No. 723,866. PATENTED MAR. 31, 1903.

G. W. HART.

ELECTRIC SWITCH.

APPLICATION FILED JULY 19, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 3.

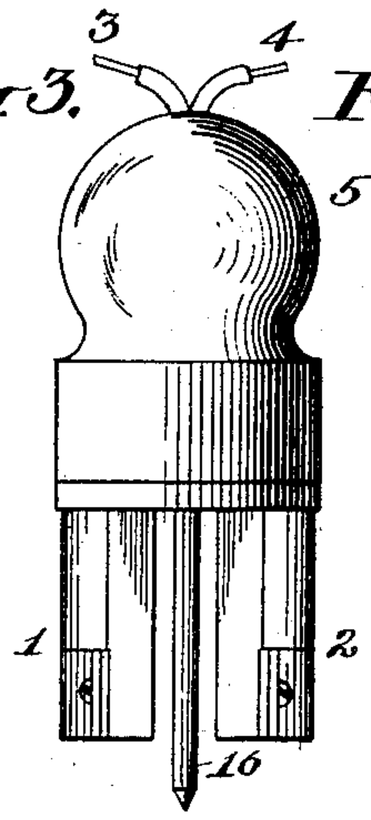


Fig. 1.

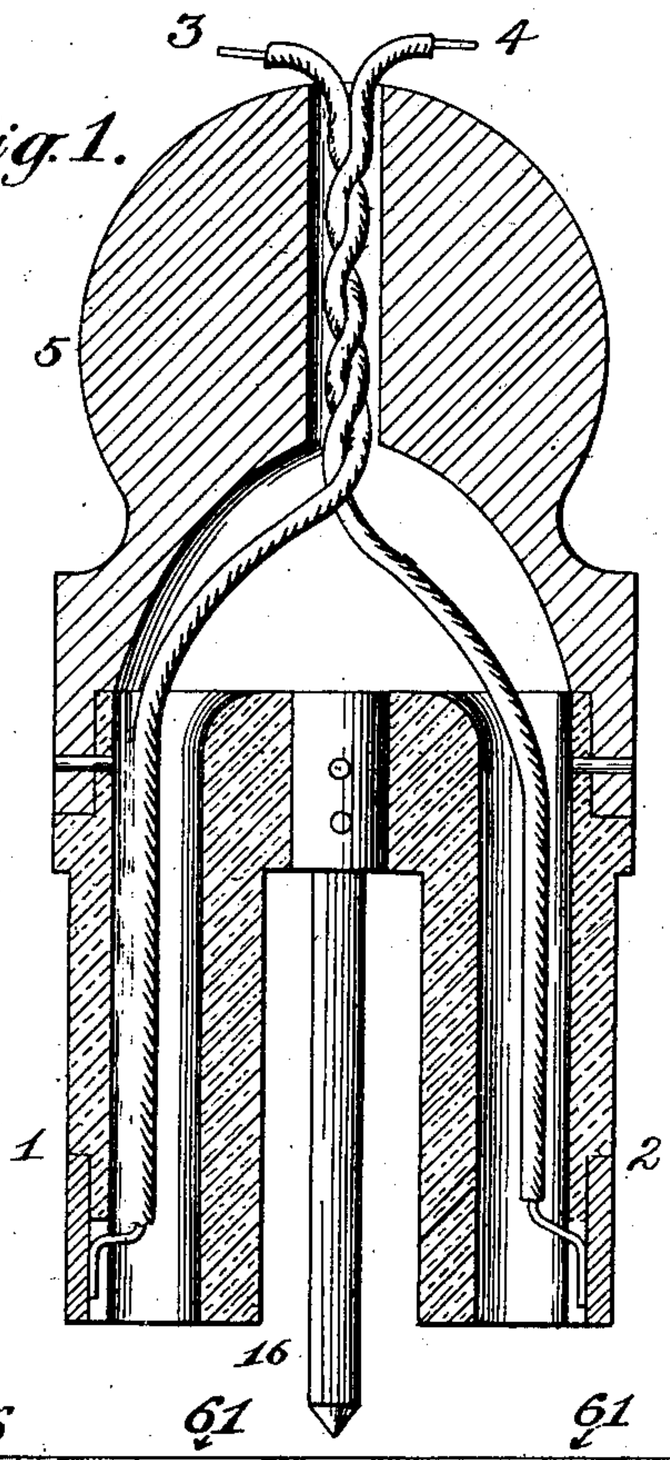


Fig. 5.

