United States Patent

[11] 3,614,699

[72] Inventor **Aloysius J. Fister**
St. Louis, Mo.

[21] Appl. No. **62,414**
[22] Filed **Aug. 10, 1970**
[45] Patented **Oct. 19, 1971**

[73] Assignee **McGraw-Edison Company**
Elgin, Ill.

[54] PROTECTOR FOR ELECTRIC CIRCUITS

9 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **337/244,** 337/159, 337/231
[51] **Int. Cl.** **H01h 85/30**
[50] **Field of Search** 337/244, 158, 159, 186, 192, 214, 227, 231, 236, 241, 267, 283, 202

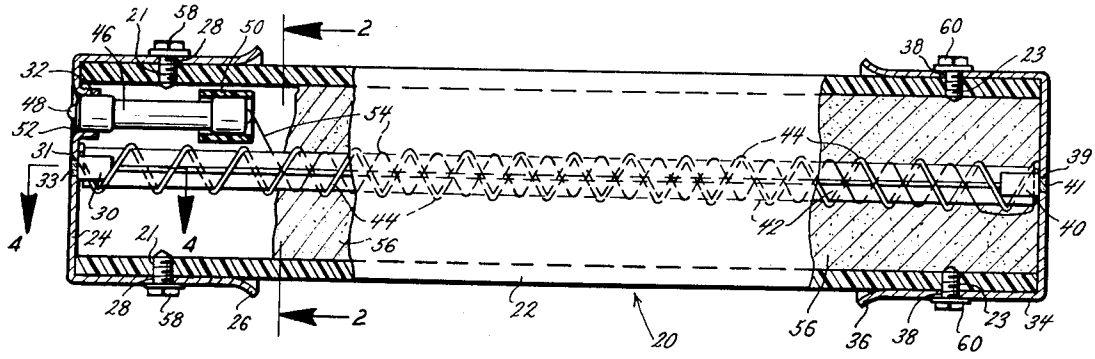
[56] **References Cited**

UNITED STATES PATENTS

2,639,350	5/1953	Cox	337/244
3,244,839	4/1966	Albright	337/159
3,301,979	1/1967	Fister	337/231
3,483,502	12/1969	Mikulecky	337/244

Primary Examiner—Harold Broome
Attorney—Rogers, Ezell, Eilers & Robbins

ABSTRACT: A terminal of an electric power-supplying fuse has an opening therein and has an annular mounting surrounding that opening; and that annular mounting supports, in cantilever fashion, the indicator-bearing terminal of an indicating fuse. The other terminal of that indicating fuse is displaced radially outwardly of and out of engagement with the fusible element of the power-supplying fuse. The indicating fuse is a wholly enclosed, complete subassembly which is manufactured and tested, and is then assembled with said annular mounting on said terminal.



