Nov. 11, 1947. T. H. BOWEN 2,430,703

ELECTRICAL PROTECTIVE DEVICE

Filed June 12, 1944 2 Sheets-Sheet 1

Fig. 1.

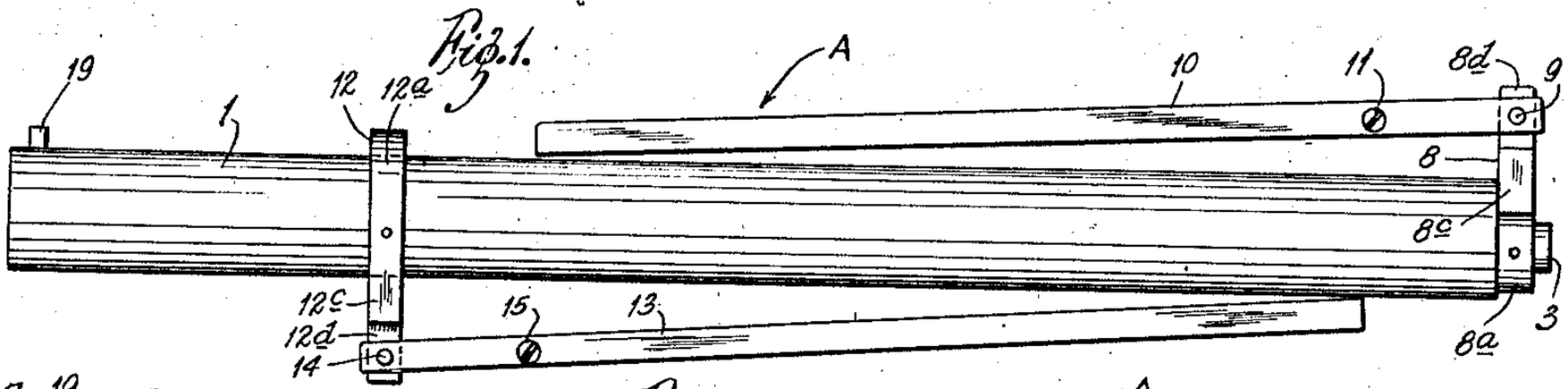



Fig. 2.

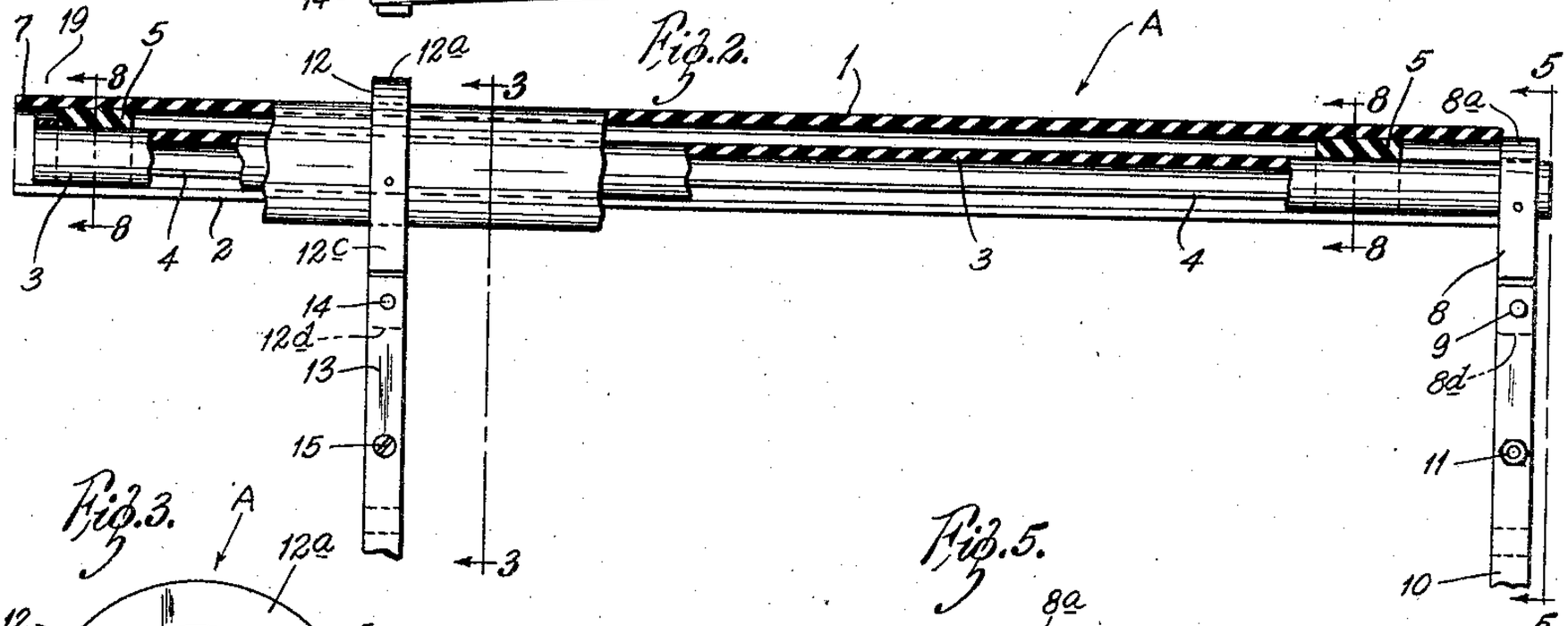



Fig. 3.

