

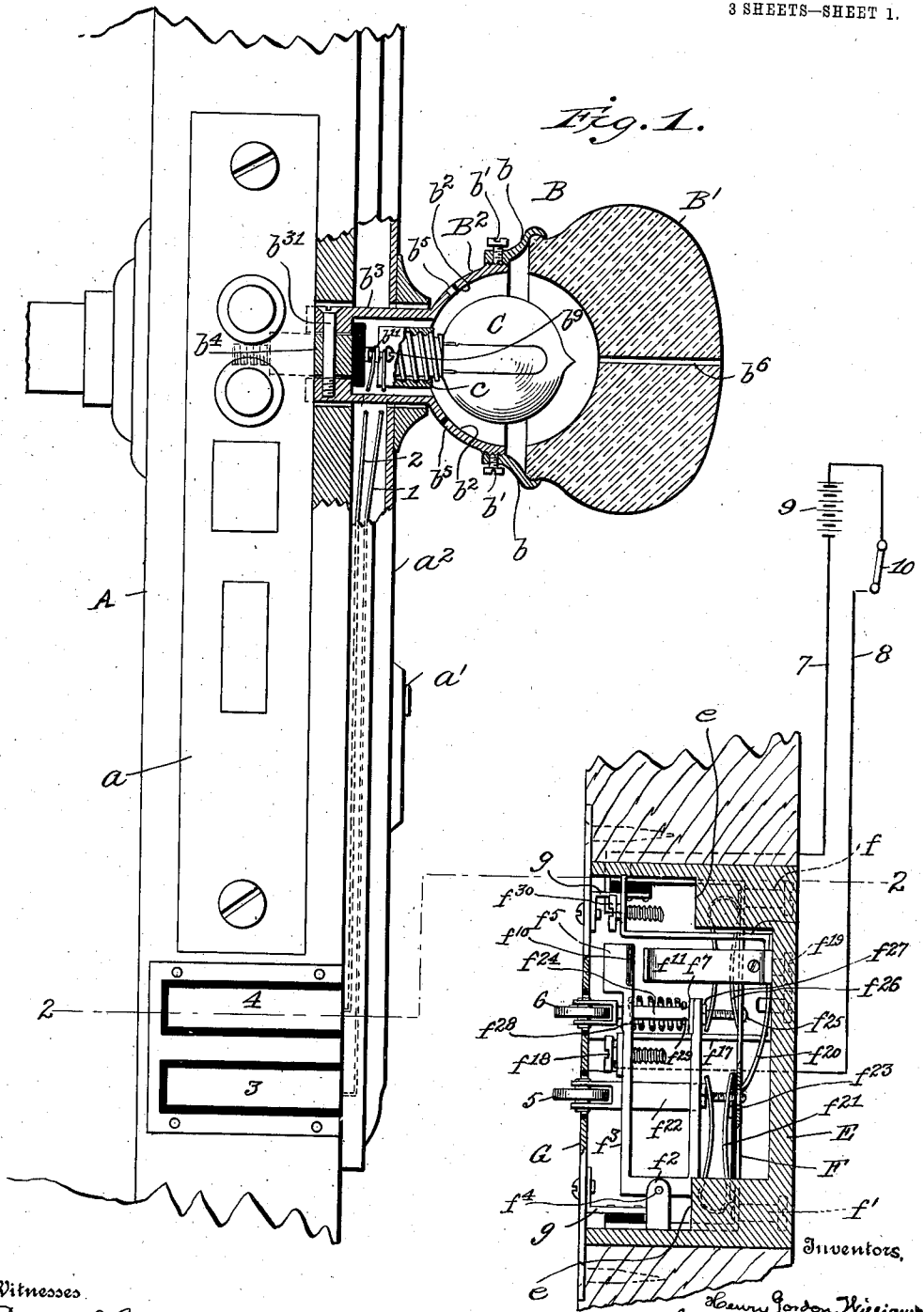
No. 893,214.