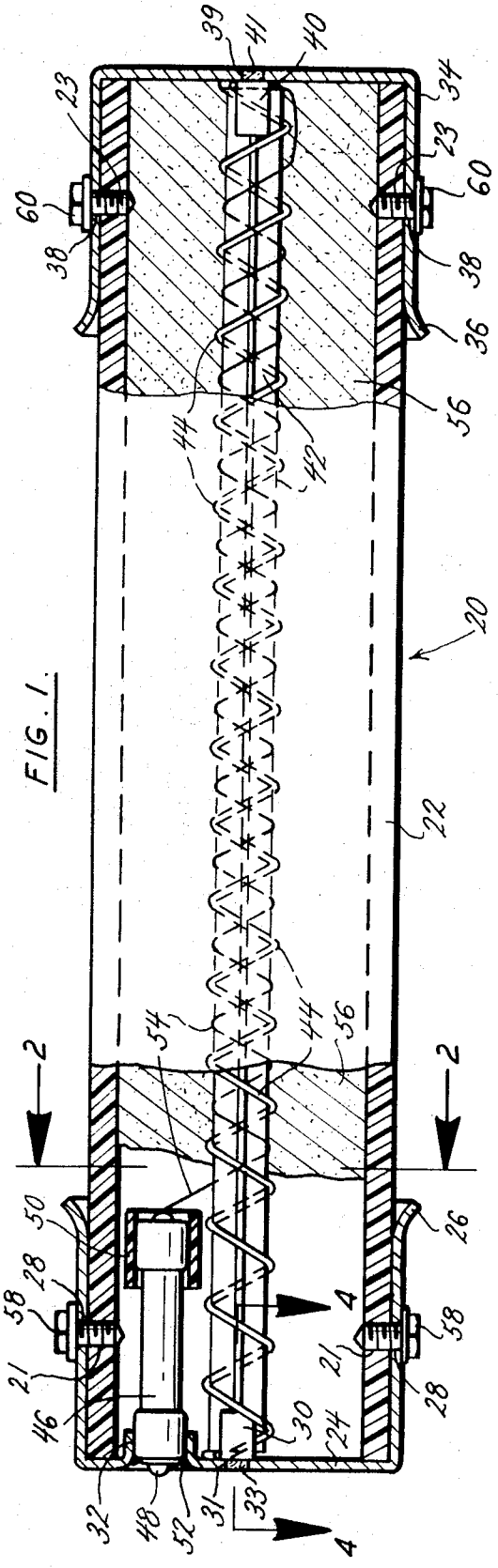


FIG. 1.

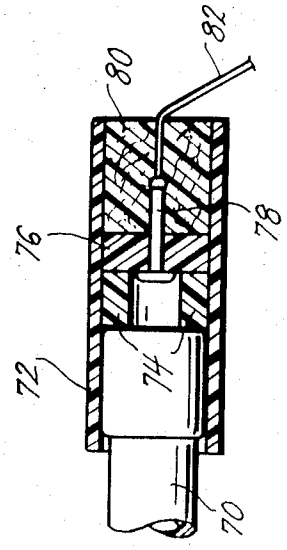


FIG. 3.

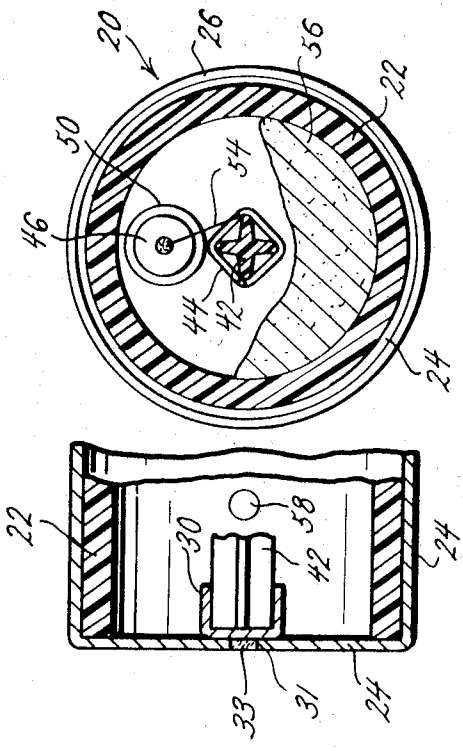


FIG. 2.

FIG. 4.

PROTECTOR FOR ELECTRIC CIRCUITS

This invention relates to improvements in Protectors for Electric Circuits. More particularly, this invention relates to improvements in indicator-equipped, power-supplying electric fuse.

It is, therefore, an object of the present invention to provide an improved indicator-equipped, power-supplying electric fuse.

Power-supplying fuses are frequently equipped with indicators, and those indicators can be very useful. Unfortunately, however, the indicators of some indicator-equipped, power-supplying electric fuses are fabricated as parts of the terminals of those fuses; and it takes more time and money to fabricate and test these indicators than it takes to manufacture and test commercially produced indicating fuses. Consequently, it would be desirable to provide an indicator-equipped, power-supplying electric fuse which utilized a commercially produced indicating fuse as the indicator thereof. The present invention provides such an indicator-equipped, power-supplying electric fuse; and it does so by forming one of the terminals of that indicator-equipped, power-supplying electric fuses with an opening that is surrounded by an annular mounting which receives and supports the indicator-bearing terminal of a commercially produced indicating fuse. That indicating fuse can be produced and tested at less cost, and with a higher degree of accuracy, than can the indicators for many indicator-equipped power-supplying electric fuse which has a terminal with an opening surrounded by an annular mounting that receives and supports the indicator-bearing terminal of a commercially produced indicating fuse.

