No. 648,671 Patented May 1, 1900.

J. T. ROBB.

SWITCH FOR ELECTRIC CIRCUITS.

(No Model.) (Application filed Dec. 21, 1899.)

Fig. 1

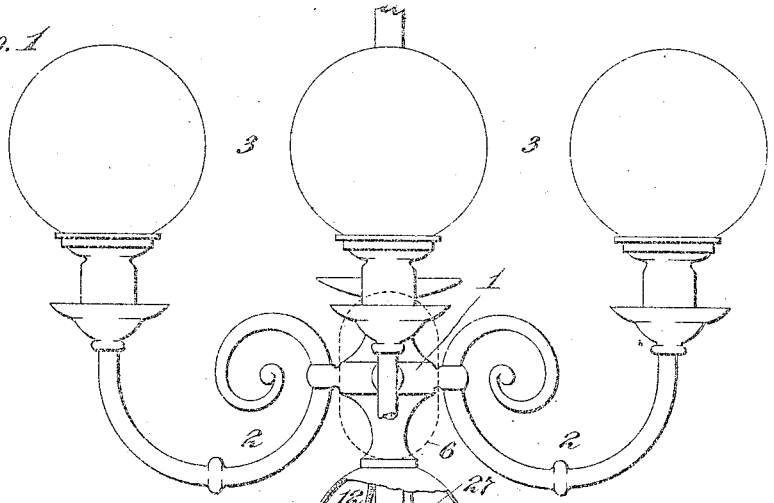
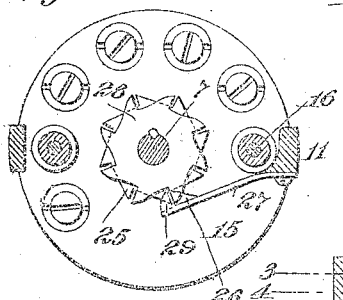


Fig. 3



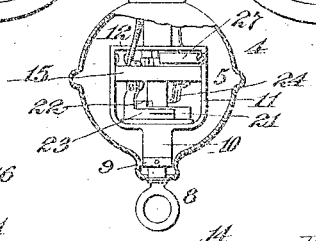


Fig. 2

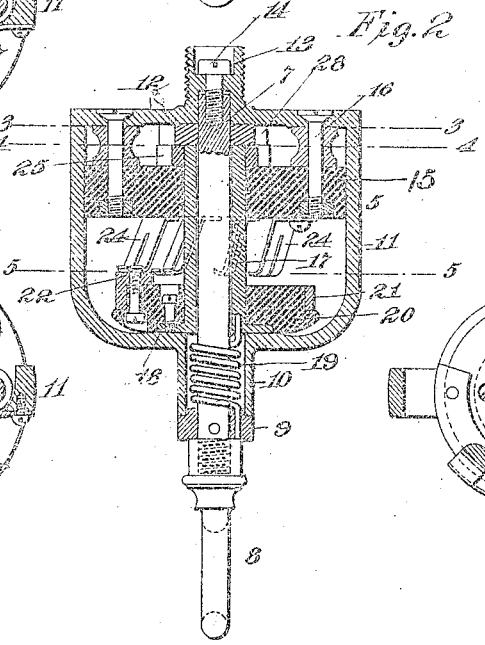


Fig. 4

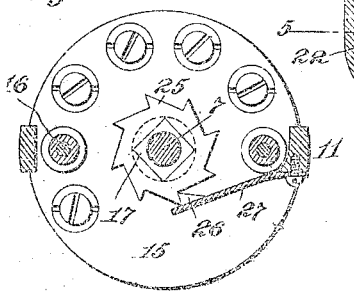
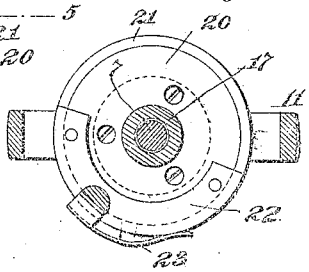


Fig. 5



Witnesses:

Inventor

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Att'ys

UNITED STATES PATENT OFFICE.

JAMES T. ROBB, OF NEW YORK, N. Y., ASSIGNOR TO THE MITCHELL VANCE COMPANY, OF SAME PLACE.

SWITCH FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 648,671, dated May 1, 1900.

