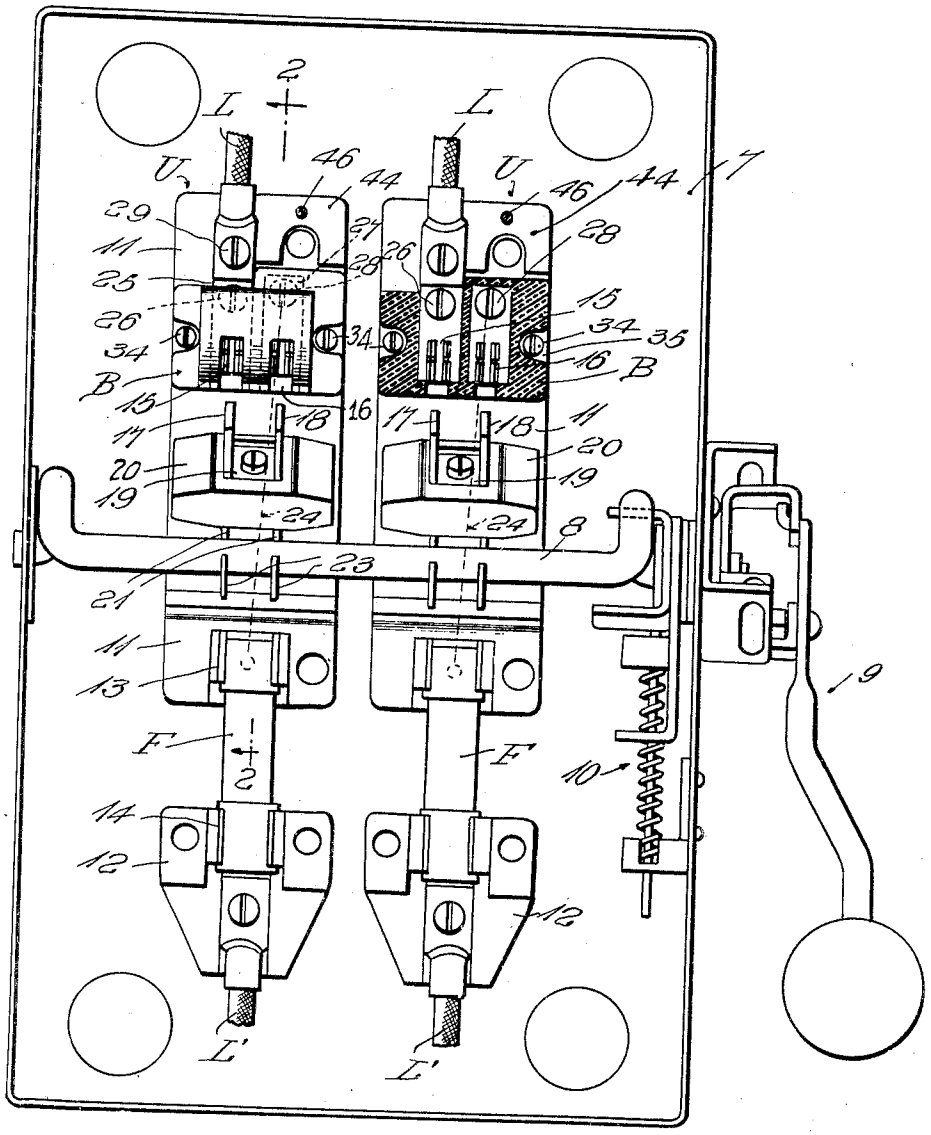
March 10, 1931. J. J. DANTE 1,795,641

SWITCH CONTACT ARC REDUCER

Filed Jan. 22, 1929 2 Sheets-Sheet 1

Fig. 1.



