Jan. 1, 1924

1,479,520

J. A. TERBECK

ELECTRIC SWITCH

Filed Feb. 21, 1921

2 Sheets-Sheet 1

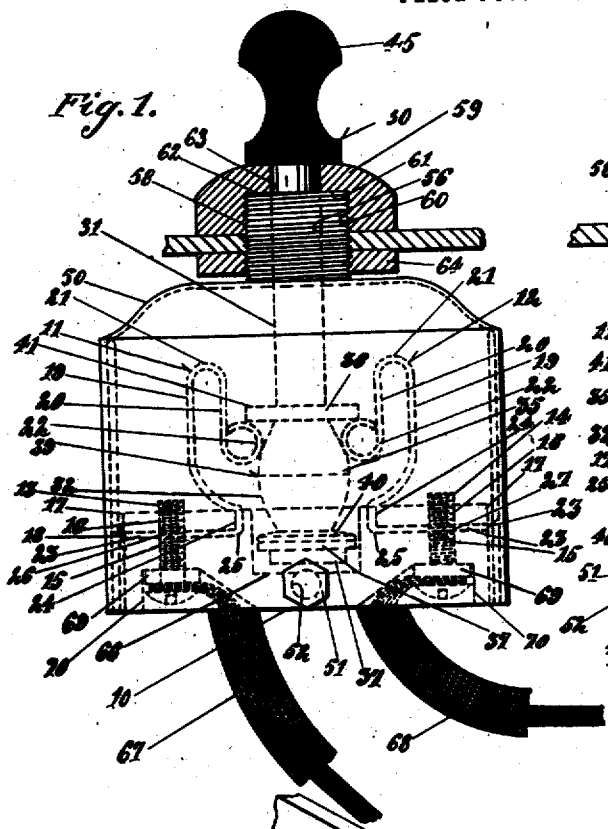


Fig. 1.

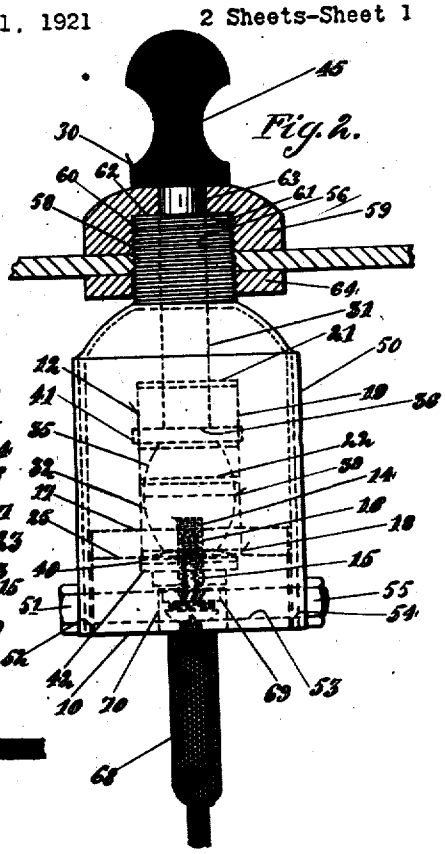


Fig. 2.

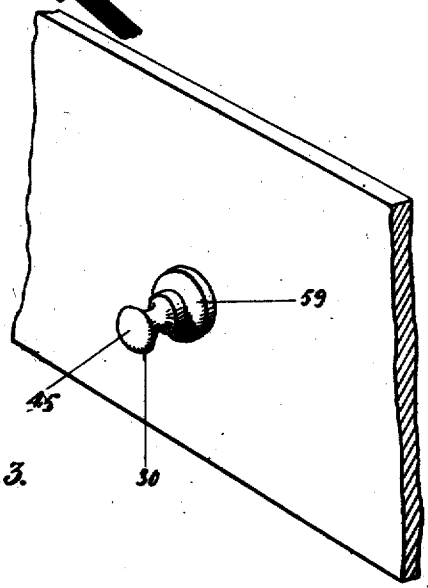


Fig. 3.

