May 9, 1933. A. RAMSEY 1,907,580

DISCONNECTING FUSE MOUNTING

Filed May 31, 1929 3 Sheets-Sheet 1

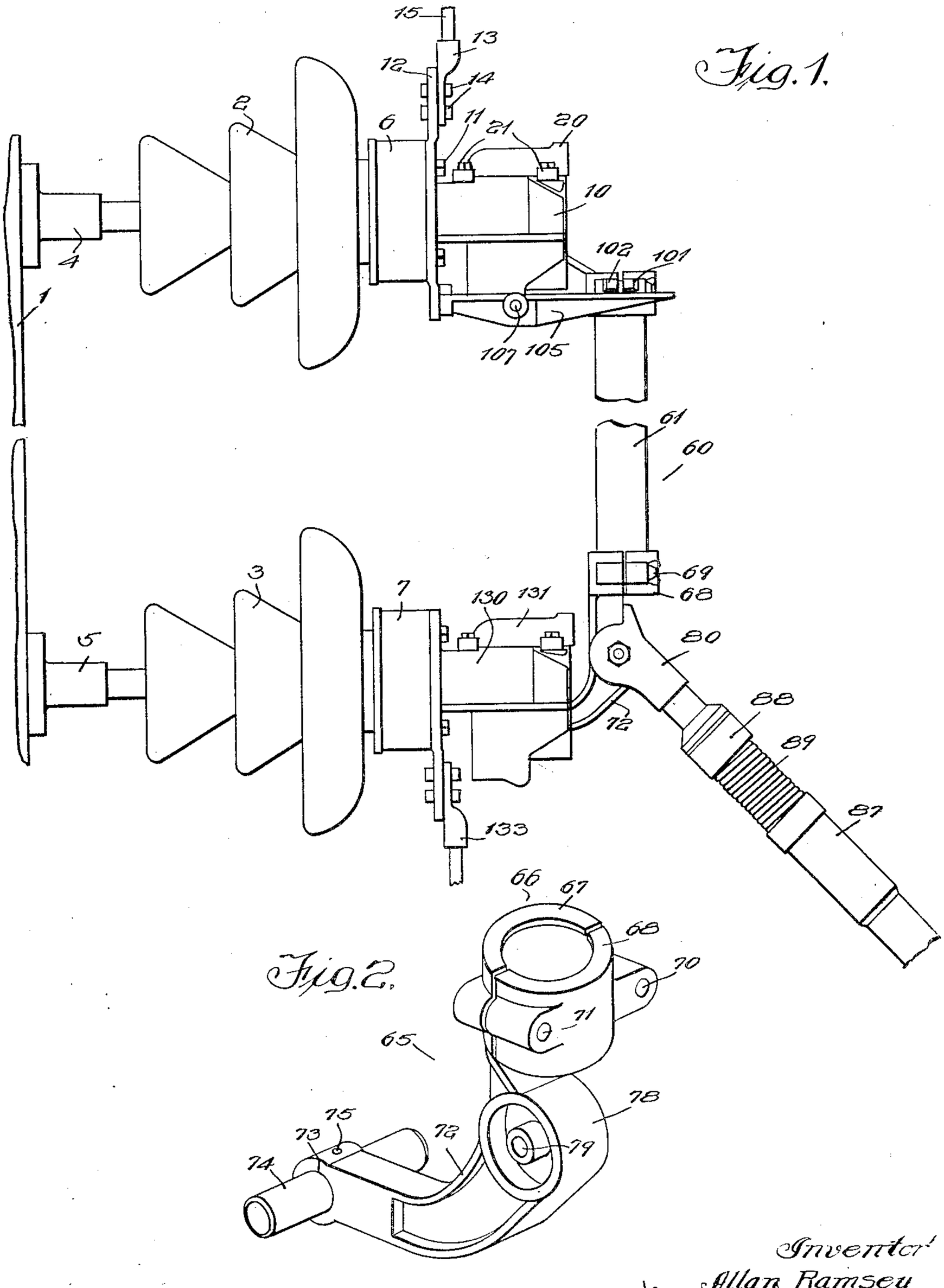

Fig. 1.

Fig. 2.

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Fig. 4.