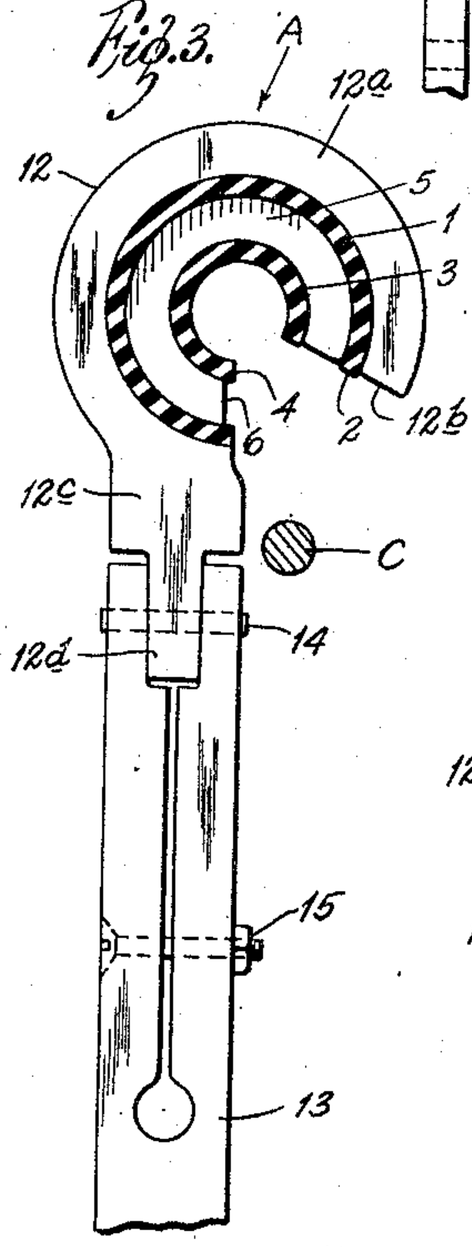



Fig. 4.

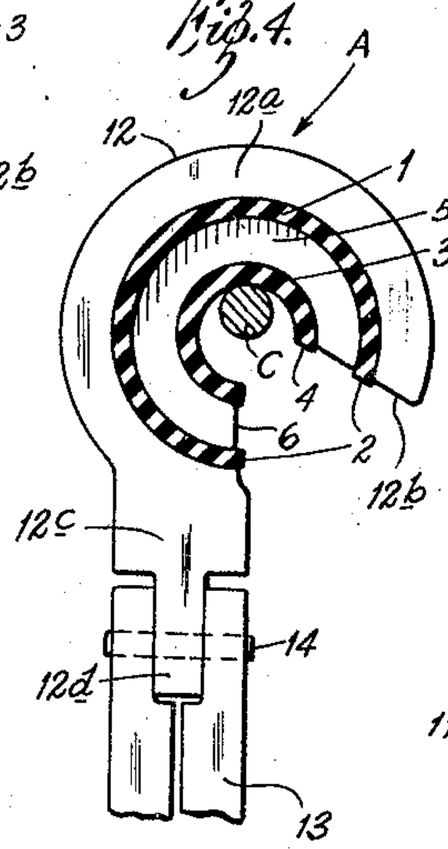



Fig. 5.