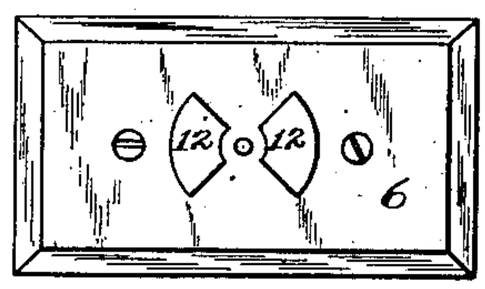


Fig. 6.

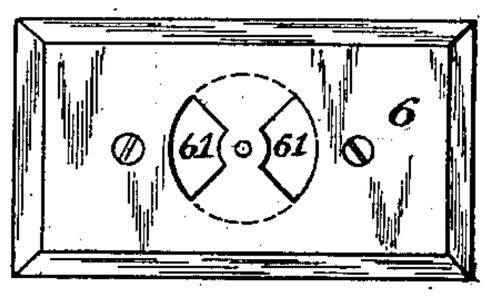


Fig. 4

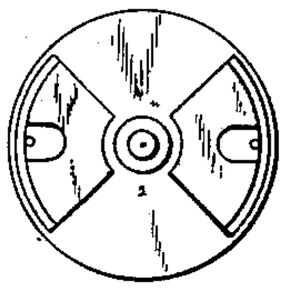
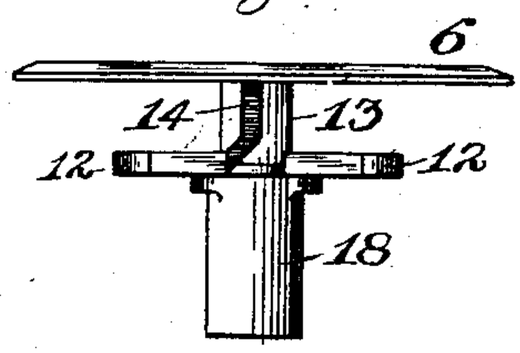


Fig. 7.



