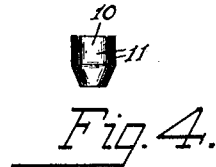
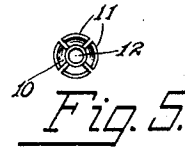
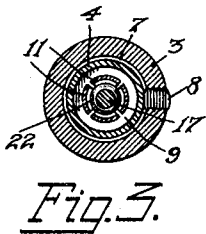
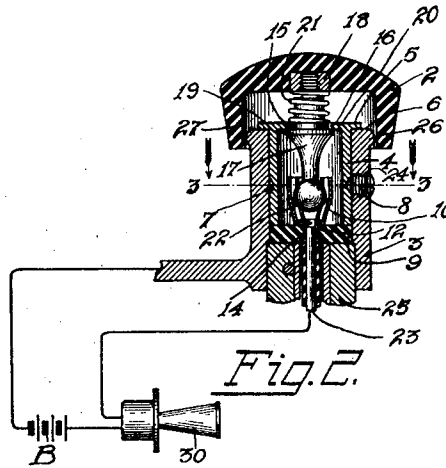
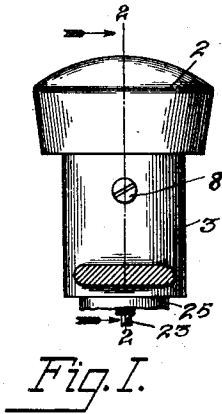


G. A. YANOCHOWSKI.
ELECTRICAL SWITCH.
APPLICATION FILED APR. 16, 1917.

1,394,132.

Patented Oct. 18, 1921.



Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTRICAL SWITCH.

1,394,132.

Specification of Letters Patent.

Patented Oct. 18, 1921.

Application filed April 16, 1917. Serial No. 162,388.

To all whom it may concern:

Be it known that I, GEORGE A. YANOCHOWSKI, a citizen of the United States of America, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Electrical Switches, of which the following is a specification.

My invention relates to electrical switches or circuit closers for use in completing electrical circuits, and has to do more particularly with actuating buttons for use on automobiles or the like for controlling signaling circuits for electrically actuated horns or warning devices.

One of the objects of my invention is to dispense with the small push button formerly employed for such purposes and to provide a simple, compact arrangement having a plurality of stationary contacts and a single manually shiftable contact for engaging with any one of said stationary contacts and which, therefore, can be more conveniently and quickly operated than the ordinary circuit closer employed where a small button must be shifted.

Another object of my invention is to provide a device that may be operated by an actuating force applied from various angles, that is, the actuating member need not be operated from a perpendicularly applied force, but may be given a slanting blow and operated to close the circuit of the warning device.

A further object of my invention is to provide the above-described device with a rubbing or sliding contact, thereby insuring a good clean contact for each operation of the actuating member.

It is also a further object of my invention to produce an improved device of the class described which embodies desirable features and advantages all in a simple, efficient and economical manner, and to the accomplishment of this object and such others as may hereinafter appear, the invention consists in the novel details of the construction, parts and combination of parts hereinafter described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming a part thereof in which the same reference characters indicate like parts throughout the several views, and in which:

Figure 1 is a plan view of the actuating member and the outer casing inclosing the movable and stationary contacts;

Fig. 2 is a sectional view of Fig. 1 along the line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view along the line 3—3 of Fig. 2;

Fig. 4 is a plan view of the slotted cup-shaped member which forms the stationary terminal of the device;

Fig. 5 is a top view of Fig. 4.

Referring now more in detail to my invention as illustrated, it comprises an actuating member or button 2 formed of insulating material, and a hollow cylindrical housing or casing 3 into which fits the circuit closing mechanism of my invention. The housing 3 is mounted on the upper portion of the steering shaft of an automobile and is provided with an annular semi-circular outwardly extended portion 26 over which the cylindrical flange portion 27 of the button 2 fits.