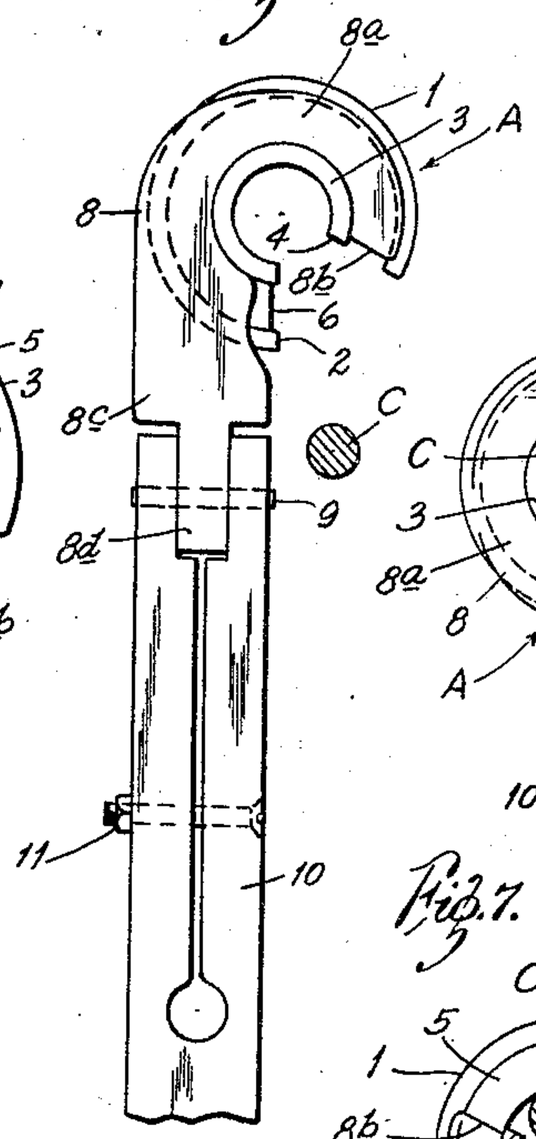



Fig. 6.

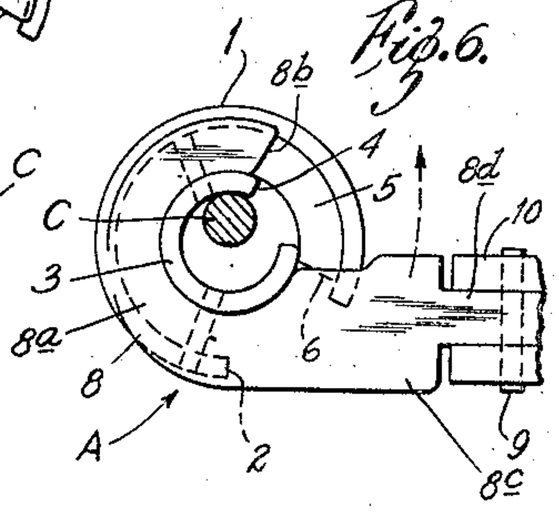



Fig. 7.

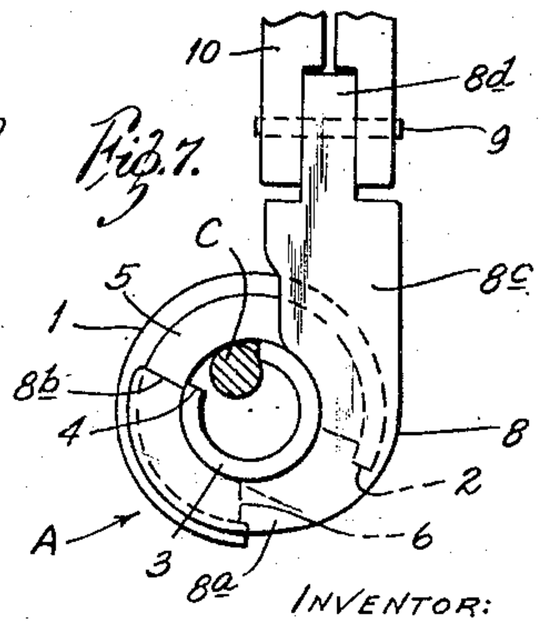
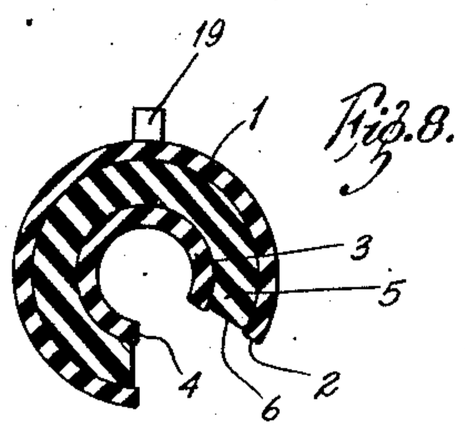



Fig. 8.




INVENTOR:
THOMAS H. BOWEN,
BY Em. Harrington,
ATTORNEY.

Nov. 11, 1947. T. H. BOWEN 2,430,703

ELECTRICAL PROTECTIVE DEVICE

Filed June 12, 1944 2 Sheets-Sheet 2

Fig. 9.

