

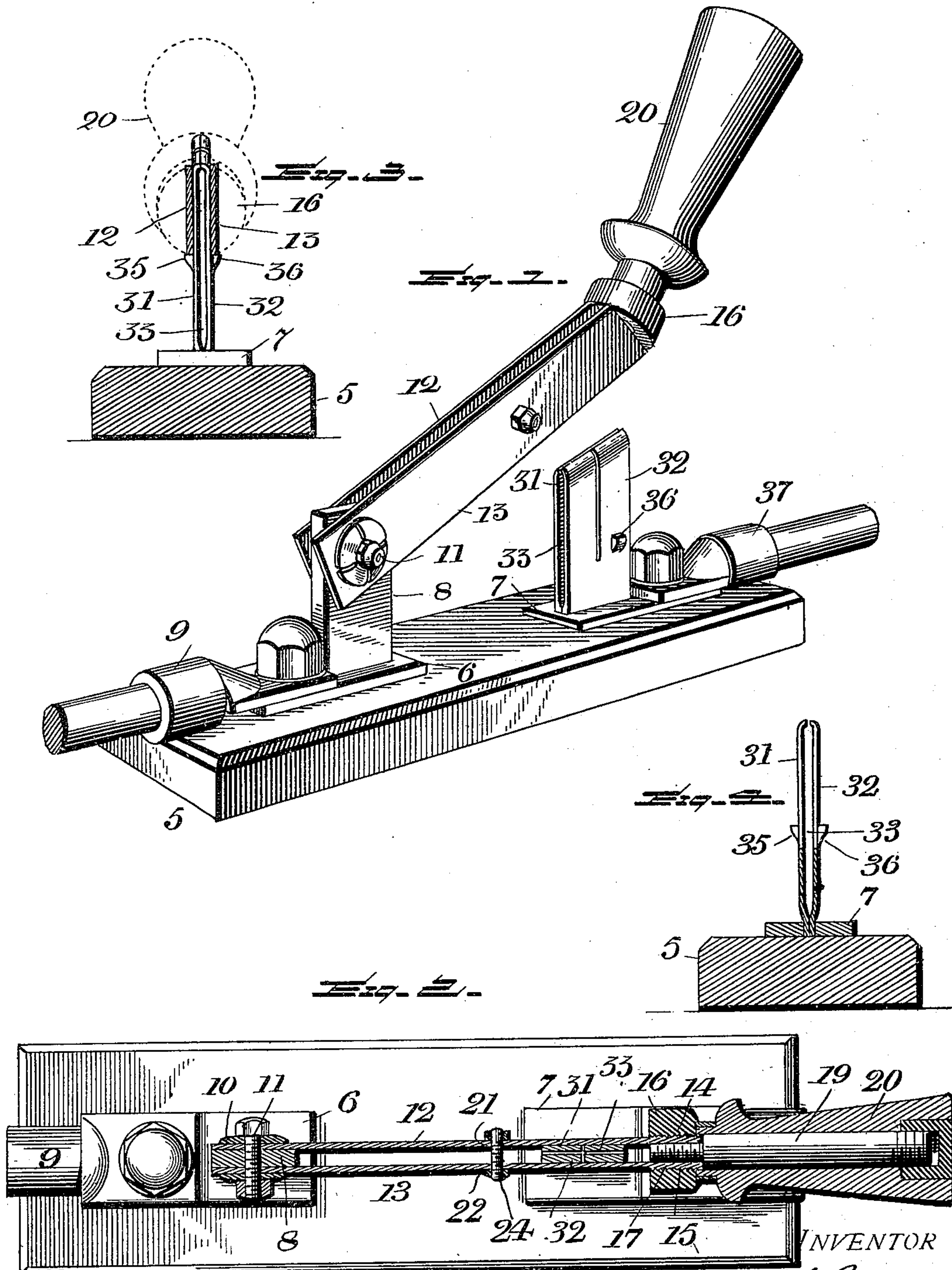
No. 670,145.

Patented Mar. 19, 1901.

W. F. BOSSERT.  
ELECTRIC SWITCH.

(Application filed June 7, 1900.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 670,145, dated March 19, 1901.

Application filed June 7, 1900. Serial No. 19,409. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. BOSSERT, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Electric Switches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which forms a part of this specification.