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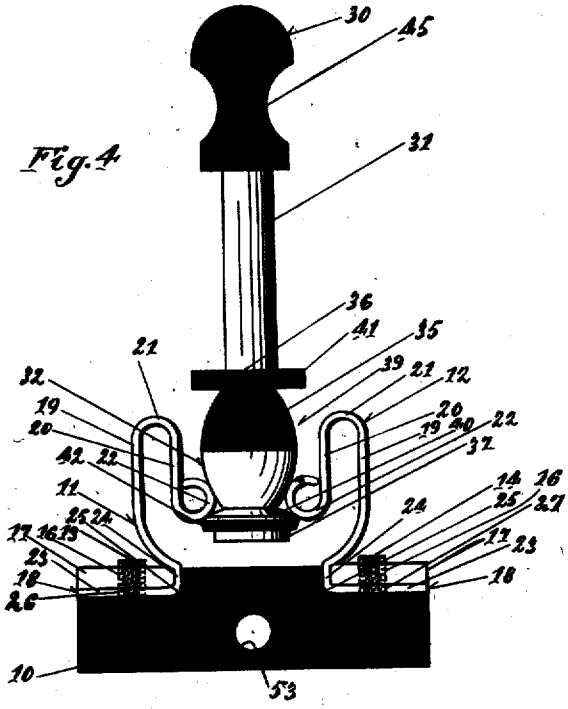
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2 Sheets-Sheet 2

Fig. 4.



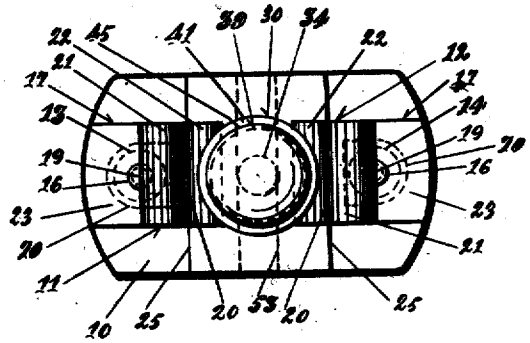


Fig. 5.

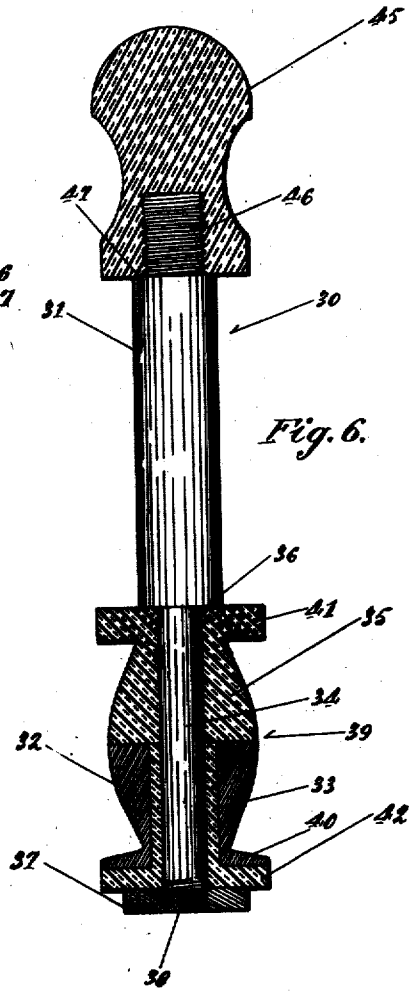


Fig. 6.

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Patented Jan. 1, 1924. 1,479,520

UNITED STATES PATENT OFFICE.

JOSEPH A. TERBECK, OF CINCINNATI, OHIO.

ELECTRIC SWITCH.

Application filed February 21, 1921. Serial No. 446,587.

To all whom it may concern:

Be it known that I, JOSEPH A. TERBECK, a citizen of the United States, residing in the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to electric switches of the push and pull type, adapted for use on automobile dash boards, portable cords and small electrical devices, such as percolators, vacuum cleaners and the like.

The switches of the type mentioned now in use, last for a comparatively short period of time, for the reason that the parts are so constructed as to easily form arcs, whereby the contacts are burned away, causing short circuits and destruction of the switch. Further, they contain a multiplicity of loosely moving parts and depend for their operation on coil springs which lose their resiliency due to heat generated within the switch by the arcing caused through imperfect breaking of the current.