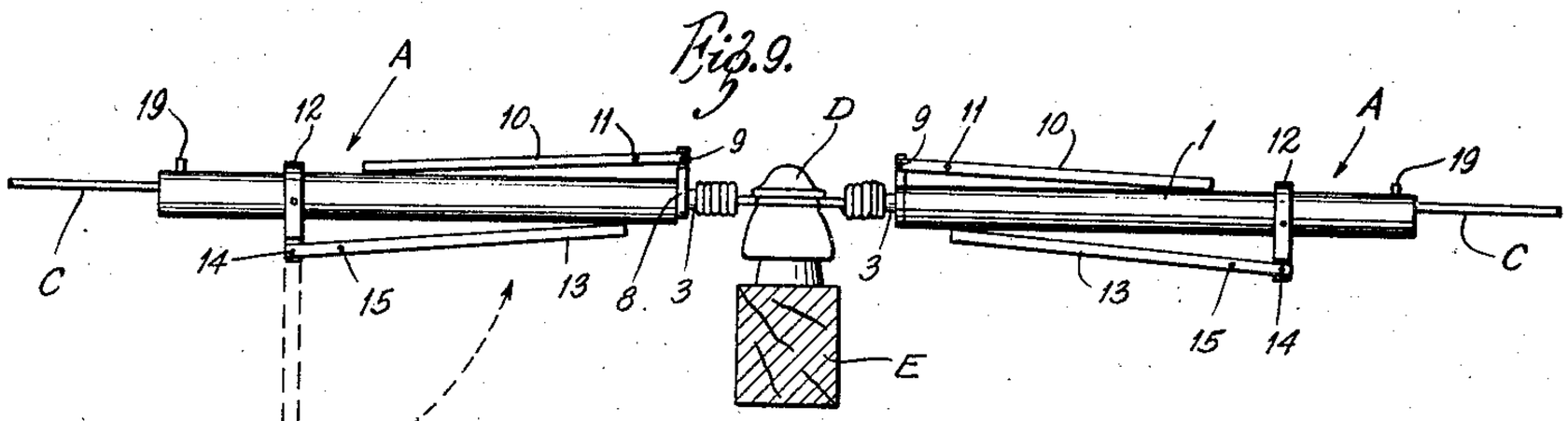



Fig. 10.

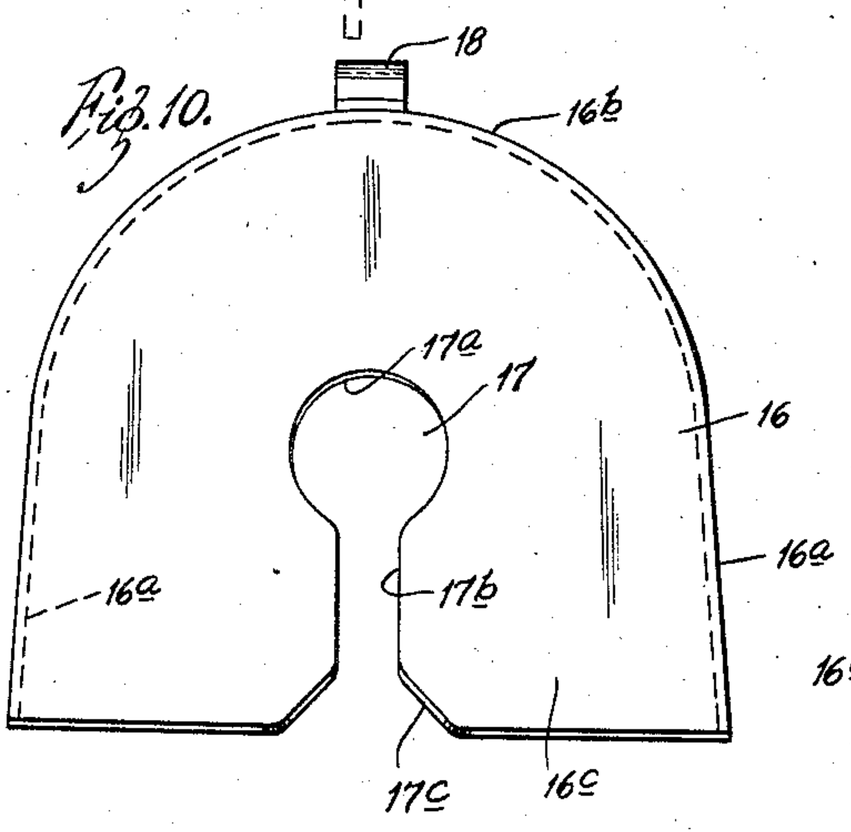



Fig. 11.