This invention relates to electric switches in general, and more particularly to the class of knife-switches wherein two electric terminals are provided, a switch-knife being pivoted to one of the terminals in such manner and position as to permit its movement into and out of engagement with the second terminal. In those switches where each of the terminals has consisted of two or more plates, the knife, either single or multiple, being pivoted between the plates of one terminal and adapted for movement to engage between the plates of the opposite terminal, the objection has been that in forcing the plates of the terminal apart to receive the knife with sufficient friction to produce an efficient contact the plates are moved outwardly at their free ends, so that when the knife is engaged therewith they lie divergingly, and consequently while there is intimate contact at the lower edge of the knife this intimacy of contact decreases toward the outer or upper edge of the knife, and the extreme outer or upper edge of the knife is at times entirely out of contact with the plates of the terminal with which it is moved into engagement. In the present construction, however, this defect is overcome by forming the blade of the knife and each blade where a compound knife is used of two plates which are of spring metal and which receive between them the two spring-metal plates which form the knife-receiving terminal. The plates of the knife-receiving terminal are joined at their lower ends or bases and are separated thereabove by an interspace, the upper ends of the plates being bent slightly toward each other, but

not touching, so that they may be pressed inwardly by engagement of the knife-plates thereover and by conforming to the correlative positions of the knife-plates insure intimate contact.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view of the complete switch with the knife raised from engagement with the knife-receiving terminal. Fig. 2 is a horizontal section taken through the knife and the terminals with the knife in its engaged or closed position. Fig. 3 is a vertical section taken through the knife at a point between the terminals and showing the knife-receiving terminal in elevation. Fig. 4 is a front elevation of the knife-receiving terminal, showing the spaced plates with their inturned ends.

Referring now to the drawings, the switch of the present invention consists of a base 5, of slate or other suitable insulating material, and on this base are mounted the two foot-plates 6 and 7, of which the former supports and is in intimate electrical connection with the terminal 8 to which the knife is pivoted and with which also is connected by means of a screw the socket-piece 9 at the end of a conducting-wire.

The terminal-plate 8 is a single plate of copper having a transverse bearing or journal adjacent its upper end and which bearing or journal receives rotatably the pivot-bolt 11 of the knife. The knife in the present instance comprises two spring-metal plates 12 and 13, preferably of copper, and which are arranged side by side and parallel, the ends of the plates 12 and 13 at one end of the knife being disposed upon opposite sides of the terminal-plate 8, the pivot-bolt which holds the plates of the knife in intimate and frictional contact with the plate 8 being of the usual form and construction.

At the free ends of the plates 12 and 13 are formed lugs 14 and 15, which lie in mutual contact and which conjointly form a cylindrical extension of the knife, these lugs being exteriorly threaded for engagement of a heavy metal collar 16, while said lugs have



formed partly in each a threaded longitudinal recess 17, with which is engaged the screw-stem 19 of an insulating-handle 20, through the medium of which the switch-knife is manipulated.

Alining perforations 21 and 22 are formed in the plates of the knife at a point properly spaced from the free end of the knife, and engaged with these perforations is a bolt 24, for a purpose which will be presently explained.

The knife-receiving terminal of the switch is mounted in the plate or foot 7, and consists of two spring-metal plates 31 and 32, which are vertically slotted, as shown, to increase their resiliency, these plates 31 and 32 lying in intimate contact mutually below the surface of the foot 7, above which they are separated by an interspace 33, the upper extremities of the plates being bent slightly inwardly or converged, so that while they will stand normally out of mutual contact they will contact mutually prior to the contact of the portions of the plates therebelow, so that the plates of the terminal may be compressed intermediate of their ends and when released will assume their normal positions or relative separation above the foot-plate. In other words, these plates meet at their lower ends and diverge slightly upward, where, as seen in the drawings, their upper ends do not meet until the knife-blade engages and slides over them.

The separation of the outer surfaces of the plates 31 and 32 is slightly more than the separation of the inner faces of the plates of the knife, and thus when the knife is drawn downwardly and into engagement with the terminal-plates the latter will be compressed slightly to bring their free ends into mutual engagement, and the movement of the knife-plates over the terminal-plates will tend to separate the knife-plates, the arrangements of the parts being such that the terminal-plates will be in contact continuously with the knife-plates throughout the widths of both plates, the peculiar arrangement of the plates being such that they will yield sufficiently at all points to secure this result.