The opening in the terminal of the indicator-equipped, power-supplying electric fuse provided by the present invention is located eccentrically of the geometric center of that electric fuse. This is desirable; because it bodily spaces the indicator of that indicating fuse away from the fusible element of the power-supplying electric fuse, and thereby keeps that indicator fuse from derating that power-supplying electric fuse. Also, the eccentric location of that indicating fuse makes it possible to displace the indicator of that indicating fuse an appreciable distance away from the base of any U-shaped clip in which the power-supplying electric fuse will be held. It is, therefore, an object of the present invention to displace the indicating fuse of an indicator-equipped, power-supplying electric fuse eccentrically away from the fusible element of that power-supplying electric fuse.

Other and further objects and advantages of the present invention should become apparent from an examination of the drawing and accompanying description.

In the drawing and accompanying description two preferred embodiments of the present invention are shown and described but it is to be understood that the drawing and accompanying description are for the purpose of illustration only and do not limit the invention and that the invention will be defined by the appended claims.

In the drawing,

FIG. 1 is a partially broken-away, partially sectional elevational view of one preferred embodiment of indicator-equipped power-supplying electric fuse that is made in accordance with the principles and teachings of the present invention,

FIG. 2 is a sectional view through the electric fuse of FIG. 1, and it is taken along the plane indicated by the line 2—2 in FIG. 1,

FIG. 3 is a sectional view, on a larger scale, of a sleeve of insulation which is supported by, and which extends outwardly from, the free end of an indicating fuse which can be substituted for the indicating fuse shown in FIGS. 1 and 2, and

FIG. 4 is a sectional view through the electric fuse of FIG. 1, and it is taken along the plane indicated by the line 4—4 in FIG. 1.

Referring to the drawing in detail, the numeral 20 generally denotes an indicator-equipped, power-supplying electric fuse that is made in accordance with the principles and teachings of the present invention. That fuse has an elongated tubular

housing 22 of insulating material, ad that housing has openings 21 adjacent the left-hand end thereof and has openings 23 adjacent the right-hand end thereof. A ferrulelike terminal 24 is telescoped over the left-hand end of the housing 22; and the free edge 26 of that ferrulelike terminal is flared outwardly, as shown by FIG. 1. A number of openings 28 are formed in the cylindrical portion of the ferrulelike terminal 24; and those openings are in register with the openings 21 in the housing 22. An opening 31 is provided at the geometric center of the closed end of the ferrulelike terminal 24; and solder 33 secures the closed end of a U-shaped bracket 30 to the inner surface of the closed end of the ferrulelike terminal 24 adjacent that opening. The arms of that U-shaped bracket extend inwardly of the housing 22, as shown by FIGS. 1 and 4. A further opening is formed in the closed end of the ferrulelike terminal 24, and an annular mounting 32 surrounds and helps define that opening; and that annular mounting extends inwardly of the housing 22, as shown by FIG. 1.

The numeral 34 denotes a ferrulelike terminal that telescopes over the right-hand end of the housing 22; and the free edge 36 of that ferrulelike terminal is flared outwardly, as shown by FIG. 1. Openings 38 are provided in the cylindrical portion of the ferrulelike terminal 34; and those openings are in register with the openings 23 in the housing 22. An opening 39 is provided at the geometric center of the closed and of the ferrulelike terminal 34; and solder 41 secures the closed end of a U-shaped bracket 40 to the inner surface of the closed end of the ferrulelike terminal 34 adjacent that opening. The arms of that U-shaped bracket extend inwardly of the housing 22, as shown by FIG. 1. The arms of the bracket 40 are in register with the arms of the bracket 30, and those brackets are at the geometric center of the housing 22.

The numeral 42 denotes an elongated support; and that support preferably is made from a suitable insulating material. That support is shown as being cruciform in cross section; but it could be given any desired cross section. The opposite ends of the support 42 are disposed between, and supported by, the arms of the brackets 30 and 40. The unstressed spacing between the arms of the bracket 30 is smaller than the distance between the outer faces of one arm of a cruciform cross section of the support 42; but those arms will yield to permit those outer faces to be pressed into position between those arms. Thereafter, the restorative forces within the arms of the bracket 30 will cause those arms to grip and hold the left-hand end of the support 42. The unstressed spacing between the arms of the bracket 40 is smaller than the distance between the outer faces of the said one arm of the cruciform cross section of support 42; but those arms will yield to permit those outer faces to be pressed into position between those arms. Thereafter, the restorative forces within the arms of the bracket 40 will cause those arms to grip and hold the right-hand end of the support 42.