The circuit closing mechanism includes an inverted cylindrical cup 4 adapted to fit into the housing 3 and is provided with a flange 5 which rides upon the upper end surface 6 of the said housing member 3. A groove 7 extends around the cylindrical cup 4 and is adapted to receive the extended end of a set screw 8, which has screw-threaded engagement with a drilled and tapped hole 24 in the inclosing housing 3. A cylindrical disk 9 formed of insulating material such as bakelite or any other suitable material is provided of a size to just fit snugly in the housing 3 and rests against the extended end of the member 25 and is held in position by the cylindrical cup-shaped member 4. Centrally attached to the disk 9 is a split cup-shaped member 10 provided with a plurality of integrally formed flexible, shiftable contact parts 11. The bottom portion of said cup 10 is shaped somewhat like the frustum of a cone and is provided with an annular recess 12 through which a rivet 14 is passed to secure the said cup 10 to the cylindrical disk 9.

A circular orifice 15 is provided in the upper circular plate-like portion of the cylindrical cup 4. A manually shiftable stud 17 is provided at its one extremity with a spherically shaped integrally formed member 22 of a diameter slightly less than the

inner diameter of the cup 10 and is adapted to make rubbing contact with the flexible parts 11 of the said cup 10. The other extremity of the member 17 is provided with
 5 threads for screw-threaded engagement with a nut 18 which is firmly set in the button 2. The button 2 may be cast of bakelite or any other suitable insulating material and if cast
 10 of bakelite the nut 18 may be formed in the button 2 at the time that it is cast. The cylindrical portion 16 of the member 17 is slightly less in diameter than the said orifice 15 in the cup 4 and immediately adjacent the cylindrical portion 16 of the
 15 member 17 is a circular flange 19 which rests against the under side of the said upper plate-like portion 20 of the cylindrical cup 4 and is of a diameter considerably larger than the diameter of the orifice 15.
 20 The orifice 15 in the plate-like portion 20 of the cylindrical cup 4 is of a size not to permit the shifting of the member 17 when it is in its normal position into engagement with the inner periphery of the cup 10.
 25 The orifice 15 is only enough larger than the portion 16 of the member 17 to permit the movable contact 22 to engage the cup 10 when the flange of the actuating member is rocked about the lower surface of the
 30 plate-like portion 20 of the cup 4 as a fulcrum.

A coiled spring 21 is provided and encircles the cylindrical portion 16 of the member 17 between the upper face of the disk-like portion 20 of the cup 4 and the under
 35 surface of the cap 2 and maintains the member 17 in its normal position. One end of a conductor 23 is fitted into the rivet 14 which is, in turn, in electrical contact with
 40 the cup 10, thereby forming one terminal of the switch device, and spherical ball 22 forms the other terminal of the device. The conductor 23 extends down through the steering column that supports the steering wheel
 45 and spark and throttle control levers to one terminal of a horn or to one terminal of a battery. The other terminal of the battery is preferably connected to the frame of the car.

50 Having described the parts that go to make up my complete device, I will now explain its function and use.

If a force is applied vertically to the button 2, as by the hand of the operator
 55 driving the car, the said button 2 is forced downward against the tension of spring 21 and the spherical ball 22 engages the parts 11 of the cup 10 and forces them outwardly a predetermined amount before the said ball
 60 22 engages the rivet 14. The ball 22 sliding along the parts 11 of the cup 10 makes a rubbing contact therewith thus insuring a good contact and closing the circuit of the warning device or electrically actuated horn
 65 30 over a circuit traced from one pole of the

battery B to the frame of the car, then through the housing 3, cylindrical cup 4, spring 21, nut 18, member 17, ball 22, cup 11, conductor 23, to one terminal of the horn 30 and from the other terminal of the horn
 70 back to the other pole of the battery B.

Now should the actuating force be applied near the periphery of the button 2, the member 17 will rock about a point opposite the
 75 side where the force is applied, a portion of the outer periphery of the flange 19 rocking on the disk portion 20 of the cup 4 as a fulcrum, thus causing the ball 20 to move laterally and to engage one or more parts 11 of the cup 10, forcing them outwardly a
 80 slight amount, thereby causing a rubbing contact therewith and closing the circuit for the warning device 30 as herein-above described.