Witness

Inventor

J. J. Dante,

By A. B. Williamson & Co

Attorneys

March 10, 1931. J. J. DANTE 1,795,641

SWITCH CONTACT ARC REDUCER

Filed Jan. 22, 1929 2 Sheets-Sheet 2

FIG. 2

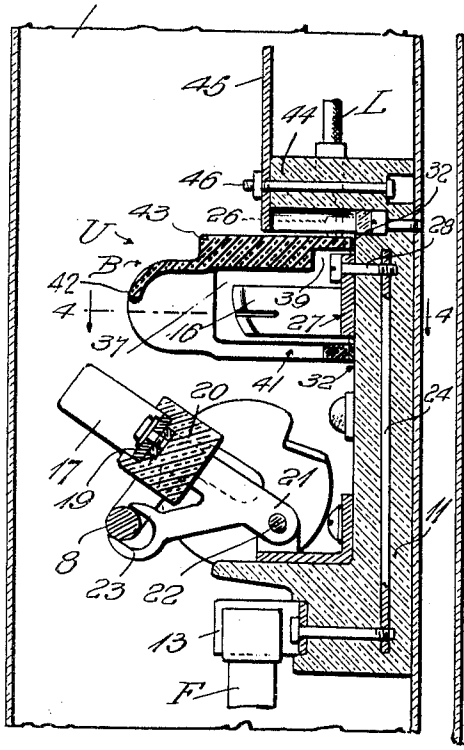


FIG. 3

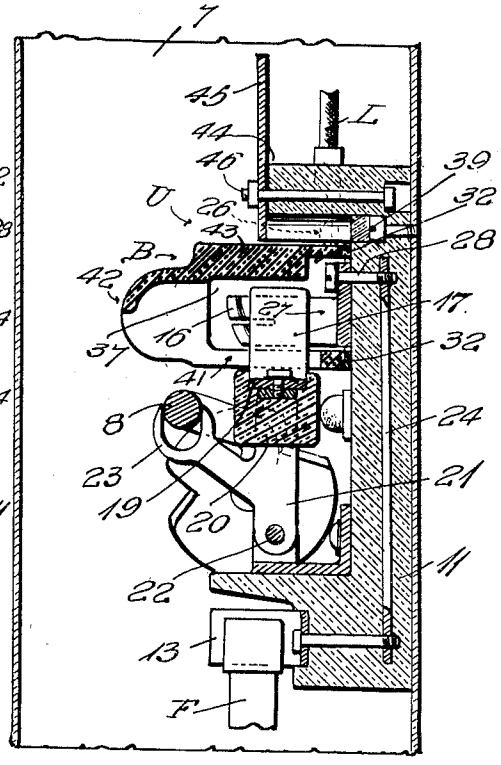


FIG. 4

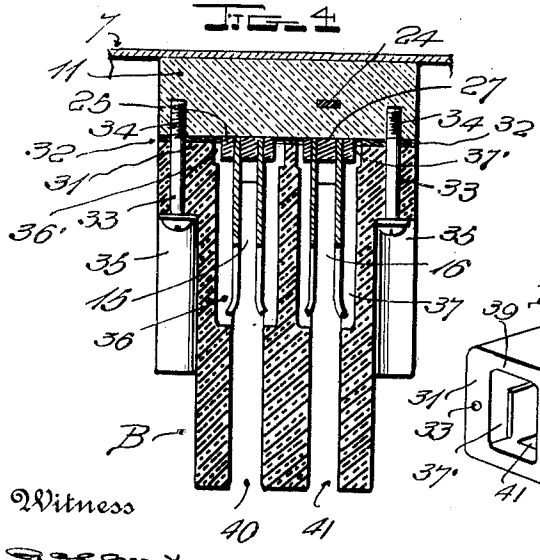


FIG. 5

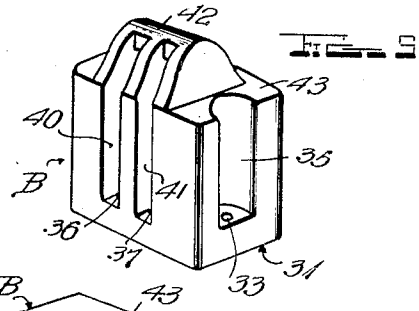
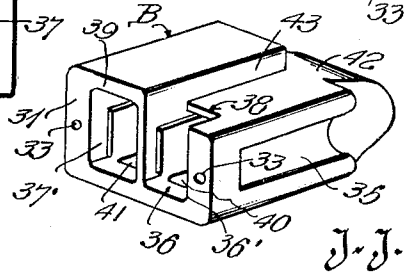


FIG. 6



Witness

Inventor

J. J. Dante

By A. Bruesonteo

Attorneys

Patented Mar. 10, 1931 1,795,641

UNITED STATES PATENT OFFICE

JOSEPH J. DANTE, OF BANTAM, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE TRUMBULL-VANDERPOEL ELECTRIC MANUFACTURING COMPANY, OF LITCHFIELD, CONNECTICUT, A CORPORATION OF DELAWARE

SWITCH-CONTACT-ARC REDUCER

Application filed January 22, 1929. Serial No. 334,302.

The invention relates to improvements in electrical switches of the type embodying stationary contact clips and movable switch blades cooperable with said clips, and it is the object of the invention to provide a new and improved means for reducing the arc commonly formed when the switch blades leave the contact clips, this being accomplished by the use of a block of fire-proof, heat-absorbing material of such construction as to not only cool the arc by absorbing heat from it, but to exclude a great amount of oxygen from the arc so that it cannot burn so freely.

