T. E. BARNUM.

ELECTRIC SWITCH.

APPLICATION FILED JUNE 29, 1910.

1,096,485. **Patented May 12, 1914.**

Fig. 1.

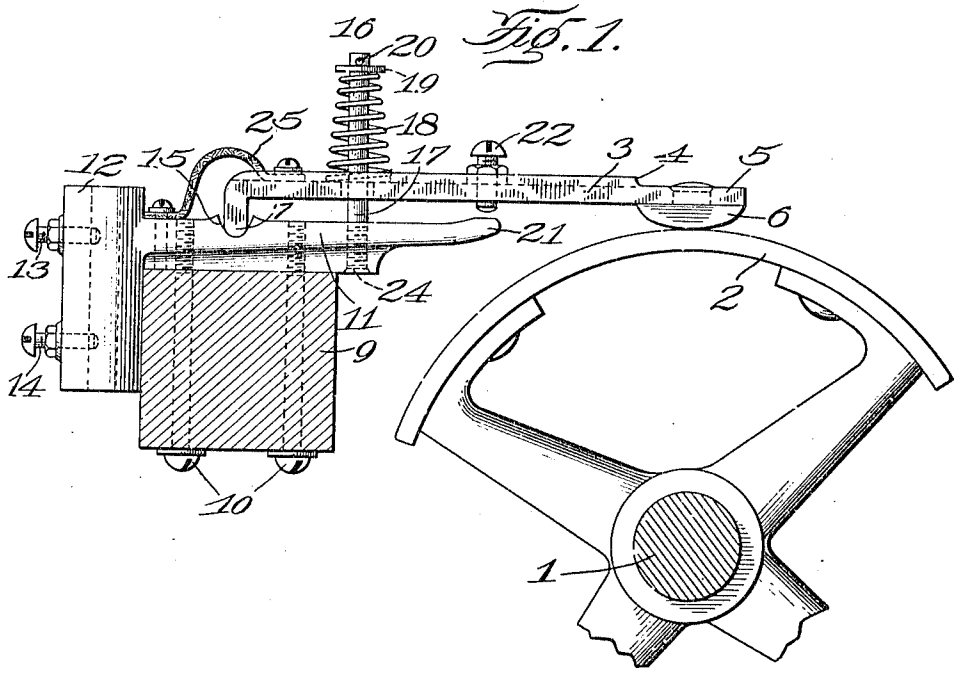
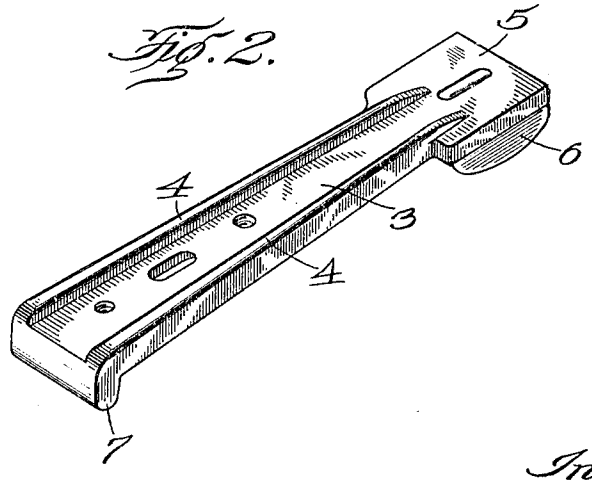


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

1,096,485. Specification of Letters Patent. Patented May 12, 1914.

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To all whom it may concern:

Be it known that I, THOMAS E. BARNUM, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Electric Switches, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in electric switches.

More particularly my invention relates to stationary contacts for switches in which the movable coöperating contacts are arranged to make a sliding contact therewith.

One object of my invention is to provide a simple but substantial contact, which will insure a good electrical connection with its coöperating movable contact, and which will prove very durable in service.

A further object of my invention is to provide a contact which may be readily removed for repairs and which may be as easily replaced.

Various other objects and advantages of my invention will hereinafter be set forth.

For the purpose of more fully disclosing the nature and advantages of my invention, I shall describe the embodiment thereof illustrated in the accompanying drawing. It should be understood, however, that my invention is capable of various modifications and therefore, is not limited to the particular structure illustrated.

In the accompanying drawing, Figure 1 is a side elevation of a switch embodying my invention in its preferred form, and Fig. 2 is a perspective view of the stationary contact finger.

My invention is particularly applicable to drum controllers, and therefore I have shown my invention used in such a connection, in the accompanying drawing. It should be understood, however, that contacts embodying my invention may be used for various other kinds of switches. It being unnecessary to show a complete controller in order to disclose my invention, I have merely shown one of the drum segments and its coöperating contact finger. I have shown a shaft 1 having a contact segment 2 mounted thereon, and arranged to engage a contact finger 3. The contact finger 3 comprises an elongated bar of suitable conducting material, such as brass. In order to reduce the weight of the contact finger and yet give the same the desired amount of rigidity, I have channeled out a portion on the top thereof leaving longitudinally extending flanges, or ribs 4—4, on opposite sides thereof. Of course, in practice the contact finger might be formed in other ways. For instance, it might be formed of sheet metal reinforced by beads, or flanges to give the desired rigidity thereto. The active end 5 of the contact finger is preferably slightly enlarged, and has secured to the under side thereof, or formed integrally therewith, a suitable contact portion 6 preferably curved to facilitate the engagement thereof with the contact segment 2. At its rear end, the contact finger is provided with a transverse downwardly extending lug 7 having a substantially semi-cylindrical extremity.

