

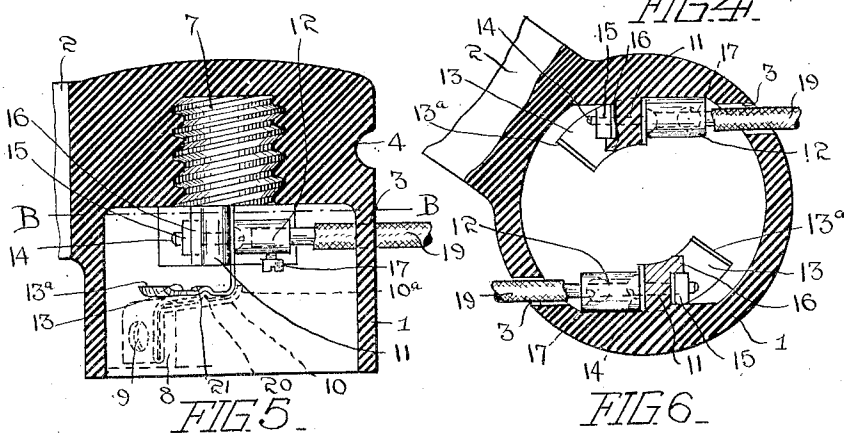
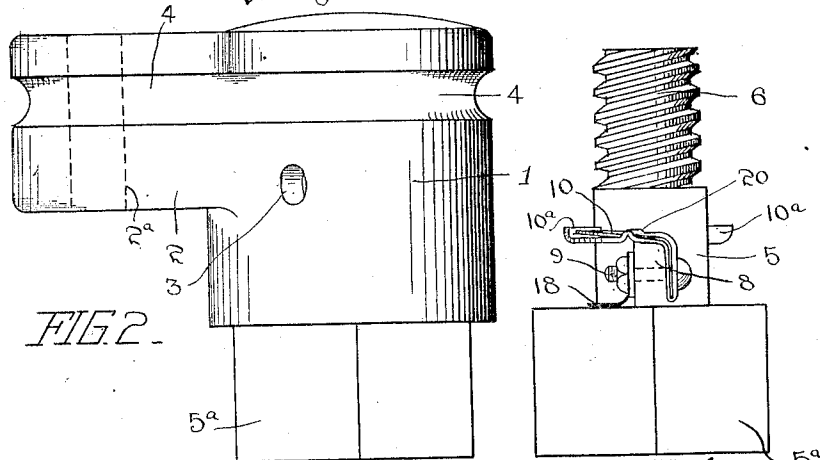
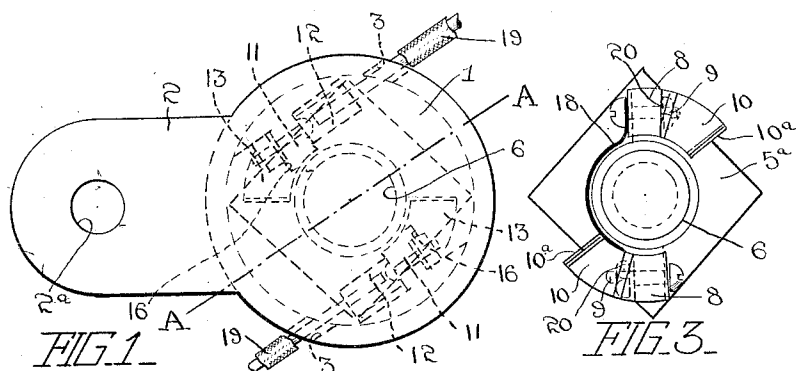
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CUT-OUT INSULATOR

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UNITED STATES PATENT OFFICE.

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CUT-OUT INSULATOR.

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This invention relates to cut-out insulators of the known type wherein a plug fitted with contact terminals and a fuse, is inserted in a body portion in order to electrically connect with each other terminal contacts, to which the ends of an electric line are connected.

The present invention provides an improved cut-out insulator of the type mentioned, the special objects being to provide a cut-out insulator, wherein the plug or fuse carrier is positively and securely held in the body portion by means other than the engagement of the contacts with each other, and also wherein the means for securing the plug in the body portion are such that the plug may be operated to an extent sufficient to break or open the circuit and to avoid arcing, without removing the plug from said body portion.

The invention is especially directed to insulators used on overhead work out of doors, although with modifications, it may be applied to switch boards and elsewhere.

The improved insulator comprises a circular and hollow body portion, closed at the top and open at the bottom, and provided with an extension by means of which it is enabled to be secured to a pole arm or the like.

A circular plug adapted to be inserted in the body portion, is provided with a screw threaded stem, which enters and screws into a screw threaded upper recess in the body portion, for the purpose of positively and securely holding the plug in the body portion, and also of maintaining contact terminals on the plug, connected with each other by a fuse, in engagement with contact terminals secured in the body portion, and electrically connected with the ends of an electric line, in order that the latter will be closed.

When used for outdoor over head work the body portion is provided with tangential holes through which the line ends are connected with the contact terminals in the body portion, while the plug is formed at its lower end so that, if necessary, it may be turned in the body portion by means of a suitable tool, operated from the ground, to break, or to close an electric circuit as required.

In the accompanying drawing, in conjunction with which the invention will be more particularly described,

Figure 1 is a plan view, and
Figure 2 an elevation of the improved insulator,

Figure 3 being a plan view, and
Figure 4 an elevation of the plug, while
Figure 5 is a vertical section of the body portion only on the line A—A Figure 1 and,
Figure 6 is a sectional plan view on the line B—B Figure 5.

