Dec. 17, 1957 H. J. BARTA 2,816,982

CIRCUIT INTERRUPTER CONSTRUCTION

Filed March 13, 1956 2 Sheets-Sheet 1

Fig. 1A

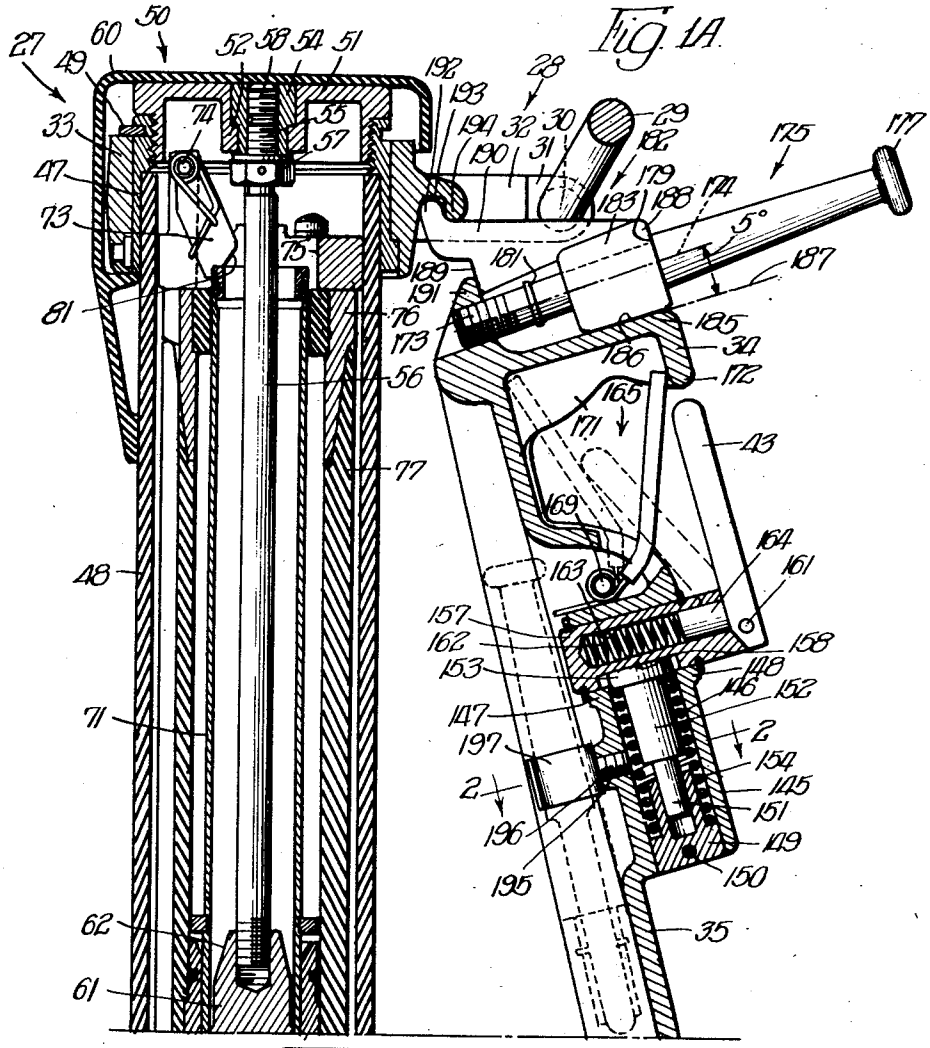
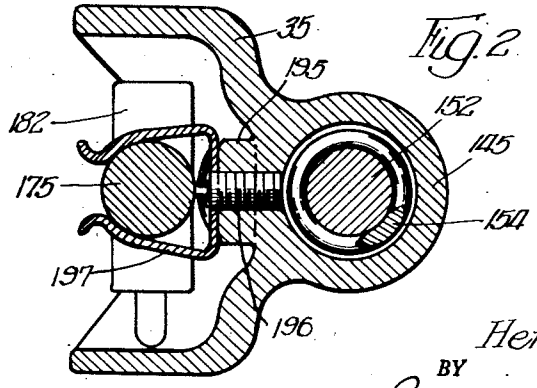


