

Sept. 3, 1929.

D. R. DAVIES

1,726,656

TRUCK TYPE CIRCUIT BREAKER

Filed July 2, 1925

2 Sheets-Sheet 1

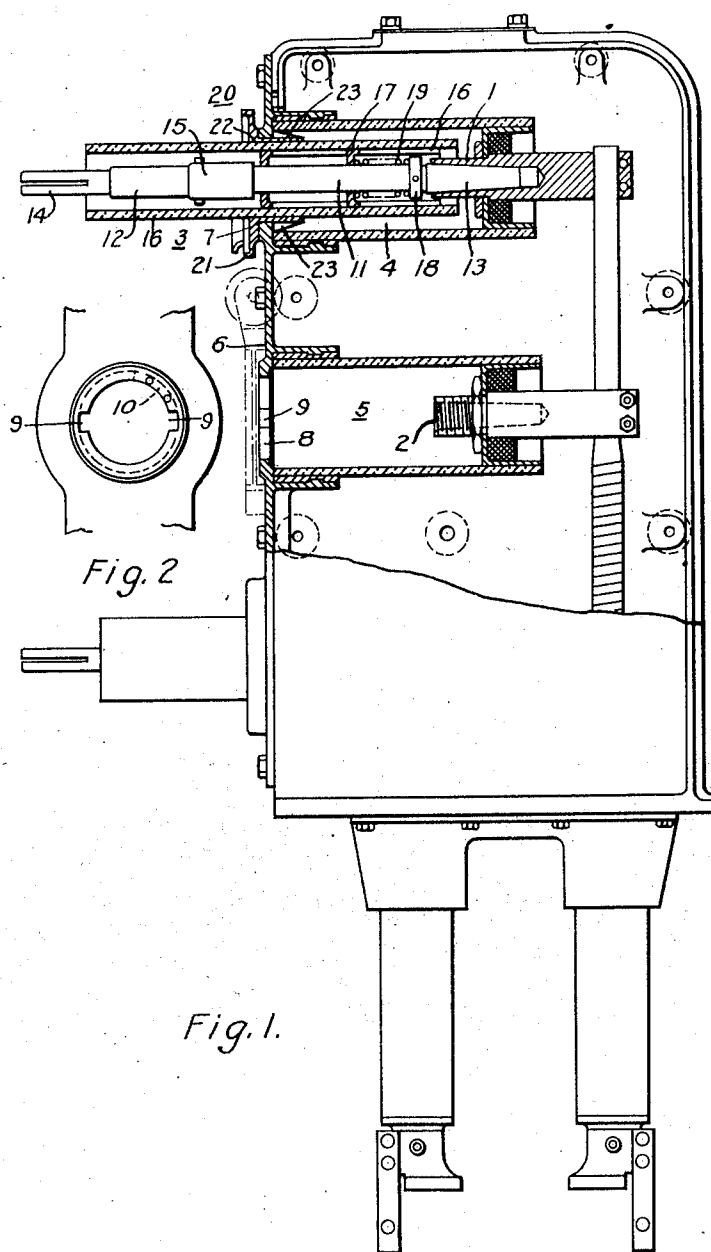


Fig. 1.

WITNESSES:

Frederick C. Williams
J. H. Kendrick

INVENTOR

David R. Davies

BY

Wesley G. Gair
ATTORNEY

Sept. 3, 1929.

