No. 688,738. Patented Dec. 10, 1901.

JAMES JONES & JAMES JONES, JR.

ELECTRIC SWITCH.

(Application filed Nov. 6, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2.

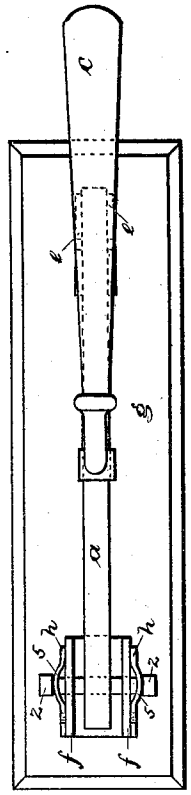


Fig. 1.

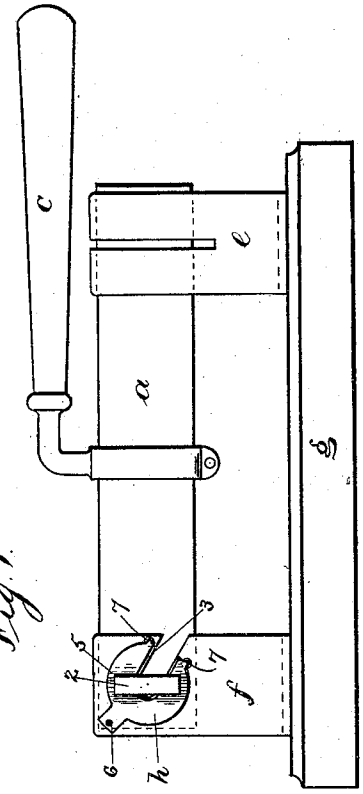
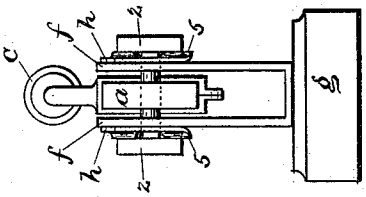


Fig. 3.



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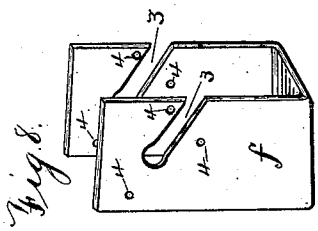


Fig. 8.

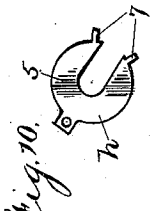


Fig. 10.

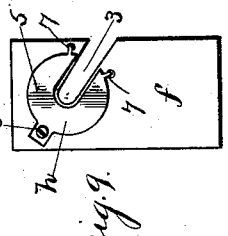


Fig. 9.

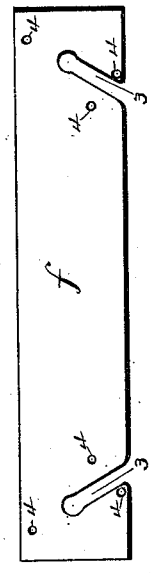


Fig. 7.

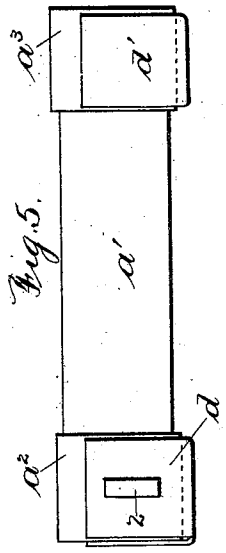


Fig. 5.

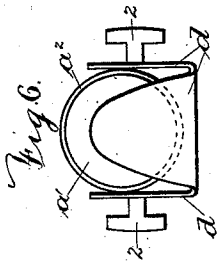


Fig. 6.

