

H. J. MOREY & F. A. BRGGDEN.
ELECTRIC SWITCH.
APPLICATION FILED JUNE 27, 1911.

Patented Sept. 10, 1912.

1,037,964.

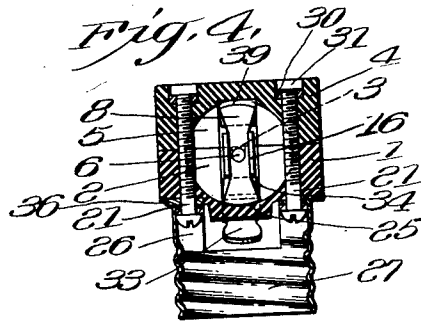
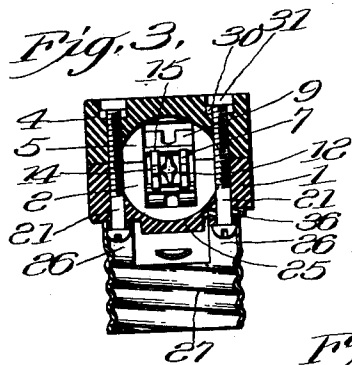
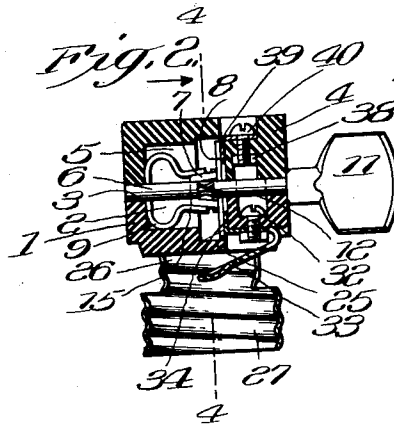
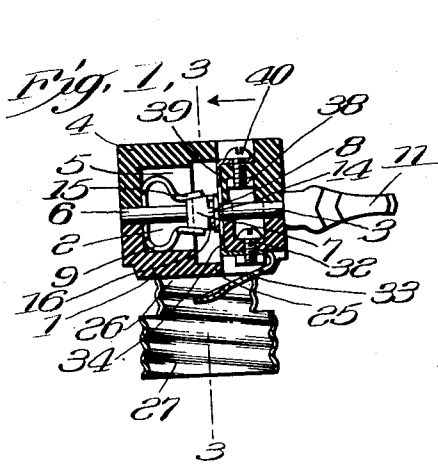


Fig. 8.

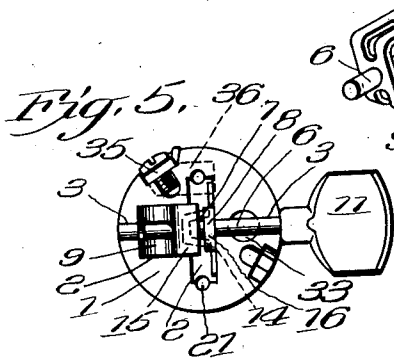
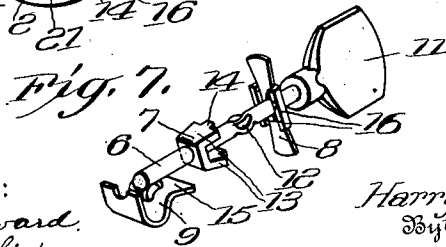
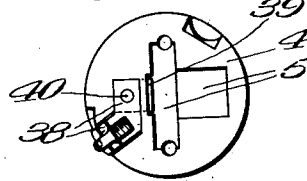


Fig. 6.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

Specification of Letters Patent. **Patented Sept. 10, 1912.**

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To all whom it may concern:

Be it known that we, HARRY J. MOREY and FAY A. BROGDEN, citizens of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented new and useful Improvements in Electric Switches, of which the following is a specification:

Our invention relates to electric switches and consists in a new combination and arrangement of parts, including certain parts of new form and function, whereby a strong, simple, compact and economical switch is produced, particularly adapted to sockets. It has the advantages of a good wiping contact, wide separation between the terminals, and a strong and quick make and break, when turned in either direction.

The essential features of our invention are a circuit closer, a cam member engaging therewith, a resilient member engaging with the cam, and means to rotate the cam. The parts are arranged on a suitable base of insulating material carrying also suitable terminals, contacts and connections.

The cam is so formed that the resilient member performs the double function of causing it to snap, when turned in either direction, and forcing it longitudinally to maintain the circuit closer in position for effecting a wiping contact with the contacts. In the particular form of switch here shown, illustrative of our invention, the circuit closer, the cam and the spring are all strung on the rotating spindle, an arrangement convenient for assembling and desirable for maintaining the parts in position.

In the drawing herewith the reference numerals of this description indicate the same parts in all the figures.

