

Aug. 11, 1936.

G. P. EDMONDS

2,050,294

POTHEAD DEVICE

Filed Jan. 17, 1931

2 Sheets-Sheet 1

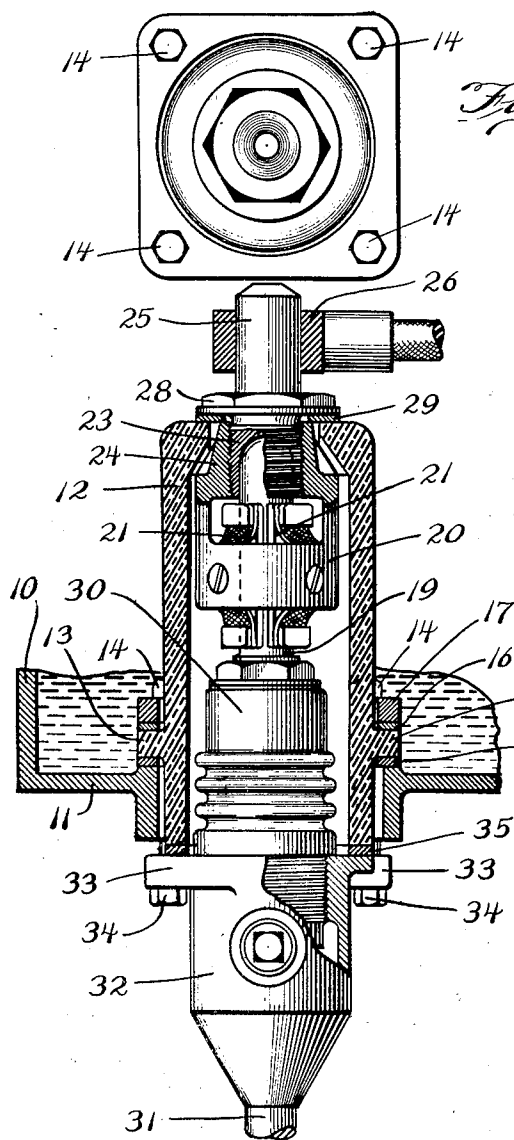


Fig. 1.

Fig. 2.

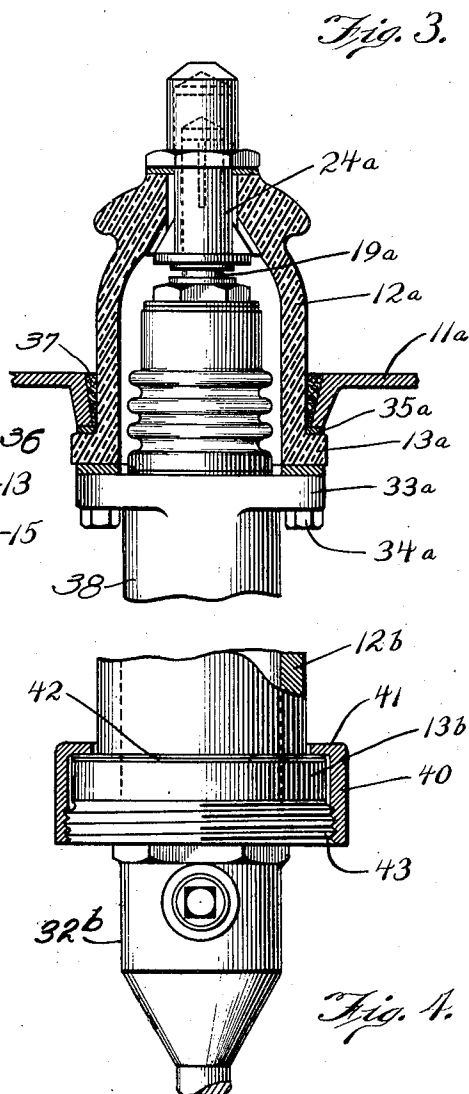


Fig. 3.

Fig. 4.

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Fig. 5.