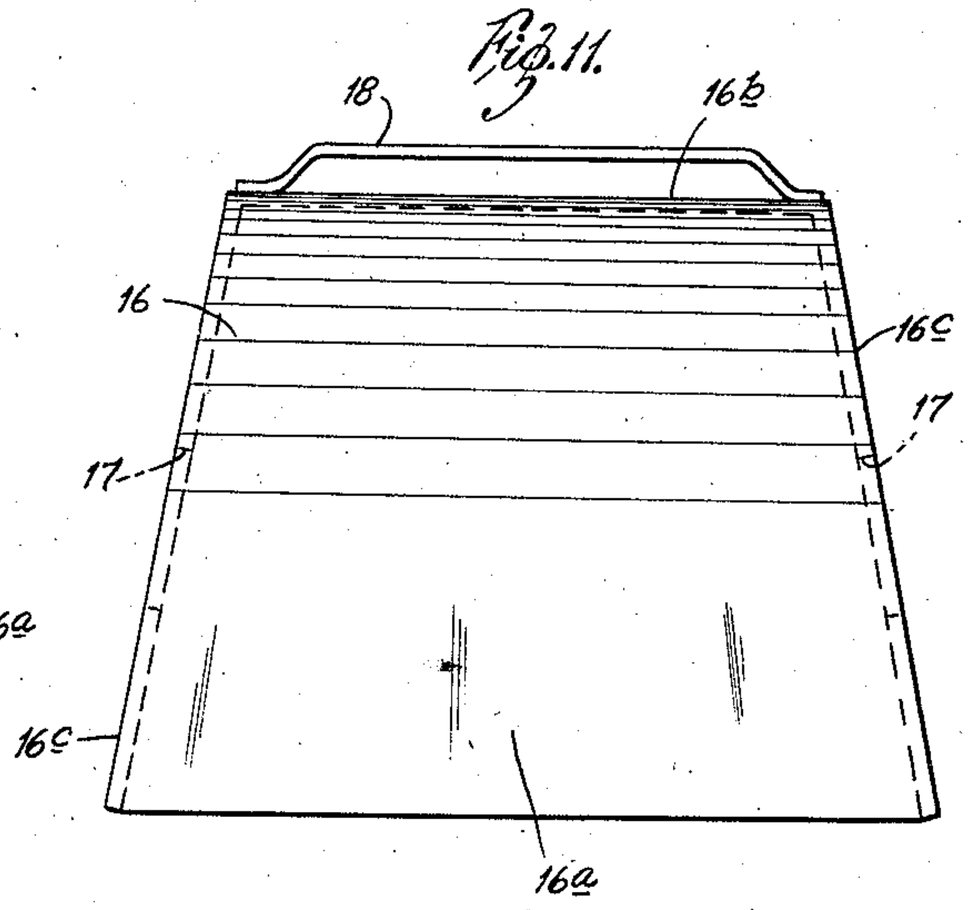



Fig. 12.

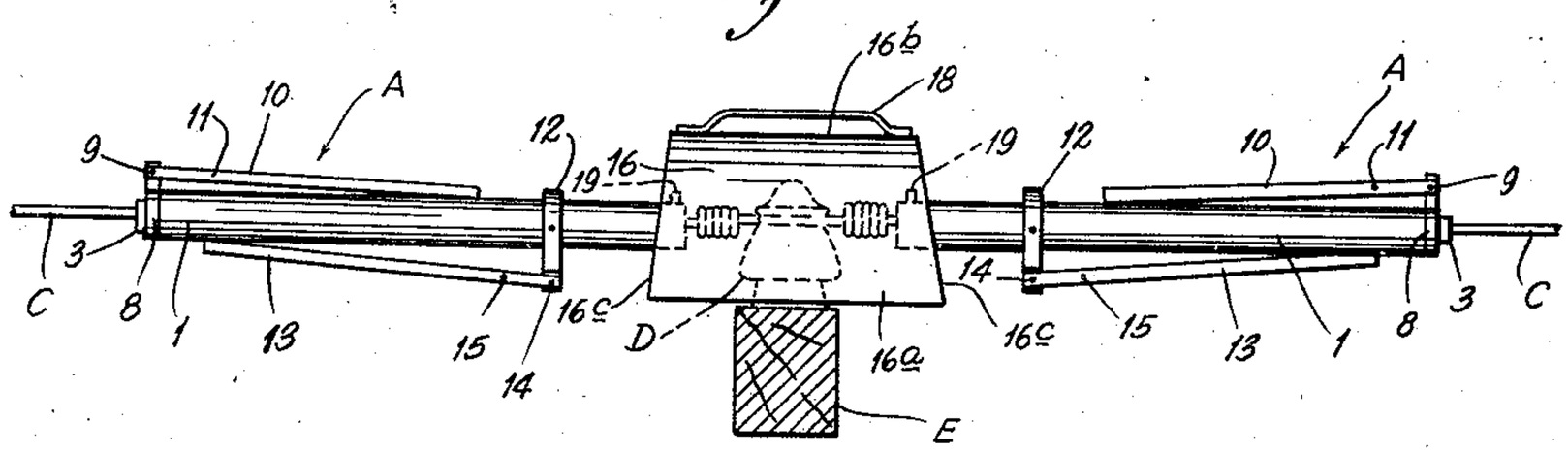
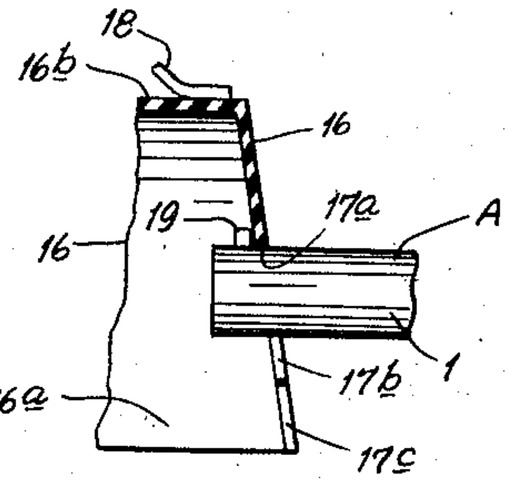



Fig. 13.




