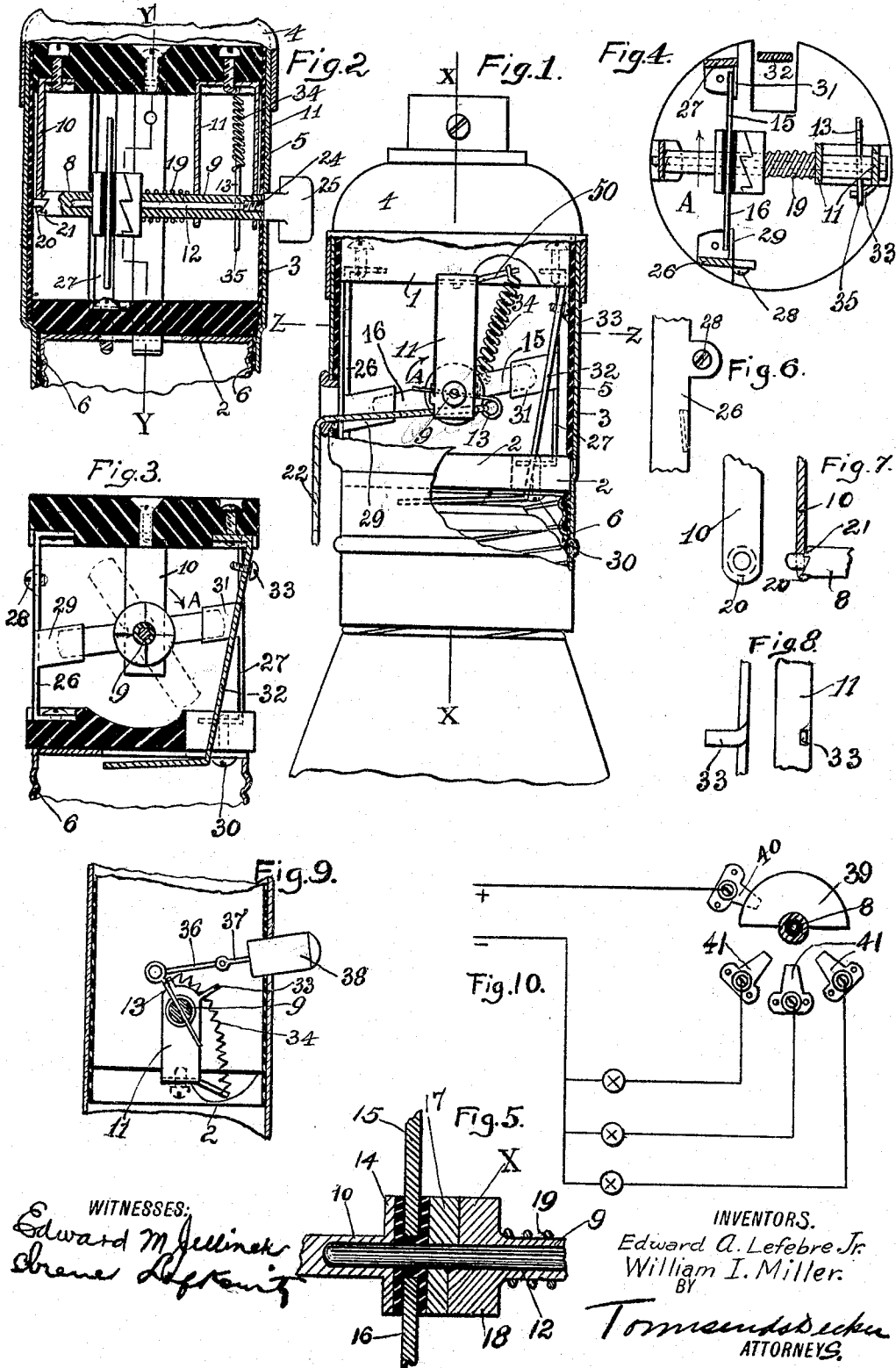


932,792.

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UNITED STATES PATENT OFFICE.

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SWITCH FOR ELECTRIC LAMPS.

932,792.

Specification of Letters Patent. Patented Aug. 31, 1909.

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To all whom it may concern:

Be it known that we, EDWARD A. LEFEBRE, Jr., and WILLIAM I. MILLER, citizens of the United States, and residents of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Switches for Electric Lamps, of which the following is a specification.