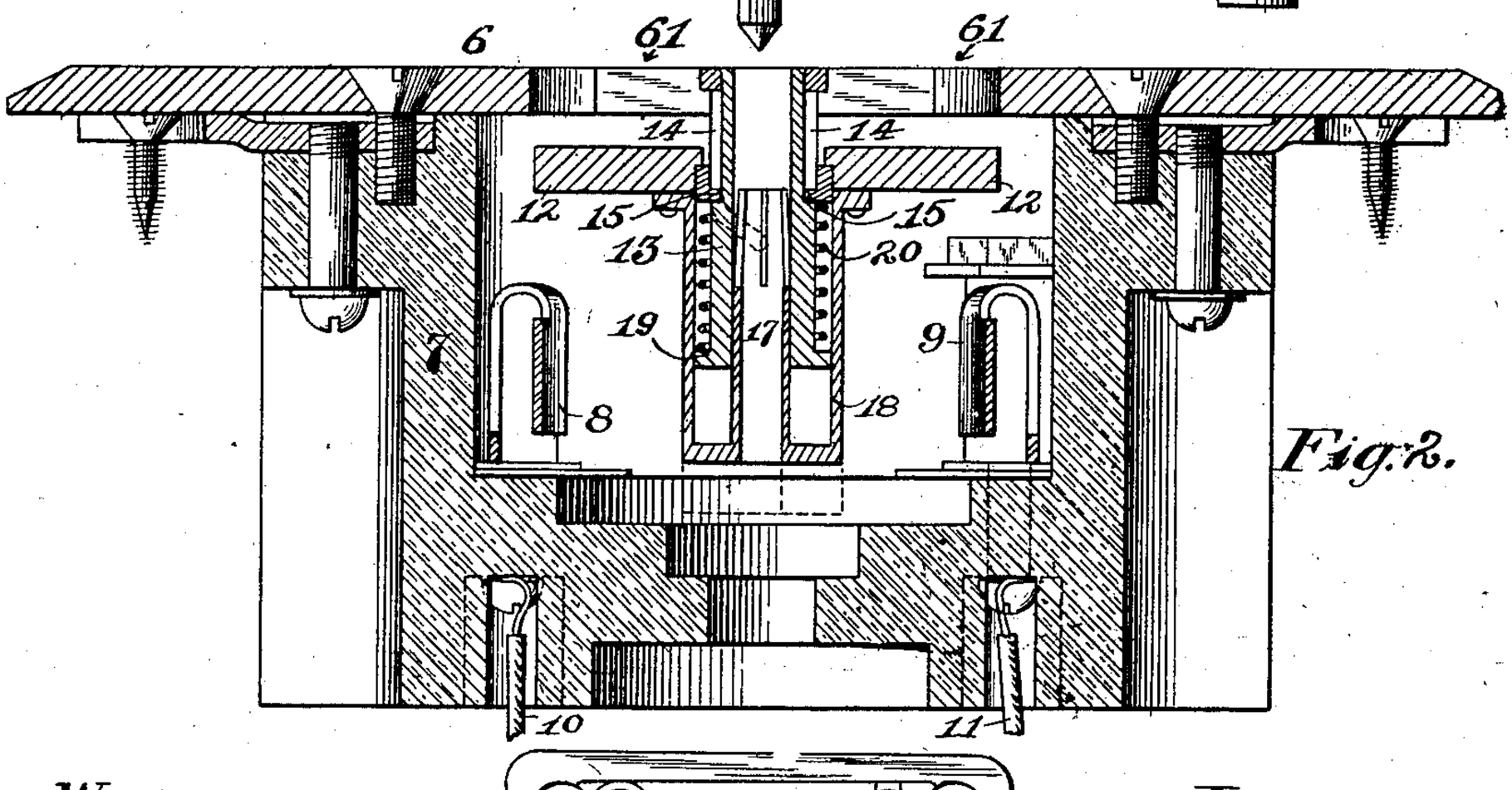


Fig. 2.

Witnesses:-

J. B. McGirr.

W. S. Allyn

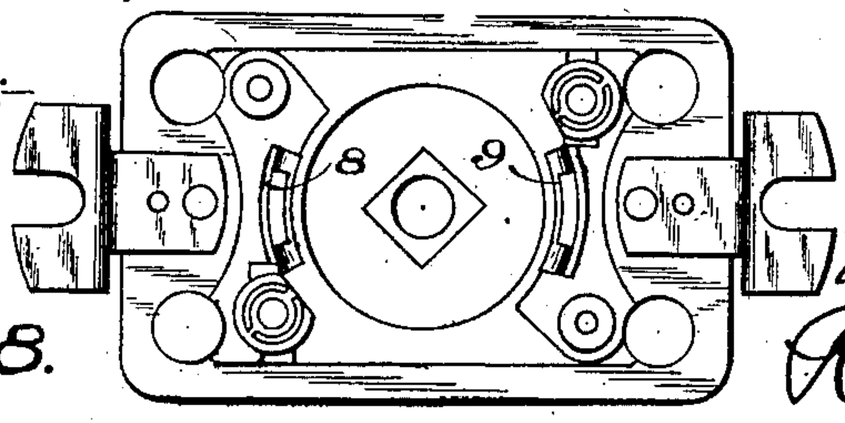


Fig. 8.

Inventor:-

Gerald W. Hart.

by

R. C. Mitchell

attorney.

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G. W. HART.

ELECTRIC SWITCH.

