

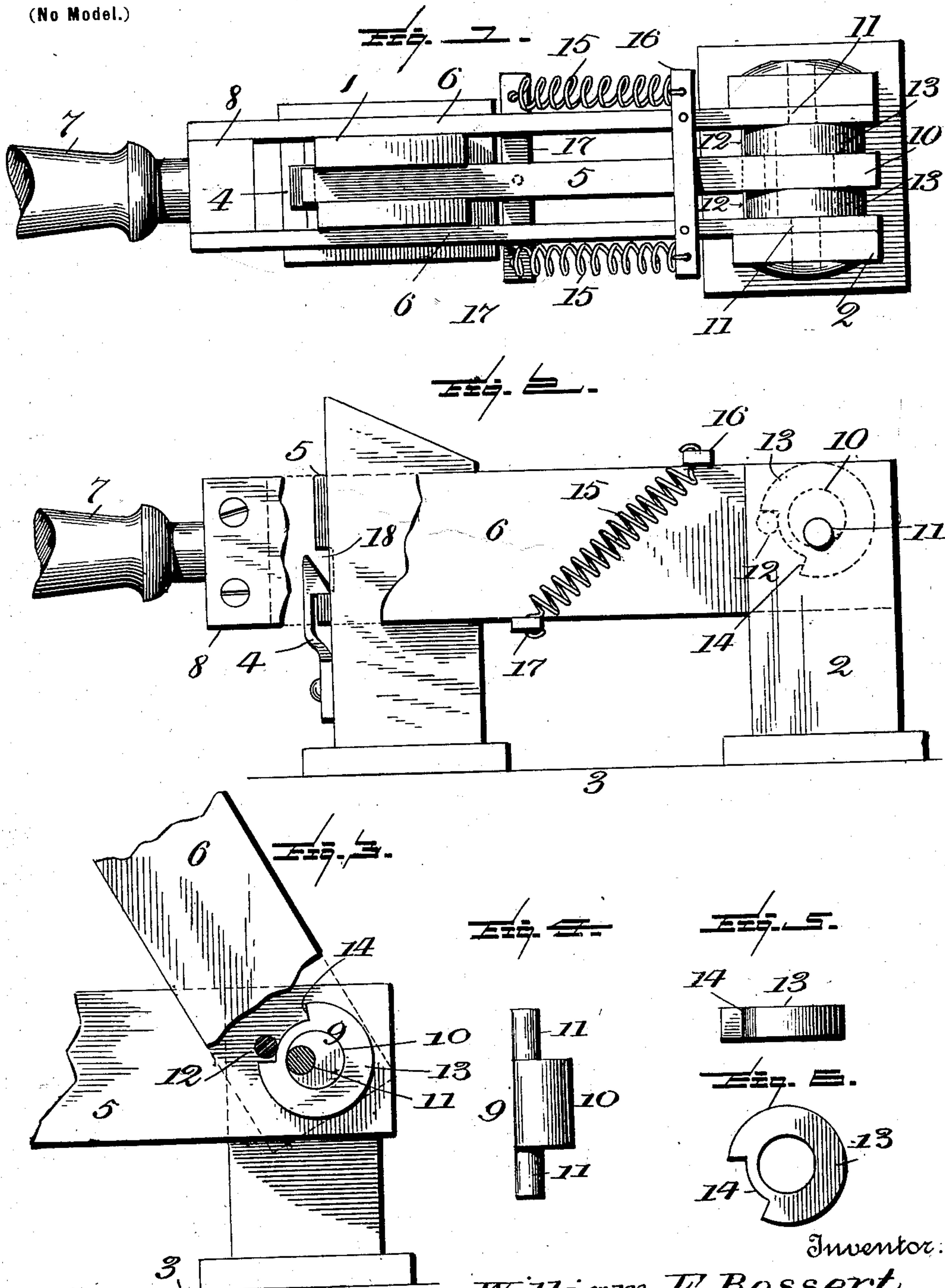
No. 655,047.

Patented July 31, 1900.

W. F. BOSSERT.
QUICK BREAK ELECTRIC SWITCH.

(Application filed Mar. 10, 1899.)

(No Model.)



Witnesses

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QUICK-BREAK ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 655,047, dated July 31, 1900.