Our invention relates to switches for electric lamps and more particularly to such devices as are commonly called "socket-switches."

One of the objects of our invention is to so construct the switch that it can be adapted for a pull-socket, key, or push-button switch.

Another object is to simplify and cheapen the cost of construction and to make the parts more solid and durable than has heretofore been the practice in constructing switches especially of the type known as "pull-sockets" on which form of sockets our invention is primarily an improvement.

Our invention consists in the novel features, combinations of parts and details of construction hereinafter more particularly described and then specified in the claims.

In the accompanying drawings, forming part hereof, Figure 1 illustrates a side elevation and partial section through the preferred form of device to which our invention is applied. Fig. 2 is a transverse vertical section taken on the line XX, Fig. 1. Fig. 3 is a transverse vertical section taken on the line YY, Fig. 2. Fig. 4 is a horizontal section taken on the line ZZ, Fig. 1 turned 90 degrees. Fig. 5 is an enlarged section through a detail and illustrates the two-part shaft and the manner of mounting and insulating the contact maker. Fig. 6 is a side elevation of a detail, the same being one of the supports forming a binding post. Fig. 7 is a side elevation and a section of the device for preventing backward rotation of the contact-maker. Fig. 8 is a side and rear elevation of the stop for limiting the rotation of the contact-maker at each single impulse and for limiting the return movement of the actuating device. Fig. 9 is a vertical section through a modification in the form of device used for rotating the contact-maker. Fig. 10 illustrates a modification of our invention, the same being shown diagrammatically.

We will describe our invention as applied

in its preferred form, that is by having the switch attached to and forming part of the lamp socket as is usual in the art, but it will be understood that the invention is not limited to the same, as variations in the location of the switch might be employed as convenience might dictate without departing from the spirit of our invention. Also, it will be understood that we are not limited to the exact form and disposition of the various details of construction as the same might be varied without departing from the spirit of the invention.

1 indicates an upper insulating block of porcelain or the like and 2 indicates a lower insulating block. 3 indicates the outer shell or casing surrounding and inclosing the space between the two insulating blocks 1 and 2 and is provided with a cap 4 all as is the usual practice in the art, an insulating lining 5 of any suitable material being located inside the shell 3. As is usual, a shell 6 threaded to receive the lamp 7 is secured to the lower insulating block 2 and forms the side contact for the lamp 7.

A shaft made in two parts, 8 and 9, so that one part can rotate without necessarily carrying the other with it, is mounted transversely to the longitudinal axis of the socket in supports 10 and 11 depending from the upper insulating block 1 and seated in recesses therein to prevent displacement. The part 9 of the shaft is preferably constructed as a sleeve having a rod 12 running through it, the rod 12 being extended beyond the sleeve and journaled in a suitable cavity in the part 10 in which it is free to turn, the sleeve and rod 12 being pinned rigidly together by a lever 13 passing laterally through them. Obviously, however, the sleeve and rod forming the part 9 of the shaft might be constructed as one piece. The part 8 of the shaft terminates at one end in a flange 14 to which is secured the contact-maker composed of two laterally projecting arms or blades 15, 16, preferably integral with each other the contact-maker being suitably insulated from the shaft by insulating washers and collars as shown particularly in Fig. 5, and therefore entirely insulated from the operating parts and supports. Also secured to the contact-maker so as to rotate therewith, but insulated therefrom, is a disk 17 provided with a number of teeth on its face and constituting a ratchet disk or connection by means of which the contact-maker

is rotated as will be presently described. The arms or blades 15, 16 of the contact-maker when actuated, will rotate in a plane parallel to the longitudinal axis of the housing or socket proper. The part 9 of the shaft has a disk 18 integral with or secured thereto, the said disk being provided with teeth on its face forming a ratchet or pawl and which is adapted to co-act with the ratchet disk 17 on the contact-maker. The ratchet disk or pawl 18 and the part 9 of the shaft, hereinafter called the actuating means for the contact-maker, are forced toward the contact-maker by a spring 19 compressed between the disk 18 and the support 11, so that the teeth of the disks 17 and 18 are at all times pressed laterally against each other. The teeth of the two ratchets are each provided with a squared side and an angled side, so that when the part 9 of the shaft is rotated in one direction it will rotate the contact-maker through the engagement of the teeth of the two ratchets, but when the part 9 of the shaft is rotated in the reverse direction, the teeth will merely ride upon their angled or inclined sides and compress the spring 19 to permit teeth of the disk 18 to pass over the teeth of the disk 17 to allow the actuating means, such as the disk 18, and part 9 of the shaft, to return to their original position without disturbing the position of the contact-maker. In order, however, to positively prevent the contact-maker from being rotated backward when the actuating means return to their original position, it is preferable to provide positive holding means such as, for instance, by forming a pawl or stop 20 on the support 10. A number of ratchet teeth 21 formed on the end of the part 8 of the shaft and corresponding in number to the number of teeth on the disk 17 lie in the path of the pawl or stop 20 but will permit the shaft to rotate in the direction of the arrow A. When the shaft tends to rotate in the reverse direction the stop 20 engages the squared side of one of the teeth 21 and prevents the part 8 of the shaft, carrying the contact-maker rotating backward and causes the connection between the two parts of the shaft to slip.

