

F. H. QUADE, JR.
ELECTRIC SNAP SWITCH.
APPLICATION FILED JUNE 10, 1919.

1,328,338.

Patented Jan. 20, 1920.

Fig. 1

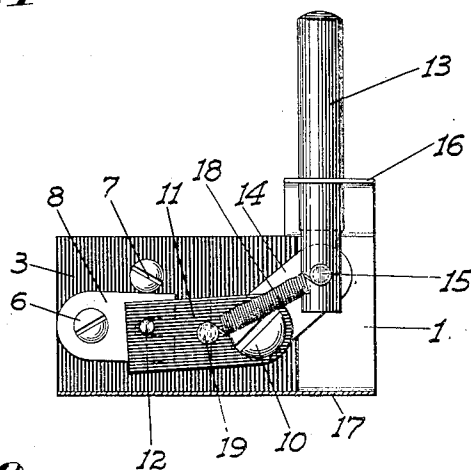


Fig. 2

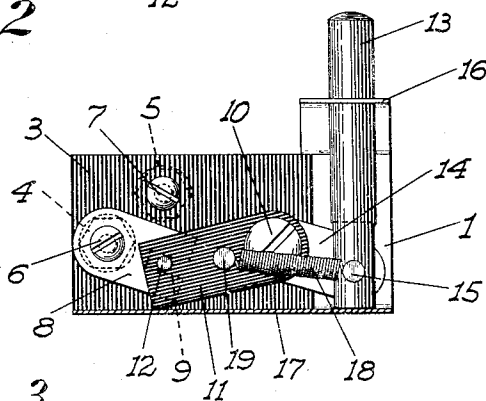
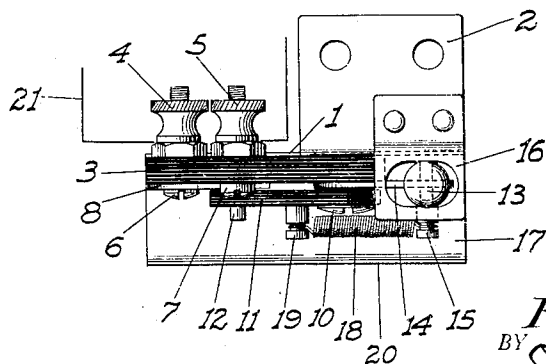


Fig. 3



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ELECTRIC SNAP-SWITCH.

1,328,338.

Specification of Letters Patent.

Patented Jan. 20, 1920.

Application filed June 10, 1919. Serial No. 303,073.

To all whom it may concern:

Be it known that I, FRANK H. QUADE, JR., a citizen of the United States, residing at Fresno, in the county of Fresno and State of California, have invented certain new and useful Improvements in Electric Snap-Switches; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this application.

This invention relates to improvements in electric switches, and particularly to one of the "snap" type, as differentiated from the knife-blade and other types, in which contact is made by wedging the contact blades together.

The principal object of my invention is to produce a snap switch which will be actuated by a pulling movement on a handle, rather than by a circular twist such as is now used to operate such snap switches as are on the market.

My switch is particularly adapted and intended for use on machines of various kinds driven by electric motors, and in the operation of which it is frequently necessary to instantly make or break the electrical circuit actuating the motor.

This operation may be accomplished far more easily and quickly with my straight pull-and-push actuated switch than with the twist-actuated type now commonly in use.

Another object of my invention is to provide a simple and inexpensive device, and yet one which will be extremely efficient for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will more fully appear from a perusal of the following specification and claims.

On the drawings similar characters of reference indicate corresponding parts in the several views, in which:

Figure 1 is a side elevation of my improved switch, showing the circuit closed.

Fig. 2 is a similar view with the circuit open or broken.

Fig. 3 is a top plan view of the switch. Referring now more particularly to the

figures of reference on the drawings, the numeral 1 denotes a metallic frame or backing, preferably having an orificed flange 2 by means of which the switch may be attached to any desired object.

Mounted on the frame 1 is a block 3 of nonconducting material, such as red fiber, hard rubber or the like. Mounted to the member 3 and suitably spaced apart are binding posts 4 and 5, the screws of which are preferably of copper, having heads 6 and 7 respectively projecting through the member 3.

Turnably mounted on the screw head 6 adjacent the block 3 is a copper strip 8 adapted to abut against the screw head or contact point 7, and provided with an open-ended slot 9 therein, extending centrally of the strip from the end thereof opposite its mounting on the head 6.