PATENTED JULY 14, 1908.

H. G. WILLIAMS & J. A. SPIKER.
ELECTRICALLY ILLUMINATED DOOR KNOB MECHANISM.

APPLICATION FILED JAN. 4, 1906.

3 SHEETS—SHEET 1.



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Fig. 2.

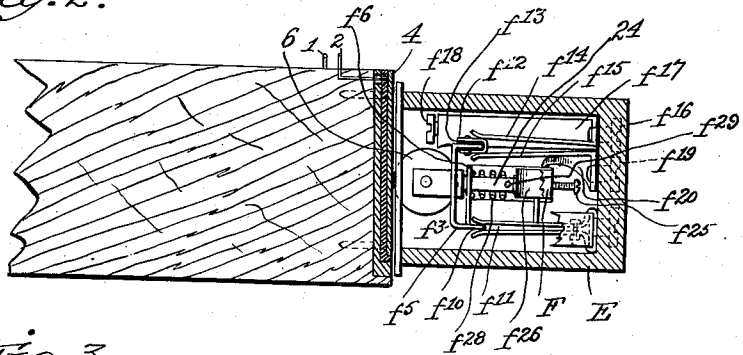


Fig. 3.

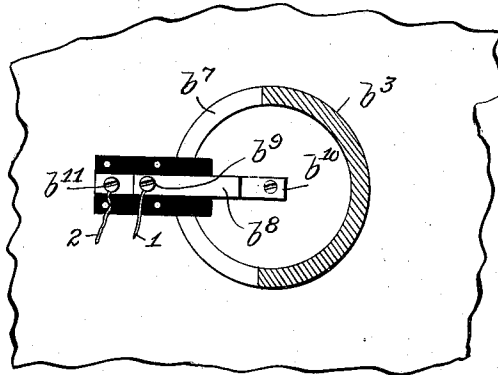


Fig. 4.

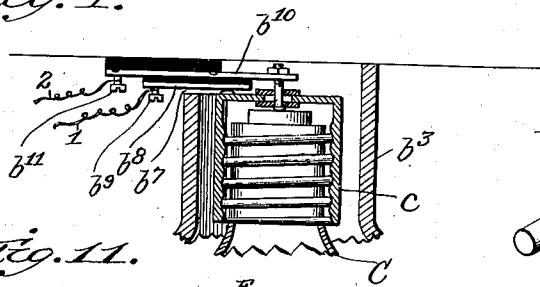


Fig. 12.

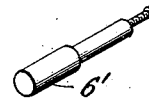
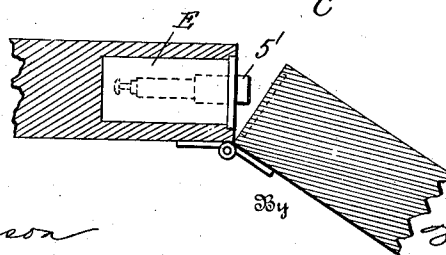


Fig. 11.