APPLICATION FILED JULY 19, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 9.

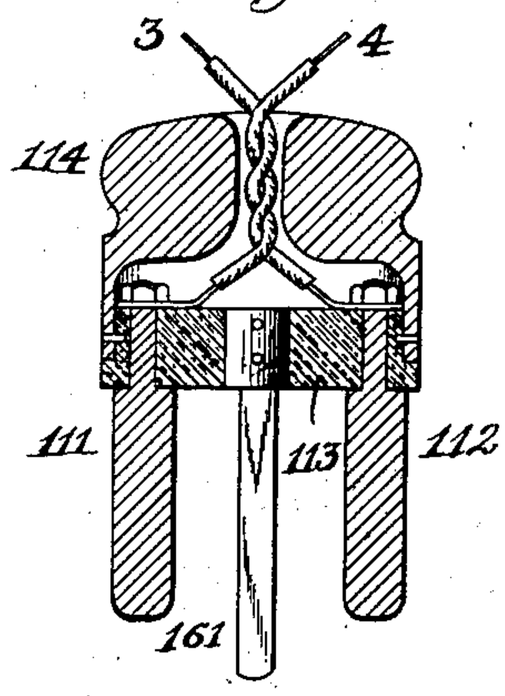


Fig. 10.

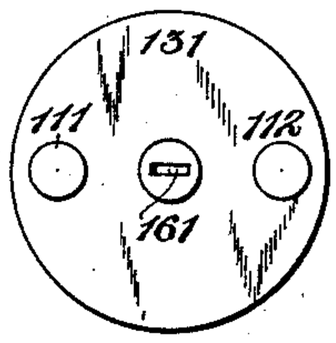
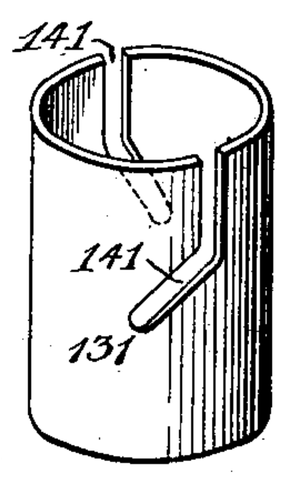


Fig. 13.



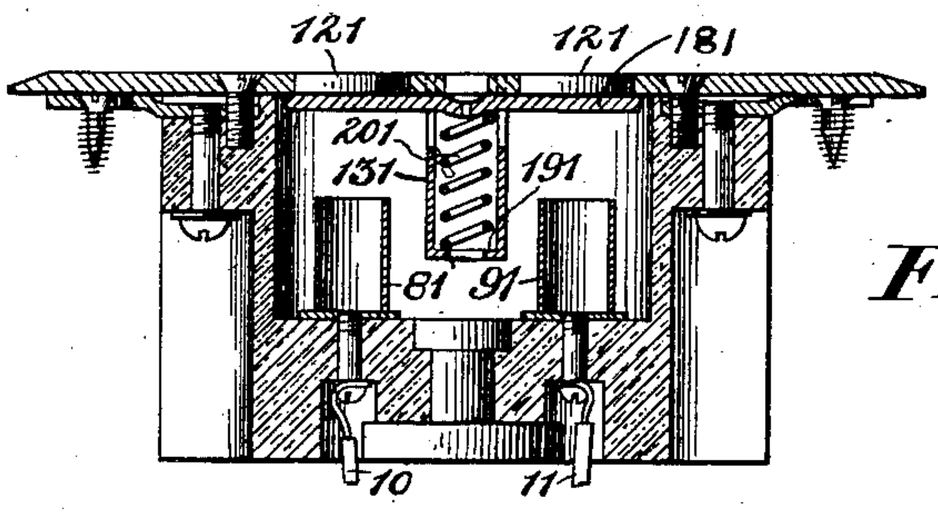


Fig. 11.

