously, various forms of contact bars might be used and the device might be adapted as a double-pole or single-pole switch. In fact the various details of the device might be modified to a considerable extent without departing from the spirit or intent of the invention, and the several oscillated parts may or may not be mounted upon the same pivot so long as the general function and operation of the various elements is present in the device.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a combination in a push button switch, a receptacle, a supporting plate mounted therein and provided with a ratchet, an oscillatory pawl plate pivotally mounted with reference thereto, a pawl borne in said plate and arranged to engage its ratchet, a contact bar movable with said ratchet plate, cooperating contacts in the receptacle and an

oscillatory releasing plate arranged to release the pawl plate.

2. In combination in a push button switch, a receptacle, contacts mounted therein, a frame or support provided with a ratchet lug, a pawl plate pivotally arranged with reference to the supporting plate and provided with a spring pawl arranged to engage the ratchet lug on opposite sides, an oscillatory actuating plate pivoted and having a free movement with reference to the pawl plate, a coiled spring having one end in engagement with the actuating plate, a contact bar carried with the pawl plate and push buttons for moving the actuating plate.

3. In combination in a push button switch, a receptacle, a sheet metal frame secured therein and provided with a supporting pivot, a ratchet lug formed in the plane of the center of the plate, an oscillatory pawl plate mounted to swing upon the supporting pivot and provided with a spring pawl arranged to engage the ratchet lug upon opposite sides, an actuating plate provided with cams for depressing said pawl upon predetermined rotation of the plate and a spring intermediate the pawl plate and actuating plate.

4. In combination in a push button switch, a receptacle, a supporting plate mounted therein and having an opening therethrough, a ratchet lug projecting into the opening, a pawl plate pivoted to the supporting plate and having a spring pawl projecting through the plate to engage the ratchet lug on either side thereof, a spring having one end in engagement with the pawl plate and the opposite end in engagement with an actuating plate and an actuating plate pivoted with reference to the support and provided with cams for releasing the pawl from the ratchet upon predetermined movement of the parts.

5. In combination in a push button switch, a receptacle, a supporting plate mounted therein and provided with a ratchet, an oscillatory pawl plate pivotally mounted with reference thereto, a pawl appurtenant to said plate and arranged to engage the ratchet, a contact bar movable with said ratchet plate, cooperating contacts in the receptacle and means for releasing and moving the pawl plate.

HERBERT C. WILLIAMSON.

Witnesses:

EDWIN S. MERRILL,
A. M. STAPLETON.