

Sept. 29, 1953

W. H. SCHAFFER
LIGHT SWITCH UNIT

2,654,006

Filed Sept. 18, 1950

2 Sheets-Sheet 1

Fig. 1

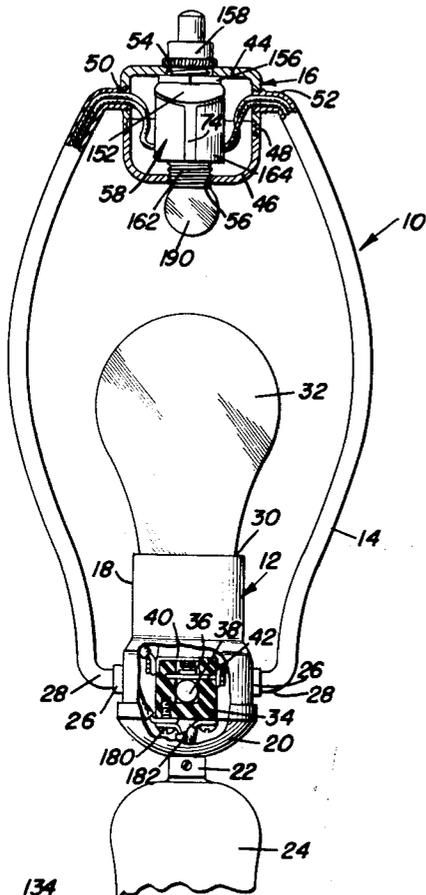


Fig. 8

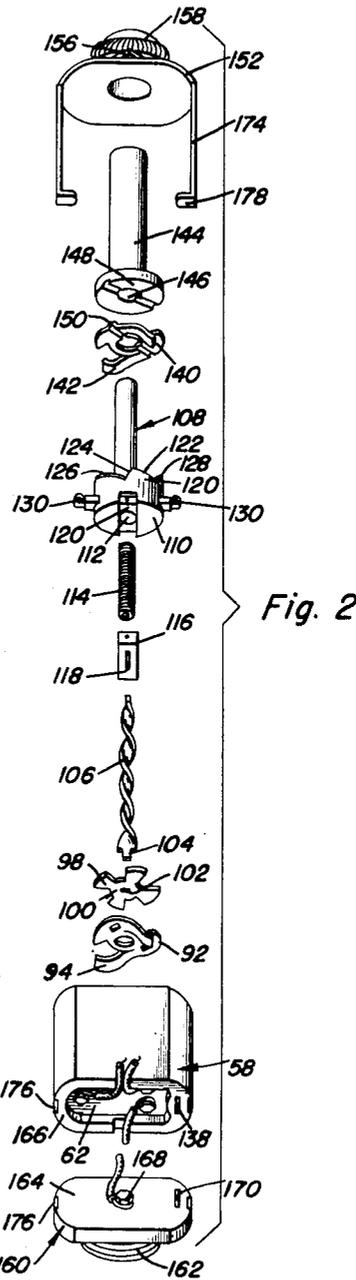
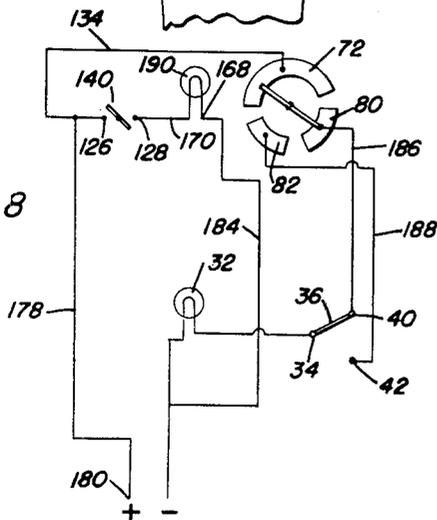


Fig. 2

Wilmer H. Schaffer
INVENTOR.