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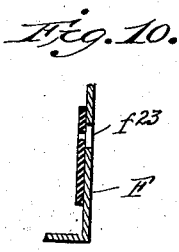
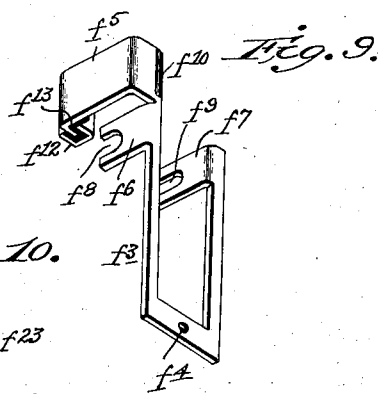
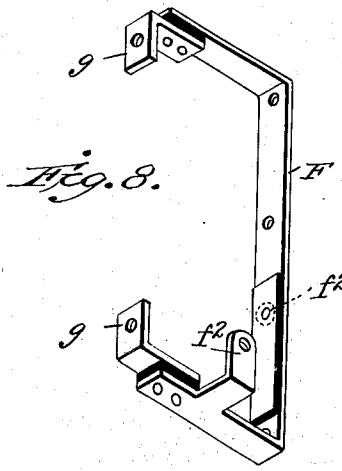
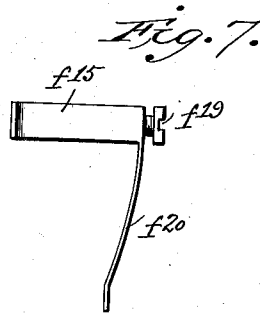
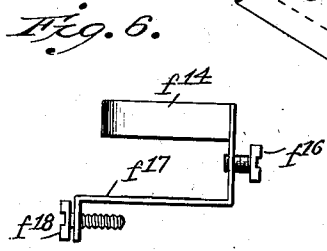
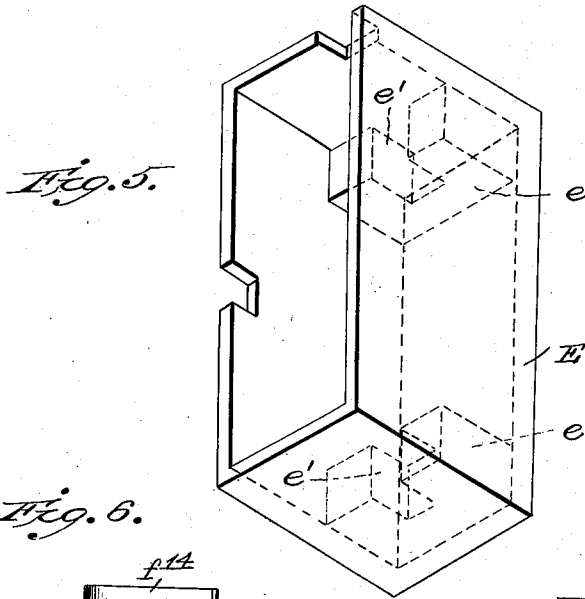
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HENRY GORDON WILLIAMS AND JOHN ALBERT SPIKER, OF SALT LAKE CITY, UTAH.

ELECTRICALLY-ILLUMINATED DOOR-KNOB MECHANISM.

No. 893,214.

Specification of Letters Patent.

Patented July 14, 1908.

Application filed January 4, 1906. Serial No. 294,540.

To all whom it may concern:

Be it known that we, HENRY GORDON WILLIAMS and JOHN ALBERT SPIKER, citizens of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Electrically-Illuminated Door-Knob Mechanism, of which the following is a specification.

Our invention relates primarily to the illumination of the knob or operating device of a door, and has for its object the provision of mechanism and devices by means of which the knob itself incloses an electric lamp and suitable means are provided for the circuit connections from the lamp to a source of electricity.

The improvements are designed particularly for application to front doors to enable a person approaching the door at night to place his hand readily upon the knob, but it will be apparent to those skilled in the art to which the invention belongs that in certain aspects the invention or certain features thereof are capable of other applications. Also, that while we shall describe an embodiment as illustrative of the invention, we do not wish to be limited to the precise form shown and described as the invention may be carried out in other ways.

In carrying our invention into effect we provide the operating knob connected to the latch of a door with a translucent portion, and place an electric lamp, preferably mounted in fixed relation to the door, within the knob itself. Circuit wires lead from the lamp thus mounted to suitable contacts at the edge of the door, which contacts are adapted to engage cooperating contacts on the door-frame. These latter contacts are preferably in the form of plungers connected through an electric switch to a suitable source of electricity, and are so constructed as to open the lamp circuit before the disengagement of the door contacts and plungers, so that any arcing which takes place will be at the switch contacts and when the door is open the exposed circuit terminals will be dead. This switch is preferably of the "snap" or "quick-break" type, to reduce the arcing to a minimum.