It is the object of my invention to provide an electric switch that will make perfect contact at all times, and effectively break the current without the possibility of arcing or burning of the contacts and further to provide a ready means of attaching the switch to a wall or casing.

My invention consists in providing an extremely simple and efficient construction with a minimum of parts that can be economically manufactured and at the same time carry the current without undue heating, and further in constructing my device to avoid the use of loose parts, thus increasing the reliability and life of the switch.

My invention further consists in providing a means for securing the switch to a wall and whereby the body thereof is hidden, exposing only the operating knob.

My invention further consists in the parts and combination and arrangement thereof as herein described and claimed.

In the drawings:

Fig. 1 is a side elevation of my invention.

Fig. 2 is an end elevation of the same.

Fig. 3 is a front elevation of my improved device applied to a wall.

Fig. 4 is an elevation of my invention with the casing removed.

Fig. 5 is a plan view of the same.

Fig. 6 is a vertical cross section in detail of the operating element.

A base 10 composed of insulating material has mounted thereon resilient contacts 11 and 12 secured thereto by screws 13 and 14 respectively. The screws pass through holes 15 in the base and are threaded into threaded holes 16 in clamp pieces 17.

The resilient contacts 11 and 12, comprise feet 18 having an outer resilient spring section 19 formed thereon and an inner spring section 20 connected by a curved portion 21. Round contact eyes 22 are formed on the lower ends of the inner spring sections 20.

Means are provided to firmly hold the resilient contacts in their proper position. The feet 18 consist of horizontal plates 23 and vertical plates 24 forming an angle and are received in rabbets 25 in the insulating base. The feet closely conform to the rabbets and are received under the clamp pieces 17, the screws 13 and 14 passing through holes 26 and 27 therein. As the clamp pieces closely conform to the feet, the resilient contacts are immovably held in place.

An operating member 30 comprises a stem 31 having a conducting member 32 secured to the lower end thereof. The conducting member is held about an insulating sleeve 33 received over reduced shank 34 on the stem. An insulating member 35 is received between the conducting member and a shoulder 36 on the stem. The conducting member and insulating member are clamped in place by a clamp nut 37 received on the threaded end 38 of the shank on the stem. The conducting member and the insulating member are perfectly formed in the shape of a spheroid as shown at 39. By having the conducting member and the insulating member thus formed in the shape of a spheroid and by having the resilient contacts 11 and 12 inturned at 21 I am enabled to so center the parts within the casing in compact relation so that the spheriodal member 39 may may be reversed in position if desired. As illustrated in the drawings the operation of making contacts consists in pulling outwardly on the knob 45 from the position shown in Fig. 1 to the position shown in Fig. 4 but when it is preferred the same result can be accomplished by placing the spheroidal member on the shank 34 in reversed position so that the operation of making contact would be by pushing the

knob 45 inwardly. The conducting member has a circular flange 40 formed on its lower end, and the insulating member has a circular flange 41 formed on its upper end. A circular flange 42 formed on the lower end of the insulating sleeve 33 is adapted to insulate the flange 40 on the conducting member from the clamp nut. For manipulating the operating member, an insulating knob 45 which may be of any suitable shape is received over the outer threaded end 46 of the stem and against a shoulder 47 thereon.

A casing 50 is received about the insulating base, covering the resilient contacts, and the lower end of the operating member and is secured by a screw 51 passing through a hole 52 in one side of the casing, a hole 53 in the insulating base, and a hole 54 in the other side of the casing. A nut 55 on the screw firmly clamps the casing to the insulating base. A bearing 56 for the stem 31 is formed on the upper end of the casing.

Means are provided whereby the switch may be secured to rear side of a wall or a dash board of an automobile, thus forming a flush type switch having the operating knob in sight on the front side of the wall only. Thus screw threads 58 are formed on the outside of the bearing 56, and has a positioning nut 59 received thereabout by a threaded bore 60. The positioning nut further has a shoulder 61 at the end of the threaded bore adapted to contact the end 62 of the bearing 56. The stem 31 passes through a hole 63 in the outer end of the positioning nut. The inner end of the positioning nut contacts the front side of the wall and is held thereagainst by a clamp nut 64 received about the screw threads 58 and against the rear side of the wall thus firmly holding the switch in place.