BY *Alvanice A. O'Brien*
and Harvey B. Jacobson
Attorneys

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2 Sheets-Sheet 2

Fig. 3

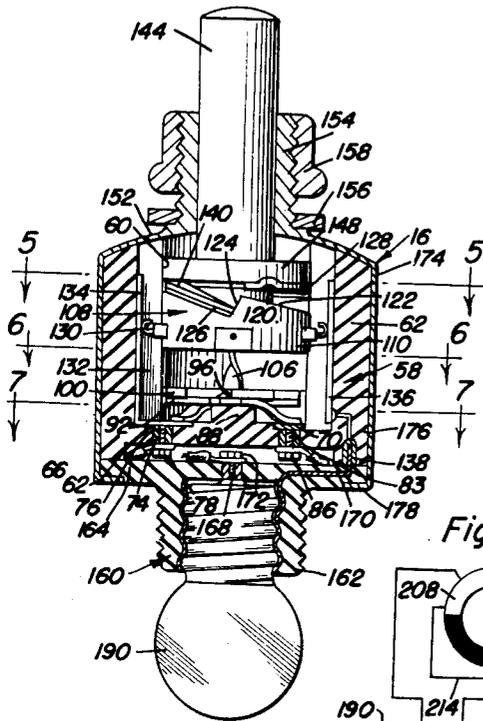


Fig. 4

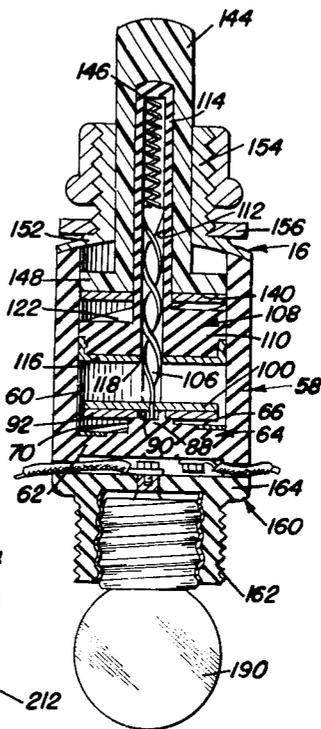


Fig. 9

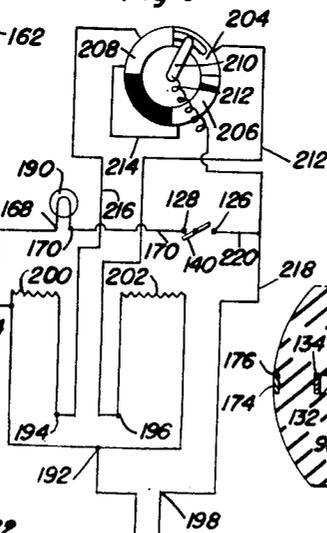


Fig. 5

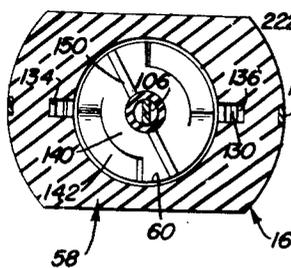


Fig. 6

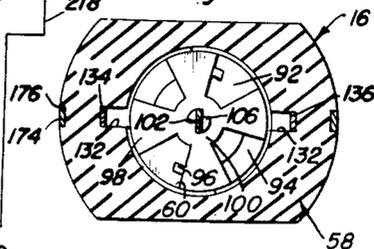
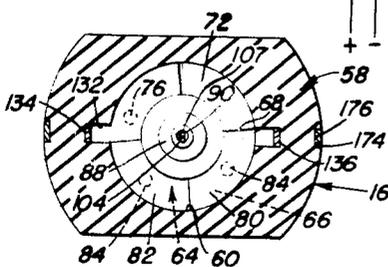


Fig. 7



Wilmer H. Schafer
INVENTOR.

BY *Clarence A. Orison*
and Harvey R. Jacobson
Attorneys

UNITED STATES PATENT OFFICE

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LIGHT SWITCH UNIT

Wilmer H. Schafer, Philadelphia, Pa.

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8 Claims. (Cl. 200—51.04)

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This invention comprises novel and useful improvements in lamp attachments and more particularly pertains to an attachment for lamps in which both the main lamp and the auxiliary lamp may be actuated by means of a single control knob.