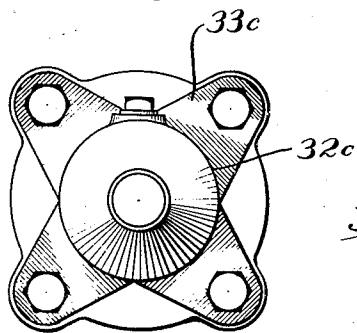
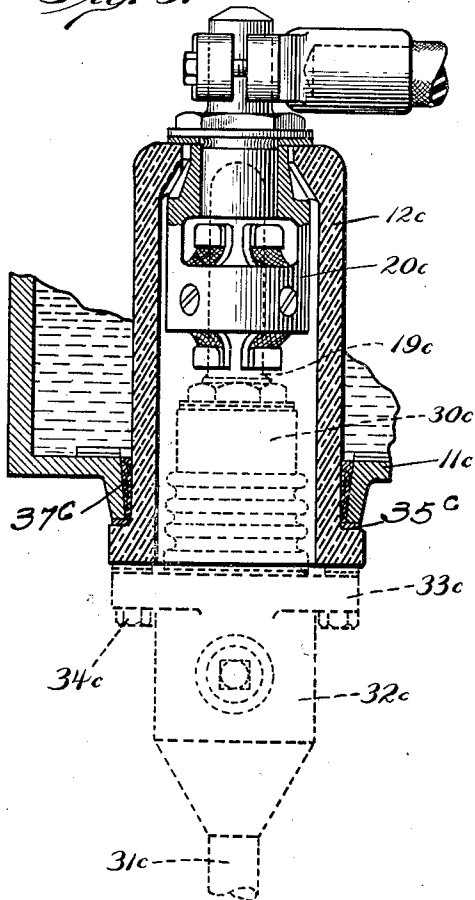


Fig. 6.

Fig. 7.

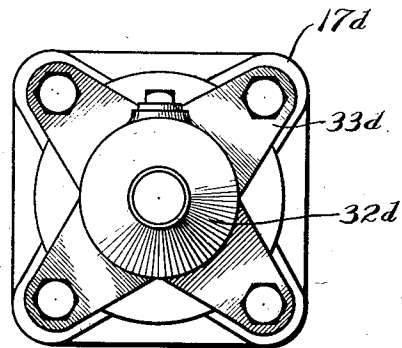
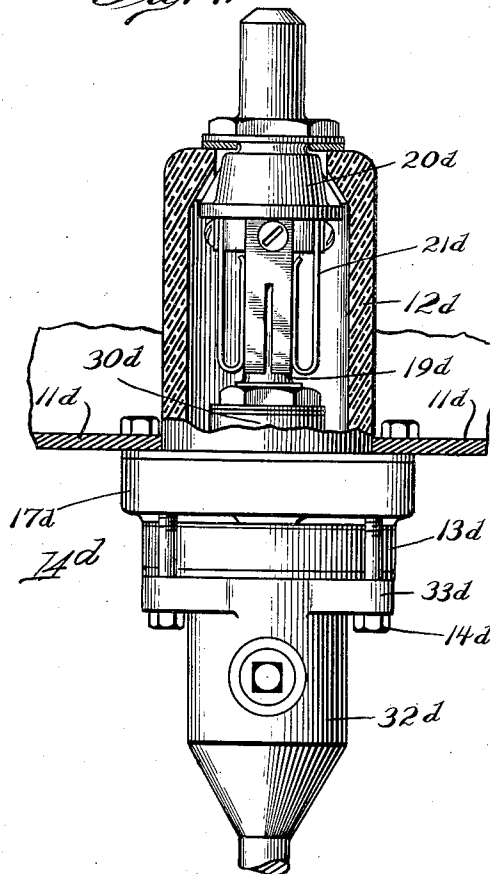


Fig. 8.

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UNITED STATES PATENT OFFICE

2,050,294

POTHEAD DEVICE

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Application January 17, 1931, Serial No. 509,329

12 Claims. (Cl. 247—6)

This invention relates to electrical conductor connections and more particularly to pothead devices such as are used for the connection of electrical cables in transformers, oil switch and the like.

One of the objects of the invention is to produce a connector device that will be safe to manipulate.

Another object is to provide a connector device that will be easily and quickly connected or disconnected.

Another object is to provide a connector device that will be oil tight and arranged to be connected or disconnected without breaking the fluid seal.

Another object is to provide a connector device that may be connected or disconnected without exposing the live disconnected terminal, so that no damage may result, first drawing the oil or compound or any portion thereof from the container.

These and other objects will be attained and will be pointed out in the claims.