Fig. 2



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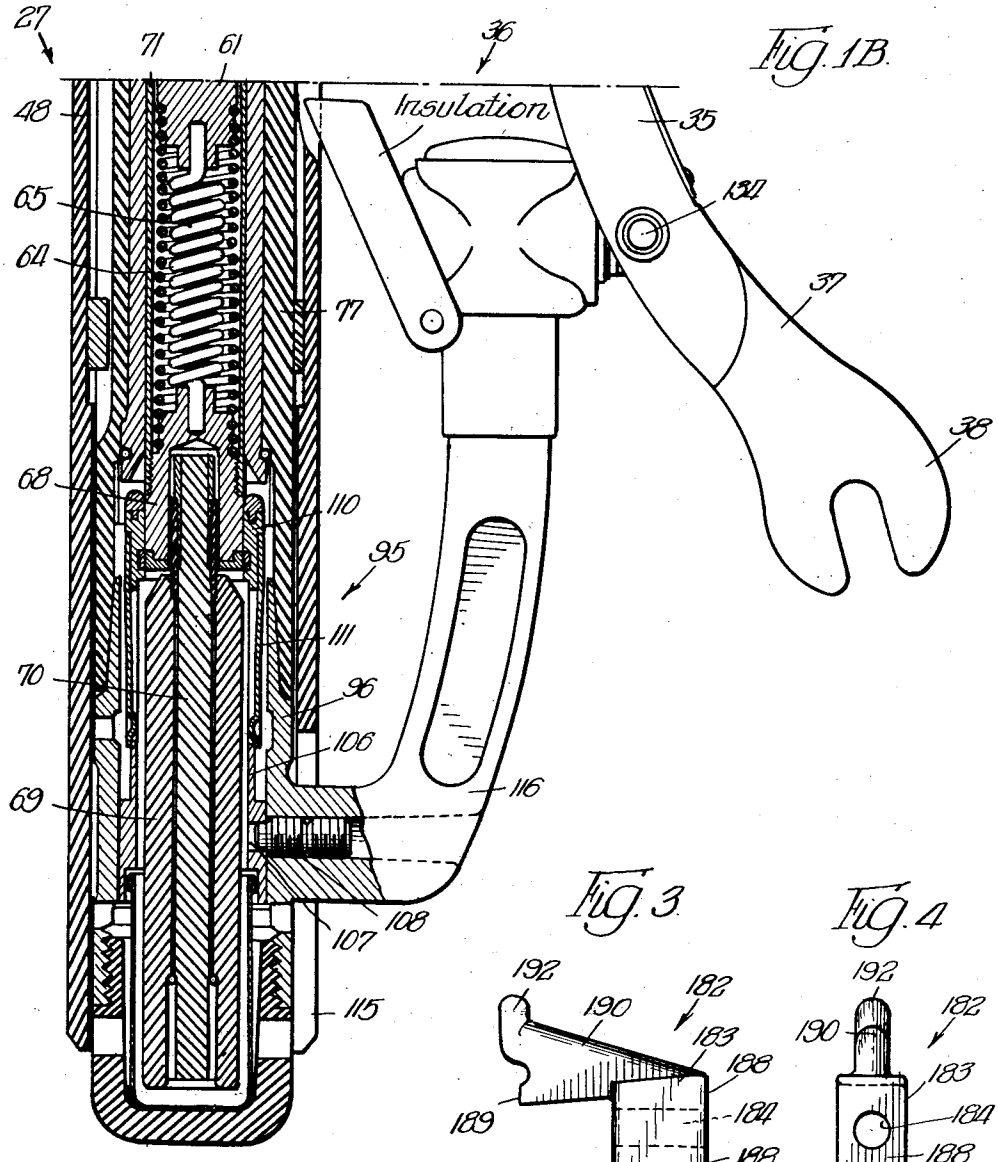


Fig. 1B.

Fig. 3

Fig. 4

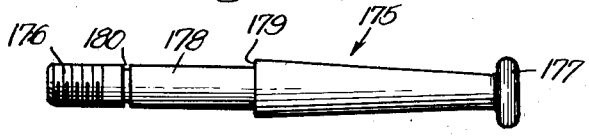


Fig. 5.

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CIRCUIT INTERRUPTER CONSTRUCTION

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Application March 13, 1956, Serial No. 571,285

13 Claims. (Cl. 200—114)

This invention relates, generally, to circuit interrupters and it has particular relation to such devices for operation in conjunction with disconnecting fuses, disconnecting switches and the like for opening them under load without drawing an external arc and for operating such devices to the closed circuit position. This invention is an improvement over the inventions of Lindell Patent Nos. 2,671,142 and 2,671,145, both issued March 2, 1954, and Lindell application Serial Nos. 412,182, filed February 24, 1954, 493,083, filed March 9, 1955, and 569,909 filed March 6, 1956.