From the foregoing description, it is apparent that no matter how the button 2 is
 85 actuated, the member 17 will engage the cup 10 either in a perpendicular direction, in a lateral direction, or in a combined perpendicular and lateral direction, each time making a rubbing contact therewith. From this
 90 description, it is readily seen that the device is very sensitive and that it will operate to cause a rubbing contact between the ball 22 and the cup 11 if the button 2 is pressed in
 95 any manner whatever.

In illustrating my invention, I have chosen a preferred form, but it is to be understood that many changes and modifications thereof
 100 may be made; therefore I do not desire to be limited to the exact structure as shown, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

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

1. A circuit closer of the character described including a housing, a hollow supporting member adapted to fit into said housing, a member extending through said
 110 housing for holding said supporting member in position, an orifice in the end portion of said supporting member, an insulating member, a relatively stationary contact cup secured to said insulating member and positioned within said housing, said supporting
 115 member holding said insulating member in position, an actuating element provided with a portion extending through the orifice in the supporting member, the extended portion being slightly less in size than the size
 120 of the orifice in the supporting member, a flange for said actuating member resting against the end portion of said supporting member, a movable contact carried by said
 125 actuating member for engagement with said contact cup, an actuating button connected to said actuating member, and a spring for yieldingly holding said actuating member in position so that the movable contact does
 130

not normally contact with the contact cup, said actuating button having a portion extending down past the upper portion of the housing and being responsive to a force applied at any point on its upper surface to cause the flange of said actuating element to rock about said supporting member as a fulcrum, thereby causing said movable contact to engage the inner surface of said contact cup.

2. A circuit closer of the character described including a housing member, an inverted supporting member fitting within said housing member and having an orifice in the end thereof, a relatively stationary contact cup mounted within said housing and extending into said supporting member, an actuating element having an extended portion extending through the orifice in the supporting member and carrying a movable contact element extending into said contact cup, a flange for said actuating member resting against the end portion of said supporting member, an actuating button connected to said actuating element, a helical spring resting against said actuating button and against said supporting member for yieldingly holding said actuating element in position, said actuating button adapted when moved to cause the flange of the actuating element to rock about the said supporting member as a fulcrum to cause the movable contact carried by the actuating element to be shifted in substantially a lateral direction to contact with the stationary contact cup.

3. A device of the character described including a supporting element having an orifice in the end thereof, a contact cup tapered off at its one extremity to form a conically shaped portion and extending into said supporting element, an actuating element having at its one extremity a movable contact extending into said contact cup, an extended portion for said actuating element extending into the orifice in said supporting element, an outwardly extended member for said actuating element, a spring member for yieldingly holding said actuating element in position, and an operating button associated with said actuating element and adapted when actuated to cause the outwardly extending member of said actuating element to rock about the said supporting element which supports said actuating element as a fulcrum to cause the movable contact of the actuating element to contact with a plurality of points around the inner surface of said cup member.

4. A device of the character described including a housing, a cup adapted to fit into said housing and having an orifice in the end thereof, a groove in said cup, means extending through the wall of said housing into the groove in said cup for maintaining said cup in position, a contact cup ex-

tending into said first cup and held in position thereby, an actuating member carrying a movable contact extending into said contact cup, a flange for said actuating member abutting against the end portion of said first cup, an extended portion for said actuating member extending through the said orifice in said first cup, an operating button connected to said actuating member adapted to be operated by force applied at any point around its periphery to move said movable contact into engagement with said contact cup, a downwardly extending flange for said actuating button extending over the upper portion of said housing, and a spring abutting against said operating button for yieldingly holding the same in position.

5. A device of the character described including a housing, a supporting member having an orifice in the end thereof extending into said housing, a depression in said supporting member, a member extending through said housing into said depression in said supporting member for holding the same in position, a disk of insulating material held in position by said supporting member, a contact cup extending into said supporting member and held in position by said disk of insulating material, an actuating member having a movable contact extending into said contact cup, a flange for said actuating member abutting against the end portion of said supporting member, an extended portion for said actuating member extending through the said orifice in said supporting member, an operating button connected to said actuating member and adapted when actuated to cause the periphery of the flange of said actuating member to rock about said supporting member as a fulcrum, thereby causing the movable contact carried by the actuating member to contact with the inner surface of said contact cup, and a spring resting against said actuating button for yieldingly holding the same in position.