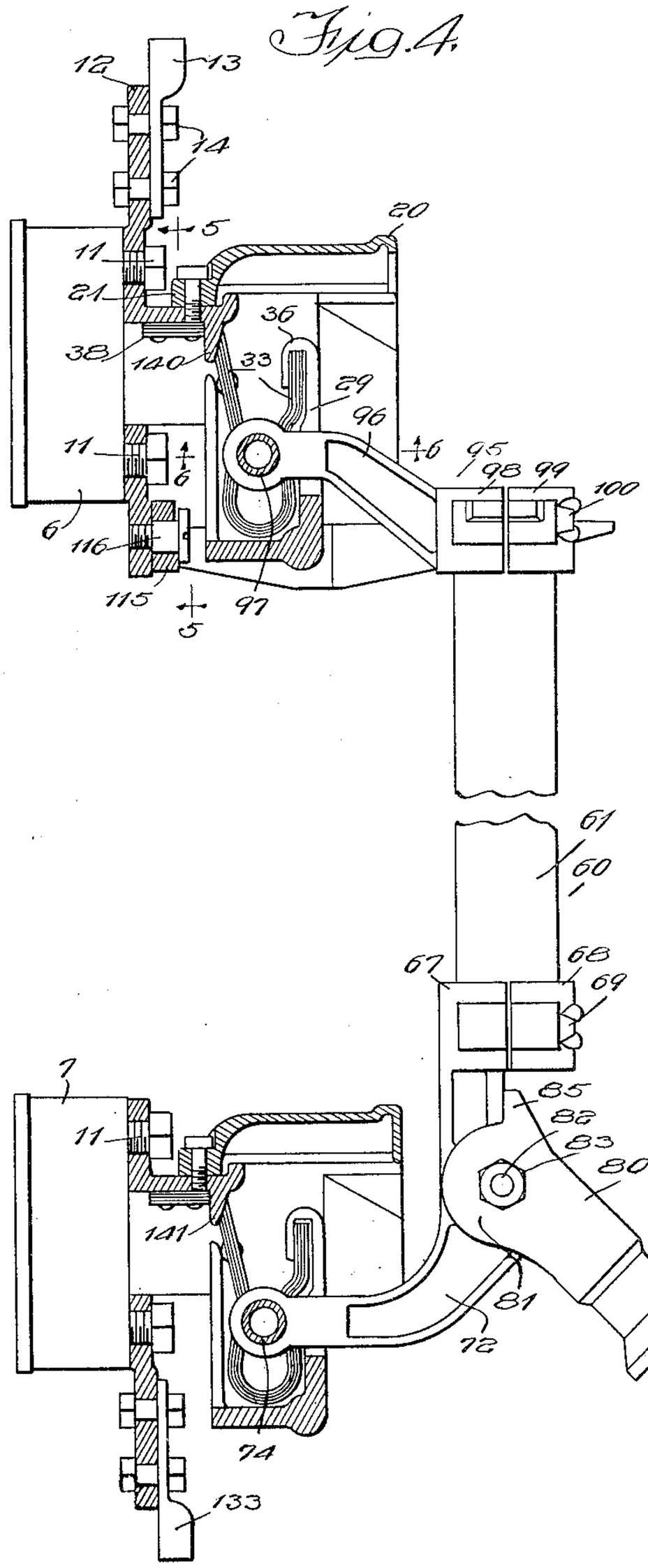
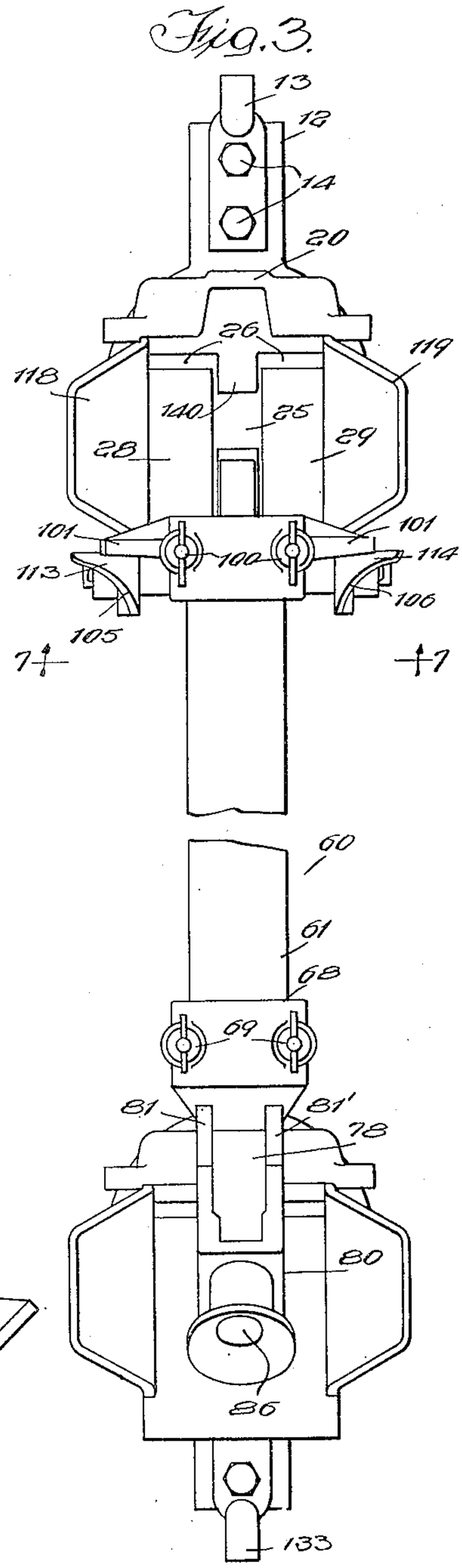


Fig. 3.



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Filed May 31, 1929 3 Sheets-Sheet 3

Fig. 7.