INVENTOR:
THOMAS H. BOWEN,
BY Em Harrington,
ATTORNEY.

Patented Nov. 11, 1947

2,430,703

# UNITED STATES PATENT OFFICE

2,430,703

## ELECTRICAL PROTECTIVE DEVICE

Thomas H. Bowen, St. Louis, Mo., assignor to James R. Kearney Corporation, St. Louis, Mo., a corporation of Missouri

Application June 12, 1944, Serial No. 539,934

4 Claims. (Cl. 174—5)

1

This invention relates generally to electrical protective devices and more specifically to protecting devices for protecting linemen at work on poles, and in other situations, from accidental contact with energized electrical lines, the predominant object of the invention being to provide a simple device of this type which is capable of easy and convenient application to an energized electrical line and which when so applied provides for a lineman the maximum protection against injury caused by accidental contact with the energized line.

As is well known to persons familiar with such matters, linemen are frequently required to work high on poles and towers, and in other situations, where they are in close proximity to energized electrical conductors. In such a situation a hazard is produced by the proximity of the energized lines which prevents the linemen from working with their usual freedom of movement and speed, because of the constant fear of receiving shocks or burns as a result of parts of the bodies of the linemen coming into accidental contact with the energized lines. The present invention provides protective means, which may be conveniently applied to portions of the energized lines adjacent to the points at which the linemen are to work, whereby the hazard referred to is entirely eliminated so that the linemen may give their entire attention to the work at hand without the necessity of careful avoidance of contact with the energized lines.

Fig. 1 is a front elevation of the improved protective device.

Fig. 2 is a view similar to Fig. 1 but with parts of the device shown in section and with parts thereof in changed positions.

Fig. 3 is an enlarged, fragmentary cross-section taken on line 3—3 of Fig. 2, showing the device as it appears as it is about to be applied to a conductor.

Fig. 4 is a view similar to Fig. 3, showing the device applied to a conductor but before final adjustment of the device to its closed position relative to the conductor.

Fig. 5 is an end elevation of the device, taken on line 5—5 of Fig. 2, and with a conductor to which the device is being applied shown in section.

Fig. 6 is a fragmentary elevation of the device showing same applied to a conductor and being adjusted to its closed position relative to said conductor.

Fig. 7 is a view similar to Fig. 6 but showing

2

the device as it appears when it has been adjusted to its closed position relative to a conductor.

Fig. 8 is a cross-section taken on the lines 8—8 of Fig. 2.

Fig. 9 is a view illustrating a pair of the protective devices applied to an electrical conductor which is shown as being supported by a cross-arm of a pole (not shown).

Fig. 10 is an end elevation of a hood with which the protective devices may be associated during certain uses thereof.

Fig. 11 is a side elevation of the hood illustrated in Fig. 10.

Fig. 12 is a view similar to Fig. 9 but showing the hood, illustrated in Figs. 10 and 11, associated with the protective devices.

Fig. 13 is a fragmentary vertical section showing the manner in which a protective device is engaged with the hood when in use.

In the drawings, wherein is shown for purposes of illustration, merely, one embodiment of the invention, A designates the improved protective device generally. The protective device A comprises an outer tubular member 1, the wall of which is provided with an opening 2 which extends from end to end of said outer tubular member, said outer tubular member being formed of wood, fiber, or other suitable electrical insulating material. Arranged concentrically within the outer tubular member 1 is an inner tubular member 3 which is of substantially less diameter than said outer tubular member and which likewise is formed of wood, fiber, or other suitable electrical insulating material, said inner tubular member being provided with an opening 4 which is formed in the wall thereof and extends from end to end of said inner tubular member.

Arranged within the outer tubular member 1 at points adjacent to the opposite ends thereof, and pinned or otherwise fixed thereto at the inner face of said outer tubular member, is a pair of arcuate bearing elements 5, said arcuate bearing elements including openings 6 which are alined with the opening 2 of the outer tubular member 1. Portions of the outer face of the inner tubular member 3 contact movably with the inner faces of the bearing elements 5 so as to support the inner tubular member axially within the outer tubular member and to provide for relative rotary movement of said outer tubular member and said inner tubular member. Because of the arrangement of the outer and inner tubular members, as just described, it is obvious that the openings 2 and 4 of said outer and inner

tubular members may be brought into alinement, by relative rotation of said outer and inner tubular members, so as to provide a passageway which leads from the exterior of the outer tubular member to the interior of the inner tubular member, and that said outer and inner tubular members may be subjected to such relative rotary movement so as to offset the openings 2 and 4 thereof with respect to each other so as to close the passageway referred to, as is shown in Fig. 7.