6. A device of the character described, including a hollow relatively stationary contact, an actuating member provided with a movable contact extending into said hollow stationary contact, a supporting member against which said actuating member abuts an actuating button connected to said actuating member, a spring for yieldingly holding said actuating member in position, said actuating button being adapted to move said movable contact vertically or substantially laterally into engagement with the inner periphery of said hollow stationary contact.

7. An electrical circuit closer including a housing member, a cylindrical cup adapted to fit into said housing member, an orifice in said cylindrical cup, a stationary cup-shaped contact member mounted within said

cylindrical cup, a movable actuating member provided with an enlarged end portion positioned within said cup, a shank for said actuating member extending through said orifice and of a diameter slightly less than the diameter of said orifice, an actuating button secured to said movable actuating member, and a spring yieldingly holding said actuating member in position relative to said cylindrical cup and stationary contact member, said actuating button adapted to be operated by force applied at any point around its periphery to move the enlarged end portion of said actuating member into contact with said contact cup.

8. An electrical circuit closer including a housing member, a cylindrical cup adapted to fit into said housing member, an orifice in said cylindrical cup, a stationary cup-shaped contact member mounted within said cylindrical cup, a movable actuating member provided with an enlarged end portion positioned within said cup, a shank for said actuating member extending through said orifice and of a diameter slightly less than the diameter of said orifice, an actuating button secured to said movable actuating member, and a spring yieldably holding said actuating member in position relative to said cylindrical cup and stationary contact member, said actuating button adapted when a force is applied at any point around its periphery to tilt the actuating member so that the enlarged end portion of the actuating member is shifted in substantially a lateral direction to contact with the inner peripheral surface of said contact cup.

9. An electrical circuit closer including a housing member, an inverted cylindrical cup adapted to fit into said housing member and having an orifice therein, a groove in said cylindrical cup, means extending through said housing into said groove in said cup to hold the same in position, a substantially stationary contact cup member extending into said cylindrical cup member, a disk of insulating material held in position by said cylindrical cup and for use in holding said stationary contact cup in position, an actuating member provided with an annular end portion extending into said contact cup and having a flange adapted to abut against the end portion of said inverted cylindrical cup, a shank for said actuating member extending through the orifice in said inverted cylindrical cup, an actuating button for moving said actuating member vertically or substantially laterally to cause its enlarged end portion to contact with the inner surface of said contact cup, and a helical spring resting against said button for

normally yieldingly holding said actuating member in position.

10. A device of the character described including a hollow stationary contact, an actuating member provided with a movable contact extending into said hollow stationary contact, a supporting member provided with an orifice adapted to receive said actuating member, a flange for said actuating member resting against said supporting member, a button connected to said actuating member, a spring resting against said supporting member and said button for maintaining said actuating member in position, said actuating button being adapted when actuated to cause the flange of said actuating member to rock about said supporting member as a fulcrum, thereby causing said movable contact to engage said hollow stationary contact.

11. A device of the character described including a cylindrical supporting member having an orifice in one end thereof, an actuating member provided with a cylindrical portion adapted to fit into said orifice, a flange for said actuating member resting against said supporting member, a button connected to one end of said actuating member, a helical spring resting against said supporting member and against said button for maintaining said actuating member in position, a hollow stationary contact, and an enlarged end portion for said actuating member extending into said hollow stationary contact.

12. A device of the character described including a cylindrical supporting member having an orifice in one end thereof, an actuating member provided with a cylindrical portion adapted to fit into said orifice, a flange for said actuating member resting against said supporting member, a button connected to one end of said actuating member, a helical spring resting against said supporting member and against said button for maintaining said actuating member in position, a hollow stationary contact, and an enlarged end portion for said actuating member extending into said hollow stationary contact, the flange of said actuating member adapted to be rocked about the said supporting member as a fulcrum to cause the movable contact to engage the inner surface of said hollow stationary contact.

Signed by me at Chicago, in the State of Illinois, this 13th day of April, 1917, in the presence of two witnesses.

GEORGE A. YANOCHOWSKI.

Witnesses:

M. R. ROCHFORD,
MARIE BREEN.