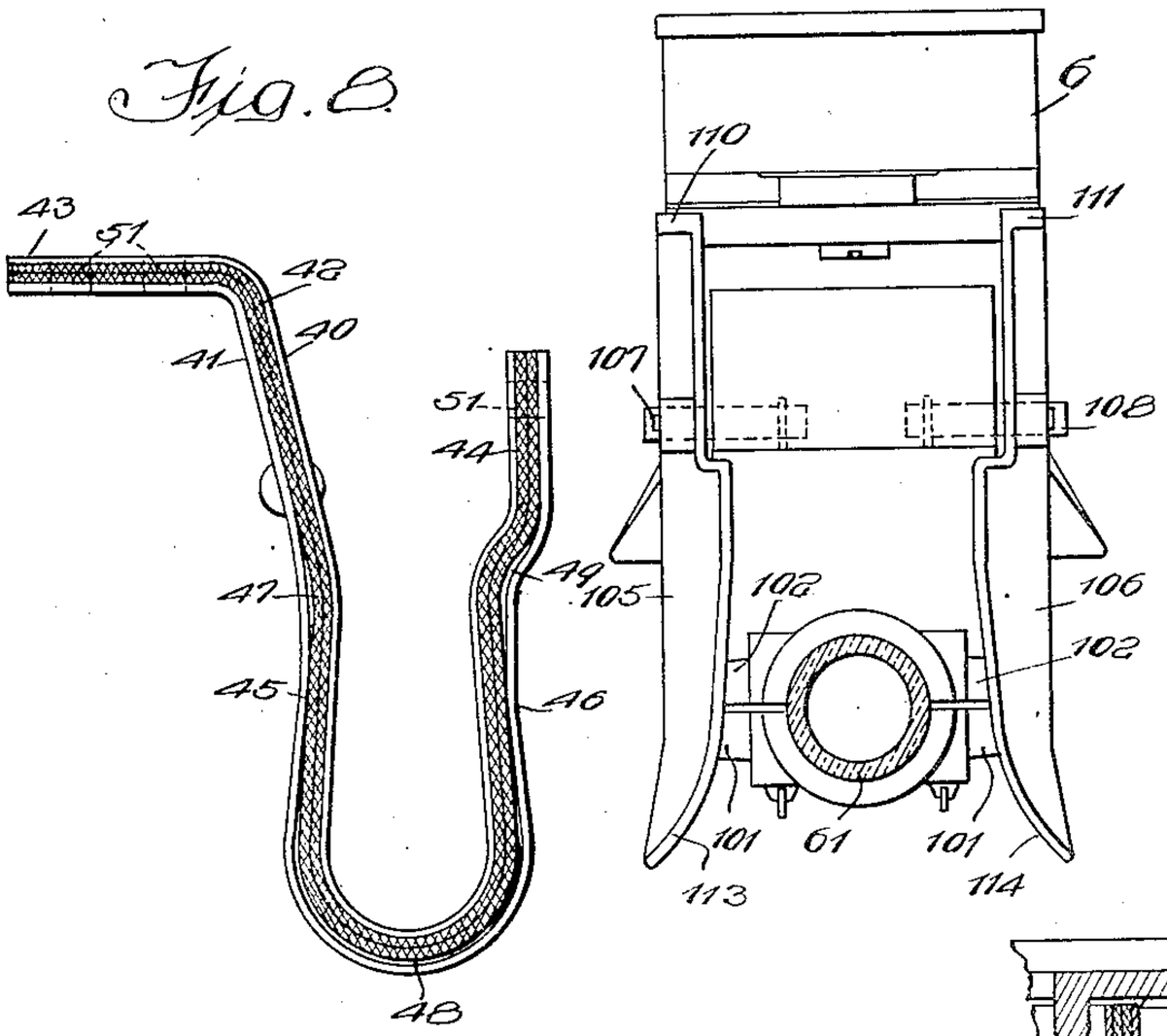


Fig. 6.

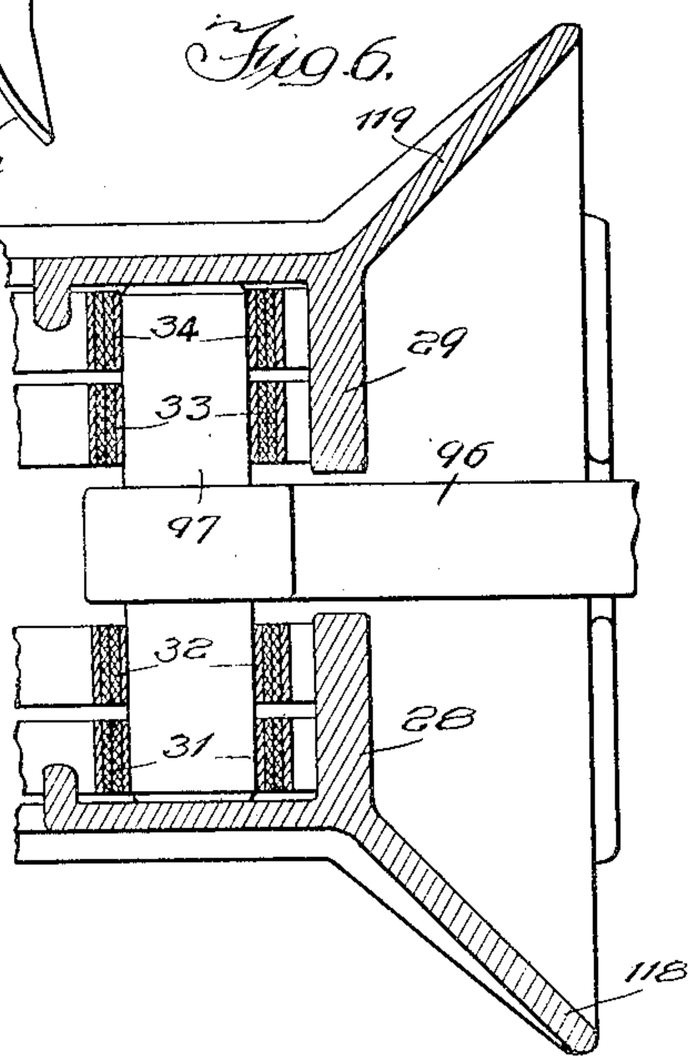
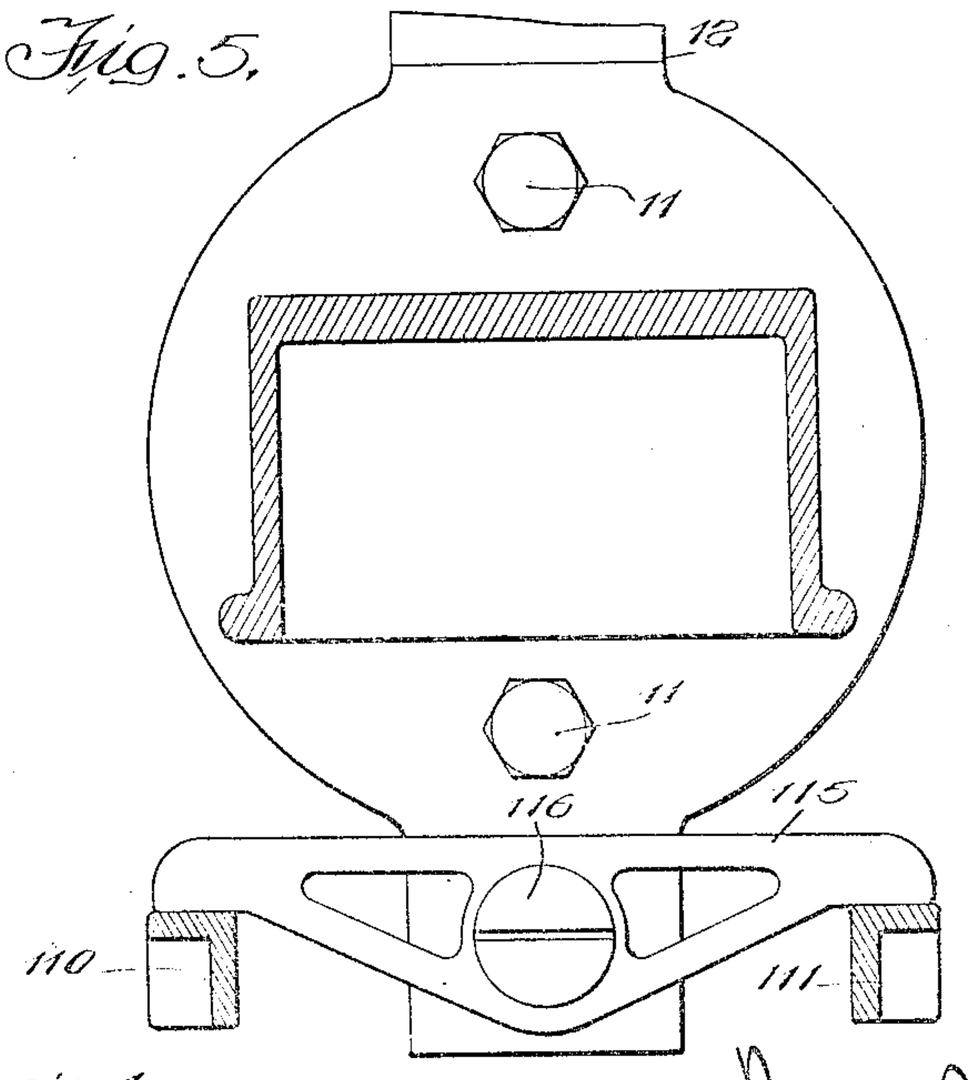