Among the objects of this invention are: To provide improved means for interconnecting the auxiliary circuit interrupter and the strut on which it is flexibly mounted to the end that they can be manipulated as a unit with a rigid connection therebetween; to employ the spring of the auxiliary circuit interrupter that separates its contacts for maintaining the rigid connection; to prevent a flexibly mounted auxiliary circuit interrupter from swinging away from a manipulating pin that is employed for independently operating a disconnecting fuse, disconnecting switch or the like; to detachably mount the connecting means on the strut; to provide a wedging action between the connecting means and the strut for rigidly securing the former to the latter; and to store the connecting means on the strut when not in use.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed in the embodiment thereof shown in the accompanying drawings and it comprises the features of construction, combination of elements and arrangement of parts that will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of this invention reference can be had to the following detailed description, taken together with the accompanying drawings, in which:

Figure 1A is a vertical sectional view of an auxiliary circuit interrupter in which the present invention is embodied, the upper portion thereof being shown in this figure;

Figure 1B is the complementary view to Figure 1A and should be positioned therebelow to complete the illustration;

Figure 2 is a sectional view taken generally along the line 2—2 of Figure 1A;

Figure 3 is a view, in side elevation, of the hook member which forms a part of the means for rigidly interconnecting the strut and the auxiliary circuit interrupter;

Figure 4 is a view, in end elevation, of the hook member shown in Figure 3; and

Figure 5 is a view, in side elevation, of the manipulating pin which forms another part of the connecting means.

Since the interconnecting means of the present invention is embodied in the circuit interrupter construction described in more detail in application Serial No. 569,909 filed March 6, 1956, the same reference characters will

be used herein as are used in that application for the same elements insofar as is necessary for an understanding of the nature and operation of the present invention. Higher numbered reference characters will be used in connection with the elements added herein which are not present in the application just referred to.

Referring now particularly to Figures 1A and 1B of the drawings, it will be observed that the reference character 27 designates, generally, an auxiliary circuit interrupter which is adapted for operation in conjunction with a disconnecting fuse or a disconnecting switch for opening the same under load without the formation of an unconfined arc. Since a description of such a disconnecting device is set forth in detail in the application last referred to above, it will not be repeated here.

Near its upper end the auxiliary circuit interrupter 27 is provided with an eye member or pull ring, shown generally at 28, which includes a bow shaped contact member 29 provided with oppositely extending trunnions 30 rockably mounted between parallel end portions 31 of a pair of arms 32 that are formed integrally with a pull ring 33. The bow shaped contact member 29 is provided for electrical and mechanical engagement with a stud or horn on the disconnecting device. It will be understood, however, that other forms of contact members can be employed such as disclosed in application Serial No. 529,880 filed August 22, 1955, where instead of the bow shaped contact member 29 a single contact arm is provided.

With a view to engaging the pull ring of the disconnecting device for separating the movable contact thereof from the stationary line contact, contact means in the form of a prong 34 is provided at the upper end of a support member or strut 35 on which the auxiliary circuit interrupter 27 is flexibly mounted by a universal joint that is indicated, generally, at 36. The strut 35 has an extension 37 which terminates in a claw bracket 38 that is arranged to cooperate with a mating claw bracket and to be secured detachably thereto by a clamp screw. It will be understood that the cooperating claw bracket is mounted on a suitable fitting that is carried by the upper end of a live line stick which is manipulated by the lineman for maneuvering the auxiliary circuit interrupter 27 into and out of operative position and for operating it in its intended manner.

In order to insure that the prong 34 does not accidentally slip out of the pull ring a rotary keeper 43 is mounted on the upper end of the strut 35 below the prong 34 as shown. The manner in which it is rockably mounted will be described in detail hereinafter.

It will be observed in Figure 1A that the pull ring 33 is telescoped over a pull ring bushing 47 which is secured by suitable adhesive means onto the upper end of a tubular insulating housing 48. A crescent snap ring 49 cooperates with the pull ring 33 to hold it in position on the bushing 47. It will be understood that the pull ring 33 and parts mounted thereon together with the bushing 47 and parts carried by it constitute a stationary contact assembly, indicated generally at 50, at the upper end of the tubular insulating housing 48. The assembly includes an end cap 51 that is threaded into the bushing 47 and has a depending hollow boss 52 for receiving a retaining nut 54 that is threaded onto the upper end 55 of a rigid conductor rod 56 which extends downwardly through the housing 48. A lock nut 57 provides a shoulder on the conductor rod 56 against which the retaining nut 54 can be tightened. A locking screw 58 is threaded into the nut 54 to secure the assembly in place thereon. An insulating cap 60 extends over the major portion of the stationary contact assembly 50.

At the lower end of the conductor rod 56 is a cam

terminal 61 having a latch engaging shoulder 62 the purpose of which will be described presently. Connected to the lower end of the cam terminal 61, as shown in Figure 1B, is a spring and cable assembly comprising a coil tension spring 64 and a flexible conductor or cable 65. The spring 64 and cable 65 are shown in slightly stressed and elongated form for a purpose which will be apparent presently.

The spring 64 and conductor 65 are connected at their lower ends to the upper end of a movable first arcing contact 68 to which a trailer 69 is attached by a trailer stud 70. Also attached to the movable first arcing contact 68 is a tubular metallic sleeve 71. The sleeve 71 is movable with the arcing contact 68 and it extends upwardly through the housing 48.

