H. F. LAUB.

DIMMER SWITCH.

APPLICATION FILED APR. 5, 1920.

1,399,129. Patented Dec. 6, 1921.

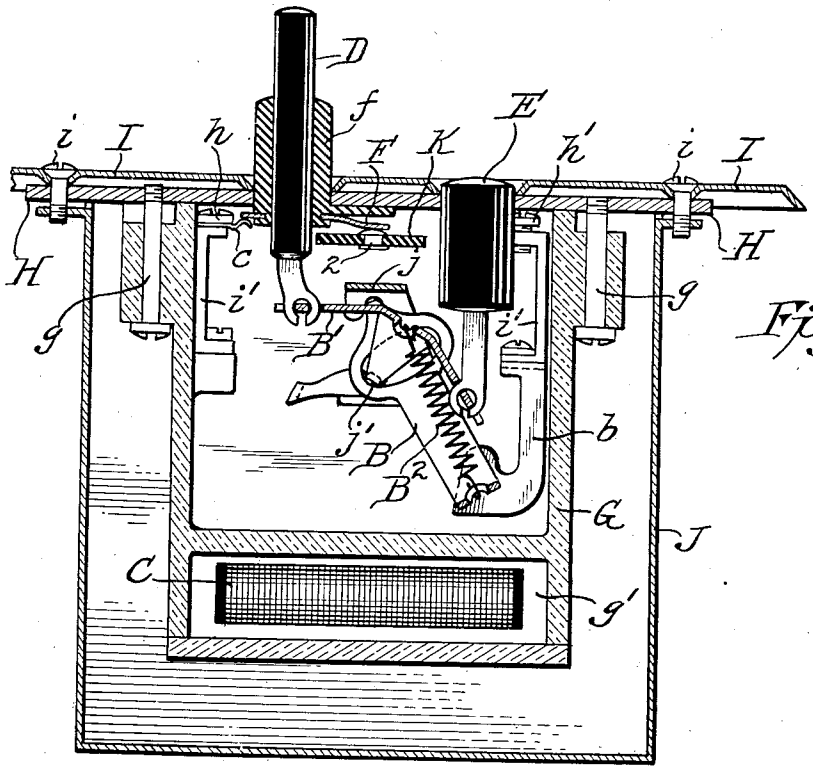
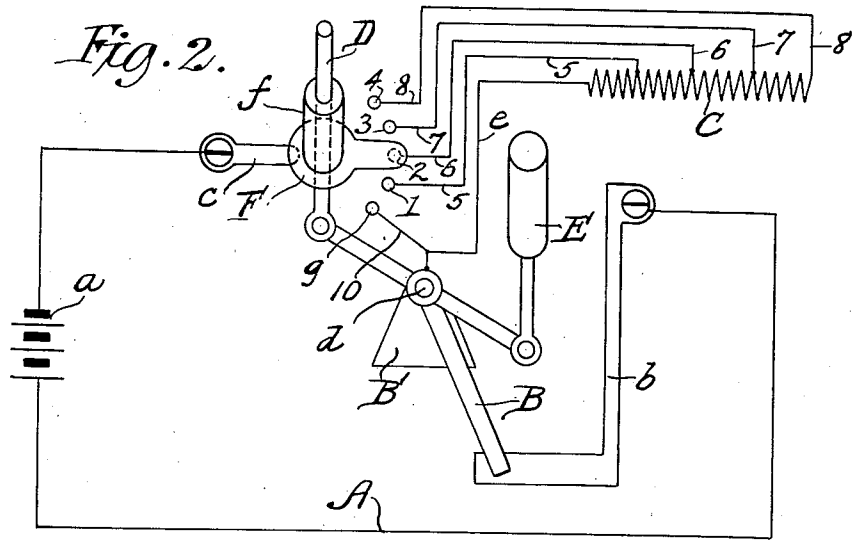



Fig. 1.

Fig. 2.

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## DIMMER-SWITCH.

1,399,129. Specification of Letters Patent. Patented Dec. 6, 1921.

Application filed April 5, 1920. Serial No. 371,242.

*To all whom it may concern:*

Be it known that I, HENRY F. LAUB, a citizen of the United States, residing at Logan, county of Cache, and State of Utah, have invented a certain new and useful Dimmer-Switch, of which the following is a specification.

This invention is a switch mechanism for electric lighting systems, the object being to control the flow of current in a manner to vary the intensity of the illumination afforded by glow (incandescent) lamps.