Fig. 5.



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Patented May 9, 1933 1,907,580

UNITED STATES PATENT OFFICE

ALLAN RAMSEY, OF EVANSTON, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SCHWEITZER & CONRAD, INC., OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

DISCONNECTING FUSE MOUNTING

Application filed May 31, 1929. Serial No. 367,221.

This invention relates to fuse mountings and more particularly to disconnect fuse mountings and it is one of the objects of the present invention to provide a fuse mounting wherein the fuse may be readily removed from the mounting without endangering the operator in any way.

Disconnect switches such as are here contemplated are used in series with an oil circuit breaker or other fast acting switch and are intended to be operated only after the circuit has been broken at the circuit breaker. Such switches have a large current carrying capacity, but are not designed to be opened under load and if such a switch is opened before the circuit through it has been interrupted at the circuit breaker, the switch is likely to be destroyed by the resulting arc and the operator is liable to be seriously or fatally injured.

These switches are used on high voltage system and even though the circuit breaker leading to the switch may be open there may be an appreciable charging current and an operator attempting to grasp the switch to open it is liable to be injured. Also, even if the fuse has blown thus opening the circuit through the switch, one terminal of the switch may be alive and an operator coming into close proximity to that terminal is exposing himself to unnecessary danger. It is one of the objects of this invention to provide a disconnect switch of the fuse type wherein the fuse, once it has blown, may be removed and another fuse may be inserted without the necessity of the operator exposing himself to danger due to one or the other of the switch terminals being alive. In the embodiment of the invention herein described this is done by providing the fuse with sockets one of which is adapted to receive an operating pole by means of which pole the fuse with its mounting sockets may be inserted into place or removed from place as desired.

It is another object of the present invention to provide a spring contact clip. The contact clip in the present instance is U-shaped and is adapted to receive a terminal within the U portion of the clip. The inner portion of the clip with which sliding contact is established consists of a copper strip whereas the outer portion consists of a strip of spring material which may be of phosphor-bronze or of any other suitable material. Between the inner and outer strips, there is located a strip of copper braided wire for increasing the current carrying capacity of the clip. The outer phosphor-bronze strip maintains a spring pressure upon the inner copper strip and thereby maintains a good contact between the copper strip and the terminal with which it is in engagement.

It is still a further object of the present invention to provide a fuse switch wherein the contacting terminal clips are mounted in housings to protect the same from weather. The contact clips being so spaced within the housing with respect to the opening thereof as to avoid all possibility of the entry of moisture to the contacts.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawings forming a part thereof.

In the drawings:

Figure 1 is a side view of my disconnect fuse mounting;

Figure 2 is a perspective view of the lower fuse socket;

Figure 3 is a front view of the disconnect fuse mounting;

Figure 4 is a view similar to Figure 1 showing the contact housings in longitudinal section;

Figure 5 is a fragmentary sectional view taken along the line 5—5 of Figure 4;

Figure 6 is a fragmentary sectional view taken along the line 6—6 of Figure 4;

Figure 7 is a fragmentary sectional view taken along the line 7—7 of Figure 3; and

Figure 8 is a view of the spring contact mounted in the housing.