In the drawings—

Fig. 1 is a vertical axial section through the connector device showing it attached to a transformer tank or like device;

Fig. 2 is a plan of the device;

Figs. 3 and 4 are views similar to Fig. 1 but of slightly different form;

Fig. 5 is similar to Fig. 1, showing the device connected to a transformer box in a slightly different manner;

Fig. 6 is a bottom view of the device shown in Fig. 5;

Fig. 7 is a view similar to Fig. 5 but showing different means for attaching the device to a transformer tank; and

Fig. 8 is a bottom view of the device shown in Fig. 7.

Fig. 1 represents what may be understood to be a transformer or switch box or the like at 10, adapted to contain oil or other insulating compound, with a bottom plate or wall 11. Attached to this bottom plate or wall 11 is a hollow bushing 12 usually made of dielectrical material such as porcelain or the like. This bushing has a circumferential flange 13 and is held in position by the ring 17 which accommodates the bolts 14—14 for fastening the bushing 12 to the wall 11. Gaskets 15 and 16 are provided at either side of the flange 13; the gasket 16 is held in position by the ring 17 which is directly under the heads of the bolts 14. This gasket 15 very effectively operates to prevent leakage of the material in the receptacle 10. The bushing is made hollow and of such proportions as to contain a contact device which may be separated as by withdrawing the part 19 from the part 20, the part 20 carrying

contact shoes 21—21 which slidably engage the part 19.

The assembly 20 and 21 is supported and connected by and to the upper part of the bushing 12 by the clamping device, which consists of the exteriorly threaded plug 23 which engages the interiorly threaded portion 24 of the part 20. The plug 23 has an upwardly projecting binding post 25 to which connections such as indicated at 26 are made within the box 10. A flange 28 is provided and arranged to compress a gasket 29 between it and the top at the bushing 12 through which the part 23 enters.

The contact piece 19 is connected to the fitting 30 and forms the terminal of the lead cable indicated at 31. The fitting 30 is screw threaded into the bell-housing 32 which has a bolting flange 33 for the bolts 34 for attaching it to the wall 11 for supporting the cable 31.

The flange 33 also serves to compress a gasket 20 between it and the bottom of the bushing 12.

From the foregoing it will be seen that the disconnection is made by separating the parts 19 and 20, which are well within the interior of the bushing 12 and this bushing will serve to shield the current-carrying part 20 so that no damage or accident may be caused by the otherwise exposed terminal.

It will be further noted that this connection at 19 and 20 may be made or broken without drawing the contents of the fluid contained in the tank 10.

Fig. 3 shows a structure having similar advantages but of slightly different details, mainly in the arrangement of the separable parts, 19^a in this instance being arranged to be inserted in the member 24^a.

The bushing 12^a is inserted through the bottom plate or wall 11^a of the tank. This wall 11^a has a downwardly extending flange 36 which surrounds the bushing 12^a and arranged to receive sealing material such as cement or the like indicated at 37. This bushing has a flange 13^a below or outside of the depending flange 36 and between these two flanges is a compressible element in the form of a gasket or the like indicated at 35^a, which serves to take up strain due to expansion of the wall 11^a and to protect the flange 13^a against breakage. The cable support element 38 has a series of projecting bolting ears 33^a—33^a which accommodate bolts or cap screws 34^a which engage the wall 11^a and assist in holding the parts together; the cement joint 37 is calculated to secure the bushing in position. A gasket between the element 38 and the flange 13^a serves to prevent foreign matter from entering the bushing 12^a.

Fig. 4 shows another manner of securing the hollow bushing 12^b which has a flange 13^b similar to that shown in Fig. 3, but a collar 40 with an 60

inturned flange 41 clamps the flange 13^b and a gasket 42 between it and a screw threaded flange 43 which extends from the fitting 32^b.

Fig. 5 shows a construction similar to Fig. 1 as to the separable parts 19^c and 20^c and similar to the construction shown in Fig. 3 as to the flange 33^c which connects the member 32^c to the bottom plate or wall 11^c. In this figure the removable part is shown in dotted lines to indicate that the cable 31^c and the associated parts 30^c and 32^c are withdrawn from the bushing 12^c by removing the bolts 34^c—34^c and withdrawing the cable terminal 30^c from the bushing. The bushing, in this form is secured in position by the cement indicated at 37^c in a manner similar to that shown in Fig. 3.

Fig. 6 shows the form of the flanges 33^c and the removable bolts 34^c.