Figures 1 and 2 are vertical sections respectively showing the circuit open and closed. Figs. 3 and 4 are vertical sections at a right angle to Figs. 1 and 2, Fig. 3 being taken on section line 3 of Fig. 1 and Fig. 4 on section line 4 of Fig. 2. Fig. 5 is a top plan of the lower block with the switch parts in position thereon. Fig. 6 is a bottom plan of the upper block. Fig. 7 is a detail perspective view of the circuit-closer, cam and spring, illustrating the desirable arrangement on the spindle. Fig. 8 is a similar detail view showing a slightly modified form of spring.

1 indicates the lower block of the insulating base provided with the T shaped recess 2 and the grooves 3 for the spindle. The upper block 4 is also provided with a similar T shaped recess 5, whereby a chamber is formed for the switch mechanism, when the blocks are assembled. This mechanism is composed essentially of the spindle 6, the cam 7, the circuit-closer 8 and the spring 9. The spindle is journaled between the two blocks in the grooves 3 formed in either one or both blocks as most convenient. It is provided on its outer end with the thumb-piece 11 of hard rubber, porcelain or other suitable insulating material. At about its center the spindle is flattened, as shown at 12, or provided with any other form of suitable projection, for engaging with and rotating the cam 7. This cam is so formed as to produce, when rotated, tension in the spring, whereby the cam and the circuit closer are snapped; also to be under constant longitudinal pressure of the spring whereby the circuit closer is held firmly in either make or break position and a good wiping contact between the circuit closer and the contacts is insured keeping them clean and bright. To perform both these functions the cam must be made with corners or projections and with inclined sides. It is conveniently and economically stamped from sheet metal in the particular form shown, that is rectangular, or square, in cross-section, and its two inclined sides 13 having inclined edges, so that in all positions it offers a tapering side to the spring and thereby is forced longitudinally.

The cam-sides 13 are provided with the studs 14, or any suitable projections, to engage with the flanges 16, or other suitable projections, on the circuit-closer, whereby the quick movement of the cam is communicated to the circuit closer and the latter alternately snapped into and out of engagement with the contacts.

The forms of spring here shown are good, though any desirable form of resilient member, or spring, may be used. We prefer the form shown in Fig. 8, which is strong, flexible and compact and made to fit the recesses in the blocks to be maintained in position when the parts are assembled. The inturned flat ends 15 are adapted to pinch the cam between them and apply the

spring pressure for the purposes above described.

In assembling the parts, the circuit closer, cam and spring are first strung on the spindle, in the order named, and then set in position in the recess in the lower block. The hole in the circuit closer is elongated so that it can be slipped over the projection 12. The parts are maintained firmly in position without any special retaining means, when the upper block is set in position and secured on the lower by the longer screws 21.

It is desirable to provide for lost motion between the spindle projections 12 and the cam to permit the latter to be snapped when a corner has passed the dead center and not be held by the hand of the operator. Lost motion between the cam and the circuit closer is also desirable, that the latter may be held by the longitudinal action of the spring in either make or break position, during the first part of the rotation of the spindle and of the cam, whereby the tension of the spring is increased without initially moving the circuit closer and when the snap thereof comes it is sharp.

The other parts of the socket are for the most part of usual construction. On the outer surface of the lower block is formed the boss 25 which fits between the flanges 26 on the outer threaded "Edison" terminal 27, to maintain said part in position. This terminal is secured to the base by the longer screws 21 which connect the blocks by engaging with washers 30 in cavities 31 in upper blocks, filled with insulating compound. In a notch in the boss is secured by a single screw 32 the center lamp terminal 33, from which extends into the inner chamber through a slot, the contact 34. In another notch on the side of the upper block is arranged the wire terminal 35 having a lip 36 extending over the lower surface of the lower block to make contact with one of the flanges of the threaded shell 27. This wire terminal is secured in place by one of the longer screws 21 engaging with its lip 36. The other wire terminal 38 and the other contact 39, extending into the chamber and into the path of the circuit-closer through a slot in the upper block, are secured in place and connected by the single short screw 40.

This switch is composed of a minimum of parts and all those parts, simple in form and easy to be made, for the most part stamped at one operation from sheet metal. Assembling is very easy. The blocks are connected and all the parts are secured on the blocks merely by two short and two long screws. These blocks are conveniently molded from porcelain, the most desirable insulating material with the similar recesses on their adjacent surfaces forming the central closed chamber in which are inclosed

and protected all parts of the switch. But the important characteristic of this switch is its high efficiency.

We have produced a small and compact switch which will break a heavy current for which much larger and heavier devices have heretofore been considered necessary.

This switch is particularly adapted for use in a standard brass shell socket and the insulating base is shown of a form to be inclosed in the brass shell, but we do not propose to limit our invention to such particular use or form.

