

H. WILHELM.
 SCREWLESS SPRING CONTACT.
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996,303.

Patented June 27, 1911.

Fig. 1.

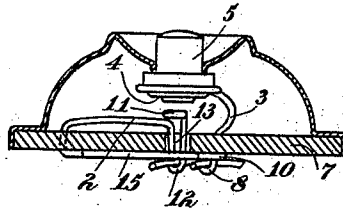


Fig. 2.

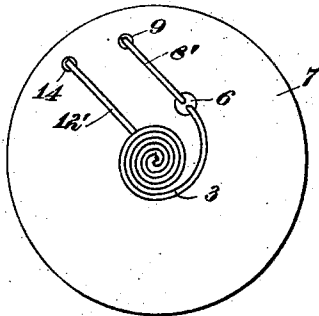


Fig. 3.

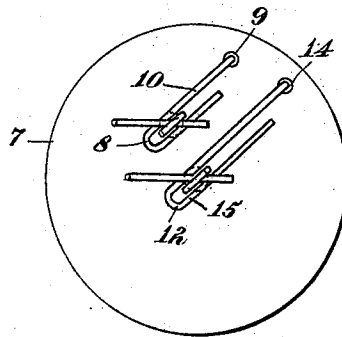


Fig. 4.

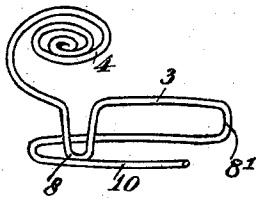


Fig. 5.

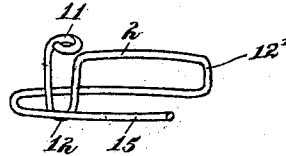


Fig. 6.

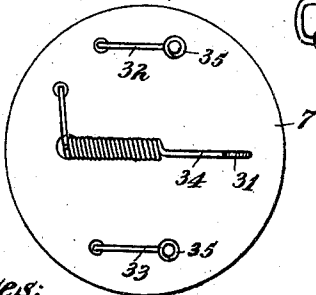


Fig. 8.

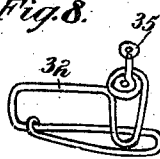
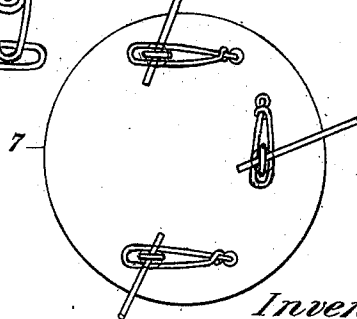


Fig. 7.



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UNITED STATES PATENT OFFICE.

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SCREWLESS SPRING CONTACT.

996,303.

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To all whom it may concern:

Be it known that I, HENRY WILHELM, a citizen of the United States, residing in New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Screwless Spring Contacts, of which the following is a specification.

This invention relates to contact members, one form of which is usually designated as a push button back, to which the invention is particularly applicable, the object of the present improvement being to provide a screwless spring contact device, for instance a push button back or a switch member, in which the contact members are connected to the supporting means or back without the use of any screws or rivets, or other similar fastening means, and in which the lead or pole wires may be connected to such contact members likewise without the use of screws, pins or other similar fastening means, the gist of the present improvement being to provide a screwless contact member, such as a push button back, to which the spring contacts and lead wires may be connected without screws, pins or other similar fastening means, while at the same time providing an extremely simple and practicable device, inexpensive to manufacture and which will have equal, if not superior, efficiency to ordinary devices of this character as now manufactured.

In the drawings accompanying and forming part of this specification, Figure 1 is a cross sectional view of the present improvement as applied to a push button back, illustrating the back in position within the ordinary push button cap; Fig. 2 is a top or plan view of the back detached from its cap; Fig. 3 is a rear or underside view of such back, showing the connection of the lead wires with the contact members; Fig. 4 is a detail view of one of the spring contact members; Fig. 5 is a detail view of the other of one form of spring contact member; Fig. 6 is a top or plan view of the improvement as applied to a switch; Fig. 7 is a rear view of the underside thereof; and Fig. 8 is a detail view of one of the switch contact-members.

Similar characters of reference designate corresponding parts throughout the different figures of the drawings.

This improvement comprises, in a general way, in the form shown, a pair of contact members one of which is of spring formation and may be made as a coil or a spiral spring, or in any other manner which will impart to it a spring action. Each of these contact members consists of a loop extending through an opening in a suitable back, to which loop the lead wire may be connected on the underside. In one form of the device each contact member may be so made that this loop will be overlapped or intersected by a portion of the contact member itself, which in some forms may be also in the form of a loop to extend crosswise of or overlap the first mentioned loop and, if preferred, to act as a spring clamp for holding the lead wire in its loop. The various details, however, may be modified and the lead wire attached to the loop by looping it thereon or by holding it therein by an intersecting piece formed as a loop or otherwise and formed of or independently of the contact member, without departing from the scope of this invention.