Application filed March 10, 1899. Serial No. 708,582. (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 Quick-Break 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 form a part of this specification.

My invention belongs to that class of electric switches which operate by a snap or quick action, so as to obviate sparking or reduce it to a minimum. In this variety of switches a main switch-blade and an auxiliary blade, one or more of each, are connected by a spring in such a manner that upon throwing the main blade to open the switch the tension of the spring is increased to such a degree as to cause a quick movement of the auxiliary blade. It frequently happens that the auxiliary blade moves prior to its actuating-spring attaining a maximum tension, which is essential to the attainment of a sudden and quick action of the auxiliary blade. This premature movement of the auxiliary blade is objectionable and requires constant care to avoid.

The primary object of my invention is to guard against movement of the auxiliary blade until its operating-spring has acquired the maximum tension, so as to insure a quick snap action thereof the instant the switch-blade reaches a predetermined point in its arcuate movement.

A further object of my invention is to combine with the auxiliary blade a catch to positively hold it until released by the movement of the switch-blade, the latter acting conjunctively with means to effect longitudinal movement of the auxiliary blade and a withdrawal thereof from the catch.

Another object of the invention is to provide a positive means for starting the auxiliary blade should it fail to move when released, said means being controlled by the switch-blade.

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 top view of a quick-break switch constructed in accordance with my invention. Fig. 2 is a side view. Fig. 3 is a fragmentary view showing in detail the pivotal connections of the main and auxiliary blades. Fig. 4 is a plan view of the pivot-pin, showing its eccentric. Fig. 5 is an edge view of one of my washers, and Fig. 6 is a plan view of the washer.

Referring now to the drawings, in operating in accordance with my invention I provide a base 3 of any desired insulating material, and to this base I secure front and rear terminals 1 and 2, respectively, each of which consists of two upwardly-extending and parallel members separated by an interspace and springing from an integral base.

Journaled horizontally in the members of the terminal 2 is a pivot-pin 11, having cylindrical ends separated by an eccentric formation 10 for a purpose which will be presently described. The axial dimension of the eccentric 10 is less than the width of the interspace between the members of the terminal 2, thus leaving at each side of the eccentric and between it and the adjacent terminal member a cylindrical bearing for a switch-blade 6, which blades are extended parallel and in the direction of the terminal 1 to engage the outer faces of the members of the terminal 1. The free ends of blades 6 are connected by means of a yoke 8, to which is attached an operating-handle 7 of insulating material. The blades 6 are fixedly connected with pin 11, so that as handle 7 is raised and lowered the pin may be oscillated.

Mounted loosely upon the eccentric 10 is a second or auxiliary blade 5, which extends between and beyond the members of the terminal 1, the free end of said blade having a notch therein to receive a catch 4, carried by or adjacent the terminal 1 and for a purpose as will be presently explained. The lateral dimension of blade 5 is such that it will make intimate contact with the inner faces of the elements of terminal 1, while mounted upon the eccentric 10 and intermediate the blade 5 and blades 6 are washers 13 of such lateral

dimensions as to fill the interspace between the members of terminal 2 in connection with blades 5 and 6.

In order to raise the blade 5 from engagement with terminal 1, I have attached to the upper edges of the blades 6 and transversely thereof a cross-piece 16, extending beyond the outer faces of the blades, while attached to the under edge of blade 5 is a second cross-piece 17, extending also beyond the outer faces of blades 6. Helical springs 15, arranged one at each side of blades 6, are each connected at one end to the adjacent extremity of cross-piece 16 and at the other end to the adjacent extremity of cross-piece 17. Thus it will be seen that if the handle 7 be raised to lift the blades 6 from the terminal 1 the springs 15 will be placed under tension and that such tension will be increased as the handle and blades are further raised. It will also be noted that the blade 5 is prevented from yielding to the pull of the springs 15 by means of the catch 4. It is in order to draw the blade 5 from the catch 4 when springs 15 have received their proper tension that the eccentric connection of blade 5 is provided.