For moving the tubular metallic sleeve 71 downwardly to stress the spring 64 and elongate the cable 65 is a trigger or latch 73 that is pivoted at 74 on a trigger frame 75 which is carried by a metallic inner sleeve end insert 76. The insert 76 is secured in a suitable manner to the upper end of an inner insulating sleeve 77 which is movable outwardly of the insulating housing 48 through its lower end when the auxiliary circuit interrupter 27 is operated to open the disconnecting device with which it may be associated for transferring the flow of load current to it and subsequently opening the circuit therethrough. The lower end 81 of the trigger or latch 73 is arranged to engage the upper end of the metallic sleeve 71 when the inner sleeve 77 is moved downwardly and out of the lower end of the housing 48.

Cooperating with the first arcing contact 68 is a movable contact assembly that is shown, generally, at 95 in Figure 1B of the drawings. The movable contact assembly 95 includes a contact sleeve terminal 96 that is secured to the lower end of the inner insulating sleeve 77 in a suitable manner. Within the contact sleeve terminal 96 is an inner contact sleeve 106 which is provided with a radial opening 107 for receiving a contact locating screw 108 to secure the contact sleeve 106 in a predetermined position within the contact sleeve terminal 96. The inner contact sleeve 106 includes flexible contact fingers 110 which surround and engage the first arcing contact 68 and in effect constitute a second arcing contact. The contact fingers 110 are biased into good contact engagement with the arcing contact 68 by a contact spring 111.

At its lower end the insulating housing 48 is provided with a longitudinally extending slot 115 through which a conducting arm 116 extends. It will be understood that the conducting arm 116 is integral with the contact sleeve terminal 96 and that the contact locating screw 108 is threadedly mounted in its lower end. The conducting arm 116 extends upwardly along the insulating housing 48 and carries the universal joint 36 at its upper end. It will be recalled that the universal joint 36 serves to flexibly mount the auxiliary circuit interrupter 27 on the support member or strut 35. The strut 35 is rockably mounted on the universal joint 36 by means of a pivot pin 134.

At some distance below the upper end of the strut 35 there is a boss 145 which is provided with a longitudinal recess 146 having bearings 147 and 148 near its upper end. At the lower end of the recess 146 is a keeper plunger guide 149 that is secured in position by a transverse pin 150. A stem 151 of a keeper plunger 152 is slidably mounted in the guide 149. The plunger 152 has a head 153 at its upper end and a coil compression spring 154 reacts between the underside of it and the guide 149 for biasing the plunger 152 upwardly. Rockably mounted in the bearings 147 and 148 is a keeper pivot shaft 157 which has a flat cam surface 158 on its under side for engaging the flat upper surface of the head 153. These surfaces in cooperation with the spring 154 cooperate to bias the keeper pivot shaft 157 to the central position as shown in the drawings.

The rotary keeper 43 is rockably mounted on the outer end of the keeper shaft 157 by a transverse pivot pin 161. It is biased to the generally upright position by a coil compression spring 162 which is located in a bore 163 within the shaft 157. The spring 162 reacts against a plunger 164 to bias the keeper 43 to the position shown by full lines.

In order to maintain contact engagement with the pull ring of the disconnecting device a contact finger 165 is employed and it is rockably mounted on a shaft 169 that extends transversely of the strut 35. The upper end of the contact finger 165 is movable in a slot that is formed between walls 171 depending from the sides of the prong and its upper end bears against the inside of a flange 172 depending from its outer end.

The construction thus far described forms a part of the disclosure of copending application Serial No. 569,909 filed March 6, 1956, and for more complete details reference can be had to that application. The added elements for the present invention will be described now.

It is often desirable to provide a rigid connection between the strut 35 and the auxiliary circuit interrupter 27 so that the lineman can manipulate both as a unit without permitting relative movement between the auxiliary circuit interrupter 27 and the strut 35. Such operation is desirable where the lineman desires to employ the strut 35 and the prong 34, or a manipulating pin to be described, for moving a fuse tube or blade of a disconnecting switch to the circuit closed position. Under such operating conditions it is desirable that complete control of the auxiliary circuit interrupter 27 from a mechanical standpoint be provided. Since the auxiliary circuit interrupter 27 is flexibly mounted by the universal joint 36, if it were not restrained under these circumstances, it might swing sufficiently to bridge the insulating gap to ground or to an adjacent energized conductor or conducting part. The construction to be set forth takes care of this problem.

For this purpose a threaded opening 173 is made in the upper end of the strut 35 above the prong 34 with its axis, indicated by the broken line 174, generally at right angles to the length of the strut. A manipulating pin 175 is threaded into the opening 173 and it extends, as shown in Figure 1A, well beyond the prong 34. It has a head 177 at its outer end and is intended for entering the eye or pull ring of a disconnecting fuse or a disconnecting switch for operating the same from one position to another.