The numeral 44 denotes a fusible element which has the left-hand end thereof electrically connected to the inner surface of the closed end of ferrulelike terminal 24 by solder, not shown; and that fusible element has the right-hand thereof electrically connected to the inner surfaces of the closed end of ferrulelike terminal 34 by solder, not shown. That fusible element is wound onto the support 42 in generally helical form; and the turns of that fusible element are fixedly held, relative to the housing 22, by that support.

The numeral 46 denotes an enclosed, self-contained, commercially manufactured and commercially tested indicating fuse; and that indicating fuse has a casing of insulating material and has two ferrulelike terminals at the opposite ends of that casing. One of those ferrulelike terminals supports a normally retracted indicator 48; but that indicator will be moved outwardly to indicating position whenever the indicating fuse 46 is "blown." The left-hand ferrulelike terminal of indicating fuse 46 is pressed into, and is aligned and supported by, the annular mounting 32 on the closed end of the ferrulelike terminal 24. Solder 52 electrically connects the ferrulelike terminal 24 of the power-supplying electric fuse 20 to the left-

hand ferrulelike terminal of the indicating fuse 46. A sleeve 50 of insulation encases the right-hand ferrulelike terminal of the indicating fuse 46; and that sleeve will keep that ferrulelike terminal from electrically engaging the fusible element 44 of the power-supplying electric fuse. In doing so, that sleeve keeps that indicating fuse from derating that power-supplying electric fuse. The annular mounting 32 will, in every instance where the indicating fuse 46 is properly assembled with the ferrulelike terminal 24, align the axis of that indicating fuse with the axis of the support 42—and will thereby automatically space the right-hand terminal of that indicating fuse away from, and radially outwardly of, the fusible element 44. However, in the event an assembler were, somehow, to improperly assemble the indicating fuse 46 with the annular mounting 32, and were to cause the right-hand terminal of that indicating fuse to incline toward one or more turns of the fusible element 44, the sleeve 50 of insulating material would prevent any electrical contact between that right-hand terminal and any turns of that fusible element.

The U-shaped bracket 30 will be fixedly secured to the inner surface of the closed end of the ferrulelike terminal 24; and it will hold the left-hand end of the support 42 fixed relative to that closed end. The annular mounting 32 is fixed relative to the U-shaped bracket 30; and it will hold the left-hand terminal of the indicating fuse 46 fixed relative to that closed end. In that way, the U-shaped bracket 30 and the annular mounting 32 automatically provide and maintain the desired spacing between the left-hand end of the support 42 and the left-hand terminal of the indicating fuse 46.

The numeral 54 denotes an elongated, normally infusible conductor which has the right-hand end thereof electrically connected to the inner surface of the closed end of ferrulelike terminal 34 by solder, not shown. That conductor has the major portion of the length thereof wound onto the support 42 in generally helical fashion; and the turns of that conductor are disposed between adjacent turns of the fusible conductor 44, so the turns of conductor 54 never engage the turns of fusible element 44. The left-hand end of the conductor 54 is soldered to the right-hand terminal of the indicator fuse 46. The normally infusible conductor 54 coacts with the indicator fuse 46 to constitute one continuous, electrical path between the ferrulelike terminals 24 and 34; and the fusible element 44 constitutes a second continuous electrical path between those ferrulelike terminals.

Arc-extinguishing filler material 56 is introduced into the housing 22 before the last of the two ferrulelike terminals 24 and 34 is assembled with that housing. Pins 58 are passed through the openings 28 in the cylindrical portion of the ferrulelike terminal 24 and through the openings 21 in the housing 22 to fixedly secure that ferrulelike terminal to that housing. Pins 60 are passed through the openings 38 in the cylindrical portion of the ferrulelike terminal 34 and through the openings 23 in the housing 22 to fixedly secure that ferrulelike terminal to that housing.