Reference may now be had more particularly to Figure 1 showing an assembled view of my improved disconnect fuse switch. The disconnecting fuse is so mounted and arranged as to take the place of a discon-

nect switch, hence the entire arrangement may be termed a disconnecting fuse switch. The switch is mounted upon a base 1 of channel iron or of any other approved standard construction. Supporting insulators 2 and 3 are each provided with an insulator pin indicated at 4 and 5, said pins being bolted or otherwise suitably secured to the channel base 1. The insulators 2 and 3 are of standard construction and are mounted upon the base 1 in a well known manner and a further description thereof is not believed to be necessary at this time. Insulator caps 6 and 7 are secured to the insulators 2 and 3 and provide means for mounting the various parts to the insulators. An upper contact housing 10 is secured to the insulator cap 6 in any well known manner, the same being accomplished in the embodiment herein illustrated by means of a set of bolts 11. The base portion of the housing 10 has lip 12 formed therein to which lip is secured a termminal lug 13 by means of bolts 14. Electrical connections to a power line 15 are made through the lug 13. The housing 10 is open at the top and is provided with a cover 20 for closing the open top thereof, said cover being secured to the top of the housing by means of suitable bolts indicated at 21. The front portion of the upper contact housing is substantially closed being provided with an opening through which a fuse socket may be inserted for establishing engagement with a spring contact mounted within the housing, all in the manner to be presently more fully set forth. The vertical portion of the opening is indicated at 25 and the horizontal portion is indicated at 26—26. The slot 25 divides the front portion of the housing 10 into two sections indicated at 28 and 29 respectively, which sections extend only part way to the top of the housing. Two spring contacts 31 and 32 which are of a construction such as shown in Figure 8, to be more fully described hereafter, have one end thereof secured to the inner side of the wall section 28 and two similar spring contacts 33 and 34 have one end thereof secured to the inner side of the wall section 29. The upper portion of the walls 28 and 29 are formed to extend in an inverted U-shape formation as indicated at 36 in Figure 4. One end of the spring contact 33 is secured within the inverted U-portion 36 being riveted or otherwise suitably secured in place. The other ends of the spring contacts 31 to 34 are suitably secured to the top of the housing 10 as indicated at 38 in Figure 4. The spring contacts hang within the housing in the form of a U-shaped loop for receiving the terminal of the fuse socket to be more fully described as the description proceeds.

Reference may be had at this point to Figure 8 showing the construction of the spring contacts 31 to 34. The spring contact shown in Figure 8 is of a three ply construction.

The inner lamination 40 is of copper and comprises a strip of copper about $\frac{1}{16}$ of an inch wide and extending the full length of the spring contact. It is, of course, understood that the invention is not limited to the use of a strip of the above dimension indicated as any other size may be used as desired. The strip used in the construction herein shown is approximately 1/50 of an inch thick although here again any other preferred size may be used. The outer lamination is of spring phosphor-bronze and is preferably of about the same width as is the copper strip and may be about two times as thick. Between the copper strip 40 and the phosphor-bronze strip 41, there is provided a center section 42 of flexible braided copper cable. The strips 40, 41 and 42 are suitably secured together at the ends 43 and 44 preferably by sweating the parts together. It is to be noted that the phosphor-bronze strip 41 touches the braid 42 only at the points 45 and 46 in addition to the points where the two are fastened together, being otherwise spaced from the braid. At the points 47, 48 and 49 the bronze strip and the braided wire may be about $\frac{1}{32}$ of an inch apart. Connection to the spring contact shown in Figure 8 is made by means of a tubular section which is inserted into the U-shaped portion of the contact.

The phosphor-bronze spring 41 maintains the copper bar 40 in pressure contact with the terminal inserted into the spring contact. The flexible copper braid 42 is also held in pressure contact with the inner copper lamination 40 by the phosphor-bronze spring thereby giving the necessary added current carrying capacity to the spring contact assembly. Holes 51—51 are drilled in the contact assembly after the ends of the laminations have been sweated together. These holes constitute the means for securing the spring contact within the contact housing.

Before proceeding with a further description of the switch housing it may be well to describe the fuse sockets by means of which the connections are established between the fuse terminals and the contacts within the switch housings. The fuse 60 shown in the drawings is a standard Schweitzer & Conrad fuse of the type shown in the patent to Nicholas J. Conrad No. 1,689,424 of October 30, 1928 although any other standard form of high voltage fuse may be used. The fuse comprises a fusible current carrying element carried within a glass tube 61 and submerged in a bath of insulating liquid such as carbon tetrachloride or the like carried within the tube.

The insulating liquid is held within the glass tube 61. The ends of the glass tube are sealed by metal ferrules to which the opposite ends of the fusible conducting member within the tube are connected. The ferrules act as terminals for the fuse and a circuit through the fuse is extended through the ferrules. The socket that is connectible to the lower fuse ferrule is shown more particularly in Figure 2, said socket serving not only to establish connections to the fuse but also serving as a means for mounting the fuse in place. The upper end of the fuse socket 65 is provided with a circular split clamp 66 for receiving the lower fuse ferrule. The portion 67 of the clamp is integral with the fuse socket and the portion 68 is separable therefrom, the two portions of the clamp being adapted to receive the lower fuse ferrule between them and thereafter to be bolted together by means of thumb screws 69 passing through the holes 70 and 71 in the split clamp portion. The clamp is provided with a downwardly extending arcuate shaped arm 72, the lower end of which is provided with a cylindrical hole 73.