In Figure 5 of the drawings the details of construction of the manipulating pin 175 are shown more clearly. It will be observed that it has a reduced diameter portion 178 with a shoulder 179 at one end which faces the strut 35. At the other end of the portion 178 is an annular groove 180 for receiving a snap washer 181 for holding a hook member, shown generally at 182 in Figures 3 and 4 of the drawings, in place on the reduced diameter portion 178. The hook member 182, which may be an aluminum alloy casting, has a body portion 183 provided with an aperture 184 therethrough for receiving the reduced diameter portion 178 of the manipulating pin 175. On its under side the body portion 183 has a flat surface 185 which is parallel to a flat upper surface 186 on the prong 34. It will be observed that the flat under surface 185 and the parallel upper surface 186 of the prong 34 are inclined as indicated by the broken line 187 at an angle to the axis 174. This angle is of the order of 5° and this relationship is provided in order to permit a wedging action between the surfaces 185 and 186 when the body portion 183 is moved toward the strut 35 on engagement of the shoulder 179 with the end 188 of the body portion 183 as the pin 175 is screwed into the threaded opening 173. The movement of the hook member 182 toward the strut 35 is limited, in part by the wedging engagement of the surfaces 185 and 186 and in part by the engagement

of a shoulder 189 on the forward end of an extension 190 from the body portion 183 which engages the tip 191 at the extreme upper end of the strut 35.

The mechanical connection to the auxiliary circuit interrupter 27 is provided by an upwardly extending nose portion 192 that is formed integrally with the extension 190 and is arranged to engage a downwardly opening pocket 193 that is formed in a flange 194 that extends radially from and is formed integrally with the pull ring 33. It will be observed that the flange 194 is positioned intermediate the arms 32 and thus is aligned with the central portion of the bow shaped contact member 29. It will be understood that other forms of contact members can be employed in conjunction with the pull ring 33. For example, the construction shown in application Serial No. 529,880 filed August 22, 1955, can be employed where, instead of the bow shaped contact member 29, a radially extending prong is provided.

It will be understood that the manipulating pin 175 normally is not threaded into the opening 173 as shown in Figure 1A of the drawings except when it is to be used for manipulating purposes and the auxiliary circuit interrupter 27 is to be mechanically connected to the strut 35 so as to operate as a unit therewith. However, it is desirable to retain the manipulating pin 175 in close association with the strut 35 so that it will be available when needed. Accordingly, the under side of the strut 35 intermediate the ends of the boss 145 is provided with an inwardly extending boss 195 which is shown more clearly in Figure 2 of the drawings. A screw 196 threaded into the boss 195 serves to hold a spring clip 197 in position thereon. As here shown the manipulating pin 175 can be stored on the under side of the spring clip 197. Of course, the hook member 182 is stored in this position also since it is non-detachably mounted on the reduced diameter portion 178 as described and is held in position thereon by the snap washer 181.

When it is desired to employ manipulating pin 175, it is removed from the spring clip 197 and is threaded into the opening 173. The hook member 182 is positioned so that the flat under surface 185 is parallel to the flat upper surface 186 of the prong 34. The shoulder 179 engages the end 188 of the hook member 182 and moves the surfaces into wedging engagement and the shoulder 189 against the tip 191. The hook member 182 and the manipulating pin 175 then are rigidly connected to the strut 35.

Next the tubular insulating housing 48 is moved upwardly or the inner insulating sleeve 77 and parts attached thereto are moved downwardly sufficiently to permit the flange 194 to clear the upper end of the nose portion 192. This tensions the spring 64 and extends the cable 65. When the housing 48 is released, the tension of the spring 64 is sufficient to draw the associated parts toward each other and to hold the portion 192 securely in place in the downwardly opening pocket 193. The auxiliary circuit interrupter 27 then is rigidly connected to the strut 35 and the entire assembly can be manipulated as a unit by the lineman as will be understood readily.

Since the auxiliary circuit interrupter 27 can be locked, as described, to the hook member 182 and to the strut 35, the manipulating pin 175 can be used safely to remove a blown fuse, to replace a re-fused fuse tube, to operate a disconnecting switch blade, etc. When the pin 175 engages an energized part and the auxiliary circuit interrupter is closed, the metallic parts of the latter are likewise energized at the same voltage. However, because of the rigid connection to the strut 35, the auxiliary circuit interrupter 27 moves with it as a unit and there is no likelihood of it faulting the circuit as might be the case if it were free to swing about the universal joint 36.