The invention consists in the various novel features of construction and combination of parts above outlined, and to be hereinafter

described and claimed; and is illustrated in the accompanying drawings in which

Figure 1 is an edge view in elevation of the lock and latch portion of a door, with a side view in section of the door-frame, showing my improved door knob and contact switch mechanism; Fig. 2 is a horizontal section on line 2—2 of Fig. 1, showing the door closed and the switch mechanism in the proper corresponding position; Figs. 3 and 4 are enlarged details showing the door knob shank construction and lamp socket mounting; Fig. 5 is a view in perspective of the switch casing with the switch parts and cover removed; Figs. 6, 7, 8, and 9 are the switch parts unassembled; Fig. 10 is detail; Fig. 11 is a horizontal section showing the door-operated switch located at the hinge side of the door instead of the lock side, as in Figs. 1 and 2; and Fig. 12 is a detail of a switch plunger shown in Fig. 11.

Referring to the drawings, A represents a door, provided with a lock and latch indicated conventionally at *a*. The key-hole and means for operating the lock are indicated at *a'*. The latch is provided with an operating knob B, composed preferably of two separable members B¹ and B². The outer member B¹ is preferably composed of glass or other translucent material, and it may simply contain a translucent portion, and is connected to inner member B² by a flange or ring *b* which is screw-threaded to engage threads upon member B², where it may be clamped by any suitable means such as set screws *b'*. Inner member B² has a cup-shaped portion which may have a polished or reflecting inside surface at *b²*, and a shank *b³* extending through the face-plate *a²* and suitably connected to the latch as by pin *b³¹* and stud *b⁴*. Each member B¹ and B² may be provided with ventilating openings, as *b⁵* *b⁶*. Openings *b⁵* also permit a portion of the light from the lamp to pass, or be deflected, rearwardly toward the door.

Within the knob B is located an electric lamp C carried by a socket *c* which is shown as of the Edison type but may be of the "T.—H." or any other type or construction. This socket *c* is mounted in fixed relation to the door, as more clearly shown in Fig. 4, and does not turn with the knob. This mounting consists of an arm secured to the door beneath the face-plate and extending through a

slot or cut-away portion b^7 of shank b^3 , as clearly shown in Fig. 3, and consists of a contact strip b^8 attached to or engaging the outer contact of the socket c and having a binding screw b^9 . A second strip b^{10} is insulated from strip b^8 and also from the door and connects with the central terminal of the socket. Strip b^{10} has a binding screw b^{11} . It will thus be seen that when the knob is turned the lamp remains stationary, and has immovable connection through the strips and binding screws.

Binding screws b^9 and b^{11} are connected by conductors 1 and 2 with contacts 3 and 4, which are mounted in suitable insulation at the edge of the door, preferably just below the lock and latch.

Mounted in the door frame are cooperating contacts 5 and 6 adapted to make connection with the electric lighting mains 7 and 8 and source of power 9 preferably through a snap switch which will now be described. A switch casing or box E preferably of porcelain or other fireproof insulating material is formed as shown in Fig. 5 with end seats e each having a central notch e' . The principal parts of the switch are mounted upon a frame F of metal bent in U-form and secured in central notches e' of end seats e by screws ff' . This frame F is provided with a lug f^2 to which is pivoted the switch arm f^3 . Switch arm f^3 is preferably a U-shaped piece pivoted at f^4 and carrying a contact portion f^5 and two lugs f^6 notched or perforated in alinement at f^8 and f^7 . The contact portion f^5 has a blade f^{10} to engage a fixed double contact f^{11} , and a bridge-piece f^{12} insulated from contact portion f^5 at f^{13} . This bridge-piece f^{10} is adapted to engage and connect two spring contact blades f^{14} and f^{15} . Contact blade f^{14} is part of a strip formed as shown in Fig. 6, is secured to bottom of casing E by screw f^{16} , and provided with a standard f^{17} carrying on terminal binding screw f^{18} of the switch. Contact blade f^{15} is mounted on the bottom of casing E by screw f^{19} and has a spring extension arm f^{20} which makes electrical connection with a U-spring f^{21} mounted upon but insulated from the frame F. U-spring f^{21} is compressed and bears upon a shoulder of plunger f^{22} , which carries contact 5, the lower end of plunger f^{22} being secured by a nut in a recess f^{23} in frame F (see Figs. 1 and 8), this nut contacting with the insulation. Contact 6 is carried by a plunger f^{24} which extends through perforations f^8 and f^7 of lugs f^6 and f^7 upon switch arm f^3 and is limited in its outward motion by nut f^{25} . Plunger f^{24} is pressed outwardly by U-spring f^{26} which rests on frame F and bears against a nut f^{27} . Both nuts f^{25} and f^{27} are adjustable to vary the play of plunger f^{24} in accordance with the distance of the door from the frame. A coiled spring f^{28} surrounds plunger f^{24} and bears against lug f^9 at one end and a pin f^{29}