A copper tube 74 is driven through the hole 73 in the arm 72 and is held in position by means of a dowel pin 75 which is forced through a hole that is drilled through the lower end of the socket 72 and through the tube 74 after the tube has been forced into the hole 73 in the socket. The tube 74 constitutes a contact rod for establishing a circuit through the fuse by way of the fuse socket 65. The arcuate arm 72 is provided with a portion 78 shaped to receive a hinged socket member to be presently described. For this purpose a hole 79 is drilled in the fuse socket for receiving a stud upon which the hinge socket member is pivoted. The surface 78 is curved to permit the swinging of the socket member about the stud passed through the hole 79. The socket member 80 has two ears formed therein one of which is shown at 81. The ears are adapted to embrace the opposite sides of the socket member at the portion 78 and are provided with holes through which the stud 82 may be passed, said stud likewise passing through the hole 79. The stud is threaded at its ends and is held in place by a set of nuts one of which is indicated at 83.

A pair of projections 85 extending from the arms 81—81′ limit the angular movement of the hinge socket 80 by abutting against the socket member. The lower end of the hinge socket is bored out at 86 to receive the end of an operating rod of insulating material. The hole 86 is tapped and the pole 87 has a threaded prong at its end for insertion into the hole 86. When the prong at the end of the pole 87 is threaded into the tapped hole 86 a firm engagement with the casting is had and by manipulation of the pole the hinge socket 65 may be inserted or removed from the housing carried by the insulator pin 7. The prong that threads into the hole 86 is integral with the member 88 at the end of the pole 87, a short flexible section 89 being interposed between the section 88 and the rest of the pole structure, said flexible section having a limited angular travel to prevent undue strain being placed on the fuse and on the socket member 65 by a side movement of the pole.

The upper fuse socket 95 is substantially similar to the lower fuse socket differing therefrom only in certain particulars to be presently set forth. Like the lower socket, the upper socket includes a split clamp portion for receiving and holding the upper fuse ferrule, and an arm 96 in the end of which a contact rod 97 in the form of a copper tube has been inserted.

The upper ferrule of the fuse is inserted between the split clamp portions 98 and 99 of the upper fuse socket and the portion 99 is then clamped to the portion 98 by means of a set of clamping screws in the form of thumb screws 100. The fuse is thus supported from the upper socket, the lower socket being suspended from the fuse, when the fuse is in service. The clamp portion 99 is provided with a pair of projecting arms 101 and the clamp portion 98 is provided with a similar pair of projecting arms 102. These projecting arms serve as a means whereby the upper socket is supported and with it the fuse and the lower socket carried thereby. The arm 96 of the upper socket which corresponds to the arm 72 of the lower socket is not provided with a hinge socket such as 80 nor of course with the protruding portion 78 nor the hole 79 provided for the hinge socket.

The fuse socket 95 is supported from the upper switch housing by means of a pair of pivoted socket supports 105 and 106. The arms are pivoted to the housing at 107 and 108 respectively. The arms 101 and 102 of the fuse socket rest upon and are supported by the supports 105 and 106 at the ends thereof. The opposite ends of the supporting arms 105 and 106, indicated at 110 and 111 respectively, are held against upward movement due to the downward pull at the opposite ends of the supports by the weight of the fuse, by an equalizer arm 115 (Figure 5) pivoted to the switch housing at 116.

The ends 110 and 111 of the supporting arms bear against the pivoted equalizer bar which thereby equalizes the weight carried by the two supporting arms. The ends of the supports 105 and 106 that support the sockets are outwardly flared as indicated at 113 and 114 to guide the split clamp of the upper fuse socket into position if it is not otherwise accurately aligned during the op-

eration of inserting the fuse into place. The upper contact housing is provided with a pair of outwardly flaring guiding lips indicated at 118 and 119 respectively. The guiding lips serve as a guide for the tubular contact rod carried by the fuse sockets.

A switch housing 130 substantially similar to the switch housing 10 is secured to the insulator cap 7 in substantially the same manner as is the housing 10. This housing is provided with a cover 131 substantially similar to the cover 20 for the upper housing and a line terminal clip 133 similar to the line terminal clip 13 and the upper housing.

An explanation will now be given of the manner in which the fuse is inserted into place in the switching structure. The upper fuse socket is clamped to the upper ferrule of the fuse and the lower fuse socket is clamped to the lower ferrule of the fuse.

A stud at the end 88 of the insulated operating rod 87 is then threaded into the tapped hole 86 in the hinge member 80 which is pivoted to the lower fuse socket. The assembly comprising the fuse, the upper fuse socket and the lower fuse is then elevated until the contact rods 74 and 97 carried by the lower fuse socket and the upper fuse socket respectively come opposite the housings 130 and 10 respectively. The guiding lips 118 and 119 upon the upper fuse housing and the corresponding lips on the lower fuse housing serve to guide the contact rods centrally of the housing. The assembly is elevated until the contact rod 97 comes opposite the opening 26 above the walls 28 and 29 in the upper housing. At this time the contact rod 74 is similarly located in the lower housing. The fuse assembly is then pushed inward so that the contact rods enter the housing, the portions 96 and 72 of the two sockets passing through slots such as the slot 25 shown in the upper housing. The inward movement of the fuse sockets into the housing is limited by stops 140 and 141 in the upper housing and in the lower housing respectively. When the fuse sockets abut against the stops 140 and 141 limiting their inward movement, the fuse may then be lowered until the arms 101 and 102 on the upper fuse socket rest upon the ends of the pivoted supports 105 and 106.

At this time the fuse is in the position shown in the drawings and the operating rod 87 may now be unscrewed from the socket 80. It is to be noted that the spring contacts shown in Figure 8 do not carry any of the weight of the fuse or its associated sockets, the same being supported by the arms 105 and 106. The spring contacts bear against the copper contact strips carried by the sockets and thus establish an electric circuit through the fuse.