The manipulating pin 175 extends well beyond the prong 34 and can more readily engage the eye of a disconnecting fuse or a disconnecting switch solely for manipulating purposes than can the prong 34. Moreover, it is not hampered in such operation by the keeper 43 which is provided, as described, to insure retention of the prong 34 in a pull ring and good contact therewith when the auxiliary circuit interrupter is used to provide a shunt circuit around the separable contacts of a disconnecting fuse or disconnecting switch for opening the same without arcing.

Since the operation of the auxiliary circuit interrupter 27 for shunting a disconnecting device and opening the circuit without arcing is described in detail in application Serial No. 569,909 filed March 6, 1956, the same will not be repeated here.

Since certain further changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matters shown in the accompanying drawings and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. A circuit interrupter comprising, in combination, a tubular housing having a first conducting means at one end and a sleeve telescoped therein and movable out of the other end, a second conducting means movable with said sleeve out of said other end and connected to said first conducting means by spring biased separable contact means with the spring when stressed acting to bias said sleeve inwardly of said housing, a strut flexibly mounted on said second conducting means and extending toward said first conducting means, and means operatively interconnecting said strut and said tubular housing when the latter is moved away from said sleeve and said spring is stressed to hold said strut and housing unitarily under the biasing action of said spring.

2. A circuit interrupter comprising, in combination, a tubular housing having a first conducting means at one end and a sleeve telescoped therein and movable out of the other end, a second conducting means movable with said sleeve out of said other end and connected to said first conducting means by spring biased separable contact means with the spring when stressed acting to bias said sleeve inwardly of said housing, a strut flexibly mounted on said second conducting means and extending toward said first conducting means, and means constituting a rigid extension of said strut interfitting with said first conducting means when said tubular housing is moved away from said sleeve and said spring is stressed to hold said strut and said conducting means and housing unitarily under the biasing action of said spring.

3. A circuit interrupter comprising, in combination, a tubular housing having a first conducting means at one end and a sleeve telescoped therein and movable out of the other end, a second conducting means movable with said sleeve out of said other end and connected to said first conducting means by spring biased separable contact means with the spring when stressed acting to bias said sleeve inwardly of said housing, a strut flexibly mounted on said second conducting means and extending toward said first conducting means, said tubular housing near said one end having a pocket opening toward said strut, and a nose portion on said strut interfitting with said pocket when said tubular housing is moved away from said sleeve and said spring is stressed to hold said nose portion in said pocket and thereby said strut and housing unitarily under the biasing action of said spring.

4. A circuit interrupter comprising, in combination, a tubular housing having a first conducting means at one end and a sleeve telescoped therein and movable out of the other end, a second conducting means movable with said sleeve out of said other end and connected to said first conducting means by spring biased separable contact means with the spring when stressed acting to bias said sleeve inwardly of said housing, a strut flexibly mounted on said second conducting means and extending toward

said first conducting means, and means detachably mounted on said strut and operatively interconnecting the same and said tubular housing when the latter is moved away from said sleeve and said spring is stressed to hold said strut and housing unitarily under the biasing action of said spring, said detachable means including a manipulating pin rigid with said strut and extending laterally therefrom.

5. A circuit interrupter comprising, in combination, a tubular housing having a first conducting means at one end and a sleeve telescoped therein and movable out of the other end, a second conducting means movable with said sleeve out of said other end and connected to said first conducting means by spring biased separable contact means with the spring when stressed acting to bias said sleeve inwardly of said housing, a strut flexibly mounted on said second conducting means and extending toward said first conducting means, said tubular housing near said one end having a pocket opening toward said strut, a nose portion detachably mounted on said strut and interfitting with said pocket when said tubular housing is moved away from said sleeve and said spring is stressed to hold said nose portion in said pocket and thereby said strut and housing unitarily under the biasing action of said spring and a manipulating pin detachable with said nose portion and rigid with said strut and extending laterally therefrom.

6. A circuit interrupter for opening a high voltage circuit isolating device such as a disconnecting fuse, disconnecting switch or the like, normally carrying line current and having a normally energized terminal contact member and a current carrying member movable into and out of engagement therewith comprising, in combination, a tubular insulating housing having a conducting member secured to its upper end, said conducting member carrying externally extending contact making means for electrical connection to said contact member and having a downwardly opening pocket, an inner insulating sleeve relatively slidably mounted within said housing having a conducting member secured thereto with an externally upwardly extending conducting arm carrying contact making means for electrical connection to said current carrying member including a strut flexibly mounted on the upper end of said arm, said strut having a prong adjacent and spaced from its upper end and extending laterally away therefrom on the side away from said housing, a pair of separable contacts in said sleeve connected respectively to said conducting members, spring means connected to one of said contacts and acting to bias it for movement away from the other contact and to bias said sleeve toward said housing with a force depending upon the extent of relative movement apart of said housing and sleeve, and a hook member detachably mounted on said strut above said prong and having an upwardly extending nose portion interfitting with said pocket under the biasing action of said spring means to hold said strut rigid with said housing.