An important object of this invention is to provide an attachment for lamps by means of which conventional lamps may be readily converted into lamps having a night light in addition to the main illuminating light.

Another important object of this invention is to provide an attachment, in accordance with the foregoing objects, in which both of the lamps may be selectively actuated, independently of each other, by means of a single control knob conveniently disposed on the upper portion of the lamp shade supporting yoke.

Yet another important object of this invention is to provide a lamp switch in which a single control knob may be rotated and reciprocated to selectively and independently actuate either of two lamps or the like.

Still another object of this invention is to provide a switch and lamp socket unit in which the contact posts for the lamp socket and switch unit are interposed between the registering faces of the socket and switch unit, thereby electrically insulating the contact posts.

A further object of this invention is to provide a switch unit which is of simple and compact construction, which will not detract from the appearance of the lamp attachment, and which is highly efficient for the purposes intended.

An important feature of this invention resides in the provision of a lamp attachment which is carried by the casing of the socket for the illuminating lamp, and which attachment includes a night lamp socket and switch unit which is carried by the upper end of the attachment, which switch unit is operable, by means of a single control knob, to selectively and independently actuate the illuminating light and the night light.

Another important feature of this invention resides in the provision of an attachment, in accordance with the foregoing feature, together with a switch casing for the switch unit, which casing provides a mount for a lamp shade, and which casing is pivotally carried by the attachment to permit tilting of the lamp shade.

A further feature of this invention resides in the provision of a lamp attachment including a lamp socket and a switch carried by the socket for controlling the actuation thereof, with a second switch means carried by the attachment

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also for controlling actuation of the lamp socket, whereby the lamp socket may conveniently be actuated from above or below the attachment.

These, together with various ancillary objects and features are attained by this device, preferred embodiments of which have been illustrated by way of example only in the accompanying drawings wherein:

Figure 1 is a front elevational view of the attachment with parts being broken away and shown in section to show details of construction;

Figure 2 is an exploded assembly view of the switch unit;

Figure 3 is a longitudinal sectional view of the switch unit;

Figure 4 is a longitudinal sectional view of the switch unit taken on a plane transverse the section plane of Figure 3;

Figure 5 is a transverse sectional view of the switch unit, taken on the plane 5—5 of Figure 3;

Figure 6 is a transverse sectional view of the switch unit, taken on the plane 6—6 of Figure 3;

Figure 7 is a transverse sectional view of the switch unit, taken on the plane 7—7 of Figure 3;

Figure 8 is a schematic wiring diagram for the attachment in which the switch unit is utilized to control a single filament lamp in conjunction with the lamp switch;

Figure 9 is a schematic wiring diagram in which the switch unit is utilized to control a three-way lamp.

Reference is now made more specifically to the accompanying drawings in which like numerals designate similar parts throughout the various views.

The lamp attachment, indicated generally by the numeral 10 includes generally a main lamp unit 12, a pair of standards 14 and a switch and night light unit 16.

The main lamp unit 12 includes a casing having an upper section 18, to which the lower ends of the standards 14 are secured, and a lower section 20, which is detachably secured to the upper section. It is preferred that the lower section be provided with an internally threaded sleeve 22, by means of which the attachment is secured to the lamp base 24. As it is intended that the wires leading to and from the switch unit be disposed within the standards 14, and that the standards, which are tubular in cross section, communicate with the interior of the upper section 18 of the lamp casing, the casing is provided with tubular bushings 26 which non-rotatably receive the lower offset ends 28 of the standards.

A lamp socket 30, of conventional design, for the reception of an illuminating bulb 32, is disposed within the casing 18. In the embodiment shown schematically in Figure 8 of the drawings, the bulb 32 has a single filament. In this embodiment it is intended that a lamp switch 34, of the single pole, double throw type, be carried by the socket, the contact arm 36 being movable by means of a button 38, into contact with either of the terminals 40 or 42.