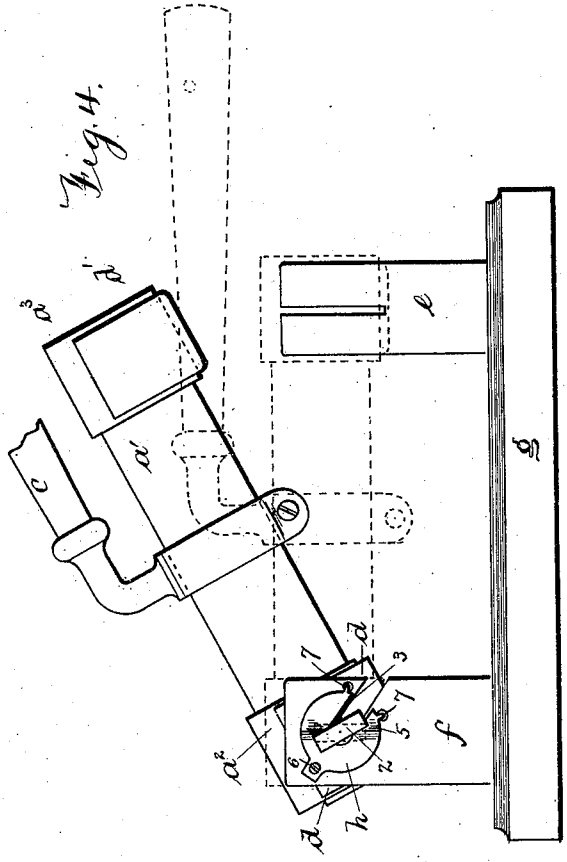


Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES JONES AND JAMES JONES, JR., OF NEW YORK, N. Y.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 688,738, dated December 10, 1901.

Application filed November 6, 1900. Serial No. 35,601. (No model.)

To all whom it may concern:

Be it known that we, JAMES JONES and JAMES JONES, Jr., citizens of the United States, residing at the borough of Brooklyn, in the city and State of New York, have invented an Improvement in Electric Switches, of which the following is a specification.

Our invention relates to devices employed in connection with a switch-bar or an insulating-case and inclosed fuse forming a switch and in which a positive engagement and binding friction are maintained between the contact ends of the switch-bar or fuse-case and supports for the same upon a suitable foundation, with the object of insuring complete and ample electrical contact of the meeting surfaces.

In carrying out our invention and in combination with either a switch-bar or an insulating fuse-case and inclosed fuse we employ headed trunnions upon one end of the bar or case, and a suitable handle is preferably attached by which the switch is operated. To a suitable base are attached clip-contacts receiving the switch-bar or fuse-case, one of which clip-contacts is of ordinary construction and the other of special construction and forming the essential feature of our invention. The latter clip-contact is made from a strip of metal bent up into U form and provided with inclined slots constituting bearings, and we employ spring-disks upon the outer surfaces of this latter clip-contact adjacent to the notches, which spring-disks are also slotted for the aforesaid trunnions and secured to the clip, each having a rib transversely of the surface adapted to forcibly contact with the trunnions and cause a binding friction between the parts.

In the drawings, Figure 1 is a side elevation, Fig. 2 a plan, and Fig. 3 an end, view illustrating our invention as applied to a bar-switch. Fig. 4 is a side elevation representing our improvement as applied to a fuse-case and inclosed fuse and in which by dotted lines the fuse-case is shown in a horizontal position when the circuit is complete and in full lines when the fuse-case is raised and the circuit broken. Fig. 5 is a side elevation, and Fig. 6 an end view, showing the insulating fuse-case and metal U-clips secured to the contact ends. Fig. 7 is a plan of the clip-contact forming the essential feature of our invention as a strip, and Fig. 8 shows the same bent up to shape. Fig. 9 is a side elevation of this clip-contact with the spring-disk in place, and Fig. 10 is an elevation of the spring-disk alone.

The switch-bar a is of ordinary character, preferably a single bar of suitable metal, such as copper. One end is provided with T-headed trunnions 2, and a handle c is connected to the bar a for moving the same. The fuse-case a', of insulating material, inclosing a fuse and the contact ends a^2 a^3, of metal, are also of usual construction, and while we prefer to employ the fuse-case the switch-bar is equally available. To the contacts a^2 a^3, which are round and conform to the case a', we attach metal U-clips d d', preferably by solder, the clip d being provided with T-headed trunnions 2, projecting from opposite surfaces of the said clip. An insulating-handle c is also secured to the fuse-case a'.

The bases g, of suitable insulating material, are provided with clip-contacts e f, of metal and of U shape, secured to the bases and adapted to have attached thereto the ends of electric wires. The clip-contacts e are of ordinary construction and adapted to receive and frictionally contact with the switch-bar a or the metal clip d', secured to the fuse-case a'.

The clip-contacts f, which form the essential feature of our invention, are provided with inclined slots 3, having an upward direction, the bases of which are preferably rounded, and adjacent to these inclined slots are perforations 4. Fig. 7 shows the clip-contact f separate and as cut from a plate of suitable metal, preferably copper. Fig. 8 shows the said clip-contact as bent up into U form preparatory to being secured to the base g. We provide spring-disks h, also slot-

ted and provided with a transverse rib 5, a perforation for the screw 6, and tangs 7, and Fig. 9 shows clearly by a side elevation the position occupied by the spring-disks when secured to the clip-contact *f*, the screw 6 passing into one perforation 4 and the tangs 7 into the other perforations, so that the slot of the spring-disk coincides with the slot of the clip-contact and the transverse rib 5 occupies a substantially vertical position.