7. A circuit interrupter for opening a high voltage circuit isolating device such as a disconnecting fuse, disconnecting switch or the like, normally carrying line current and having a normally energized terminal contact member and a current carrying member movable into and out of engagement therewith comprising, in combination, a tubular insulating housing having a conducting member secured to its upper end, said conducting member carrying externally extending contact making means for electrical connection to said contact member and having a downwardly opening pocket, an inner insulating sleeve relatively slidably mounted within said housing having a conducting member secured thereto with an externally upwardly extending conducting arm carrying contact making means for electrical connection to said current carrying member including a strut flexibly mounted on the upper end of said arm, said strut having a prong adjacent and spaced from its upper end and extending laterally away therefrom on the side away from said housing, a pair of separable contacts in said sleeve connected respectively to said conducting members, spring means connected to one of said contacts and acting to bias it for movement away from the other contact and to bias said sleeve toward said housing with a force depending upon the extent of relative movement apart of said housing and sleeve, a manipulating pin detachably mounted on said strut above said prong and extending laterally of the former substantially beyond the latter, and a hook member carried by said pin and having an upwardly extending nose portion interfitting with said pocket under the biasing action of said spring means to hold said strut rigid with said housing and permit manipulation thereof as a unit with said pin.

8. A circuit interrupter for opening a high voltage circuit isolating device such as a disconnecting fuse, disconnecting switch or the like, normally carrying line current and having a normally energized terminal contact member and a current carrying member movable into and out of engagement therewith comprising, in combination, a tubular insulating housing having a conducting member secured to its upper end, said conducting member carrying externally extending contact making means for electrical connection to said contact member and having a downwardly opening pocket, an inner insulating sleeve relatively slidably mounted within said housing having a conducting member secured thereto with an externally upwardly extending conducting arm carrying contact making means for electrical connection to said current carrying member including a strut flexibly mounted on the upper end of said arm, said strut having a prong adjacent and spaced from its upper end and extending laterally away therefrom on the side away from said housing and having an upwardly extending nose portion above said prong interfitting with said pocket, a pair of separable contacts in said sleeve connected respectively to said conducting members, spring means connected to one of said contacts and acting to bias it for movement away from the other contact and to bias said sleeve toward said housing and said nose portion into said socket with a force depending upon the extent of relative movement apart of said housing and sleeve to hold said strut and housing unitarily, a manipulating pin detachably mounted on said strut above said prong and extending laterally of the former substantially beyond the latter, and means secured to said strut and extending therefrom toward said housing for detachably receiving said pin.

9. A circuit interrupter for opening a high voltage circuit isolating device such as a disconnecting fuse, disconnecting switch or the like, normally carrying line current and having a normally energized terminal contact member and a current carrying member movable into and out of engagement therewith comprising, in combination, a tubular insulating housing having a conducting member secured to its upper end, said conducting member carrying externally extending contact making means for electrical connection to said contact member and having a downwardly opening pocket adjacent said housing and aligned with said contact making means, an inner insulating sleeve relatively slidably mounted within said housing having a conducting member secured thereto with an externally upwardly extending conducting arm carrying contact making means for electrical connection to said current carrying member including a strut flexibly mounted on the upper end of said arm, said strut having a prong adjacent and spaced from its upper end and extending laterally away therefrom on the side away from said housing and having a threaded opening above and generally parallel to said prong, said prong having a flat surface on its upper side inclined at an angle away from the axis of said threaded opening, a pair of separable contacts in said sleeve connected respectively to

said conducting members, spring means connected to one of said contacts and acting to bias it for movement away from the other contact and to bias said sleeve toward said housing with a force depending upon the extent of relative movement apart of said housing and sleeve, a manipulating pin screwed into said threaded opening and extending laterally of said strut substantially beyond said prong, a hook member mounted on said pin and having a flat under surface parallel to said flat surface on said prong for wedging engagement therewith, means cooperating with said pin to move said hook member into said wedging engagement, said hook member also having an upwardly extending nose portion at its inner end interfitting with said pocket under the biasing action of said spring means to hold said strut rigid with said housing and permit manipulation thereof as a unit with said pin.