The inner tubular member 3 has fixed thereto at one end thereof an arcuate abutment element 7 (Fig. 2) which is formed of electrical insulating material and which abuts against the bearing element 5 at the corresponding end of the protective device so as to prevent longitudinal movement of the inner tubular member with respect to the outer tubular member to the right as the protective device is illustrated in Fig. 2. The abutment element 7 is shaped in accordance with the cross-sectional shape of the inner tubular member, in that said abutment element includes an opening which coincides with the opening 4 of said inner tubular member.

At the end of the protective device A opposite to the end thereof at which the abutment element 7 is located, the inner tubular member 3 extends beyond the end of the outer tubular member 1 a slight distance, as is shown to good advantage in Figs. 1 and 2. Pinned, or otherwise secured to the extended end portion of the inner tubular member 3 is an arm 8 which includes an arcuate head portion 8*a* that embraces said extended end portion of said inner tubular member, said head portion being provided with an opening 8*b* which coincides with the opening of the inner tubular member (Figs. 5, 6, and 7), and extended from said arcuate head portion of said arm 8 is a shank portion 8*c*. The shank portion 8*c* of the arm 8 is provided with an extension 8*d* of reduced width to which is secured by a pivot 9 for pivotal movement, an elongated handle 10, said handle being split longitudinally for a portion of its length, as is shown in Fig. 5, and the opposed parts of the split portion of the handle being drawn together by a bolt and nut assembly 11. Because of this arrangement the contacting faces of the handle and the extension 8*d* of the arm 8 are drawn into close, frictional engagement with each other so that the handle will remain in any position to which it is adjusted.

The protective device includes a second handle assembly that is associated with the outer tubular member 1 and which is constructed and arranged in accordance with the handle assembly of the inner tubular member 3 as just described. In other words, the handle assembly of the outer tubular member 3 includes an arm 12 which is provided with an arcuate head 12*a* that is pinned, or otherwise secured to the outer tubular member, said head being provided with an opening 12*b* that coincides with the opening 2 of said outer tubular member. This head 12*a* has extended therefrom a shank portion 12*c* that is provided with an extension 12*d* of reduced width to which an elongated handle 13 is attached by a pivot 14 for pivotal movement. The handle is provided with a longitudinally split portion, as shown in Fig. 3, with a bolt and nut assembly 15 provided for drawing the opposed parts of the split portion of the handle together to obtain close frictional contact between the contacting faces of the handle and the extension 12*d* of the arm 12 so that the handle will remain in positions to which it is adjusted.



In the use of the improved protective device as thus far described herein, the handles 10 and 13 are moved to parallel, vertical positions where they extend downwardly from the assembled outer and inner tubular members 1 and 3, as is shown in Figs. 2, 3, and 5, and when the handles are so disposed the openings 2 and 4 of the outer and inner tubular members are arranged in registration, as is shown to good advantage in Figs. 3 and 5. The lineman grasps the handles 10 and 13 and elevates the protective device to the proper position and elevation with respect to the conductor to which the protective device is to be applied, as is shown in Fig. 3 wherein the conductor is designated by the reference character C. The lineman then lowers the protective device with respect to the conductor C so as to cause said conductor to pass through the openings 2 and 4 of the outer and inner tubular members 1 and 3, the downward movement of the protective device being arrested when the conductor extends through the inner tubular member 3, and the top portion of the inner face of said inner tubular members contacts the top portion of the surface of the conductor, as is shown in Fig. 4. Next, the lineman rotates one or the other of the handles about the axis of the assembled outer and inner tubular members through an arc of approximately 180° which subjects the outer and inner tubular members to relative axial rotation and serves to offset the openings 2 and 4 of said outer and inner tubular members with respect to each other as is shown in Fig. 7. This causes the conductor portion to which the protective device is applied to be completely enclosed by the electrical insulating outer and inner tubular members, and the handles 10 and 13 are then folded against the outer tubular member as is shown in Figs. 1 and 9.