D. R. DAVIES

1,726,656

TRUCK TYPE CIRCUIT BREAKER

Filed July 2, 1925

2 Sheets-Sheet 2

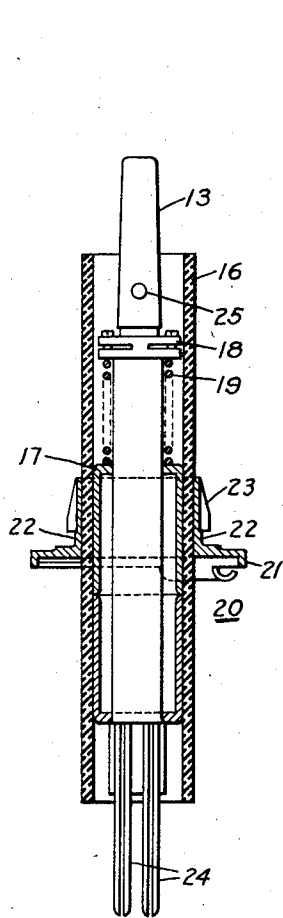


Fig. 3

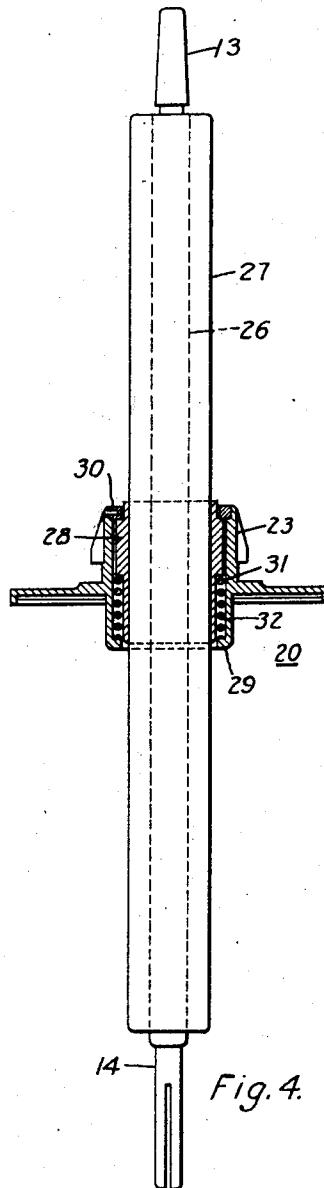


Fig. 4

WITNESSES:

Fred. C. Williams
J. H. Hendley

INVENTOR

David R. Davies

BY

Wesley G. Carr
ATTORNEY

UNITED STATES PATENT OFFICE.

DAVID REGINALD DAVIES, OF STRETFORD, ENGLAND, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

TRUCK TYPE CIRCUIT BREAKER.

Application filed July 2, 1925, Serial No. 41,014, and in Great Britain July 5, 1924.

This invention relates to electrical switch gear of the kind which comprises two or more separable portions the respective devices in which are adapted to be electrically connected together or disconnected by means of plug and socket contact members which are caused to engage or disengage one another when one portion of the switch gear is moved towards or drawn out from the other. Thus, for example, said plugs may constitute isolating switches for a circuit-breaker which may be mounted on one of the portions of the gear.

According to the present invention, a plug for use in switch gear of the kind above referred to is so constructed as to permit movement of the contact portions thereof independently of the flange or the like, by means of which it is held in position in one portion of the switch gear when the other portion of the gear is separated therefrom and in order that the end of the plug shall make good electrical contact with the socket in which it is received, a spring is provided between said flange or the like and the portion of the plug constituting the contact member.

Usually, the plug is enclosed within an extended bushing and the spring may be included between the bushing and the flange by means of which the plug is secured to the switch gear. The plug is preferably provided with a tapered contact member which is adapted to be received in a corresponding socket provided in that portion of the switch gear in which the plug is first attached and the other end of the plug may be either cylindrical or in some cases, provided with a flat or knife blade contact member which is received in a corresponding socket in the other portion of the switch gear when the two portions are brought together. In either case, the end of the plug which is last to be engaged in the socket may be flexibly connected to the other part of the plug according to a well known practice.

In order that the invention may be clearly understood and readily carried into practice, reference will now be made to the accompanying drawings which illustrate by way of example a part of one of the separable portions of a switch-gear of the draw-out type and several plug contact members constructed in accordance therewith.

Fig. 1 is an elevation view partly sectional of the draw-out portion of the switch-gear including one plug contact member constructed in accordance with the invention, 55

Fig. 2 is a detail view of the construction illustrated by Fig. 1, and 60

Figs. 3 and 4 are sectional elevation views illustrating other constructions of plug contact members in accordance with the invention.

Referring first to Figs. 1 and 2 the switch-gear here in part illustrated is of the well known type hereinbefore referred to comprising sets of socket contact members 1 and 2 in the draw-out portion of the switch-gear, corresponding to socket contact members in the other portion of the gear-switch (not shown), and a plug contact member 3 in the socket 1 by which alternative connections can be established with either socket 1 or socket 2 as desired. 75

The socket contact members 1 and 2 are located in housings 4 and 5 which are covered by a grid or cover plate 6, a portion of which is shown in elevation in Fig. 2, having openings 7 and 8 therein in axial alignment with the housings 4 and 5 respectively. In the periphery of each of these openings are diametrically opposed slots 9 and adjacent to at least one slot of each opening is a stop 10 (Fig. 2), the structure thus formed constituting a bayonet socket. 85