As hereinbefore stated, the blades 6 are fixedly connected with the pivot-pin 11, while blade 5 is loosely mounted on the eccentric. This eccentric 10 is so disposed with respect to the blades 6 that when the latter are raised to give proper tension to springs 15 the eccentric will have been rotated to a position in the rear of its axis of rotation, thus drawing the blade 5 longitudinally and rearwardly and away from the catch, the blade 5 being drawn clear of the catch 4 at the proper time, when it will be released and will rise with a quick snap. The cross-piece 16 limits the upward movement of the blade 5 and also acts to press said blade into engagement with terminal 1 when blades 6 are lowered.

In order to insure the operation of blade 5 in leaving the terminal 1, I have formed segmental peripheral recesses 14 in washers 13, said washers being fixedly mounted upon the eccentric 10 and so disposed that their recesses will aline laterally.

Passed laterally through the blade 5 is a pin 12, the ends of which are adapted to play in the recesses 14 as the eccentric is rotated, the lengths of the inner arcs of the recesses being such that the resultant rear shoulders 14' of the recesses will engage the ends of the pin to rotate and lift the blade 5 slightly, and so decrease the friction between said blade and terminal 1 that the springs 15 may act in the manner above described.

This invention is applicable to a single or multiple switch and the blades may be single or in series. It will thus be understood that I may vary the specific constructions and arrangements herein shown and described and that I may embody my principles in any form of switch without departing from the spirit of my invention.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. In an electric switch the combination with terminals, of main and auxiliary blades adapted to bridge the terminals, a spring having connection with the auxiliary blade and adapted to throw it, means for placing said spring under tension, a latch adapted to hold the auxiliary blade against the action of the spring and means for moving the auxiliary blade bodily from the influence of the latch.

2. In an electric switch the combination with terminals of main and auxiliary blades adapted to bridge the terminals, a spring connection between the main and auxiliary blades, means for placing said spring under tension, and means for shifting the auxiliary blade longitudinally as an entirety with relation to both the terminals comprising an eccentric upon the pivot-pin of the bridging-blades, and means for oscillating said eccentric.

3. In an electric switch, the combination with terminals, of means for bridging the terminals, a spring adapted to exert pressure upon the bridging means to throw it, a catch adapted to hold the bridging means against the tendency of said spring, means for moving the bridging means bodily and longitudinally from the terminals, means for releasing the latch comprising an eccentric on the pivot-pin of the bridging means, and means for oscillating said eccentric.

4. In an electric switch the combination with terminals of main and auxiliary blades adapted to bridge the terminals, a spring connection between the main and auxiliary blades and adapted to be placed under tension by the movement of the main blade to throw the auxiliary blade, a latch adapted to hold the auxiliary blade against the action of the spring, and means for moving the auxiliary blade bodily from the influence of the latch.

5. In an electric switch the combination with terminals of main and auxiliary blades adapted to bridge the terminals, a spring having connection with the auxiliary blade and adapted to throw it, means for placing said spring under tension, a latch adapted to hold the auxiliary blade against the action of the spring, and means for shifting the auxiliary blade bodily and longitudinally from the influence of the latch.

6. In an electric switch, the combination with terminals of main and auxiliary blades adapted to bridge the terminals, a spring having connection with the auxiliary blade, and adapted to throw it, means for placing said spring under tension, a latch adapted to hold the auxiliary blade against the action of the spring, and means for moving the auxiliary blade longitudinally from the influence of the latch comprising a pivot-pin mounted in bearings and having an eccentric portion upon which the auxiliary blade is mounted.

7. In an electric switch of the snap-action

type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, and means controlled by the movement of the switch-blade to shift the auxiliary blade bodily and effect a release thereof from the catch or restraining means when the said spring has reached the predetermined tension.

8. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, and an eccentric connection between the blades to cause a bodily movement of the auxiliary blade when throwing the switch-blade and effect a release thereof from the catch when the spring has acquired the predetermined tension.

9. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, and a hinge-pin mounted in bearings and having the switch-blade secured to turn therewith, and having an eccentric portion upon which the auxiliary blade is mounted.

10. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, and an eccentric mounting for the blades and adapted to turn with the switch-blade to cause a longitudinal movement of the auxiliary blade and release it from the catch when the spring has acquired a given tension.

11. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, and a hinge-pin having an intermediate eccentric portion upon which the auxiliary blade is loosely mounted, and having the members of the switch-blade secured to the journals or reduced terminals of the hinge-pin to turn therewith.

12. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, means controlled by the movement of the switch-blade to shift

the auxiliary blade bodily and effect a release thereof from the catch or restraining means when the said spring has reached the predetermined tension, and cooperating means between the blades to give an initial movement to the auxiliary blade when released and upon the continued movement of the switch-blade.

13. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, an eccentric connection between the blades to cause a bodily movement of the auxiliary blade when throwing the switch-blade and effect a release thereof from the catch when the spring has acquired the predetermined tension, and means between the auxiliary blade and said eccentric connection to start the auxiliary blade when released and upon the continued movement of the switch-blade.

14. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, a hinge-pin mounted in bearings and having the switch-blade secured to turn therewith, and having an eccentric portion upon which the auxiliary blade is mounted, a washer or plate mounted upon the eccentric portion of the hinge-pin and having a shoulder, and a pin or stop projecting from the auxiliary blade to be engaged by the said plate.

15. In an electric switch of the snap-action type, switch and auxiliary blades, a spring connection between the blades and adapted to have its tension increased when throwing the switch-blade, a catch for holding the auxiliary blade until the actuating-spring has acquired a given tension, a hinge-pin having an intermediate eccentric portion upon which the auxiliary blade is loosely mounted, and having the members of the switch-blade secured to the journals or reduced terminals of the hinge-pin to turn therewith, a pin applied to the auxiliary blade and projecting from the sides thereof forming stops, and washers or plates mounted upon the end portions of the eccentric and having cut-away parts forming shoulders to engage with the aforesaid stops to overcome the inertia of the auxiliary blade and start it when released.

16. In an electric switch, the combination with terminals, of main and auxiliary blades for bridging the terminals, said main and auxiliary blades being independently pivoted, spring connections between the main and auxiliary blades, whereby when the main blades are rotated they will place the spring connection under tension, a latch engaging the auxiliary blade, and means for moving

the auxiliary blade from engagement with the latch.

17. In an electric switch, the combination with terminals of main and auxiliary blades for bridging the terminals, a common pivot rigidly connected with the main blades and having an eccentric portion upon which the auxiliary blade is mounted, a spring having connection with the auxiliary blade to throw it, means for placing said spring under tension and a latch adapted to hold the auxiliary blade against the tendency of the spring, said eccentric being adapted to draw the auxiliary blade from the latch when the eccentric is rotated as the main blades are raised.

18. In an electric switch, the combination with terminals, of main and auxiliary blades for bridging the terminals, a common pivot rigidly connected with the main blades and having an eccentric portion upon which the auxiliary blade is mounted, a spring having connection with the auxiliary blade to throw it, means for placing said spring under tension, a latch adapted to hold the auxiliary blade against the tendency of the spring, said eccentric being adapted to draw the auxiliary blade from the latch when the eccentric is rotated as the main blades are raised, and projections carried by the main and auxiliary blades and adapted to mutually engage and start the auxiliary blade.

19. In an electric switch, the combination with terminals, of main and auxiliary blades for bridging the terminals, a common pivot rigidly connected with the main blades and having an eccentric portion upon which the auxiliary blade is mounted, spring connections between the main and auxiliary blades,

and a latch adapted to hold the auxiliary blade against the tension of said spring connections as the main blades are raised, said eccentric being adapted to draw the auxiliary blade from the latch when the eccentric is rotated to a given point.

20. In an electric switch, the combination with terminals of main and auxiliary blades for bridging the terminals, a common pivot rigidly connected with the main blades and having an eccentric portion upon which the auxiliary blade is mounted, spring connections between the main and auxiliary blades, a latch adapted to hold the auxiliary blade against the tension of said spring connections as the main blades are raised, said eccentric being adapted to draw the auxiliary blade from the latch when the eccentric is rotated to a given point, and projections carried by the main and auxiliary blades and adapted to mutually engage and start the auxiliary blade.

21. In an electric switch the combination with terminals of main and auxiliary blades adapted to bridge the terminals, a spring having connection with the auxiliary blade and adapted to throw it, means for placing said spring under tension, and means for moving the auxiliary blade bodily from the terminals, comprising an eccentric on the pivot-pin of the main and auxiliary blades, and means for oscillating said eccentric.

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

WILLIAM F. BOSSERT.

Witnesses:

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L. S. HANAUER.