Any suitable means for turning the shaft to rotate the contact-maker might be employed, the device in its preferred form being provided with means for operating it as a pull-socket or by the ordinary key. To operate it as a pull-socket a chain or cord 22 is secured to the end of the lever 13 and passes through a bushing 23 secured in the side of the casing 3 and by pulling the cord or chain both parts of the shaft are rotated by means of the lever 13. The end of the part 9 of the shaft is provided with a threaded hole in which is secured a screw 24 carrying a key 25 of the usual type, located outside of the shell or casing, the shank of

which passes through a suitable opening in the side of the casing 3 and lining 5. As will be obvious, when operated as a pull-socket only, the key 25 can be readily unscrewed from the shaft and nothing will protrude beyond the outer shell. If desired to operate the socket as a key switch, the key 25 is readily attached.

26 and 27 indicate standards or supports joining the two insulating blocks 1, 2, and seated in recesses in the blocks to prevent turning as is well known in the art. The standard or support 26 is insulated from the side contact shell 6 and is provided with a binding screw 28 by which one of the wires of the circuit is secured to the support 26. The support 26 is provided with a laterally projecting ear 29 preferably integral therewith and so located that it will be engaged and wiped by the arms of the contact-maker, when the same is rotated. The standard or support 27 is electrically connected with the side contact shell 6 by means of screw 30 and is provided with a laterally projecting ear 31 diagonally opposite the ear 29 on the support 26 so that when one arm of the contact-maker engages the ear 29 the other arm will engage the ear 31 and thus connect the circuit wire with the side contact shell 6. The contact ears 29 and 31 are preferably bent or formed so that they will be disposed at an angle to the path of travel of the contact maker which insures that the arms of the contact maker will always engage the ears and also tends to force the ears and contacts into firm engagement. Preferably the arms 15, 16, of the contact-maker are constructed of a spring yielding metal so that they will press against the ears 29 and 31 and make a good contact therewith. Also the said ears might be slanted slightly to insure that the contact-maker would not catch on the edge thereof.

32 indicates a strip of metal secured at its upper end to the upper insulating block 1 and in a recess thereof. The strip 32 passes downward and through a slot in the lower insulating block 2 and is then bent inwardly to provide a cushion or spring seat against which the center contact of the lamp presses. The strip 32 is provided with a suitable binding screw 33 by which the other circuit wire is secured to the strip 32 and thus when the contact-maker is rotated so that the arms thereof are in contact with the ears 29, 31, the circuit will be completed, namely from the support 26 through the contact-maker to the support 27 to the side contact shell 6, through the lamp and to the center contact strip 32.

The rotation of the contact-maker is limited at any one impulse given to the shaft by a suitable stop, such as by the lever 13 coming against a stop 33 formed preferably integral with the support 11, the stop being

so located that it is struck by the lever when the contact arms engage the ears 29, 31, or when they are midway between as the case may be, whether making or breaking circuit. When the shaft is released from the turning force, the part 9 is brought back to its original position by a spring 34 secured preferably to the lever 13 and to any other support such as to a projection 50 integral with the support 11, the part 8 of the shaft carrying the contact-maker being held positively against returning with it by the stop 20. The return movement of the actuating means, is limited by a laterally projecting pin 35, which is preferably a continuation of the lever 13, coming in contact with the upper surface of the stop 33 at which time the squared sides of the ratchet teeth of the disks 17, 18 are together.