in the plunger just above lug f^7 , or it may extend through lug f^7 and bear on nut f^{27} . A face-plate G is attached by screws and insulated brackets g to frame F, and is provided with insulation around each of contacts 5 and 6, as shown. One circuit wire 7 enters casing E through a notch in the end, and is secured to binding screw f^{30} in electrical connection with double blade f^{11} . The other circuit wire 8 enters casing E through a notch in the side, and is attached to binding screw f^{18} . 10 is a cut-out switch to open the circuit when the light is not desired. In Fig. 1 we have shown contacts 5 and 6 as small wheels or rollers, for engagement with contacts 3 and 4 on the lock edge of the door. When, however, it is desired to place the switch near the hinge edge of the door, as shown in Fig. 11, these contacts will be plain plungers 5' 6'.

The operation of the mechanism will now be briefly described: When the door is closed contacts 5 and 6 will be engaged by contacts 3 and 4, and both plungers f^{22} and f^{24} will be pushed in against the action of springs f^{21} and f^{26} , plunger f^{24} by pressure on lug f^6 , depressing arm f^3 and closing the switch. Blade f^{10} is then in engagement with springs f^{11} and bridge-piece f^{12} connects springs f^{14} and f^{15} . Current will then flow from source of current 9 through main 7, binding screw f^{30} , springs f^{11} , switch blade f^{10} , plunger f^{24} to contact 6, door contact 4, conductor 2 to the lamp C. Thence returning by conductor 1 to door contact 3, contact 5, insulated plunger f^{22} , spring f^{21} , arm f^{20} , contact spring f^{15} , bridge-piece f^{12} , contact spring f^{14} , binding screw f^{18} , main 8 and return to source of power through switch 10. The lamp will therefore be lighted. Upon opening the door, just before door contact 4 leaves contact 6, the outward movement of plunger f^{24} under the force of spring f^{26} has been compressing coiled spring f^{28} , bearing against lug f^6 , when the force of coiled spring overcomes the friction of the switch blade with its contacts and opens the switch with a snap. When contact 4 leaves contact 6, therefore, there is no sparking, and contacts 5 and 6 are dead. If desired, the parts may be so proportioned that nut f^{24} engages lug f^7 at the proper time to start the switch blade, when coiled spring f^{28} will complete the motion.

Having described our invention, what we claim as new and desire to secure by Letters Patent of the United States, is—

1. The combination with a door provided with a latch, a movable knob for operating said latch and provided with a translucent portion, an electric lamp within said knob mounted in fixed relation to the door and independent of the movement of said knob, and electrical connections for said lamp.

2. The combination with a door provided with a latch, a movable knob for operating said latch capable of an oscillatory motion

and provided with a translucent portion and a shank, an electric lamp within said knob having a socket extending into said shank and mounted in fixed relation to the door and independent of the movement of said knob, and electrical connections for said lamp.