When the contacting surfaces of the knife-plates and terminal-plates become worn so as not to establish sufficient intimacy of contact, the bolt 24 may be adjusted to draw the knife-plates toward each other to an extent sufficient to compensate for this wear, the bolt being so positioned that when the knife is in its operative position the bolt will lie adjacent to the knife-receiving terminal.

Stop-lugs 35 and 36 are formed upon the plates 31 and 32 for engagement by the knife-plates to limit the downward movement of the knife over the plates of the terminal, and the foot-plate 7 has the usual socket piece or plate 37 connected therewith, as shown.

It will of course be understood that in practice various modifications of the specific construction shown may be made and that any

materials and proportions that are suitable may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

1. A switch comprising an approximately V-shaped knife-receiving terminal of resilient metal and having its upper ends bent toward each other and their lower ends bent and meeting each other, and a knife including spaced plates adapted for contact with the exterior faces of the bent portions of the receiving-terminal and to slide thereover into contact with the surfaces therebelow.

2. A switch comprising an approximately V-shaped receiving-terminal having its upper ends converged, a knife including spaced plates adapted for contact with the outer faces of the converged portions of the receiving-terminal to slide thereover into contact with the surfaces therebelow, the plates of the knife having means for moving and holding them toward each other to compensate for wear.

3. The herein-described terminal for knife-switches, comprising separated resilient plates having their upper ends bent inwardly toward each other, and their lower ends in mutual contact, and a supporting-plate connected with the lower ends, said plate being constructed and arranged to hold said lower ends in intimate contact.

4. The herein-described terminal for knife-switches, comprising separated, resilient, slitted plates having their upper ends bent or curved inwardly toward each other and their lower ends bent and meeting each other, and a foot-plate having a slot in which said lower ends are inserted and whereby the plates are there held together with their remaining portions free for movement toward and away from each other by their resiliency when engaged by the switch-knife.

5. A switch comprising an approximately V-shaped knife-receiving terminal having its upper ends bent toward each other, a foot-plate in which the terminal is seated, and a knife including spaced plates adapted for contact with the outer faces of the receiving-terminal, the separation of the knife-plates being less than the normal separation of the outer faces of the receiving-terminal.

6. A switch comprising a knife-receiving terminal including plates of resilient metal and normally spaced at their upper ends, the upper extremities of said plates being bent toward each other, and a knife including spaced plates adapted for contact with the outer faces of the bent portions of the receiving-terminal and to slide thereover into contact with the surfaces therebelow, the separation of the knife-plates being less than the normal separation of the outer faces of the receiving-terminal.

7. A switch-knife comprising independent plates having lugs located adjacent each other and provided with hollowed screw-threaded portions in their adjacent faces, and having



exterior screw-threads, an operating-handle provided with a screw-threaded stem which is engaged with the hollowed screw-threaded portions of the lugs, and an internally-screw-threaded collar screwed over the lugs and holding them in rigid engagement with the stem.

8. A switch comprising a knife-receiving terminal including plates formed of slitted resilient metal and normally spaced at their upper ends, the upper extremities of said plates being bent toward each other, and a knife including spaced plates adapted for contact with the exterior faces of the bent portions of the receiving-terminal and to slide thereover into contact with the surfaces therebelow.

9. A switch comprising a knife-receiving terminal including plates formed of resilient metal and their upper portions normally spaced, the upper extremities of said plates being bent toward each other, and a knife including spaced plates adapted for contact

with the outer faces of the bent portions of the receiving-terminal and to slide thereover into contact with the surfaces therebelow, the plates of the knife having means for moving and holding them toward each other to compensate for wear.

10. A switch comprising a knife-receiving terminal including separated, slitted, resilient plates having their upper ends tapered, and a knife including spaced plates adapted for engagement with the outer faces of the terminal-plates to move them inwardly to pass to portions therebelow, the plates of the knife having means for moving and holding them toward each other to compensate for wear.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. BOSSERT.

Witnesses:

ARTHUR L. BOSLEY,  
GEORGE WARD.