In Fig. 9 is shown a condition where a pair of the improved protective devices A are applied to a conductor C at opposite sides of an insulator D of a cross-arm E of a pole (not shown). In some situations, however, it is desirable also to afford protection to linemen with respect to the portion of a conductor which passes a cross-arm insulator and the tie wires which secure the conductor to the insulator. The hood 16, shown in Figs. 10 and 11, is provided for this purpose, and said hood comprises a housing, formed of wood, fiber, or other suitable electrical insulating material, said housing being made up of opposed side walls 16*a* which merge into a curved top wall 16*b*, and opposed, inclined end walls 16*c*. Formed in the opposed end walls of the hood 16 are alined openings 17, shaped as is shown in Fig. 10, that is to say, each of said openings 17 comprises an upper substantially circular portion 17*a* and a vertical slot 17*b* which leads into the lower portion of said upper circular opening portion 17*a* and which is provided with a lower flared portion 17*c*. Also, the hood 16 is provided with a suitable handle 18, fixed to its top wall, which facilitates handling thereof.

When the hood 16 is to be used in association with a pair of the protective devices A, the protective devices are applied in embracing relation with respect to the conductor, in the manner previously explained herein, and in spaced relation with respect to the cross-arm insulator D. The hood 16 is then passed downwardly over the cross-arm insulator D and the adjacent end portions of the protective devices are introduced into the circular opening portions 17*a* of the hood. In order to lock the protective devices A to the hood

16 the outer tubular member of each protective device is provided, at the end portion thereof which is introduced into a circular opening portion 17*a* of the hood with an outstanding lug 19. The circular opening portions 17*a* of the hood are only slightly larger than the diameters of the outer tubular members 1 of the protective devices A, and in introducing the end portions of the outer tubular members of the protective devices into the circular opening portions 17*a* of the hood 16 the lugs 19 are positioned so that they will pass laterally through the slot portions 17*b* of the openings 17 of the hood. The protective devices are then rotated approximately 180° to bring the lugs 19 to positions at the tops of the circular opening portions 17*a*, and inwardly of the end walls of the hood in which said opening portions are formed, so that said lugs overlap solid portions of said end walls of the hood and thereby lock the protective devices to the hood, as is shown in Fig. 13.

I claim:

1. A protective device comprising an outer tubular member having an opening formed longitudinally thereof, an inner tubular member disposed axially within said outer member and having an opening formed longitudinally thereof, bearing elements arranged within said outer member for supporting the wall of said inner member in spaced relation with respect to the wall of said outer member so as to adapt said outer and inner members for relative rotary movement whereby the openings of said outer and inner members may be brought into registration and said openings of said outer and inner members may be moved to positions where they are offset with respect to each other, and means including handles associated with said outer and inner members which facilitate relative rotation thereof, one of said handles being associated with said outer member and another handle being associated with said inner member.

2. A protective device comprising an outer tubular member having an opening formed longitudinally thereof, an inner tubular member disposed axially within said outer member and having an opening formed longitudinally thereof, bearing elements arranged within said outer member for supporting the wall of said inner member in spaced relation with respect to the wall of said outer member so as to adapt said outer and inner members for relative rotary movement whereby the openings of said outer and inner members may be brought into registration and said openings of said outer and inner members may be moved to positions where they are offset with respect to each other, said bearing elements comprising spaced arcuate elements fixed to said outer member and having openings which coincide with the opening of said outer member, and means associated with said outer and inner members which facilitate relative rotation thereof.



3. A protective apparatus including a device comprising an outer member having an opening formed longitudinally thereof, an inner member disposed axially within said outer member and having an opening formed longitudinally thereof, said outer and inner members being adapted for relative rotary movement to bring the openings thereof into registration and to move said openings to offset relation with respect to each other, means associated with said outer and inner members which facilitate relative rotation thereof, a separable hood adapted for association with said device which is provided with an opening in a wall thereof through which an end portion of said device is adapted to be extended, and means associated with said device which is adapted to lock said device to said hood.

4. A protective apparatus including a device comprising an outer member having an opening formed longitudinally thereof, an inner member disposed axially within said outer member and having an opening formed longitudinally thereof, said outer and inner members being adapted for relative rotary movement to bring the openings thereof into registration and to move said openings to offset relation with respect to each other, and means associated with said outer and inner members which facilitate relative rotation thereof, a hood adapted for association with said device which is provided with an opening in a wall thereof through which an end portion of said device is adapted to be extended, and means associated with said device which is adapted to lock said device to said hood, the last-mentioned means comprising a lug formed on the outer member of said device which is adapted to be passed with said device through a portion of the opening of said hood and which may be adjusted by rotating said device with respect to said hood to a position where said lug is disposed inwardly of a portion of wall of said hood through which said hood opening is formed.

THOMAS H. BOWEN.


## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 568,060 | Wood | Sept. 22, 1896 |
| 992,738 | Marshall | May 16, 1911 |
| 1,141,674 | Withers | June 1, 1915 |
| 1,598,155 | Salisbury | Aug. 31, 1926 |
| 1,668,513 | Millward | May 1, 1928 |
| 1,877,035 | Palmer | Sept. 13, 1932 |
| 1,988,604 | Merrill | Jan. 22, 1935 |