The insulator comprises a hollow body portion 1, circular in plan and provided at one side of its upper end with an extension 2, containing a hole 2^a, through which the insulator may be secured, by a U bolt, strap, or other suitable means to a pole arm or elsewhere.

About midway of its height, the body portion 1 is provided at diametrically opposite points with tangential holes 3 which open into the interior of the body portion, and also through the outer surface thereof, while a horizontal groove 4, is formed in and right around the outer surface of the body portion 1, and the extension 2.

A plug 5 having a lower handle portion 5^a is provided with a screw threaded stem 6 adapted to be screwed into an upper central and screw threaded recess 7 in the body portion for the purpose of holding the plug 5 securely within the latter.

The plug 5 has formed on the upper end of the handle portion 5^a, upward projections or blocks 8 integral with said handle and located at diametrically opposite points thereon, said projections or blocks 8 having screwed thereon by screws and nuts 9 passing through the latter, contact terminals 10 shaped to conform to the curve of the plug 5.

Each contact terminal 10 consists of a strip of suitable conducting metal, doubled and bent to pass vertically down one side of a projection or block 8, and to incline upwards from and over the latter, the underneath portion of the doubled strip having an upturned end 10^a whereas the upper portion of said doubled strip is designed to serve as a spring member and has an upward projection or rib 20 thereon.

The interior of the body portion 1 is provided at the top with downward projections or blocks 11, the latter being integral with the body portion 1 and at diametrically opposite points therein, and also opposite the tangential holes 3.

Each projection or block 11 has secured to its vertical side facing a hole 3, a terminal 12, the latter consisting of a socket, from which there projects downwards a contact 13 having an upturned end 13^a, and shaped to

conform to the curve of the body 1, said contact 13 also having a recess 21 in its under side.

Each terminal 12 and contact 13 is secured to a projection or block 11 by a screw 14 passed through the terminal 12 and projection or block 11, and entered in a nut 15 at the opposite side of said block and prevented from turning by a rib 16 thereon, while the screw 14 is tightened or screwed up, by means of a screw driver or other suitable tool, inserted in the hole 3, and terminal 12. Each terminal 12 is also provided with a screw 17 for securing the bared end of a wire therein.

In use the contact terminals 10 of the plug 5 are connected with each other by a fuse wire 18, and the bared ends of a line 19 are passed one through each of the holes 3 in the body portion 1 and inserted in the terminals 12 of the latter, where they are secured by the screws 17, access to the latter being had through the open bottom of the body portion 1.

If the insulator is being used in connection with the junction of a branch line with a main line, an end of the "tap off" from the latter is passed in through one hole 3, and secured in a terminal 12, while the branch line, after being looped around the groove 4 of the insulator and secured thereto so that the latter takes the strain of the branch, has its end passed inwards through the other hole 3 and secured in the terminal 12 opposite same, the wire ends for connection to the terminals 12, being in all cases secured therein before the plug 5 is inserted in the body portion 1.

The plug 5 with the fuse 18 thereon is then screwed upwards into the body portion 1 until the contact terminals 10 engage the contacts 13, see dotted portion (Figure 5), the turned up ends 10^a of the former when engaging the terminals 13, acting as stops and preventing further turning movement of the plug 5 in the body portion 1, once proper contact has been established between said contact terminals 10 and the contacts 13. Further, upon the contact terminals 10 properly engaging the contacts 13, the ribs or projections 20 enter or spring into the recesses 21 and provide a slight lock between said contact terminals 10 and the contacts 13.

The contact terminals 10 and fuse 18 therefore bridge or connect the contacts 13, and complete the electrical line through the insulator.

The handle 5^a or lower portion of the plug 5, is made square or flatsided to fit into a correspondingly formed socket secured

on a pole by means of which the plug 5 can be screwed into, or out of the body portion 1.

The screw thread on the spindle 6 is made quick acting, so as to ensure clean and sharp "making" and "breaking" or closing and opening of the circuit by the movement of the contact terminals 10, said thread being formed with a pitch so that approximately one complete turn of the plug 5 will ensure a clean break, thus preventing "arcing".

Also by making the stem 6 long enough, and the recess 7, to suit, it is possible to unscrew the plug 5 a distance sufficient to prevent "arcing" across the contacts without removing the plug 5 from the body portion, thereby enabling the "cut out" to be operated in the case of overhead insulators, from the ground by means of a tool of sufficient length, and without removing the plug 5 from the body portion 1.

The body portion 1 and plug 5 are formed of any suitable nonconducting material, preferably porcelain, while the contacts and terminals fitted thereto are of copper, brass, or other suitable conducting material.

What I do claim and desire to obtain by Letters Patent of the United States of America is:—

1. A cut-out insulator of the character described including a partially hollow body portion provided with an inwardly extending screw threaded recess communicating with the hollow portion, a screw threaded plug for adjustable engagement with the recess and having a handle, and opposed contact terminals projecting laterally from the plugs and hollow body portion, and positioned so that upon the rotation of the handle the terminals on the plug will either engage or disengage the terminals in the body portion, substantially as and for the purposes set forth.

2. A cut-out insulator according to claim 1 wherein opposed blocks are formed integral with the plug and hollow body portion and have the plug and body portion contact terminals secured thereto.

3. A cut-out insulator according to claim 1 wherein the plug contact terminals comprise doubled strips of metal forming a vertical attaching portion and a laterally extending portion curved to conform to the shape of the plug, the upper lateral portion of each doubled strip constituting a spring member while the lower lateral portion has one end upturned to form a stop when engaging a contact terminal in the body portion.

In testimony whereof I affix my signature.

THOMAS BAILEY.