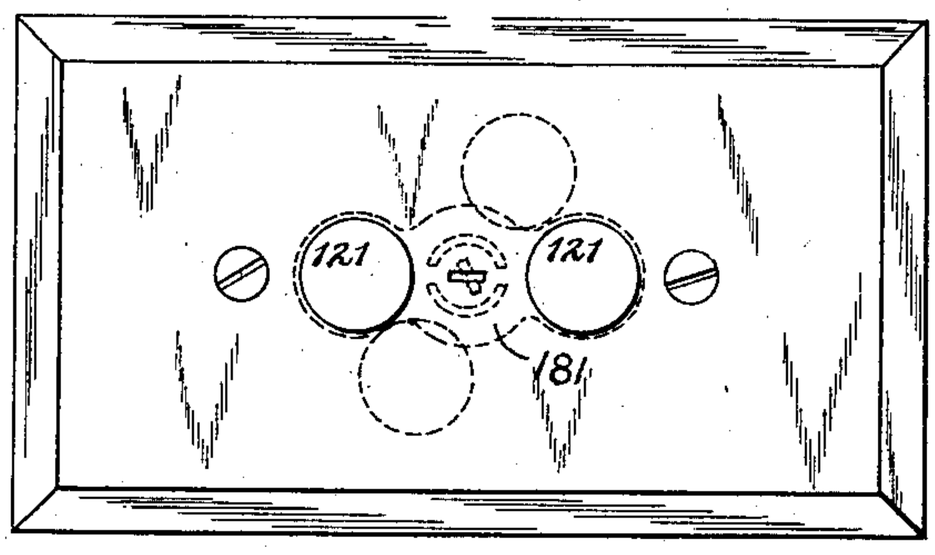
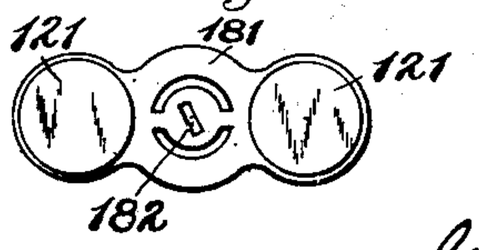


Fig. 12.

Fig. 14.



Witnesses:-
J. B. McGirr.
W. S. Allyn.

Inventor:-
Gerald W. Hart.
by R. C. Mitchell
Attorney.

UNITED STATES PATENT OFFICE.

GERALD W. HART, OF WEST HARTFORD, CONNECTICUT, ASSIGNOR TO THE HART MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 723,866, dated March 31, 1903.

Application filed July 19, 1902. Serial No. 116,149. (No model.)

To all whom it may concern:

Be it known that I, GERALD W. HART, a citizen of the United States, residing at West Hartford, in the county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Electric Switches, of which the following is a full, clear, and exact description.

My invention relates to electrical apparatus, and particularly to devices termed "plug cut-outs." In devices of this character there is a box or receptacle employed, into which a plug may be inserted as desired, the purpose being to permit the lamp or other translating device to be introduced into an electrical circuit at any convenient point in a building, the boxes being located at suitable points in the building to permit of the attachment of the plugs wherever desired.

The object of my invention is to provide a simple, inexpensive, and effective means for automatically closing the plug-opening when the plug is removed, so that the face-plate of the box will not present an unsightly appearance and, furthermore, so that dust and dirt will not be likely to gather within the box, as would be the case if the plug-opening were uncovered.

A further feature of improvement comprises so constructing the parts that when the plug is introduced and the shutter (by which the plug-opening is closed) is moved back the said shutter will not be scratched by engagement with the plug.

In the drawings, Figure 1 is a vertical section of a plug on an enlarged scale. Fig. 2 is a vertical section of a box on an enlarged scale. Fig. 3 is a side elevation of the plug on a reduced scale. Fig. 4 is a view of the under side of the plug shown in Fig. 3. Fig. 5 is a plan view of the top of a box such as shown in Fig. 2, excepting on a reduced scale. Fig. 6 is a similar view, the dotted lines indicating the changed position of certain parts. Fig. 7 is an elevation of certain details of construction. Fig. 8 is a plan view of the box with the top plate removed. Fig. 9 is a vertical sectional view of a plug of modified form. Fig. 10 is a view of the under side of the same. Fig. 11 is a vertical section of a box of modified form. Fig. 12 is a plan view of the same. Fig. 13 is a perspective view of a detail of construction. Fig. 14 is a plan view of another detail of construction.