A further object of the invention is to provide a block of the nature set forth which will serve to prevent a flash-over between poles of opposite polarity.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Fig. 1 is a front elevation of a switch embodying my improvements, the switch blades being shown in open position.

Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 2 but showing the switch closed.

Fig. 4 is a horizontal sectional view on line 4—4 of Fig. 2.

Figs. 5 and 6 are perspective views of one of the arc-diminishing blocks.

A switch is shown of the enclosed type and the casing of this switch is denoted at 7. Two switch units U are shown within this casing operable by means of a shaft 8, a handle 9 and appropriate quick-acting means 10 for rapidly completing the movement of the shaft 8 in either direction. The construction associated with the handle 9 and the means 10 form no part of the present invention and the former is embodied in another U. S. application, Serial No. 334,301, filed January 22, 1929. As both switch units U are identical, only one will be described.

11 denotes an elongated insulating base secured to the back of the casing 7 and 12 has reference to a smaller base secured to said casing back. The two bases 11—12 carry fuse clips 13—14 for engagement with a suitable fuse F and the base 11 carries two contact clips 15—16 and pivoted switch blades 17—18 co-operable with said clips 15—16 respectively. The blades 17—18 are connected at their inner ends by a current-conducting portion 19 and said portion is secured to an insulator 20 which is carried by two plates 21, the latter being pivotally mounted at 22 and having portion 23 engaging the shaft 8. One of the line wires L is electrically connected with the clip 15 and the clip 16 is connected by a conductor 24 with the fuse clip 13, this conductor 24 being shown in full lines in Figs. 2 and 3 but being only diagrammatically illustrated in Fig. 1. When the blades 17—18 are in engagement with the contacts 15—16, current flows from the wire L through the parts 15—17—19—18—16—24—13—F—14 to the load wire L′ which is electrically connected with the clip 14. One of the units U obviously controls one side of the line and the other of said units controls the other side of the line. Without the provision of the arc-diminishing means hereinafter described, separation of the pivoted switch blades 17—18 from the contact clips 15—16, would produce severe arcing, but due to the provision hereinafter described, such arcing is reduced to an uninjurious minimum.

Before describing the arc-diminishing means, it will be explained that the contact clip 15 is provided with a relatively long attaching foot 25 secured by a screw 26 to the base U, and that the clip 16 is provided with a similar but shorter attaching foot 27 fastened to said base and electrically connected with the conductor 24, by a screw 28. Both of these feet project beyond the clips 15—16 in a direction away from the switch blade pivots 22, and the outer end of the foot 25 is provided with a binding post 29 for attaching the line wire L thereto. An arc-diminishing block B is related in a novel manner with these feet 25—27, the contacts 15—16, and the switch blades 17—18. This block B is preferably formed from glazed porcelain or other material which will act to absorb heat and to prevent passage of current. This block is formed with a flat inner end 31 to

abut a gasket 32 which in turn abuts the front side of the base 11, and said inner end of the block is formed with openings 33 to receive screws 34 by means of which it is attached to said base 11, opposite sides of said block being longitudinally grooved as at 35 so that screws of excessive length need not be used. The block B is formed with two elongated recesses 36—37 for receiving the clips 15—16 respectively, and the portions of these recesses at the flat end 31 of the block are enlarged somewhat as at 36′ and 37′ respectively to accommodate the attaching feet 25—27. The back wall of the block B is formed with a notch 37 communicating with the recess 36 and the projecting end of the foot 25 passes through this notch, making its binding post 29 accessible at the exterior of the block. The rear lower portion of the recess 37 is formed with an offset 39 receiving the projecting end of the foot 27.

Formed longitudinally in the block B, are two slots 40—41 to receive the switch blades 17—18 respectively when these blades are closed. Slot 40 is in communication with recess 36 and slot 41 similarly communicates with recess 37. The width of these slots is only slightly more than the thickness of the blades 17—18 and while said slots open through the longitudinal side of the block B toward the pivots 22 of the blades 17—18, said slots open through no other longitudinal sides of said block. Substantially half the depths of the slots 40—41 are open at the outer end of the block B but the back wall of the latter turns forwardly at its outer end as denoted at 42, closing the remaining depths of the slots. The free edge of the wall portion 42 is positioned so that it slightly more then clears the free ends of the switch blades 17—18 when the latter move from open to closed positions or vice versa.

By constructing the block B in the manner shown and described and relating it with other parts of the switch as explained, said block not only excludes a great deal of oxygen from the arc formed by opening the switch blades, but it absorbs heat from said arc, thereby cooling and greatly diminishing the latter. Then too, due to the insulating characteristics of the block, it prevents flash-overs and consequently removes one more hazard from the switch.