Application filed December 21, 1899. Serial No. 741,084. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. ROBB, a subject of the Queen of Great Britain, residing at New York, (Flatbush,) in the borough of Brooklyn and State of New York, have invented a certain new and useful Improvement in Switches for Electric Circuits, of which the following is a description.

My invention relates to various new and useful improvements in switches for electric circuits; and the invention is particularly designed for the purpose of controlling the circuit to a plurality of electric lights or groups of electric lights carried by a chandelier, the improved switch possessing the capacity of permitting one or more of such lights or groups of lights to be brought into circuit or cut out therefrom, as may be desired, whereby it becomes possible to control a number of lights or groups of lights by means of a single switch instead of by the employment of a number of switches, as is now the usual practice.

The object of the invention is to provide a simple and efficient switch for the purpose which can be constructed cheaply, which will be durable in use, and wherein a very perfect snap action takes place, reducing arcing to a minimum.

In carrying my invention into effect I provide a rotatable conducting ring or disk with which one of the main terminals is preferably in constant connection—as, for instance, through a contact-spring—the said disk or ring being so formed as to engage successively with a series of contact-springs connected to the several lamps or groups of lamps which it may be desired to control, the arrangement being such that the said springs will be successively engaged and brought into the circuit and all of said springs will be in the circuit before they can be successively cut out. The said disk or ring is carried on a sleeve which surrounds a stem operated by a suitable thumb-piece and which may project below the central body of the electric fixture or chandelier when the device is employed in this specific way. The said stem is connected to the sleeve by means of a spring, so that as the stem is turned the sleeve tends to follow it. Immediate movement of the sleeve is prevented, however, by means of a pawl which engages the teeth of a ratchet-wheel carried by the sleeve, and said pawl is adapted to be successively released from such teeth by means of a star-wheel or cam which is carried by the stem immediately above the ratchet-wheel. Thus the turning of the stem manually places the spring under tension and immediately results in the withdrawal of the pawl from one of the teeth of the ratchet-wheel to permit the sleeve to advance with a snap action under the tension of the spring.

In order that the invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an elevation, partly in section, of a portion of an electrolier of a common form, showing my invention applied thereto; Fig. 2, a vertical section, on an enlarged scale, of the improved switch; Fig. 3, a section on the line 3 3 of Fig. 2; Fig. 4, a section on the line 4 4 of Fig. 2, and Fig. 5 a section on the line 5 5 of Fig. 2.

In all of the above views corresponding parts are represented by the same numerals of reference.

In Fig. 1 the chandelier is provided with the usual distributing-body 1, from which extend the arms 2, carrying the electric lights 3. I illustrate the fixture as being provided with an ornamental globe 4 below the distributing-body, in which is placed my improved controlling-switch 5. In many forms of electroliers the globe 4 is not used; but the canopy extends above and below the distributing-body 1, as indicated in dotted lines at 6. With electroliers of this type the switch 5 will be placed within said canopy, as will be understood, and will be preferably carried by the distributing-body.

My improved switch comprises a spindle 7, which may be screw-threaded at its lower end and with which screw-threaded portion a finger-piece 8 may engage. 9 is a disk keyed to said spindle, said disk engaging a sleeve 10 of a frame 11, provided at its top with a yoke or bridge 12, having a screw-

threaded nipple 13, by means of which the switch may be engaged with the distributing-body 1 of the electrolier or with any other suitable stationary element, so as to be properly supported. A screw 14 engages the upper end of the spindle 7 to hold the same in place.

15 represents a disk, of porcelain or other suitable insulating material, which is properly supported within the frame 11—as, for instance, by means of bolts 16, depending from the yoke 12.