The switch unit 16 includes a casing having an upper section 44 and a lower section 46 which are threadedly connected to each other as at 48. The upper section 44 is provided with internally threaded bores 50 to receive the externally threaded upper offset portions 52 of the standards 14. It may be noted at this time that the switch casing is also pivotal about the horizontal upper portions of the standards. The upper and lower sections of the casing are provided with vertically aligned bores 54 and 56, for reception of the switch and night light unit, to be described more fully hereinafter.

The switch 16 includes a housing 58 having a bore 60 therein and a bottom wall 62. The bottom wall 62 is formed with a circular saw-tooth rack, as best shown in Figure 7, each tooth 64 of which rack includes a dwell portion 66, and an abutment portion 68. The dwell portion 66 of each tooth is preferably provided with an arcuate recess 70, which recess receives arcuate contact plates. A first stepped semi-circular contact plate 72 is disposed in the recesses 70 in two adjacent rack teeth, which plate has an integral L-shaped projection 74, which extends through an aperture 76 and provides a contact post for reception of the screw 78. As is thought apparent, the projection 74 further serves to retain the contact plate 72 in firm engagement with the bottom wall, and may be formed as an integral tab on the contact plate which is angulated and inserted through the bore 76 and then bent over to underlie the undersurface of the bottom wall. A second plate 80, and a third plate 82, are also provided with integral projections 83 which extend through apertures 84 in the bottom wall, whereby those plates will also be attached to the bottom wall 60. Suitable contact screws 86 are carried by the projections 83.

A cylindrical block 88, having a reduced extension 90 thereon is formed integrally with the bottom wall 62, and is disposed axially thereof. A contact disk 92 having a pair of diametrically disposed contact fingers 94, is rotatably received on the extension 90 and rests on the shoulder between the block 88 and the reduced extension 90, in spaced relation to the bottom wall, the fingers slidably engaging the contact plates. The disk 92 is also provided with a pair of keys 96, which are engageable with the arms 98 of the actuating key 100, whereby the disk 92 may be selectively rotated in unison with the key 100 in one direction, the fingers 94 of the disk engaging the abutment portions 68 of the rack teeth to prevent rotation of the disk in the opposite direction.

The key 100 is provided with a centrally disposed slot 102, through which the splined extension 104 of the longitudinally twisted rod 106 extends. The extension 90 of the block 88 is provided with a central bore 107 which rotatably receives the projecting end of the extension 104. A plunger 108 is vertically reciprocally mounted in the bore 60, which plunger has an enlarged base portion 110. A bore 112 extends

longitudinally of the plunger 108 and slidably and guidably receives the upper end portion of the rod 106, a spring 114 being disposed in the bore 112 to yieldingly urge the rod 106 outwardly thereof. A strap 116 having a slot 118 therein is received in a corresponding recess 120 in the base portion 110 of the plunger. The rod 106 extends through the slot 118 whereby the rod and key 100 will be rotated as the plunger is reciprocated. Since the key 100 is yieldingly biased into engagement with the disk 92, it is thought apparent that relative rotary motion between the disk and key will be effected when the former is locked against rotation with the fingers 94 thereof engaging the abutment portions 68 of the rack teeth 66.

The upper face of the base 110 is also provided with an annular saw-tooth rack having teeth 120, each of which has a dwell portion 122 and an abutment face 124. A pair of contact plates 126 and 128 are disposed on diametrically opposite quadrants of the rack, a pair of contact bars 130 are molded in the material of the base 110, or inserted in slots therein, which bars are attached to the contact plates 126 and 128. The bars 130 project laterally of the base 110 and are slidably and guidably received in recess 132 in the housing 58 which extend longitudinally of the bore 60, whereby the plunger 108 is slidably and non-rotatably received in the bore 60. Contact strips 134 and 136 are disposed in the recesses 132, in electrical contact with the bars 130. The strip 134 is connected to, or formed integrally with the contact plate 72, the strip 136 being electrically connected to a socket 138 on the undersurface of the switch casing bottom wall 62.