In the present embodiment of this improvement, when applied to a push button back, it comprises a pair of contact members 2 and 3, which may be made of wire of any suitable form, or of any material which may be bent into the required shape, one of said contact members, as 3, being formed as a spring member. This member is provided with a coil portion 4 for engagement with the underside of the push button 5 and extends from such coil portion to an opening 6 in an ordinary push button back 7, it passing through such opening in the form of a loop 8, one member or leg 8' of which extends through another opening 9 in the back to the underside of the back, and is there formed into a loop 10 to overlap the first loop, the loop 10 in the form shown having a spring action so that it will act to clamp the lead wire in the loop 8. The other contact member 2, which is usually a fixed or stationary member, is likewise formed with a contact portion or head 11 and a loop 12 extending

through an opening 13 in the back, one member or leg 12' of this loop likewise projecting through an opening 14 in the back and forming, in the form shown, another 5 loop 15, the loop 15 overlapping the loop 12 and likewise, in the form shown, having a spring action.

By forming the contact members of suitable spring wire it will be observed that 10 the push button 5, through the medium of the spring contact, will be held in proper position for operation, and that when the spring contact is pushed in by means of the button it will engage the stationary contact 15 member in the usual manner, while at the same time, by forming the member as a coil, a certain oscillatory or wiping action of one contact member on the other is obtained on the pushing in of the button, so that the 20 members are freed of verdigris, in other words, are self-cleaning or wiping. Furthermore, it will be observed that by this mode of connection the contact members are attached to the back without the use of 25 screws, rivets or pins, and that also the lead wires are attached thereto without the use of screws, rivets or pins and do not have to project through openings in the back as has been the usual practice. Thus I am able 30 very materially to reduce the expense of manufacturing devices of this character. In practice the loops extending through the back will be of such size as to be wedged in the openings, so that the contact members 25 will be rigidly clamped in position against play.

The device is equally applicable to switches and other forms of contact members. In the form shown in Fig. 6 a switch 31 and a 40 plurality of contacts 32, 33, are illustrated. Each contact is secured in position in the manner hereinbefore described, while the switch is likewise made up in a somewhat similar manner, the switch arm 34 comprising a coil spring terminating in a bent 45 portion forming a thumb piece. Each stationary contact may have its end bent over to form a head 35 for the switch. Obviously this provides a very simple and inexpensive 50 switch.

It will be observed that by forming the spring contact member as a coil spring an increased surface is obtained for the engagement of the push button, thus obviating 55 the tendency of the button to wobble as heretofore when the ordinary spring strip has been used as one of the contact members.

From the foregoing it will be observed that in the form of the improvement shown 60 each contact member constitutes a means for locking or clamping its lead wire at the rear of the back, which lead wire in turn acts to secure or lock the contact member in position on the back, so that the several parts 65 interlock one with another.

I claim as my invention:

1. In a screwless contact device, the combination with a back, of a contact member formed of a single strip having an integral part passing through the back and formed 70 into a loop and also having an integral part passing through the back and having a bent portion lying against the back and cooperating with said loop for clamping the contact member to the back and a lead wire in position. 75

2. In a screwless contact device, the combination with a back, of a contact member formed of a single strip having an integral part passing through the back and formed 80 into a loop and also having an integral part passing through the back and having a bent portion lying against the back and cooperating with said loop for clamping the contact member to the back and a lead wire 85 in position, said contact having a coiled push button engaging portion.

3. In a screwless contact device, the combination with a back, of a contact member formed of a single strip having an integral 90 part passing through the back and formed into a loop and also having an integral part passing through the back and terminating in a bent portion lying against the back and around said loop for clamping the contact 95 member to the back and a lead wire in position.

4. In a screwless contact device, the combination with a back, of a contact member having integral parts passing through the 100 back at different points and formed into loops, one lying against the back and one receiving the other and said loops being adapted to secure a lead wire in position and the contact member to the back, said contact 105 member terminating at one end in a coiled push button engaging portion.

5. In a screwless contact device, the combination with a back provided with two sets 110 of holes, of a pair of contacts, each formed of an integral strip having parts passing through one set of said holes, said contacts having contact portions normally spaced apart and in position one for movement into 115 engagement with the other, and each contact having the parts which pass through a set of holes formed into bent portions with one of such bent portions lying against the back and one to receive the other to clamp a lead 120 wire in position and the contact to the back.

6. A screwless contact member comprising a back having openings, and a pair of wire formed contacts, each having a loop projecting through one of said openings in 125 the back and also having a part projecting through the back and formed into a loop to receive the first loop to secure a lead wire in position, one of said contact members having a coiled push button engaging portion. 130

7. A screwless contact member comprising a back, and a pair of contact members each having a pair of loops, one projecting through the back for the reception of a lead wire and the other of resilient formation and in position at the rear of the back to receive the other and said loops adapted

to secure a lead wire in position, one of said members having a coiled push button engaging portion.

HENRY WILHELM.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