Fig. 7 shows a construction common to the other forms in that the contact is made and broken within the bushing 12^d at 19^d and the spring contact members 21^d. The members 21^d are carried by the fitting 26^d and the plug 19^d associated with the removable member 30^d as in the other forms. In this form the bolts or cap screws 14^d—14^d are removed permitting the cable terminal 19^d being withdrawn.

Fig. 8 shows the bolting flange 33^d which is just below the flange 13^d of the bushing 12^d and a flange 17^d which is cemented to the bushing 12^d just above it. The flange 17^d is attached to the bottom plate or wall 11^d and serves to support the bushing 12^d as well as the cable fitting 32^d.

It will be seen that with the arrangement of the bushing and the type of frictional connections shown, the current may be discontinued for making repairs or for any other reason and the part of the connector which is charged with the current will be well within the bushing and safely guarded.

It is to be understood that changes and modifications may be made without departing from the spirit of this invention.

I claim:—

1. A device of the class specified comprising an outer casing, an inner casing inside of the outer casing and passing through the wall of the same, said inner casing having its outer end open to the space outside the outer casing, a circuit making and breaking device inside the inner casing, said device comprising a contact member provided with contacts and arranged at the inner end of said inner casing, said contact member and inner casing end being provided with co-operating shoulders permitting the contact member to make a tight fit with the casing when drawn longitudinally thereof, and a terminal having a threaded end which fits into a threaded socket in said contact member and a nut on said terminal adapted to draw the same and the contact member together when said nut is turned, said nut being arranged outside of the inner end of said inner casing and co-operating with shoulders on the outer side of the inner end of said casing.

2. A device of the class specified comprising an outer casing, an inner casing inside of the outer casing and passing through the wall of the same, said inner casing having its outer end open to the space outside the outer casing, a circuit making and breaking device inside the inner casing, said device comprising a contact member provided with contacts and arranged at the inner end of said inner casing, said contact member

and inner casing end being provided with co-operating shoulders permitting said member to make a tight fit with the casing when drawn longitudinally thereof, a terminal having a threaded end which fits into a threaded socket in said member and a nut on said terminal adapted to draw upon the contact member and casing together when said nut is turned, said nut being arranged outside of the inner end of said inner casing and co-operating with shoulders on the outer side of the inner end of said casing, and the other part of said circuit breaking device comprising a contact piece having a contact adapted to co-operate with the contacts on said contact member, and means for detachably holding said contact piece in position in the inner casing to permit said contact members to close the circuit.

3. A device of the class specified comprising an outer casing, an inner casing inside of the outer casing and passing through the wall of the same, said inner casing having its outer end open to the space outside the outer casing, a circuit making and breaking device inside the inner casing, said device comprising a contact member provided with contacts and arranged at the inner end of said inner casing, said member and inner casing end being provided with co-operating shoulders permitting said member to make a tight fit with the casing when drawn longitudinally of the casing, a terminal having a threaded end which fits into a threaded socket in said contact member and a nut on said terminal adapted to draw upon the contact member against the casing when said nut is turned, said nut being arranged outside of the inner end of said inner casing and co-operating with shoulders on the outer side of said casing, and the other part of said circuit breaking device comprising a contact piece having a contact member adapted to co-operate with the contacts on said contact member, and means for detachably holding said contact piece in position in the inner casing as to permit it to close the circuit, said last mentioned means comprising a terminal housing adapted to receive and make connection with the cable end and also adapted to have said contact piece connected to it before said contact piece is inserted into the open outer end of the inner casing to cause connection to be made between said contact members.

4. A device of the class specified comprising an outer insulating material casing, an inner casing inside the outer casing and passing through the wall thereof, said inner casing having its outer end open to communicate with the space outside the outer casing, a plug and socket make and break device within said inner casing, one member of said device being adapted for removal through the open end of the inner casing while the latter is in position in the outer casing, and means for closing the open end of the inner casing, said means comprising a housing having threaded connection with the removable make and break devices.

5. A device of the class specified comprising an outer casing, an inner casing inside the outer casing and passing through the wall thereof, said inner casing having its outer end open to communicate with the space outside the outer casing, and being separable from the outer casing, a plug and socket make and break device within said inner casing, one member of said device being adapted for removal through the open end of the inner casing while the latter is in position in the

outer casing, means for closing the open end of the inner casing, the inner end of the inner casing being adapted to substantially enclose and shield the plug and socket device left in the inner casing when one of said devices is removed through the open end, and means for making air and water-tight joints between the inner casing and the wall of the outer casing through which the inner casing passes and also between the outer end of the inner casing and said housing, said last mentioned means comprising packing material.