A second contact disk 140, having fingers 142, is rotatably mounted on the plunger with the fingers thereof slidably engaging the rack teeth 120. An actuating knob 144 having an axial bore 146 therein is rotatably mounted on the plunger 108, the lower portion of the knob having a diametrically recessed flange 148 thereon. A key 150 on the second contact disk 140 registers with the recess in the flange 148 to be selectively and unidirectionally rotated in unison with the knob 144.

A cover member 152, having an externally threaded sleeve 154 thereon is disposed over the open end of the housing 58 and slidably and rotatably receives the knob 144. A lock nut 156 is carried by the sleeve 154 and underlies the upper section 44 of the switch casing, a second knurled nut 158 also being carried by the sleeve 154 to lock the lamp shade mounting hub (not shown) to the casing.

A night light socket 160 which includes an externally threaded sleeve 162 and a base member 164, is carried by the housing 58, the base of the socket 160 underlying the bottom wall 62 of the housing 58, and spaced therefrom by the peripheral flange 166 on the bottom of the housing. The socket 160 has a pair of contact terminals 168 and 170, the former of which carries a screw 172, the latter being received in the socket 138 when the socket base 164 and housing 58 are secured together.

The cover member 152 carries a pair of arms 174 which are received in corresponding recesses 176 in the housing 58 and base 164, the arms having inwardly directed finger portions 178 which underlie the base 164.

In the embodiment shown in Figure 8 of the drawings, the contact strip 134 electrically con-

nects the plate 72 to the terminal 126 of the turn switch, the conductor 170 being connected by means of the screw 180 to the plate 72, which conductor extends through one of the standards 14 and is connected to a screw 180 carried by the switch 34, to permit convenient attachment of one of the lead in wires 182. The other plate 128 of the turn switch is electrically connected by strip 136, and socket 138 to terminal 170 of the night light socket 160. Terminal 168 of the night light socket is connected by a conductor 194, to the other of the lead in wires 182. Contact plates 80 and 82 are electrically connected by conductors 186 and 198 to the terminals 48 and 42 respectively of the lamp switch 34. In this embodiment, the night light 190 may be selectively illuminated by rotation of knob 144, while the lamp 30 may be turned on or off by either the lamp switch 34 or the contact disk 92 which is actuated by reciprocation of the knob 144.

In the second embodiment of the invention, shown in Figure 9, there is utilized a two filament bulb, the socket 30 being of any conventional construction. It is intended, however, that the socket employed in this embodiment does not have incorporated therewith a lamp switch such as 34, as utilized in the other embodiment previously described. The socket may be provided with 4 contact terminals 192, 194, 196 and 198. The terminal 192 is in electrical contact with both the filaments 200 and 202 in the lamp 32, the terminals 194 and 196 respectively electrically contacting the filaments 200 and 202, while terminal 198 is a blank, it being provided to permit convenient attachment of the lead in wires 132.

The contact plates 204, 206, and 208 in the second embodiment are of slightly different shape than the corresponding contact plates 72, 80 and 82 of the first embodiment, the plate 204 overlying one rack tooth 64 and a part of an adjacent tooth, while the plate 206 overlies but a portion of a rack tooth. Additionally, the contact arm 210, is in rotating electrical contact with a terminal 212, carried by the housing 58. Obviously a contact screw (not shown) extending through the bottom wall 82 and the block 88 in rotating contact with a disk similar to the disk 92, but having a single contact arm 210, would suffice.

The contact plate 204 is connected by conductor 213 to terminal 198, while plate 206 is connected by conductor 214 to plate 208, which in turn is electrically connected by conductor 216 to terminal 194. The contact arm 210 is connected by conductor 218 to the blank terminal 198.

The terminal 128 of the turn switch 140 is electrically connected by conductor 220 to the conductor 218, the terminal 128 being connected by conductor 170 to the night light socket 190, which is otherwise connected by conductor 222 to the common filament terminal 192. Thus by merely providing separate contact terminals for strips 134 and 136 on the base of the housing, and by utilizing a centrally disposed terminal in rotating contact with the arm 210, the switch unit may be utilized to control a three-way bulb having filaments 200 and 202.