Mounted on the block 3 and substantially on a horizontal line with the head 6 and suitably spaced therefrom is a screw which forms a bearing for an arm 11 turnable thereon. This arm is also constructed of a non-conducting material, and overlaps the strip 8 for a certain portion of its length. This arm has a metallic pin secured therein and projecting into the slot 9 in the strip 8.

Positioned substantially at right angles to the arm 11 is a handle rod 13, also of a non-conducting material throughout, which is held in position relative to the screw 10 by means of an arm 14 turnably mounted thereon adjacent the block 3, and to a pin 15 on the handle 13.

The rod 13 above such pivotal connection extends through a guide member 16 mounted to the frame 1, and which aids in maintaining the vertical alinement of the handle rod. This rod therefore has a certain range of vertical movement about the screw 10 as a pivotal point, downward movement thereof being limited by a flange 17 projecting from the under edge of the block 3, and on which the lower end of the rod 13 abuts. With the rod 13 in this position, the pivotal point 15 is below the center of the screw 10, as shown in Fig. 2. A close-coiled tension spring 18 extends from the pin 15 to a pin 19 projecting from the arm

11 central thereof and a suitable distance from its pivotal mounting.

The frame flange 17 may be bent upwardly as at 20 and extended over the block 3, serving as a protection therefor, or any suitable form of casing to surround the entire mechanism may be utilized if desired.

In the operation of the switch, referring first to Fig. 2 of the drawings, it will be noted that besides the rod 13, the arm 11 also abuts against the flange 17, thus preventing further downward movement of the same.

An upward pull on the rod 13 will gradually place the pins 15 and 19 in alinement with the screw 10, which position might be termed the dead-center, and until the pin 15 moves upwardly and beyond such position, no movement of the arm 11 will take place.

When the rod 13 however is further pulled to move the pin 15 above such dead-center alinement, the spring 18 being in tension, pulls on the arm 11, and causes it to move upwardly about its pivotal connection on the screw 10. The pin 12 therein, riding in the slot 9 in the strip 8, moves said strip up also, until it impinges against the screw head 7, which closes the circuit through the wires 21 connected to the binding posts 4 and 5, and of course forms a stop against any further upward movement of the rod 13.

Similarly, to break the circuit, no movement of the arm 11 will take place until the pin 15 has moved down beyond the point of dead center previously described, when the arm 11 will be thrown to abut against the flange 17, and the strip 8 likewise moved away from contact with the member 7.

Of course this spring action takes place almost instantaneously, irrespective of the speed of the handle rod 13, and contact is made or broken in a very rapid manner.

It will be understood that the terms "horizontal" and "vertical" as used herein are merely relative to the position of the switch as shown on the drawings. It will be evident that a device of this character may be mounted in any desired position without impairing the efficiency or working thereof.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfils the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred embodiment of my invention, still in practice such deviations from such detail may be made as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what

I claim as new and useful, and desire to secure by Letters Patent is:—

1. An electric snap-switch comprising a non-conducting base, a pair of spaced binding posts mounted thereon and connected to pins projecting therethrough, a contact strip turnably mounted on one of the pins, and adapted to have one edge thereof abut against the other pin, an arm turnably mounted on a bearing provided in the base and having a pin thereon adapted to constantly engage the sides of a longitudinal slot provided in the contact strip, the arm being adapted for limited movement on its bearing, a pull rod positioned substantially at right angles to the arm and the bearing thereof, and means whereby a sliding movement of the rod in either direction will cause a sudden movement of the arm in the same direction about its pivotal point only after a predetermined travel of the arm, thereby causing the contact strip to make or break connection with the contact pin.

2. An electric snap-switch comprising a non-conducting base, a pair of spaced binding posts mounted thereon and connected to pins projecting therethrough, a contact strip turnably mounted on one of the pins and adapted to have one edge thereof abut against the other pin, an arm turnably mounted on a bearing provided in the base and having a pin thereon adapted to constantly engage the sides of a longitudinal slot provided in the contact strip, the arm being adapted for limited movement on its bearing, a pull rod positioned substantially at right angles to the arm and the bearing thereof beyond the same and in the same plane thereas, a pin on the rod, a bar between the arm and the rod with the bearing of the arm and the pin on the rod as pivotal points, a pin projecting from the arm on the longitudinal center line thereof, and a tension spring secured to the last named pin and to the pin on the rod, the rod being adapted for sliding movement to an extent to position the pin thereon an equal distance on either side of a line produced through the arm bearing and the last named pin thereon, whereby no movement of the arm in either direction will take place until the pin on the rod has passed by such dead center line in the same direction.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANK H. QUADE, Jr.

Witnesses:

J. W. LIVERMORE,
EMILY LOEWENGUTH.