Preferably, the block B is rearwardly widened as at 43 so that it will not be weakened by the formation of the recess offset 39, and this widened portion may extend substantially to the outer end of the block B and abut the inner side of a lug 44 which is formed on the base 11 for the attachment of a guard plate 45 which covers the line wires L. Bolts 46 are shown for securing the guard plate 45 to the lugs. The inner edge of this guard plate is preferably notched to receive the enlargement 43 of the block B.

As excellent results are obtained from the details disclosed, they are preferably followed. However, within the scope of the invention as claimed, variations may be made.

I claim:—

1. In an electric switch, a base, a contact clip mounted thereon, a pivoted switch blade co-operable with said clip, a one-piece fireproof block having a recess receiving said clip and having at one side of said recess and above the same a relatively narrow longitudinal slot which receives said blade when the latter is closed, and means securing said block against said base and around the inner end of said clip, the outer end of said block being outwardly spaced from the outer end of said clip, the aforesaid slot opening through the longitudinal side of the block toward the blade pivot and being partially closed at the outer end of said block.

2. In an electric switch, a base, a contact clip mounted thereon, a pivoted switch blade cooperable with said clip, a fireproof block having a recess receiving said clip and a longitudinal slot which receives said blade when the latter is closed, and means securing said block against said base around the inner end of said clip, the outer end of said block being outwardly spaced from the outer end of said clip, the aforesaid slot opening through the longitudinal side of the block toward the blade pivot but through no other longitudinal side of said block, said slot being open for substantially half its depth at said outer end of said block, the latter being provided with a back wall whose outer end turns toward said one longitudinal side of the block and closes the remaining depth of the slot at said outer end of the block.

3. In an electric switch, a base, two contact clips having parallel attaching feet of different lengths secured against said base, two co-axially pivoted switch blades co-operable with said clips respectively, said feet projecting different distances beyond said clips away from the blade pivots, and the longer of said feet having a binding post; a fireproof block having separate recesses receiving said clips and separate longitudinal slots which receive said blades when the latter are closed, and means securing said block to said base, one of said recesses being provided at the inner end of the block with an enlargement receiving the projecting end of the shorter of said clip attaching feet, said inner end of said block having a notch through which the projecting end of the longer foot passes to render its binding post accessible at the exterior of the block, the aforesaid slot opening through the longitudinal side of the block toward the blade pivots but through no other longitudinal side of said block.

4. A structure as specified in claim 3; said slots being open for substantially half their

depths at the outer end of said block, the latter being provided with a back wall whose outer end turns toward said one longitudinal side of the block and closes the remaining depths of the slots at said outer end of said block.

5. An arc reducer comprising an elongated fire-proof block having a flat inner end and formed with means facilitating fastening of said end against a clip-carrying base, said block having a clip-receiving recess which opens through said inner end and a longitudinal blade-receiving slot communicating with said recess, said slot opening through one longitudinal side of said block but through no other longitudinal side thereof, said slot being open for substantially half its depth at the outer end of said block, the latter being provided with a back wall whose outer end turns toward said one longitudinal side of the block and closes the remaining depth of the slot at said outer end of the block.

6. An arc reducer comprising an elongated fireproof insulating block having a flat inner end and formed with means facilitating fastening of said end against a clip-carrying base, said block having two clip-receiving recesses which open through said inner end and two longitudinal blade-receiving slots communicating with said recesses respectively, said inner end of the block being formed with a notch communicating with one side of one of said recesses to receive a carrying foot of one of the clips, said one side of the other recess having an offset to receive the foot of the other clip; the aforesaid slots opening through the longitudinal side of the block opposite said offset and notch but opening through no other longitudinal side of said block, said slots being open for substantially half their depths at the outer end of said block, the latter being provided with a back wall whose outer end turns toward said one longitudinal side of the block and closes the remaining depths of the slots at said outer end of said block.

In testimony whereof I have hereunto affixed my signature.

JOSEPH J. DANTE.

DISCLAIMER

1,795,641.—*Joseph J. Dante*, Bantam, Conn. SWITCH-CONTACT-ARC REDUCER. Patent dated March 10, 1931. Disclaimer filed March 31, 1934, by the assignee, *Cutler-Hammer, Inc.*

Hereby enters the following disclaimer:

To so much of claim 1 as may cover an electric switch in which the slot in the fire-proof insulating block is not partially closed at the outer end of the block in such manner that the height of the entrance to the slot at the outer end of the block is materially less than the corresponding dimension of the slot within the block.

Thereby limiting claim 1 to an electric switch in which the slot in the fire-proof insulating block is partially closed at the outer end of the block in such manner that the height of the entrance to the slot at the outer end of the block is materially less than the corresponding dimension of the slot within the block.

[*Official Gazette April 24, 1934.*]