The effective resistance of the fusible element 44 of the power-supplying electric fuse 20 is very much less than the total effective resistance of indicating fuse 46 and normally infusible conductor 54. As a result, as long as the fusible element 44 remains intact, that fusible element will conduct substantially all of the current which flows between the ferrulelike terminals 24 and 34; and hence not enough current will flow through the indicating 46 to "blow" that indicating fuse. However, when the power-supplying electric fuse 20 is subjected to a heavy overload or a "short circuit," the fusible element 44 will heat to its melting temperature and will fuse. At such time, the overload or "short circuit" current will attempt to flow through serially connected indicating fuse 46 and normally infusible conductor 54; but the fusible element of that indicating fuse will promptly fuse. Thereupon a spring, not show, within that indicating fuse will force the indicator 48 of that indicating fuse to move outwardly of the ferrulelike terminal 42 of the power-supplying electric fuse 20. That indicator will provide a quick and certain indication, to a maintenance man, that the power-supplying electric fuse 20 has interrupted the circuit.

The indicating fuse 46 can be any on e of a number of commercially produced and commercially tested small ampere indicating fuses that are being marketed. Such indicating fuses are made by mass production method, and they are tested as they are produced. As a result, those indicating fuses are relatively inexpensive, and they have carefully controlled and carefully tested electrical characteristics. The annular mounting 32 enables that indicating fuse from any stresses to which it might be subjected if it were mechanically connected to the support 42. Also, that annular mounting spaces that indicating fuse wholly away from the fusible element 44, and thereby keeps that indicating fuse from derating the power-supplying electric fuse 20.

Referring particularly to FIG. 3, the numeral 70 denotes and indicating fuse which can be similar to the indicating fuse 46, but which will usually have a smaller ampere rating than that of indicating fuse 46. The left-hand terminal of the indicating fuse 70 will support an indicator, not shown, which is similar to the indicator 48. A sleeve 72 of insulating material is telescoped over the right-hand terminal of the indicating fuse 70; and that sleeve extends a substantial distance beyond that terminal. A tubular washer 74 of that washer abuts the closed end of the right-hand terminal of the indiating fuse 70. A disk 76, which supports a metal arc-gap terminal 78, abuts the right-hand face of the tubular washer 74; and that disk holds the left-hand end of that metal arc-gap terminal in register with the central portion of the right-hand terminal of indicating fuse 70. A mass 80 of insulating material, such as an epoxy plastic, fills the right-hand end of the metal arc-gap terminal 78 and the left-hand end of a normally infusible conductor 82 which is fixedly secured to the right-hand end of that metal arc-gap terminal. The normally infusible conductor 82 can be similar to the normally infusible conductor 54, although it may have a different overall resistance.

The indicating fuse 70 will have the left-hand terminal thereof held by an annular mounting similar to the annular mounting 32 in FIG. 1; and that annular mounting will support that indicating fuse in cantileverlike fashion. THe right-hand terminal of the indicating fuse 70 will normally be displaced from, and spaced radially outwardly, of the, fusible element of the power-supplying electric fuse in which the indicating fuse 70 is mounted. However, in the event an assembler fails to properly insert the left-hand terminal of the indicating fuse 70 within the annular mounting therefore, the sleeve 72 of insulation will keep the right-hand terminal of that indicating fuse from electrically engaging the fusible element of that power-supplying electric fuse.

As long as the fusible element of the power-supplying electric fuse, of which the indicating fuse 70 is a part, remains intact, that fusible element will carry substantially all of the current flowing through that power-supplying electric fuse; and hence, not enough current will flow through the indicating fuse 70 to "blow" that indicating fuse. However, when that fusible element responds to a heavy overload or to a "short circuit" to fuse, the voltage across the power-supplying electric fuse will cause an arc to develop across the spark gap between the arc-gap terminal 78 and the right-hand terminal of the indicating fuse 70. That spark will cause sufficient energy to pass through the fusible element of that indicating fuse to cause that fusible element to fuse. Thereupon, the indicator, not shown, of that indicating fuse will move outwardly to indicating position, and will thereby indicate that the power-supplying electric fuse had opened the circuit.

The indicating fuse 70, like the indicating fuse 46 of FIG. 1, will be an enclosed, self-contained, commercially produced and commercially tested indicating fuse. As a result, that indicating fuse will be relatively inexpensive, and it will have carefully controlled and carefully tested electrical characteristics. In addition, that indicating fuse can easily be assembled with a fuse terminal by having the indicator-bearing thereof pressed into an annular mounting on that fuse terminal.

Because the power-supplying electrical fuse **20** uses a commercially produced and commercially tested indicating fuse, a manufacturer of that power-supplying electric fuse does not need to rate and test the indicating fuses for different sizes of that power-supplying electric fuse. Instead, that manufacturer need only rate and test the fusible element **44** for any desired size of power-supplying electric fuse **20**, and then select the appropriate size of indicating fuse **46** or **70**. As a result, it is simple and inexpensive to design and make any desired ampere rating of the power-supplying electric fuse **20**.