It is also contemplated that a second dual switch unit such as 16 may be substituted for the lampswitch 34. The turn switches of the dual switch units being electrically connected to each other and to the night light socket to permit actuation of the night light from either above or below the lamp shade; the reciprocally actuated switches of the dual switch units being similarly connected together to permit control of the main

illuminating lamp from either above or below the lamp shade. Further, it is contemplated that a dual switch unit positioned below the lamp shade may be utilized to provide the sole means of control of the night light and main illuminating lamp.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A switch unit comprising a casing, a first rotatable switch unit disposed in said casing, a plunger reciprocally mounted in said casing, means responsive to reciprocation of said plunger for rotating said first switch unit, a control knob non-slidably and rotatably mounted on said plunger, a second switch unit carried by said plunger, said control knob operatively contacting said second switch unit to rotate said second switch unit in response to rotation of said control knob, contact strips disposed in said casing, and second switch contact fingers carried by said plunger slidably contacting said strips.

2. The combination of claim 1 including plunger guides in said casing for limiting rotation of said plunger relative to said casing.

3. The combination of claim 2 wherein said contact strips are disposed in said guides, said contact fingers extending into said guides.

4. A switch unit comprising a casing, a first rotatable switch unit disposed in said casing, a plunger reciprocally mounted in said casing, means responsive to reciprocation of said plunger for rotating said first switch unit, a control knob non-slidably and rotatably mounted on said plunger, a second switch unit carried by said plunger, said control knob operatively contacting said second switch unit to rotate said second switch unit in response to rotation of said control knob, contact posts disposed on the external undersurface of said casing, means electrically connecting said contact posts to said first and second switch units, a lamp socket carried by said casing and overlying said contact posts, means electrically connecting one of said switch units to said socket.

5. A switch unit comprising a casing having a bore therein, a first switch unit, said first switch unit including stationary contacts fixed in said bore, an axial bearing in said bore, movable contacts journaled on said bearing, a plunger slidably and non-rotatably mounted in said bore, a second switch unit, said second switch unit including stationary contacts fixed on said plunger, an operating knob slidable in said bore and rotatable and non-slidable with respect to said plunger, movable contacts carried by said knob and cooperating with the contacts fixed on said plunger, driving means responsive to sliding movement of said plunger for rotating said movable contacts of said first switch unit.

6. A switch unit comprising a casing having a bore therein, a first switch unit, said first switch unit including stationary contacts fixed in said bore, an axial bearing in said bore, movable contacts journaled on said bearing, a plunger slid-

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ably and non-rotatably mounted in said bore, a second switch unit, said second switch unit including stationary contacts fixed on said plunger, an operating knob slidable in said bore and rotatable and non-slidable with respect to said plunger, movable contacts carried by said knob and cooperating with the contacts fixed on said plunger, driving means responsive to sliding movement of said plunger for rotating said movable contacts of said first switch unit, contact strips in said bore, brush means carried by said plunger connecting said fixed contacts to said contact strips.

7. A multiple switch comprising a casing, a bore in said casing, a plunger non-rotatably, slidably mounted in said bore, a first switch unit including fixed contacts mounted adjacent one end of said bore, rotatable contacts journaled for cooperation with said fixed contacts, actuating means responsive to sliding motion of said plunger for rotating said rotatable contacts, an operating knob slidable and rotatably mounted in said bore, said knob being rotatable with respect to said plunger, a second switch unit including fixed contacts mounted on said plunger, movable contacts mounted on said knob.

8. A multiple switch comprising a casing, a bore in said casing, a plunger non-rotatably, slidably mounted in said bore, a first switch unit including fixed contacts mounted adjacent one

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end of said bore, rotatable contacts journaled for cooperation with said fixed contacts, actuating means responsive to sliding motion of said plunger for rotating said rotatable contacts, an operating knob slidable and rotatably mounted in said bore, said knob being rotatable with respect to said plunger, a second switch unit including fixed contacts mounted on said plunger, movable contacts mounted on said knob, longitudinal grooves in the side of said bore, contact strips mounted in said grooves, brushes mounted on said plunger and contacting said conducting strips, said brushes being connected to said fixed contacts.

WILMER H. SCHAFER.

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