In the particular form shown in Figs. 1 to 8 a double plug is illustrated, 1 2 being the plug members, from which lead wires 3 4 to a lamp or other translating device. The wires 3 4 may pass out through a suitable handle 5. 6 is the face-plate of a box 7, which latter may be formed of any suitable material—for example, porcelain. 61 represents openings in the face-plate, through which the plugs 1 2 may be passed in the manner hereinafter described. The method of attaching the face-plate to the box is immaterial and need not be described in detail. Within the box are terminals 8 9, connected with suitable conductors 10 11, respectively. The terminals 8 9 within the box are in the path of movement of the plugs 1 2, so that when the latter are inserted an electrical connection is effected and the wires 3 4 introduced into the circuit of the terminals 10 11. The form of the terminals is immaterial.

As stated, the purpose of this invention is to provide means to close the openings in the face-plate through which the plugs are passed and to effect this closing automatically. To that end, therefore, I provide a shutter 12 for a plug-opening 61. In the form shown two plug-openings are indicated in the face-plate, as well as two shutters 12 12, adapted to fit the said openings, so that when the shutters are in place the face-plate will present a substantially unbroken surface, save directly in the center, where another small and inconspicuous opening is provided for the purpose hereinafter described. The means for automatically opening and closing the plug-openings shown in Figs. 1 to 8, inclusive, comprise the following instrumentalities: The shutters 12 12 are adapted to slide up and down on an inner tube 13, said shutters being provided with a suitable frame providing a bearing around said tube. In the side of the tube 13 is a groove or grooves 14. (Best seen in Fig. 7.) The upper part

of the groove 14 may be straight, while the lower part takes a spiral turn. 15 15 are projections from the shutters 12 12 or parts connected therewith, the said projections extending into the grooves 14, so that when the shutters are moved down the said projections will be depressed and in following the grooves 14 14 will cause the rotation of the shutters to move them out of alinement with the openings.

In the particular form shown in Figs. 1 to 8 the spiral groove takes a quarter-turn; but this, it will be seen from the modification shown, is immaterial to other forms. When the shutters 12 12 are rotated one-quarter way around the tube 13, the windows 61 are entirely opened. Were the plug-terminals 1 2 employed for the purpose of pushing back the shutters 12 12 when the plug is introduced, the finished surface of the shutters would be marred and scratched. Hence to avoid this I provide a means to prevent this injurious result. This means comprises a pin or key 16, which may be carried by the plug-handle 5 and adapted to pass into a small central opening in the face-plate and into the tube 13. 17 is a tube loosely fitted within the tube 13 and having a split contracted entrance, so that when the pin-key 16 is introduced it will not immediately enter the tube 17, but will first depress the same. The tube 17 is connected with a tube 18, located externally of the tube 13 and connected with the shutters 12 12. Hence when the key 16 is first introduced it will by frictional engagement with the end of the tube 17 cause the shutters and the tubes 17 18 to slide back independent of the plugs 1 2 until the spiral groove causes the rotation of the shutters out of the line of movement of said plugs. As soon as the projections 15 15 are pushed into the lower part of the groove 14 14 further movement of the shutters is checked; but the further movement of the plugs 1 2 is permitted, since the end of the tube 17 will spring open sufficient to permit the pin or key 16 to be introduced to an extent sufficient to allow the plugs to enter the box and engage with the terminals 8 9. When the plugs are removed, the frictional engagement between the pin-key 16 and the tube 17 is overcome by a sufficient pull until the same is freed. The shutters then slide back to their normal position, in which they stand within and close the plug-openings by action of a spring 20, located between the shutters or a part movable therewith and a stationary flange 19 on the tube 13.