In the modification illustrated in Fig. 9 we show the device as constructed for operation by a push-button. The only change necessary is to attach pivoted links 36, 37, to the lever 13 and to a button 38 which projects from the outer casing or shell 3. On pushing in the button 38 the contacts will be rotated exactly as in the previously described form and when released, the actuating means will be brought back to their original position by the spring as in the preferred form.

The contact ears 29 and 31 are located in the space between the insulating blocks 1 and 2 and out of direct contact therewith, so that when the contact-maker rotates to break the circuit it will do so in air.

In the modification illustrated in Fig. 10, a progressive or selective type of switch is diagrammatically illustrated in which 39 indicates the rotatable contact-maker mounted on and insulated from the part 8 of the shaft as in the other forms.

40 indicates a common return contact and 41 indicates the other contact, one for each lamp desired. The contact-maker 39 is rotated and controlled as in the forms previously described.

What we claim as our invention is:

1. In a device of the character described, the combination of a shell forming the side contact for the lamp, an upper and a lower insulating block, standards connecting said blocks, a two-part shaft mounted in supports secured to one of said blocks, a contact maker secured to one part of said shaft, a ratchet on one end of said shaft adapted to engage a pawl on one of said supports to prevent backward rotation of said contact maker, laterally projecting spring contact ears adapted to be engaged by said contact maker and means for rotating said contact maker secured to the other part of said shaft.

2. In a device of the character described, the combination of a shell forming the side contact for the lamp, an upper and lower

insulating block, standards connecting said blocks, one of said standards being insulated from said shell and provided with a binding post, the other standard being electrically connected with said shell, laterally projecting ears integral with said standards, and a rotatable contact-maker adapted to engage said ears, said ears being disposed at an angle to the path of travel of said contact maker whereby they will be positively engaged thereby.

3. In a device of the character described, the combination of an upper and lower insulating block, a shell forming the side contact for the lamp secured to the lower block, standards connecting said blocks, one of said standards being insulated from said shell and provided with a binding post, the other standard being electrically connected with said shell, laterally projecting ears integral with said standards, a rotatable contact-maker adapted to engage said ears and a center contact for the lamp secured to said upper insulating block and provided with a binding post and a spring seat adapted to press against the center contact of the lamp when said lamp is inserted in the socket.

4. In a device of the character described, the combination of a rotatable contact maker, a ratchet secured to said contact maker, means for preventing backward rotation of said contact maker, a shaft carrying a ratchet adapted to engage said first named ratchet and adapted to oscillate in both directions, a lever secured to said shaft whereby said contact maker is rotated by pulling force applied to said lever, means adapted to return said shaft to its original position and a positive stop adapted to limit the rotation of said contact maker and also the return movement of said lever.

5. In a device of the character described, the combination with an insulating block, of a two-part shaft mounted in supports secured to said block, a rotatable contact maker secured to one part of said shaft but insulated from both parts, means for preventing backward rotation of said contact maker, means adapted to oscillate in both directions secured to the other part of said shaft and means adapted to couple the two parts of said shaft to each other.

6. In a device of the character described, the combination with an insulating block, of a two part shaft mounted in supports secured to said block, a rotatable contact-maker secured to but insulated from said shaft, a ratchet on one end of said shaft adapted to engage a pawl on one of said supports to prevent backward movement of said contact-maker, a ratchet secured to said contact-maker, a co-acting ratchet secured to said shaft and adapted to oscillate in both directions, means for rotating said contact-maker through said ratchets and a stop on

one of said supports adapted to limit the rotation of said contact-maker at a predetermined point.

- 5 7. In a device of the character described, the combination with an insulating block, of a two part shaft mounted in supports secured to said block, a rotatable contact-maker secured to but insulated from said shaft, a ratchet on one end of said shaft
10 adapted to engage a pawl on one of said supports to prevent backward movement of said contact-maker, a ratchet secured to said contact maker, a co-acting pawl or ratchet secured to said shaft and adapted to oscillate

in both directions, a lever secured to said 15 shaft, a cord or chain secured to the end of said lever and a stop for limiting the rotation of said contact-maker at a predetermined point and for limiting the return 20 movement of the actuating ratchet.

Signed at borough of Brooklyn in the county of Kings and State of New York this 9th day of January A. D. 1909.

EDWARD A. LEFEBRE, JR.

WILLIAM I. MILLER.

Witnesses:

HENRY W. ROZELL,

TERESA L. SHAUGHNESSY.