Each plug contact member 3 comprises a central spindle consisting of two parts 11 and 12 carrying respectively the tapered and bifurcated portions 13 and 14 and united in known manner by a flexible coupling 15. Surrounding the major portion of the central spindle is a bushing 16 of insulating material in which is rigidly secured a sleeve 17 which is slidable upon the part 11. Between the sleeve 17 and a collar 18 fast on the part 11, is a spring 19. Surrounding and rigidly secured to the bushing 16 is a structure 20 comprising a flange or hand-grip 21, a neck 22 slightly smaller in diameter than the openings 7 and 8, and diametrically opposed teeth or projections 23 which are adapted to register with the slots 9. 90 95 100

With this construction, when a plug is inserted in one of the contact sockets 1 or 2, the teeth or projections 23 are passed through the slots 9 and are then turned to 105

the right by means of the flange or hand-grip 21 until one of the teeth abuts against the stop 10. As the action of passing the teeth 23 through the slots 9 compresses the spring 19, when the hand-grip 21 is released, the spring holds the teeth 23 frictionally in contact with the back of the plate 6 and thereby prevents displacement of the plug contact member and also forces the tapered portion 13 into contact with the socket 1 or 2. The contact portion 13 being connected to the bushing 16 through the spring, a good mechanical hold is provided between the plug and its socket notwithstanding slight inaccuracies in machining or assembly.

In the plug contact illustrated in Fig. 3, the central spindle is in one piece with a tapered contact portion 13 at one end and a pair of knife-blade contact members 24 are provided at the other end, a pin 25 being also provided in the portion 13 which engages a slot (not shown) in the socket within which the plug is received so as to ensure that when the plug is in position in a socket in one portion of the switch gear the contact members 24 will be in a proper position to engage their cooperating contact members in the other portion of the switch gear. Otherwise, the contact member illustrated in Fig. 3 is similar to that illustrated in Fig. 1, corresponding parts in these two figures being indicated by similar reference numerals.

The plug contact member illustrated in Fig. 4 differs from those previously described primarily in that the metallic contact portion is not movable with reference to the insulating bushing. In this construction the central spindle consists of a portion 26 carrying contact members 13 and 14, similar to those in the construction illustrated by Fig. 1 and having a long insulating sleeve 27 secured thereon. Mounted on the exterior of the sleeve 27 is a short sleeve 28 of stepped formation and surrounding this latter sleeve is the structure 20. In this particular construction, however, the structure 20 is provided at opposite ends with inwardly projecting flanges 29 and 30, the latter of which is detachable as shown. Between the flange 29 and the collar 31 which results from the stepped formation of the sleeve 28 is located a spring 32. Apart from the above-mentioned differences, the structure resembles those previously described, corresponding parts being indicated by similar reference numerals and the spring 32 operating in a manner similar to that of the spring 19.

It will be understood that the constructional forms herein described are given by way of illustration or example only and that other forms may readily be devised without exceeding the limits of the invention as defined by the succeeding claims.

I claim as my invention:

1. In a circuit breaker for power circuits, a housing having an electrical terminal mounted therein, a bushing extending through the wall of the housing in alignment with the terminal and having a bayonet-socket connection with the wall of the housing, and a connector disposed in the bushing and having a resilient connection therewith for biasing the connector into engagement with the terminal and for tensioning the bayonet-socket connection.

2. In a circuit breaker for power circuits, a housing having an electrical terminal mounted therein, a bushing extending through the wall of the housing in alignment with the terminal and having a bayonet-socket connection with the wall of the housing, and a connector loosely disposed in the bushing and having a resilient connection therewith for biasing the connector into engagement with the terminal and for tensioning the bayonet-socket connection.

3. In a circuit breaker for power circuits, a housing having an electrical terminal mounted therein, a bushing extending through the wall of the housing in alignment with the terminal and having a bayonet-socket connection with the wall of the housing, and a connector disposed in the bushing, and a coil spring disposed within the bushing and encircling the connector for biasing the connector into engagement with the terminal and for tensioning the bayonet-socket connection.

4. In a circuit breaker for power circuits, a housing having an electrical terminal mounted therein, a bushing extending through the wall of the housing in alignment with the terminal and having a bayonet-socket connection with the wall of the housing, and a connector disposed in the bushing and having a resilient connection therewith, whereby the bushing and conductor may be removed from the housing as a unit upon the manipulation of the bayonet-socket connection.

5. In a circuit breaker for power circuits, a housing having an electrical terminal mounted therein, a bushing extending through the wall of the housing in alignment with the terminal and having a bayonet-socket connection with the wall of the housing, and a connector disposed in the bushing and having a resilient connection therewith, whereby the connector and terminal are brought into engagement upon the insertion of the bushing into the housing and the manipulation of the bayonet-socket connection.

In testimony whereof, I have hereunto subscribed my name this 15th day of June, 1925.

DAVID REGINALD DAVIES.