Surrounding the spindle 7 is a sleeve 17, formed with a disk 18 at its lower end, as shown. Mounted within the boss 10 and connecting the disks 9 and 18 is a spiral spring 19. Secured to the disk 18 is a disk, of porcelain or other insulating material 20, which carries a conducting-ring 21. (Shown particularly in Fig. 5.) This conducting-ring is provided with a conducting portion 22, which extends not more than half-way around the disk 18. The conducting-ring 21 is preferably in constant electrical connection with one of the main terminals of the distributing-body 1- as for instance, by means of a contact-spring 23, supported from the insulating-body 15. A series of conducting-springs 24 are carried by the insulating-body 15 and are adapted to be engaged by the conducting portion 22 as the disk 20 is rotated, whereby the circuit to one or more lamps 3 or to one or more groups of lamps will be completed. When the conducting portion 22 is moved out of engagement with the springs 24, the said circuits will be successively broken. In order to provide for an effective snap action of the disk 20 to carry the conducting portion 22 into and out of engagement with the conducting-springs 24, I mount upon the upper end of the sleeve 17, above the conducting-body, a ratchet-wheel 25, with which ratchet-wheel engages a tooth 26, carried on a spring-arm 27, secured, preferably, to one leg of the frame 11, and I carry upon the spindle 7, immediately above said ratchet-wheel, a star-wheel or cam 28, with which a tooth 29, also carried on the spring 27, engages. The size of the teeth of the star-wheel 28, which correspond in number to the teeth of the ratchet-wheel 25, and the relation which said teeth bear to the teeth of the ratchet-wheel are such that when the spindle 7 is turned the spring 19 will be placed under tension before the tooth 29 has been moved to its full extent by means of one of the engaging teeth of the star-wheel or cam 28, the movement of said tooth 29 being sufficient to withdraw the tooth 26 from one of the teeth of the ratchet-wheel 25, thus freeing the sleeve 17 and permitting the spring 19 to advance the said sleeve forward, whereupon the tooth 29, having passed the operating-tooth of the star-wheel, will permit the tooth 26 to engage the succeeding tooth of the ratchet-wheel 25, thereby holding the sleeve against further movement due to the stress of said spring 19. The snap action which results from this operation takes place with such rapidity that arcing is reduced to a minimum.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a switch, the combination with a spindle, of means for manually turning the same, a sleeve concentric to said spindle, a spring connecting said sleeve with said spindle, contact devices controlled by the movement of said sleeve, a ratchet-wheel carried by said sleeve, a pawl engaging said ratchet-wheel for resisting the rotation of said sleeve, and means carried by the spindle for periodically releasing said pawl, substantially as set forth.

2. In a switch, the combination with a spindle, of means for manually turning the same, a sleeve concentric to said spindle, a spring connecting said sleeve with said spindle, contact devices controlled by the movement of said sleeve, a ratchet-wheel carried by said sleeve, a pawl engaging said ratchet-wheel for resisting the rotation of said sleeve, and a cam-wheel carried by the spindle for periodically releasing said pawl, substantially as set forth.

3. In a switch, the combination with a spindle, of means for manually turning the same, a sleeve concentric to said spindle, a spring connecting said sleeve with said spindle, contact devices controlled by the movement of said sleeve, a ratchet-wheel carried by said sleeve, a pawl for engaging said ratchet-wheel for holding the sleeve normally against movement, a spring carried by said pawl, a cam-wheel carried by the spindle, and a tooth carried by said spring for engaging said cam-wheel, substantially as set forth.

4. In a switch, the combination with a frame and a body of insulating material carried by said frame, of a spindle mounted in the frame, means for manually turning the said spindle, a sleeve surrounding the said spindle, connections between said spindle and sleeve, an insulated disk carried by the sleeve, a contact-plate carried by said disk, contact-arms depending from the insulating-body for making contact with said contact-plate, and means for providing a snap movement of said disk upon the rotation of said spindle, substantially as set forth.

5. In a switch, the combination with a frame and a body of insulating material carried by said frame, of a spindle mounted in the frame, means for manually turning the said spindle, a sleeve surrounding the said spindle, connections between said spindle and sleeve, an insulated disk carried by the sleeve, a contact-plate carried by said disk, contact-arms depending from the insulating-body for making contact with said contact-plate, a ratchet-wheel carried by the sleeve, a pawl engaging said ratchet-wheel for preventing movement of said sleeve, and means operated by the spin-

dle for periodically disengaging said pawl to allow a snap movement of the sleeve to take place, substantially as set forth.

6. In a switch, the combination with a frame and a body of insulating material carried by said frame, of a spindle mounted in the frame, means for manually turning the said spindle, a sleeve surrounding the said spindle, connections between said spindle and sleeve, an insulated disk carried by the sleeve, a contact-plate carried by said disk, contact-arms depending from the insulating-body for making contact with said contact-plate, a ratchet-wheel carried by the sleeve, a pawl engaging said ratchet-wheel for preventing movement of said sleeve, and a cam-wheel carried by the spindle for periodically releasing said pawl, substantially as set forth.

This specification signed and witnessed this 19th day of December, 1899.

JAMES T. ROBB.

Witnesses:
CHAS. S. BONNOR,
JOSEPH ROURK.