10. A circuit interrupter for opening a high voltage circuit isolating device such as a disconnecting fuse, disconnecting switch or the like, normally carrying line current and having a normally energized terminal contact member and a current carrying member movable into and out of engagement therewith comprising, in combination, a tubular insulating housing having a conducting member secured to its upper end, said conducting member carrying externally extending contact making means for electrical connection to said contact member and having a downwardly opening pocket adjacent said housing and aligned with said contact making means, an inner insulating sleeve relatively slidably mounted within said housing having a conducting member secured thereto with an externally upwardly extending conducting arm carrying contact making means for electrical connection to said current carrying member including a strut flexibly mounted on the upper end of said arm, said strut having a prong adjacent and spaced from its upper end and extending laterally away therefrom on the side away from said housing and having a threaded opening above and generally parallel to said prong, said prong having a flat surface on its upper side inclined at an angle away from the axis of said threaded opening, a pair of separable contacts in said sleeve connected respectively to said conducting members, spring means connected to one of said contacts and acting to bias it for movement away from the other contact and to bias said sleeve toward said housing with a force depending upon the extent of relative movement apart of said housing and sleeve, a manipulating pin screwed into said threaded opening and extending laterally of said strut substantially beyond said prong, said pin having a reduced diameter portion overlying said flat surface of said prong and a shoulder facing said strut near the outer end of said prong, a hook member loosely mounted on said reduced diameter portion of said pin, said hook member being engageable at its outer end by said shoulder on said pin and having a flat under surface parallel to said flat surface on said prong for wedging engagement therewith and a shoulder at its inner end for engaging said strut at its upper end, said hook member also having an upwardly extending nose portion at its inner end interfitting with said pocket under the biasing action of said spring means to hold said strut rigid with said housing and permit manipulation thereof as a unit with said pin.

11. A circuit interrupter for opening a high voltage circuit isolating device such as a disconnecting fuse, disconnecting switch or the like, normally carrying line current and having a normally energized terminal contact member and a current carrying member movable into and out of engagement therewith comprising, in combination, a tubular insulating housing having a conducting member secured to its upper end, said conducting member carrying externally extending contact making means for electrical connection to said contact member and having a downwardly opening pocket adjacent said housing and aligned with said contact making means, an inner insulating sleeve relatively slidably mounted within said housing having a conducting member secured thereto with an externally upwardly extending conducting arm carrying contact making means for electrical connection to said current carrying member including a strut flexibly mounted on the upper end of said arm, said strut having a prong adjacent and spaced from its upper end and extending laterally away therefrom on the side away from said housing and having a threaded opening above and generally parallel to said prong, said prong having a flat surface on its upper side inclined at an angle away from the axis of said threaded opening, a pair of separable contacts, in said sleeve connected respectively to said conducting members, spring means connected to one of said contacts and acting to bias it for movement away from the other contact and to bias said sleeve toward said housing with a force depending upon the extent of relative movement apart of said housing and sleeve, means for releasing said one contact for movement under the influence of said spring means when said sleeve has been moved relatively away from said housing to a given position, a manipulating pin screwed into said threaded opening and extending laterally of said strut substantially beyond said prong, said pin having a reduced diameter portion overlying said flat surface of said prong and a shoulder facing said strut near the the outer end of said prong, a hook member loosely mounted on said reduced diameter portion of said pin, said hook member being engageable at its outer end by said shoulder on said pin and having a flat under surface parallel to said flat surface on said prong for wedging engagement therewith and a shoulder at its inner end for engaging said strut at its upper end, said hook member also having an upwardly extending nose portion at its inner end interfitting with said pocket under the biasing action of said spring means to hold said strut rigid with said housing and permit manipulation thereof as a unit with said pin, and a spring clip secured to said strut and extending therefrom toward said housing for detachably receiving said pin and therewith said hook member.

12. A circuit interrupter comprising, in combination, a tubular housing having a first conducting means at one end and a sleeve telescoped therein and movable out of the other end, a second conducting means movable with said sleeve out of said other end and connected to said first conducting means by spring biased separable contact means with the spring when stressed acting to bias said sleeve inwardly of said housing, a strut flexibly mounted on said second conducting means and extending toward said first conducting means, means extending laterally from said strut and away from said tubular housing for engaging an operating member of a circuit disconnecting device, and means operatively interconnecting said strut and said tubular housing when the latter is moved away from said sleeve and said spring is stressed to hold said strut and housing unitarily under the biasing action of said spring.

13. A circuit interrupter comprising, in combination, a tubular housing having a first conducting means at one end and a sleeve telescoped therein and movable out of the other end, a second conducting means movable with said sleeve out of said other end and connected to said first conducting means by spring biased separable contact means with the spring when stressed acting to bias said sleeve inwardly of said housing, a strut flexibly mounted on said second conducting means and extending toward said first conducting means, a prong formed integrally with said strut and extending laterally away therefrom and away from said tubular housing for engaging and making electrical contact with an operating member of a circuit disconnecting device, a manipulating pin detachably mounted on said strut and extending laterally substantially beyond said prong for engaging said operating member solely for moving the same, and means op-

eratively interconnecting said strut and said tubular housing when the latter is moved away from said sleeve and said spring is stressed to hold said strut and housing unitarily under the biasing action of said spring.

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