Heretofore, it has been the usual practice to operate a flush switch or a snap switch for admitting current to a lamp or to cut off the flow of current to the lamp, but so far as I am aware all such prior switches acted to admit the full current to the lamp, hence the resulting illumination was obtained at full current strength.

There are certain conditions under which it is desirable to reduce the intensity of the illumination, such as in bed rooms and in sick rooms, as well as in other places, but prior snap switches have made no provision for reducing the flow of current in the lighting circuit.

According to this invention, my snap or flush switch embodies means controllable at will for interposing a variable resistance in the lighting circuit according to a desired reduction in the intensity of the illumination afforded by a glow lamp.

In a practical form of the snap switch, the push members are connected as usual with a pivoted member. With that push member which closes the circuit for the flow of current to the lamp, I associate a rotary switch element adapted to make electrical connection with either of a series of contacts in circuit with a resistance coil, the latter being so connected with the lighting circuit as to impede the flow of current in said circuit and thereby obtain a variation in the illumination afforded by a lamp in said lighting circuit.

Other functions and advantages of the invention will appear from the following description taken in connection with the drawings, wherein—

Figure 1 is a sectional view through a constructional form of snap switch provided with my invention.

Fig. 2 is a diagram illustrating the snap switch and lighting circuit with my invention incorporated therein.

Referring to the diagrammatic illustration Fig. 2, A is a lighting circuit with a source of energy, such as battery *a*, and including one or more lamps (not shown) of the incandescent bulb type. One conductor of said circuit is attached to a brush *b* and the other to a brush *c*, and between said brushes *b*, *c*, operates the pivotal member B of the snap switch, said pivoted member being positioned for electrical engagement with the brush *b*. The switch member B is mounted for rocking movement on an axis *d*, the latter being permanently in electrical connection with a return conductor *e* for a resistance coil C. With said switch member is associated a push pin D, and a push pin E. Said push pins D, E, and pivoted member B are similar to the ordinary snap switch for interrupting the flow of current in the lighting circuit, and said switch mechanism does not require detailed explanation except to say that in one position of the member B and pin D, the circuit is closed to establish the flow of current for the illumination of the lamp or lamps.

My invention makes provision for interposing the resistance C, in the whole or in part, in the lighting circuit A, in order to vary the intensity of the illumination afforded by the lamp. To this end, I employ a plurality of contacts, for being shown at 1, 2, 3, 4, from which lead a number of short conductors 5, 6, 7, 8 the latter running to the resistance coil C and connected at different points thereto, as shown. A further contact 9 has a connection 10 branched onto the return connection *e* of the resistance coil. The series of contacts 1, 2, 3, 4 and 9 are traversed by a rotatable switch element F, the latter being unitary with a sleeve *f* which is fitted loosely on push pin D, whereby the sleeve and the switch element F are adapted to turn freely on the push pin D. Said sleeve *f* is composed, preferably, of insulating material, whereas the switch element F is of current carrying metal. The brush *c* is in electrical contact with the switch element F, and the latter bridges the space between said brush *c* and one of the fixed contacts 1, 2, 3, 4, 9, so that the current will flow in the lighting circuit when the switch device is in service.

With the pin E pushed inwardly, the switch member B makes electrical contact with brush *b* and closes the lighting circuit, the current flowing being dependent upon

the resistance C in the circuit. As shown in Fig. 2, the switch element F is in electrical engagement with brush *c* and contact 2, so that the circuit is completed for the current to flow from battery *a*, through brush *c*, switch element F, contact 2, conductor 6, a part of the resistance C, conductor *e*, axis *d*, switch member B, brush *b*, and back to the battery.

The sleeve *f* may be turned by hand upon the pin D for the purpose of shifting switch element F to the right to left, and thus said switch element may be moved into electrical engagement with either of the contacts 1, 2, 3, or 4 for interposing more or less of the resistance coil C in the lighting circuit, thus making provision for effecting a variation in the flow of the current so as to correspondingly vary the intensity of the illumination afforded by the lamp. By turning the sleeve *f* and switch element F to the left so that the latter makes contact 9, the resistance coil C is cut out of the lighting circuit, and the current at full strength flows from battery to brush *c*, switch element F contact 9, conductor 10, switch member B, brush *b*, back to battery.

For cutting off the flow of current through the lighting circuit, the push pin E is operated by pushing it inward as usual in order to shift member B from contact with the brush *b*, thus interrupting the lighting circuit.

The means for cutting the resistance coil into or out of the lighting circuit and for regulating the flow of current by the action of said resistance coil may be embodied in various constructional forms, one of which is shown in Fig. 1 of the drawings.