In Fig. 2 for convenience of illustration I have shown the shutters 12 12 as depressed out of their normal position. In the arrangement of the parts shown in Fig. 1 the projections 15 15 are about to engage with the spiral portion of the groove 14 14. Further depression of the shutters would cause the rotation of the same. The normal action of the spring 20, as indicated, is to automatically elevate or advance the shutters 12 12, so that they will slide into the plug-openings 61 61 to close the same for the purpose indicated.

In Figs. 9 to 14 a modified form is indicated, in which instead of having grooves in a central tube I form slots, which also take a spiral turn, as best seen in Fig. 13. In these figures (9 to 14) 131 is the tube, the upper end of which is fastened to the face-plate around the central opening, which may be in the form of a flat keyhole or slot. 181 is a shutter-carrying plate, having curved grooves therein adapted to fit onto the slotted end of the tube 131 and underneath the face-plate. 182 is a keyhole in said shutter-carrying plate 181. 121 121 are shutters carried by the plate 181 and adapted to fit the plug-openings in the face-plate. In these figures the plug-openings are round and of larger diameter than the diameter of the plugs 111 112, which may be of any solid conducting material. 114 is a suitable handle. The wires 3 4 connect with the plugs 111 112 and lead out through the plug-handle 114. 161 is a flat key taking the place of the pin-key 16 in Fig. 1. This key is adapted to fit the keyhole in the face-plate, as well as in the shutter-carrying plate 182. 191 is an inturned flange on the tube 131. 201 is a spring located between the flange 191 and the under side of the plate 181. The effect of the spring 201 is to elevate the shutter-carrying plate 181 and the shutters, so as to slide the latter into the plug-openings to close the same for the purpose indicated. 81 91 are terminals within the box and in the path of movement of the plugs 111 112. In the normal position of the parts the plug-openings are closed by the shutters 121 121, the spring 201 normally tending to hold them closed. In this position the keyhole 182 in the shutter-carrying plate 181 is arranged at an angle to the keyhole in the face-place, as best seen in dotted lines, Fig. 12. In operation the key 161 is passed through the keyhole-opening in the plate, whereupon it engages with the plate 181. By pushing the key 161 into the plate the shutters are depressed until the spiral portion of the slot is encountered, at which time the shutters are entirely removed from the face-plate. By further pressing in the key 161 the plate 181 is necessarily revolved, so as to rotate the shutters 121 from the position indicated in solid lines, Fig. 12, to the position indicated in dotted lines therein and out of the plane of the plug-openings. In this position the keyholes in the face-plate and the plate 181 register. Hence the plugs 111 112 may be pushed in to engage with the terminals 81 91 within the box. When the key is removed, the spring 201 slides the plate 181 upwardly and causes the shutters 121 to close the plug-openings, giving to the face-plate a substantially unbroken appearance.

Manifestly the number of plugs employed is immaterial. One or more may be employed and still the subject-matter of my invention

retained. Of course the plug-openings in the face-plate, as well as the shutters therefor, would ordinarily correspond to the number of plugs, be they one or more.

The foregoing description and the accompanying drawings refer to preferred forms of the various details of construction; but it should be understood that the invention is not necessarily confined to either of the specific forms shown, since the details and the arrangements thereof may be modified in a variety of ways, such as would be apparent to the mechanic skilled in the art, without departing from the spirit or scope of my invention.

What I claim is—

1. In a plug cut-out, a face-plate having an opening therein, a plug adapted to pass through said opening, a shutter for said opening, the surface of said shutter being normally substantially flush with the surface of said plate, and means to operate said shutter in advance of the plug.

2. In a plug cut-out, a face-plate having an opening therein, a plug adapted to pass through said opening, a shutter for said opening, the surface of said shutter being normally substantially flush with the surface of said plate, means to operate said shutter other than the plug, and means to automatically cause said shutter to close said opening when the plug is removed.

3. In a plug cut-out, a face-plate having an opening therein, a plug adapted to pass through said opening, a shutter for said opening, the surface of said shutter being substantially flush with the surface of said face-plate when said opening is closed, and means to operate said shutter in advance of the insertion of the plug.