Having described our invention, we claim,—

1. In a socket, a switch mechanism comprising suitable contacts suitably supported, a rotatable circuit-closer, a cam, engaging means connecting the cam and the circuit-closer, means to rotate the cam in either direction and a resilient member engaging with the cam to snap the latter as turned and to force the latter against the circuit-closer.

2. A socket switch mechanism comprising a suitable insulating base, contacts thereon, a rotatable circuit-closer, a tapering cam of angular cross section, engaging means between the cam and the circuit-closer, means to rotate the cam, and a resilient member exerting pressure on the cam to snap the cam as rotated and to press the cam and circuit-closer toward the contacts.

3. An electric switch comprising suitable contacts, a rotatable circuit-closer to cooperate with the contacts, a rotatable cam, engaging means between the cam and the circuit-closer to communicate rotation of one to the other, hand operated means to rotate one of said rotatable parts, and a resilient member engaging with the cam to snap the latter as turned and to force the cam and the circuit-closer toward the contacts.

4. An electric switch mechanism comprising suitable contacts suitably supported, a rotatable circuit-closer to cooperate with the contacts, a tapering cam having projections on its sides, engaging means between the cam and the circuit-closer, hand operated means to rotate the cam, and a resilient element exerting pressure on the side of the cam to snap the same as it is rotated and to force the same toward the circuit-closer.

5. In a socket the combination with a suitable insulating base, of contacts thereon, a hand rotated spindle journaled in the base, a circuit-closer strung on the spindle adjacent to the contacts and rotatable independently of the spindle, a tapering cam strung on the spindle, said cam having side projections, engaging means connecting the cam and the spindle, engaging means connecting the cam and the circuit-closer and a spring in engagement with the side of the cam.

6. A quick-make, quick-break switch

comprising an insulating base, terminals thereon suitably separated and insulated, conductors for the terminals, a circuit-closer adapted to bridge the space between the terminals and to make wiping contact therewith, a wedge shaped cam engaging with the circuit-closer, engaging means connecting the cam and the circuit-closer, means to turn the cam, in either direction, and a spring engaging with the edge of the cam to snap it as the corners pass the spring in rotation and to force it longitudinally against the circuit-closer.

7. In a socket for incandescent electric lamps having an insulating base composed of two blocks of porcelain recessed on their adjacent faces to form a chamber, a quick-make, quick-break switch mechanism comprising contacts extending into said chamber, a spindle journaled between the blocks, a circuit closer strung on the spindle adjacent the contacts and rotatable independently of the spindle, a tapering cam having projections on its sides, said cam being strung on the spindle and having parts loosely engaging with the circuit-closer to turn the latter in either direction, a projection on the spindle to turn the cam when the spindle is turned, said projection being in loose engagement with the cam and a spring engaging with the cam to snap the latter as it is turned and to force the cam against the circuit-closer and the latter against the contacts.

8. In a socket for incandescent electric lamps having an insulating base composed of two porcelain blocks provided with T shaped recesses to form a T shaped chamber for the circuit-closer, and a switch mechanism arranged in the chamber comprising a spindle journaled between the blocks, an external thumb-piece on the spindle, a circuit-closer strung on the spindle, a tapering cam, square in cross section, strung on the spindle, said cam being provided with parts loosely to engage with cooperating parts on the circuit-closer and said spindle being provided with a projection loosely to engage with the cam, and a spring strung on the spindle and having a

large loop fitting the shaft of the T shaped chamber and inturned opposite ends to engage with the sides of the cam and pinch the cam between them.

9. In a socket having a base composed of two blocks of porcelain adapted to set together and provided with recesses on their adjacent faces to form a chamber, and a switch mechanism comprising a spindle journaled between the blocks, a circuit-closer strung on the cam and turning independently thereof, opposite flanges on the circuit-closer, a tapering cam strung on the spindle, said cam being square in cross-section and having opposite studs on its sides loosely to engage with the circuit-closer flanges, said spindle being provided with a flattened portion loosely to engage with the cam and rotate the latter when the spindle is rotated, and a spring strung on the spindle and engaging the sides of the cam, said circuit-closer, spring and cam being arranged in the chamber.

10. A quick make, quick break electric switch, comprising suitable contacts, a circuit-closer cooperating therewith, a tapering cam having projections, engaging means between the cam and the circuit-closer, a key rotatable in either direction, said key being formed to engage with the cam with a loose engagement for rotating the latter, and a resilient element engaging with the cam to snap the same as it is rotated and to press it and the circuit-closer longitudinally toward the contacts.

11. For use in an electric switch, a tapering cam having suitable projections on its surface, means to rotate the cam, and a spring to engage with the cam surface provided with projections to snap the cam and to force it longitudinally.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HARRY J. MOREY.
FAY A. BROGDEN.

Witnesses:

B. E. SALISBURY,
W. BREWSTER HALL.