The T-headed trunnions 2 are located at right angles to the axis of the switch-bar *a* and fuse-case *a'*, and when the parts are brought into position the trunnions are passed up the inclined slots 3, and the heads of the trunnions (shown in Figs. 1 and 4) bear frictionally upon opposite edges of the transverse ribs, and in the position shown in Fig. 4 the fuse-case or switch-bar may be supported at this inclination, in which the circuit is broken, because the metal clip *d'* is not in contact with the clip-contact *e*. If now pressure is applied to either handle *c* to force the switch-bar *a* or the fuse-case *a'* downward and bring the switch-bar *a* or the clip *d'* into electrical connection with the clip-contact *e*, the heads of the trunnions 2 will be caused to bear forcibly upon the outer surfaces of the ribs 5, so that there will be a frictional binding action that will positively hold the adjacent parts in firm, intimate, and frictional contact.

When the switch is not in use, the same may occupy the position shown in Fig. 4 or be swung completely over to the left hand, so as to bring the T-heads of the trunnions to bind on the other opposite sides of the transverse ribs 5. This form of switch fulfils the requirements made by the authorities of several places for switches having a positive engagement and binding friction between the metallic contacts.

We claim as our invention—

1. The combination in a switch with a device for opening and closing the circuit, of a base and clip-contacts thereon, one of which is provided with openings, and means substantially as specified fixed to one end of the opening and closing device and engaging the clip-contacts having openings, whereby the clip-contacts engage the ends of the opening and closing device and a pivotal function is provided for, and yielding spring-acting devices connected to one of the clip-contacts for producing a binding friction between the engaging metallic parts, substantially as set forth.

2. The combination in a switch with a device for opening and closing the circuit, of a base, a clip-contact connected to said base and adapted to receive one end of the said opening and closing device, a second clip-contact secured to the base and having inclined slots, headed trunnions secured to one end of the opening and closing device and adapted to enter the said inclined slots, and a device connected to the slotted clip-contact and engaged by the trunnions for effecting a binding friction between the metallic parts, substantially as set forth.

3. The combination in a switch, with a device for opening and closing the circuit, of a base, a clip-contact connected to said base and adapted to receive one end of the said opening and closing device, a second clip-contact secured to the base and having inclined slots, headed trunnions secured to one end of the opening and closing device and adapted to enter the said inclined slots, and spring-disks having transverse ribs secured to opposite faces of the slotted clip-contact and adapted to engage the heads of the trunnions to produce a binding friction between the metallic parts, substantially as set forth.

4. The combination with a fuse-case and contact ends, of a base, a clip-contact connected to said base and adapted to receive one contact end of the fuse-case, a second clip-contact secured to the base and having inclined slots, trunnions secured to one of the contact ends of the fuse-case and adapted to enter the said inclined slots, and spring-disks having transverse ribs secured to opposite faces of the slotted clip-contact and adapted to engage the heads of the trunnions to produce a binding friction between the metallic parts, substantially as set forth.

5. The combination in a switch, with a fuse-case having round contact ends, of metal U-clips secured to the round contact ends and T-headed trunnions secured to opposite sides of one of said clips, a suitable base of insulating material, a clip-contact upon said base, adapted to engage one of the metal clips of the fuse-case, a second clip-contact upon the said base having inclined slots adapted to receive the trunnions of the other metal clip, spring-disks having projecting transverse ribs slotted and provided with means for attaching the same to the opposite surfaces of the slotted clip-contact with the slots coinciding, whereby the heads of the trunnions as received in the said slots are adapted to form a positive engagement and binding friction with the surfaces of the said ribs to hold the clip-contacts forcibly against the U-clips of the fuse-case, substantially as set forth.

6. The combination in a switch with a fuse-case having round contact ends, of metal U-clips secured to the round contact ends and T-headed trunnions secured to opposite sides of one of said clips, a suitable base of insulating material, a clip-contact upon said base adapted to engage one of the metal clips of the fuse-case, a second clip-contact upon the said base having inclined slots adapted to receive the trunnions of the other metal clip, spring-disks having projecting transverse ribs, slotted and provided with means for attaching the same to the opposite surfaces of the slotted clip-contact with the slots coinciding, whereby the heads of the trunnions as

received in the said slots are adapted to form a positive engagement and binding friction with the surfaces of the said ribs to hold the clip-contacts forcibly against the U-clips of the fuse-case, and a suitable handle connected to the fuse-case and by which the said fuse-case and its contact ends are swung on the trunnions to bring the free contact end of the fuse-case into electrical connection with one of the clip-contacts of the base and remove the same therefrom, substantially as set forth.

Signed by us this 31st day of October, 1900.

JAMES JONES.
JAS. JONES, JR.

Witnesses:
M. KING,
J. M. VAN FLEET.