To remove the fuse from its mounting the operating rod is first turned into the hinge socket 80 and by means of this rod the lower fuse socket and with it the fuse and the upper fuse sockets are first raised to bring the contact rods 97 and 74 opposite the openings 26 and then the fuse and its mountings are drawn outward from the fuse contact housings.

In compliance with the requirements of the patent statutes I have herein shown and described a preferred embodiment of my invention. It is, however, to be understood that the invention is not limited to the precise construction shown, the same being merely illustrative.

What I consider new and desire to secure by Letters Patent is.

1. A fuse mounting comprising a pair of spaced insulators one above the other for receiving a fuse between them, a contact housing mounted on each of said insulators, and spring contact clips in each of said housings, each of the housings being closed at the top and having an opening in the side thereof through which a portion of a fuse engaging socket may be inserted for engagement with the spring contact within, the spring contact clips being below the side openings, and said top of the upper housing extending forward of said side opening to constitute an overhanging eave.

2. A fuse mounting comprising a pair of spaced insulators one above the other for receiving a fuse between them, a contact housing mounted on each of said insulators, and spring contact clips in each of said housings, each of the housings having an opening therein through which a portion of a fuse engaging socket may be inserted for engagement with the spring contact within, the upper housing including means spaced from the contact clips for supporting the fuse engaging socket and thereby supporting the fuse held therein.

3. A fuse mounting comprising a pair of spaced insulators one above the other for receiving a fuse between them, a contact housing mounted on each of said insulators, and spring contact clips in each of said housings, each of the housings having an opening therein through which a portion of a fuse engaging socket may be inserted for engagement with the spring contact therein, the upper housing including a pair of arms from which the fuse engaging socket may be suspended thereby supporting the fuse.

4. A fuse mounting comprising a pair of spaced insulators one above the other for receiving a fuse between them, a contact housing mounted on each of said insulators, spring contact clips in each of said housings, each of the housings having an opening therein through which a portion of a fuse engaging socket may be inserted for engagement with the spring contact within, the

upper housing including a pair of pivoted arms from which the fuse engaging socket may be suspended thereby supporting the fuse, and an equalizing bar between the two arms for equalizing the weight carried by the arms.

5. A fuse disconnect switch comprising a pair of supporting insulators, contacts mounted on the insulators, a fuse having contact ferrules, sockets removably mounted on the ferrules of the fuse, said sockets having contacting portions for engagement with the contacts, and means carried by one of the sockets for receiving the end of an insulated operating rod for inserting or removing the fuse with its associated sockets into and out of said contacts.

6. A fuse disconnect switch comprising a pair of supporting insulators, a contact housing mounted on each insulator, a pair of sockets secured to the respective ends of a fuse, said housings having openings for receiving a portion of said sockets for establishing a circuit through the fuse, and one of said sockets having means for inserting an insulating rod therein for inserting the fuse sockets with the fuse therebetween into the sockets and for removing the same therefrom.

7. A fuse disconnect switch comprising, a pair of supporting insulators, one above the other, a contact housing mounted on each insulator, a pair of sockets secured to the respective ends of a fuse, said housings having openings for receiving a portion of said sockets for establishing a circuit through the fuse, one of said sockets having means for inserting an insulating rod therein for inserting the fuse sockets with the fuse therebetween into the sockets and for removing the same therefrom and means carried by the upper housing for carrying the fuse and the associated sockets.

8. A fuse disconnect switch comprising a pair of contacting terminals, a fuse comprising the blade of the switch, and fuse engaging sockets at the ends of the fuse for holding the fuse and maintaining a circuit therethrough, both of said sockets including portions inserted into and removed from the terminals by successive rectilinear motions at substantially right angles to one another and one of said sockets including a portion adapted to receive a mounting tool for mounting the blade.

9. Means for mounting a fuse in a substantially vertical position, said means comprising a pair of horizontally spaced supports adapted to receive a fuse between them and support the same, said supports being pivoted about horizontal axes, and an equalizer arm between them, said arm being pivoted intermediate its ends, and being acted upon by the two members so as to equalize the load on the two members.

10. A contact strip comprising a number of thin laminations lying substantially parallel and adjacent one another, the inner lamina being of copper and comprising the contact making portion of the strip, the outer lamina being of spring material for maintaining a spring pressure against the inner lamina, and the intermediate portion being of flexible braided metal of high current conductivity.

11. A U-shaped contact clip comprising an inner relatively thin U-shaped contacting strip having a backing of flexible copper braid, and an outer U-shaped spring strip for maintaining a spring pressure against the inner strip.

12. A contact clip comprising an inner relatively thin U-shaped contacting strip having a backing of flexible current carrying material and an outer strip of substantially the same shape as the inner strip for maintaining a spring pressure against the inner strip.

13. A contact clip comprising an inner relatively thin contacting strip having a backing of flexible current carrying material and an outer strip of substantially the same shape as the inner strip for maintaining a spring pressure against the inner strip, and between the two a flexible braided conductor of high current carrying capacity, said inner and outer strips being secured together at a plurality of spaced points.

14. A contact clip comprising an inner relatively thin U-shaped contacting strip having a backing of flexible current carrying material and an outer strip of substantially the same shape as the inner strip for maintaining a spring pressure against the inner strip, said inner and outer strips being secured together adjacent their ends with the flexible current carrying material between them.

15. A contact clip comprising an inner relatively thin contact making strip having a backing of flexible current carrying material and an outer strip of substantially the same shape as the inner strip for maintaining a spring pressure against the inner strip when the inner strip is forced outward, said inner and outer strips being secured together at a plurality of spaced points, and being separate from one another between the securing points.

