

UNITED STATES PATENT OFFICE

JOHN ELZER, OF READING, PENNSYLVANIA

ELECTRIC-CONNECTION HINGE

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My invention relates to hinges for doors or the like, and more particularly to an electrical-connection hinge structure adapted to pivotally unite door-carried wire extensions to an electric wiring circuit, my main objects being to insure a proper electrical connection of said extension wires, provide adequately safe insulation thereof with simple and convenient connecting means for the circuit wires, and provision for a removable plug socket to disconnect said extension wires when desired without removal of the hinge. With these stated objects in view, and with others that will appear later herein, my invention comprises the hinge structure fully described in connection with the accompanying drawing, the novel features thereof being pointed out in the appended claims.

Fig. 1 is a diagrammatic view of a door-casing and hinged door mounted therein indicating preferred embodiment of my invention.

Fig. 2 is an elevation of one hinge member, partly in section to show the encased electrical conductive means.

Fig. 3 is a corresponding view of the cooperating hinge member.

Fig. 4 is a separate view of my special pivot pin adapted to pivotally and electrically connect the hinge members.

Fig. 5 is a cross sectional view of one hinge member taken on line 5—5 of Fig. 2.

Fig. 6 is a corresponding sectional view of the other hinge member taken on the line 6—6 of Fig. 3.

Fig. 7 is a rear view of one hinge member showing the engagement of the electric wires thereto.

Fig. 8 is a corresponding rear view of the other hinge member and its connecting wires.

Fig. 9 indicates a modified hinge structure embodying my invention, parts being shown in section.

House wiring systems, for electric lighting, commonly have control switches fixedly located on a room wall, such switches being more or less unsightly, and fumbling therefor in the dark leaving disfiguring finger marks on the walls surrounding them. With the object of locating such a controlling

switch in a more readily accessible position as on a swinging entrance door, either associated with or adjacent its door knob on the inner or outer side, or on both sides, or in a normally hidden position in a door edge, I provide said door with wire extensions preferably buried within the door structure, the connection of these extension wires to the wall carried wires requiring a special pivotal insulating device which forms the subject matter of my present invention.

Referring to the drawing 1 represents a wall having a usual door case 2 for a swinging entrance door 3 hung on hinges 4, 4 and provided with a door knob 5. 6, 6 indicates diagrammatically the wires of a house lighting circuit insulating buried in the wall 1 and door case 2 and extending to my improved electrical-connecting hinge 7 which electrically and insulatingly connects them to door carried wire extensions 8, 8, the latter having a control switch provided with a usual pivot button 9. The control switch button 9 may be located in any convenient place on the door and is shown as preferably mounted in the door knob 5.

A preferred embodiment of the special electrical-connection 7 is disclosed in Figs. 2 to 8 and comprises cooperating door and case connected members 10 and 11 respectively provided with pivot ears 12, 12 and 13 for a pivot engaging pin 44.

The hinge members 10 and 11 are preferably, though not essentially, formed of a non-conductive material as hard rubber, bakelite or the like and suitably provided with apertures for screw connection to the door and case. To provide for electrical contact engagement of the wires, each ear, as indicated is formed with a metallic or conductive sleeve, preferably cast therein, as shown, and provided with a wire connecting extension lying within its associated hinge member. The ears 12, 12 are shown with sleeves 14, 14, each having a wire connecting extension 15, 15; and ear 13 is shown with spaced sleeves 16, 16, each sleeve having an extension 17, 17.

The pivot pin 44 indicated is preferably formed of non-conductive material with spaced conductive sleeve contacting rings 18

and 19, arranged to extend across the contacting ends of ears 12, 12 and 13 and ring 18 thus electrically connecting sleeve 14 of upper ear 12 with upper sleeve 16 in ear 13 and ring 19 similarly connecting lower sleeve 16 to lower ear sleeve 14.

Instead of the sleeves shown, such contact may conceivably be effected as by spring plates mounted in the ears for contact of co-operating spring plates on pin 44, such modification being readily understood and is therefore not indicated in the drawings. Furthermore said pin may be formed in two separate parts, or each ear 12^a, 12^a may have a metal pivot pin 44^a, 44^a formed therein as indicated in the modified construction of Fig. 9, a spring 20, 20 normally projecting said pins into engagement with ear 13^a, and insulated head extensions 21, 21 permitting retraction of said pins to separate said hinge members.

The sleeve extensions 15, 15 of hinge member 10, are shown as normally covered by the material of said plate except at their ends 25, which are indicated as thickened to lie exposed and flush with the inner face of the latter and provided with screws 26, by means of which the wire ends 8, 8 are respectively secured to them in electrical contact therewith.

Hinge member 11 is indicated as provided with a rearwardly projected socket 27 for a removable circuit closing plug 28 of usual construction, and sleeve extensions 17, 17 within said member 11 are shown as extended and secured respectively to one split insulated half of the metal threaded lining 30 of said socket and a similar split half of the bottom contact seat 31 of the same, so that removal of said socket will break the electric circuit when desired and its insertion close the insulated gaps of said lining and bottom contact. The circuit wires 6, 6 are indicated as respectively connected to the other half of said socket lining 30 and the other half of said contact 31 through extensions 32, 32 thereof by means of screws 33, 33. Both hinge members 10 and 11 may have the simple wire connection illustrated for member 10, or both may have the socket connection illustrated for member 11, or any other usual wire connection may be employed. The wires 6, 6, and 8, 8 may of course be suitably carried in an insulating conduit 35 indicated, such tube in the door 3 lying in a recess 36, as indicated, or otherwise hidden within the structure thereof.

My electrical-connection hinge thus fully described provides a safe, positive and workmanlike connection of the wires 6, 6 and 8, 8. It may be used as a supplemental hinge only, or as a door carrying hinge. Instead of the switch button 9, an outlet member or a lamp switch may be substituted. My hinge is also equally applicable to other swinging frames than doors. The electric circuit thus con-

nected need not necessarily be a lighting circuit, but may be an electrical call circuit or the like. And the preferred embodiment above set forth in detail may be readily modified within the spirit of my invention as particularly set forth in the following claims.

What I claim is:

1. In combination with a door case having electric wires in a wall thereof, and a pivotally swinging door in said case having a control switch and extension wires insulatedly mounted therein, of an insulating pivotal wire connecting device comprising co-operating hinge members secured respectively to said case and door and having pivot ears provided with internal contacts conductively connected to their respective case and door wires, and pin connecting means for said ears conductively connecting the ear contacts of the corresponding case and door wires.

2. In combination with a door case having electric wires in a wall thereof, and a pivotally swinging door in said case having a control switch and extension wires insulatedly mounted therein, of an insulating pivotal wire connecting device comprising co-operating hinge members secured respectively to said case and door and having pivot ears provided with internal contacts conductively connected to their respective case and door wires, pin connecting means for said ear conductively connecting the ear contacts of the corresponding case and door wires, and a removable plug socket in one of said hinge members inserted in the line wires carried thereby.

3. A pivotally swinging insulating conductor device for electric line wires comprising co-operating insulating members having interengaging pivot ears and line connecting terminals, contacts in said ears having member-encased extensions to the respective terminals, and an ear connecting pivot conductively connecting the ear contacts of the corresponding member terminals.

In testimony whereof I affix my signature.
JOHN ELZER.