The insulating base has a circular bore 66 therein, and located directly below the stem adapted to receive the lower end of the operating member when the switch is operated.

Electrical conductors 67 and 68 are adapted to be received between the heads of screws 13 and 14 and washers 69 received thereabout. Recesses 70 in the bottom of the insulating base contain the heads of the screws and the washers so as to prevent them from projecting beyond the outline of the switch. When the switch is in the "off" position so as to interrupt the current, the eyes on the resilient contacts rest on the smaller portion of the insulating half of the spheroid and against the flange 41 thereon. The pressure exerted toward each other by the resilient contacts hold the operating member in the off position. To turn on the current, the knob 45 is grasped by the fingers and pulled outwardly, the eyes on the contacts are forced outward over the thick portion of the spheroid, and by reason of their spring pressure aid the outward movement of the stem coming to rest on the smaller portion of the conducting half of the spheroid and against the flange 40 thereon, thus closing the circuit. When it is desired to interrupt the current, the knob is pushed inwardly, the eyes on the contacts again travelling over the thick portion of the spheroid and coming to rest on the insulating half thereof and against the flange 41, thus interrupting the current. The spheroid coacting with the resilient contacts causes an extremely rapid movement of the operating member thus effectively breaking the current. The formation of arcs is thus prevented when the current is broken. Also, the heat generated is rapidly distributed by the comparatively large body of metal in the conducting half of the spheroid. As the operating member is free to rotate, constantly new and clean surfaces are presented to the resilient contacts, thus giving long life to the switch.

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

1. In an electric switch, a plurality of resilient conducting contacts, a stem, an insulating member on said stem adapted to be interposed between said contacts, a conducting member on said stem adapted to establish electrical connection between said resilient contacts and said insulating member and said conducting member together forming a reversible spheroid for the purposes set forth herein.

2. In an electric switch, a plurality of resilient conducting contacts, an insulating base to which said contacts are secured, an endwise slidable stem, a handle on one end of said stem, a conducting member on the other end of said stem and insulated therefrom adapted to establish electrical connection between said resilient contacts, an insulating member on said stem adjacent said conducting member adapted to be interposed between said contacts, said conducting member and said insulating member collectively forming a reversible spheroid, for the purposes set forth herein.

3. In an electric switch, a base composed of insulating material, a plurality of rabbets in said base, a plurality of resilient conducting contacts secured to said base and in said rabbets, said resilient contacts comprising feet said feet consisting of a horizontal portion and vertical portions to form angles adapted to conform to said rabbet, outer resilient portions formed on said feet, resilient curved portions connecting said outer sections and inner sections, and eyes formed on said named inner sections, a casing secured to said insulating base, an endwise movable stem, a bearing in said casing for said stem, an insulating sleeve on the lower end of said stem, a conducting mem-

ber received over said sleeve adapted to establish electrical connection between said contacts, a flange on the lower end of said conducting member, an insulating member on said stem adjacent said conducting member, a flange on the upper end of said insulating member adapted to be interposed between said contacts whereby electrical connection therebetween is broken, said insulating member and said conducting member on said stem collectively forming a spheroid, and an operating handle on the outer end of said stem.

4. In an electric switch, a plurality of resilient contacts, an insulating base on which said contacts are mounted, an operating element comprising a stem, a spheroid on the lower end of said stem adapted to coact with said resilient contacts whereby electrical connection is formed and broken, and an operating knob on the upper end of said stem, a casing secured to and enclosing said base, resilient contacts and spheroid, a wall, a bearing on said casing for said stem, screw threads on the outside of said bearing adapted to project through said wall, a positioning nut received about said screw threads on the front side of said wall, a clamp nut received about said screw threads on the rear side of said wall whereby said casing is secured thereto, and said operating element projecting beyond said bearing and said positioning nut whereby said switch is operated from the front side of said wall.

JOSEPH A. TERBECK.