16. A contact clip comprising an inner relatively thin contact making strip having a backing of flexible current carrying material and an outer strip of substantially the same shape as the inner strip for maintaining a spring pressure against the inner strip when the inner strip is forced outward, said inner and outer strips being secured together adjacent their ends, and being separate from one another between the securing points.

17. A contact clip comprising inner and outer strips of substantially similar U-shapes separated by a layer of flexible material of high current conductivity.

18. A contact clip comprising inner and outer strips of substantially similar shape separated by a layer of flexible material of high current conductivity, one of said strips comprising a thin layer of contact making metal and constituting the contact making portion of the clip, the other strip comprising a spring for maintaining spring pressure against said contact strip.

19. A switch including a pair of vertically spaced housings, both the upper and lower housing being closed at the top, contacts mounted in each of the housings, a switch member entirely removable from the switch and including contact making portions adapted to cooperate with the contacts in the housings to establish a circuit between them, said housings being open at one side for permitting entrance of the contact making portions, said switch member including a pivotally mounted tool receiving member for receiving a tool for inserting and removing the switch member from the switch.

20. A switch including a pair of vertically spaced housings, both the upper and lower housing being closed at the top, contacts mounted in each of the housings, a switch member entirely removable from the switch and including contact making portions adapted to cooperate with the contacts in the housings to establish a circuit between them, said housings being open at one side for permitting entrance of the contact making portions, said switch member including pivotally mounted tool receiving means spaced forward of the housings for receiving a tool for inserting and removing the switch member from the switch.

21. A switch including a pair of vertically spaced housings, both the upper and lower housing being closed at the top, contacts mounted in each of the housings, a switch member entirely removable from the switch and including contact making portions adapted to cooperate with the contacts in the housings to establish a circuit between them, said housing being open at one side for permitting entrance of the contact making portions, said switch member including tool receiving means spaced forwardly of the housings and adjacent the lower housing for receiving a tool for inserting and removing the switch member from the switch.

22. A switch including a pair of spaced contacts, a switch member including contact making portions comprising trunnion-like members extending laterally thereof at the opposite ends thereof for establishing a circuit between the contacts, said switch member being moved into engagement with both contacts by a non-swinging motion as a unit in substantially a straight line, said switching member including tool receiving means whereby the same may be supported for removal from the switch to open the circuit between the contacts.

23. A switch including a pair of vertically spaced contacts and separate therefrom a switch member including contact making portions at each end thereof and means at the lower end of the switch member and extending forwardly and downwardly thereof at a substantial angle to the longitudinal axis of the switch member for receiving a tool for mounting the switch member in engagement with both contacts.

24. In combination, a switch support having two vertically spaced contacts, a combined fuse and switch connecting element having removable connection with the contacts, and tool receiving means extending forward and downwardly from one end of the combined fuse and switch connecting element and constituting a part of said element for receiving a tool for moving said element laterally of itself towards engagement with both contacts.

25. A fuse switch including a pair of contacts and a removable member adapted to be placed in bridging relation to the contacts, said removable member comprising a fuse having ferrules at the ends thereof, and a socket removably secured to the lower ferrule and including contact making means for cooperating with the lower contact member, and a second socket removably secured to the upper ferrule and including contact making means for co-operating with the other contact.

26. A fuse switch including a pair of contacts and a removable member adapted to be placed in bridging relation to the contacts, said removable member comprising a fuse having ferrules at the ends thereof, and a socket removably secured to the lower ferrule and including contact making means for cooperating with the lower contact member, said socket member including a screw threaded tool receiving portion for receiving a tool for mounting the removable member.

27. A contact housing having a slot for permitting access of a contact making member into the housing, said housing having a second slot at an angle to the first slot for movement of a contact holding member therein to move the contact making member within the housing and away from the first slot, and a contact mounted in the housing for engagement with the contact making member when said contact making member is moved within the housing away from the first slot by the movement of the holding member in the second slot.

28. A contact housing having a slot for

permitting access of a contact making member into the housing, said housing having a second slot at an angle to the first slot for movement of a contact holding member therein to move the contact making member within the housing and away from the first slot, and a contact mounted in the housing for engagement with the contact making member when said contact making member is moved within the housing away from the first slot by the movement of the holding member in the second slot, said two slots being at substantially right angle to one another.

29. A switch housing having a T-shaped opening in the side thereof for receiving a contact making member, and contacts within the housing on the opposite sides of the stem of the T opening and having contact receiving portions spaced from the web of the T shaped opening.

30. A switch housing having a T-shaped opening in the side thereof for receiving a contact making member, and contacts within the housing on the opposite sides of the stem of the T opening and having contact receiving portions spaced from the web of the T shaped opening, and a contact making member movable into and out of the housing through the web of the T opening and including a portion thereafter movable in the stem of the T opening for moving the contact making member into engagement with the contact receiving portions.

31. A switch housing having a T-shaped opening in the side thereof for receiving a contact making member, and contacts within the housing on the opposite sides of the stem of the T opening and having contact receiving portions spaced from the web of the T shaped opening, and means overhanging a portion of the web of the T shaped opening for guiding a contact making member into the housing.

32. A switch housing having a T-shaped opening in the side thereof for receiving a contact making member, and contacts within the housing on the opposite sides of the stem of the T opening and having contact receiving portions spaced from the web of the T shaped opening, a contact making member movable into and out of the housing through the web of the T opening and including a portion thereafter movable in the stem of the T opening for moving the contact making member into engagement with the contact receiving portions, and means overhanging a portion of the web of the T shaped opening for guiding a contact making member into the housing.

In witness whereof, I hereunto subscribe my name this 29th day of May 1929.

ALLAN RAMSEY.