3. The combination with a door provided with a latch, a knob for operating said latch and provided with a translucent portion and a shank, said shank having a cut-away portion, a lamp socket support fixedly mounted and extending through said cut-away portion into said shank, an electric lamp socket mounted upon said support within said shank and an electric lamp within said operating knob attached to said socket.

4. The combination with a door provided with a latch, an operating knob for said latch comprising an inner socket member having a shank connected with said latch and a separable outer member having a translucent portion, and an electric lamp inclosed by said members

5. An operating knob for a door latch comprising an inner socket member having a shank for connection with the door latch and a separable outer member having a translucent portion, and an electric lamp inclosed by said members.

6. The combination with a door frame and a door cooperating therewith, of an electric lamp mounted on and carried by said door, cooperating contacts upon said door and door frame arranged to complete the circuit from said lamp to a source of current, and means for rendering the contacts upon said door frame dead when said cooperating contacts are separated.

7. The combination with a door frame and a movable element or door cooperating therewith, of an electric lamp mounted on and carried by said movable element, cooperating contacts upon said movable element and door frame arranged to complete the circuit from said lamp to a source of electric current, and switch mechanism controlled by the movement of at least one of said cooperating contacts to open the lamp circuit before the separation of said contacts.

8. The combination with a door frame and a movable element or door cooperating therewith, of an electric lamp associated with said movable element, cooperating contacts upon said movable element and door frame arranged to complete the circuit from said lamp to a source of electric current, and snap-switch mechanism controlled by said cooperating contacts to open the lamp circuit with a quick motion before the separation of said contacts.

9. The combination with a movable element and a fixed element, of an electric lamp carried by said movable element, contacts upon said movable element in circuit with

said lamp, a plunger contact mounted upon said fixed element for engagement with one of said contacts, and a snap switch operated by said plunger to open the circuit before the separation of said plunger and movable element contact.

10. The combination with a movable element and a fixed element, of an electric lamp carried by said movable element, a contact upon said movable element through which the circuit of said lamp is completed, a plunger contact mounted upon said fixed element for engagement with said contact, a switch arm cooperating with said plunger, a spring for forcing said plunger towards said movable element contact, and a spring of less tension connecting said plunger with said switch arm.

11. The combination with a movable element and a fixed element of an electric lamp carried by said movable element, a contact upon said movable element through which the circuit of said lamp is completed, a plunger contact mounted upon said fixed element for engagement with said contact, a switch having a contact arm cooperating with said plunger and fixed contact, a spring for forcing said plunger towards said movable element contact, and a spring connecting said plunger and contact arm arranged to be compressed by the initial movement of the first mentioned spring and then to move said contact arm from said fixed contact with a quick motion.

12. The combination with a movable element and a fixed element, of an electric lamp carried by said movable element, a contact upon said movable element through which the circuit of said lamp is completed, a plunger contact mounted upon said fixed element for engagement with said contact, and a switch comprising a fixed contact and a two-part arm which cooperates with said plunger, a spring for forcing said plunger towards said movable element contact, and a spring of less tension between the parts of said arm connecting said plunger and arm.

13. A door knob, comprising a supporting stud, a hollow globular knob capable of transmitting light terminating at its rear side in a hollow neck fitting said stud, lamp-supporting means carried removably in said stud, and a lamp detachably secured to the outer end of said lamp-supporting means and projecting centrally of said hollow neck into said globular knob.

14. A door knob, comprising a supporting stud, a hollow translucent globular knob terminating at its rear side in a hollow neck fitting said stud, lamp-supporting means carried removably in said stud, and a lamp detachably secured to the outer end of said lamp-supporting means and projecting centrally of said hollow neck into said globular knob.

15. A hollow door knob, and an electric lamp mounted therein, said door knob comprising translucent material for the external transmission of the light from said internal lamp, including means for deflecting a portion of said light rearwardly toward the door.
5 In testimony whereof we have signed our

names to this specification in the presence of two subscribing witnesses.

HENRY GORDON WILLIAMS.
JOHN ALBERT SPIKER.

Witnesses:

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WM. F. COLTON.