6. In combination, an outer casing adapted to hold a mobile insulating material and having an opening therein, an insulator bushing disposed within said opening and extending into said outer casing and being connected thereto to provide a tight joint preventing loss of said material, a make and break device disposed within said bushing and comprising two members, one of said members being connected adjacent one end of said bushing to provide a tight joint to prevent loss of said material from said casing through said bushing, said bushing having its other end open to communicate with the exterior of said casing to receive the other member of said make and break device.

7. In combination, an outer casing adapted to hold a mobile insulating material and having an opening therein, an insulator bushing disposed within said opening and extending into said outer casing and being connected thereto to provide a tight joint preventing loss of said material, a make and break device disposed within said bushing and comprising two members, one of said members being connected adjacent one end of said bushing to provide a tight joint to prevent loss of said material from said casing through said bushing, said bushing having its other end open to communicate with the exterior of said casing to receive the other member of said make and break device, and a housing operatively connected to said last-named member and connected to the open end of said bushing to close the same and to hold said members in association therewith.

8. In combination, an outer casing adapted to hold a mobile insulating material and having an opening therein, an insulator bushing disposed within said opening and extending into said outer casing and being connected thereto to provide a tight joint preventing loss of said material, a make and break device disposed within said bushing and comprising two members, one of said members being connected adjacent one end of said bushing to provide a tight joint to prevent loss of said material from said casing through said bushing and having a part extending through said casing providing an electrical connection within said casing, said bushing having its other end open to communicate with the exterior of said casing, a cable having the other member of said make and break device operatively connected thereto, a housing operatively connected to said last-named member and cable, and means for securing said housing in closing relation with the open end of said bushing.

9. In combination, an outer casing adapted to hold a mobile insulating material and having an opening therein, an insulator bushing disposed within said opening and extending into said outer casing and being connected thereto to provide a tight joint preventing loss of said material, said bushing having an opening at each end, a make and break device disposed within said bushing

and comprising two members, one of said members being disposed in the opening at the inner end of said bushing and comprising means for drawing said member into cooperative relation with said bushing to provide a tight joint preventing loss of said material from said casing through said bushing, the opening at the other end of said bushing providing for communication with the exterior of said casing, a cable having the other member of said make and break device operatively connected thereto, a housing operatively connected to said last-named member and cable, and means for drawing said housing into closing relation with the open end of said bushing and said members into operative electrical contact.

10. In combination, an outer casing adapted to hold a mobile insulating material and having an opening therein, an insulator bushing disposed within said opening and extending into said outer casing and being connected thereto to provide a tight joint preventing loss of said material, said bushing having an opening at each end, a make and break device disposed within said bushing and comprising two members, one of said members being disposed in the opening at the inner end of said bushing and comprising means for drawing said member into cooperative relation with said bushing to provide a tight joint preventing loss of said material from said casing through said bushing, the opening at the other end of said bushing providing for communication with the exterior of said casing, a cable having the other member of said make and break device operatively connected thereto, a housing operatively and adjustably connected to said last-named member and cable, and means for securing said housing in closing relation with the open end of said bushing.

11. In combination, an outer casing adapted to hold a mobile insulating material and having an opening therein, an insulator bushing disposed within said opening and extending into said outer casing and being connected thereto to provide a tight joint preventing loss of said material, said bushing having an opening at each end, a make and break device disposed within said bushing and comprising two members, one of said members being disposed in the opening at the inner end of said bushing and comprising means for drawing said member into cooperative relation with said bushing to provide a tight joint preventing loss of said material from said casing through said bushing, the opening at the other end of said bushing providing for communication with the exterior of said casing, a cable having the other member of said make and break device operatively connected thereto, a housing operatively and adjustably connected to said last-named member and cable, and means for drawing said housing into closing relation with the open end of said bushing and said members into operative electrical contact.

12. A device of the class specified comprising an outer insulator material casing, an inner casing inside the outer casing and passing through the wall thereof, said inner casing having its outer end open to communicate with the space outside the outer casing, a plug and socket make and break device within said inner casing, one member of said device being adapted for removal through the open end of the inner casing while the latter is in position in the outer casing, and means for closing the open end of the inner casing.

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