4. A plug cut-out having the combination of a face-plate with an opening therein, a shutter for said opening, said shutter being normally flush with said face-plate when said opening is closed, and means for opening said shutter without contact with the face of said shutter.

5. A plug cut-out, a face-plate therefor having an opening in the same, a shutter for said opening, said shutter being longitudinally movable and rotatable, and means for producing longitudinal and rotary movement of said shutter.

6. In a plug cut-out, a plug, a face-plate having an opening for said plug, a shutter for said opening, said shutter being substantially flush with the face-plate when the opening is closed, and means to cause said shutter to automatically move away from the opening and in advance of the insertion of the plug and separate mechanism to move said shutter toward and close said opening when said opening means is withdrawn.

7. In a plug cut-out, a face-plate having an opening therein, a plug adapted to pass through said opening, a shutter for said opening, said shutter being substantially flush with said plate when said opening is closed, means to operate said shutter other than the plug, said means operating to lock said shutter in the open position when the plug is inserted.

8. In an electric plug cut-out, a plug, a box, a face-plate having an opening therein adapted to receive said plug, a shutter normally closing said opening, said shutter being flush with the said face-plate when said opening is closed, a spring for holding the same normally in position to close said opening, a key moving with said plug but in advance thereof and adapted to move said shutter away from said opening during the act of introducing the plug and in advance of the latter.

9. In a plug cut-out, a face-plate having an opening therein, a plug smaller than said opening and adapted to pass through the same without engaging the sides of said opening, a shutter for said opening, said shutter being substantially flush with said face-plate when said opening is closed, and means to move the same away from said opening and in advance of the plug, and means to cause said shutter to move back and close said opening independently of said plug and after the latter has been entirely withdrawn.

10. In an electric plug cut-out, a box or receptacle containing terminals, a face-plate having openings therein, shutters normally closing said openings and flush with said face-plate when said openings are closed, a plurality of plugs adapted to pass through said openings and means to automatically move the shutters away from said openings and out of the path of movement of said plugs and in advance thereof, and means to normally cause the shutters to return to and close the terminal openings in the face-plate when the plug is removed.

11. In an electric plug cut-out, a box or receptacle containing terminals, a face-plate having openings therein for access to said terminals, shutters normally closing said openings and lying flush with the face of said face-plate when said openings are closed, a plurality of plugs adapted to pass through said openings, and a key movable with said plug, said face-plate having an opening for the passage of said key and means coacting with said key connected with said shutters, whereby the introduction or removal of said key operates said shutters.

12. In a plug cut-out, a face-plate having an opening therein, a plug adapted to pass through said opening, a shutter for said opening and means to automatically cause said shutter to close said opening after the plug is removed, said means including a spring, a tube, said shutter being guided thereon, a spiral means on one of said parts and means on the other part engaging said spiral.

13. A plug cut-out having the combination of a face-plate having an opening therein for a plug, a shutter for the plug-opening, a plug, a key carried by said plug, said plate also

having an opening for said key, and means whereby by the insertion of said key the shutter may be longitudinally moved and rotated.

14. In a plug cut-out, a face-plate having an opening therein, a shutter for said opening, a member having a longitudinal and a cam-shaped slot, and means coacting therewith by which said shutter may be moved longitudinally and rotated.

15. In a device of the character described, a face-plate having an opening therein, a shutter for said opening, a carrier therefor, a member having a longitudinal and cam-shaped slot said carrier being movable relatively to said member, a portion of said carrier extending into said slot, and means coacting with said parts whereby the shutter may be moved longitudinally and rotated.

16. In a plug cut-out, a face-plate having an opening therein, a shutter for said opening, the surface of said shutter being normally flush with the surface of said plug, and a spiral guide for said shutter.

Signed at New York city this 17th day of July, 1902.

GERALD W. HART.

Witnesses:
L. VREELAND,
ROBT. S. ALLYN.