In drum controllers it is customary to provide an insulating base, such as the base 9 for supporting the contact fingers. This base may be formed of wood, or any other desired material. To this base, I secure by any suitable means, such as screws 10, a support 11 for the contact finger. The support 11, as illustrated, is provided at its rear end with a portion 12 having binding posts 13 and 14 thereon for making the desired electric connections with the contact finger. The contact support, or bearing block, may be formed of any suitable material, but in practice I prefer to form the same of brass. Extending transversely of the support, or bearing block, 11 is a groove 15 adapted to receive and form a bearing for the lug 7 of the contact finger. The groove 15 is preferably made flaring, but having the bottom thereof curved correspondingly to the curvature of the lug 7. This arrangement in effect forms a trunnion bearing for the contact finger.

For maintaining the lug 7 of the contact finger in the groove 15, and yet permitting the desired movement of the contact finger, I have provided a tension device 16. This device comprises a pin 17 secured to the support 11 and projecting through a slot 18 in the contact finger, and having mounted thereon, a conical spring 18 interposed between the contact finger and a collar 19 held on the outer end of the rod 17 by a removable pin 20.

For limiting the movement of the con-

tact finger under the influence of the spring 18, I have provided on the support 11 a projection 21 arranged to be engaged by an adjustable set screw 22 carried by said contact finger. With this arrangement the retention of the contact finger, in engagement with its supporting base is insured and the movement of said finger under the influence of the spring 18 may be limited as desired, while the resiliency of the spring will allow said finger to yield to the movable contact, and yet firmly hold the same in engagement therewith.

As illustrated, the portion 24 of the rod 17 has a screw threaded engagement with the contact support, or bearing block, and might be adjusted therein to vary the pressure exerted by the spring upon the contact finger. While the contact finger is in direct electrical engagement with the support 11, yet I prefer to further electrically connect said finger with said support by means of a flexible lead 25.

With the arrangement illustrated, when the contact segment is moved under the contact finger it turns said contact finger in its bearing thereby compressing the spring 18. This compression of the spring obviously tends to increase the pressure on the contact finger and hence holds said finger in firm engagement with the segment. When the segment is moved out of engagement with the contact finger, the contact finger moves under the influence of the spring 18 until the set screw 22 thereof engages the lug 21 in which position it is arrested and remains until the segment is again moved into engagement therewith. When desired to remove the contact finger, it is merely necessary to disconnect the lead 25 therefrom, or from the base 11, then remove the pin 20 from the rod 17, and then lift the contact finger out of place. On the other hand, in replacing the contact finger it is only necessary to place the same on the rod 17, then place the spring 18 and collar 19 on the rod, insert the pin 20 and, if necessary, shift the contact finger until the lug 7 thereof finds its place in the groove 15. No further attention is required except in connecting the contact finger to the lead 25. The means for holding the contact finger in place, and the adjusting means, are both on the exposed side of the switch and, hence, are readily accessible when it is desired to remove, or adjust the contact finger.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In an electric switch, in combination, a support, a contact finger having at one end an open pivotal bearing on said support and having at its other end a contact, a pin mounted on said support and extending through said contact finger intermediate its ends, and a coil spring surrounding said pin and bearing upon said contact finger to hold the latter in engagement with said support and permit movement of said contact.

2. In an electric switch, in combination, a support, a contact finger having at one end an open pivotal bearing on said support and having at its other end a contact, a pin mounted on said support and extending through said contact finger intermediate its ends, and a coil spring surrounding said pin and bearing upon said contact finger to hold the latter in engagement with said support and permit movement of said contact, said support having an extension to limit the movement of said contact finger in one direction.

3. In an electric switch, in combination, a support, a contact finger having at one end an open pivotal bearing on said support and having at its other end a contact piece, a pin mounted on said support and extending through said contact finger intermediate its ends, a coil spring surrounding said pin and pressing upon said contact finger to hold the latter in engagement with said support, and adjustable means on said contact finger to limit the movement of the same in one direction.

4. In an electric switch, in combination, a support having a groove therein, a contact finger having at one end a lug resting in said groove and having at its other end a contact piece, a pin mounted on said support and extending through said contact finger intermediate its ends, a collar on said pin, a coil spring surrounding said pin between said collar and said contact finger to hold the latter in engagement with said support, adjustable means carried by said contact finger to limit the movement thereof in one direction and a flexible conductor between said support and said contact finger, said flexible conductor, said spring and said adjustable means being accessible from the exposed side of said contact finger.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

THOMAS E. BARNUM.

Witnesses:
FRANK H. HUBBARD,
GEORGE HAYNES.