The operating parts are housed within a container G, the same being closed on all sides for excluding dust and dirt from said operating parts. Said container is supported or mounted by screws *g* on a terminal panel H, the latter being covered by a face plate I, and to this panel is attached an exterior casing J, the face plate and the casing being fastened by screws *i* to said panel, whereby the screws may be removed for permitting the several parts to be separated in order to obtain access readily to the operating parts.

Within the container G are brackets *i'* for supporting the binding posts *h*, *h'*, to which the lead wires are attached as usual. The post *h* carries the brush *c*, which is normally in electrical contact with the rotary switch element F, whereas the other binding post *h'* is associated directly with the brush *b*, the latter being in the path of the member B of the snap switch. The form of the switch member shown in Fig. 1 comprises two parts B B', one of which members B rocks in a bearing *j* and is adapted for contact with brush *b* while the other member B' rocks on a bearing *j'*, said two members B B' being assembled in operative relation and being under the control of a spring $B^2$. To the member B' is connected the push pins D E, mounted for endwise movement in a suitable manner in terminal panel H and face plate I. As shown, the sleeve *f* of insulating material is mounted for free rotation in the panel H and face plate I, said sleeve fitting loosely around push pin D and protruding sufficiently beyond the face plate for the operator to grasp said sleeve in order to turn it as desired.

The switch element F is housed within the container, preferably below the terminal panel, and the contacts 1, 2, 3, 4, 9 are attached to a switch plate K composed of insulating material and secured fixedly in position beneath the terminal panel so that said switch contacts are in the path of the switch element F, the latter being shown as a spring adapted for good electrical contact with the fixed switch contacts.

The resistance coil C may occupy any desired position within the container G, as for example below the terminal panel, but I have shown this coil positioned within a compartment *g'* at the back of the container.

It is thought the operation will be readily understood from the foregoing description taken in connection with the drawings. The snap switch may be used as a part of a lighting system for dwellings, offices, etc., as well as for automobiles, and in other relations, and said switch may be installed in walls or upon instrument boards, and in other places convenient for access thereto. The addition of the switch element and its related parts provides for the regulation of the current flow so as to obtain illumination from the maximum to a minimum of light, and at the same time the snap switch may be used in the ordinary manner for interrupting and restoring the lighting circuit. The parts are simple in construction, economical of manufacture, and readily accessible for inspection and repairs.

Having thus fully described the invention, what I claim as new, and desire to secure by Letters Patent is:—

1. Means for controlling the illumination afforded by a lighting circuit embodying a main switch for closing and interrupting said circuit, operating means for said main switch, a resistance, and a switch element bridging a gap in said circuit to be controlled by the main switch and operable for cutting more or less of said resistance in series with the lighting circuit, said switch element being rotatable on an axis afforded by said operating means and said switch element being operable independently of the main switch.

2. Means for controlling the illumination afforded by a lighting circuit embodying a

snap switch provided with a plurality of operating members adapted for imparting movement to said snap switch whereby in one position the switch closes said circuit and in another position the switch interrupts the circuit, a resistance, an independent switch element rotatable on an axis afforded by one of said operating members, and means in coöperative relation to the switch element and the resistance whereby said switch element is adapted to include more or less of said resistance in series with said circuit.

3. Means for controlling the illumination afforded by a lighting circuit embodying a main switch movable to a plurality of positions for closing said circuit and for interrupting the same, a resistance in series with a plurality of contacts, and an independently operable switch element bridging a gap in said circuit to be controlled by the main switch and coöperating with said contacts for interposing the resistance in whole or in part in series with the circuit.

4. Means for controlling the illumination afforded by a lighting circuit embodying a main switch operable for closing said circuit and to interrupt the same, a resistance and a plurality of switch contacts, and a switch element positioned to bridge a gap in said circuit to be controlled by the main switch and said switch element being shiftable at will relatively to said switch contacts for interposing the resistance in whole or in part in series with said lighting circuit.

5. Means for controlling the illumination afforded by a lighting circuit embodying a main switch operable to open and close said circuit, and additional switching means bridging a gap in said circuit and including a resistance adapted by the movement of said additional switching means to be interposed in whole or in part in series with said lighting circuit.

6. A snap switch including a switch member and an endwise movable operating member therefor, of a sleeve rotatably fitted to said operating member, a resistance element, a plurality of switch contacts in series with said resistance element, and a switch element in fixed relation to said rotatable sleeve, said switch element being shiftable into contact with either of said switch contacts.

In testimony whereof I have hereunto set my hand and seal this 16th day of March, 1920.

HENRY FRED LAUB.