Whereas the drawing and accompanying description have shown and described two preferred embodiments of the present invention, it should be apparent to those skilled in the art that various changes may be made in the form of the invention without affecting the scope thereof.

What I claim is:

1. A power-supplying electric fuse which has a housing, a terminal adjacent one end of said housing, a terminal adjacent the other end of said housing, a fusible element electrically connecting said terminals, an opening in the first said terminal, an annular mounting on said first said terminal surrounding said opening ans extending inwardly of said first said terminal and extending inwardly of said housing, an enclosed self-contained indicating use which has a casing of insulating material and which has terminals at the opposite ends of said casing and which has one of said terminals telescoped within said annular mounting, the indicator of said indicating fuse normally being held in retracted position within said one terminal of said indicating fuse, said indicating fuse being supported in cantilever fashion by said annular mounting and having the other terminal of said indicating fuse being displaced radially outwardly of, and out of engagement with, said fusible element, said indicating fuse having said first said terminal by said annular mounting, said fusible element normally carrying essentially all of the current flowing between said terminals of said power-supplying fuse and thus normally enabling said indicator of said indicating fuse to be held in nonindicating position, said indicating fuse responding to the fusing of said fusible element to cause said indicator thereof to move outwardly to indicating position.

2. A power-supplying electric fuse which has a housing, a terminal adjacent one end of said housing, a terminal adjacent the other end of said housing, a fusible element electrically connecting said terminals, an opening in the first said terminal, an annular mounting on said first said terminal surrounding said opening and extending inwardly of said first said terminal and extending inwardly of said housing, and enclosed self-contained indicating fuse which has a casing of insulating material and which has terminals at the opposite ends of said casing and which has one of said terminals telescoped within said annular mounting, the indicator of said indicating fuse normally being held in retracted position within said one terminal of said indicating fuse, said indicating fuse being supported in cantilever fashion by said annular mounting and having the other terminal thereof disposed inwardly of said housing said other terminal of said indicating fuse being displaced radially outwardly of, and out of engagement with, said fusible element, said indicating fuse having said indicator thereof held in register with said opening in said first said terminal by said annular mounting, said fusible element normally carrying essentially all of the current flowing between said terminals of said power-supplying fuse and thus normally enabling said indicator of said indicating fuse to be held in nonindicating position, said indicating fuse responding to the fusing of said fusible element to cause said indicator thereof to move outwardly to indicating position, said annular mounting having the axis thereof parallel to, but displaced radially outwardly of, the geometric axis of said housing of said power-supplying electric fuse.

3. A power-supplying electric fuse which has a housing, a terminal adjacent one end of said housing, a terminal adjacent the other end of said housing, a fusible element electrically connecting said terminals, and opening in the first said terminal, an annular mounting on said first said terminal surrounding said opening and extending inwardly of said first said terminal and extending inwardly of said housing, an enclosed self-contained indicating fuse which has casing of insulating material and which has terminals at the opposite ends of said casing and which has a one of said terminals telescoped within said annular mounting, the indicator of said indicating fuse normally being held in retracted position within said one terminal of said indicating fuse, said indicating fuse being supported in cantilever fashion by said annular mounting and having the other terminal thereof disposed inwardly of said housing, said other terminal of said indicating fuse being displaced radially outwardly of, and out of engagement with, said fusible element, said indicating fuse having said indicator thereof held in register with said opening in said first said terminal by said annular mounting, said fusible element normally carrying essentially all of the current flowing between said terminals of said power-supplying fuse and thus normally enabling said indicator of said indicating fuse to be held in nonindicating position, said indicating fuse responding to the fusing of said fusible element to cause said indicator thereof to move outwardly to indicating position, said annular mounting being adjacent the inner surface of said housing of said power-supplying electric fuse and thus being eccentric of the geometric axis of said housing of said power-supplying electric fuse, whereby said indicating fuse can be spaced an appreciable distance from the base of a U-shaped clip for said first said terminal of said power-supplying electric fuse.

4. A power-supplying electric fuse as claimed in claim 1 wherein solder engages said annular mounting and said one terminal of said indicating fuse to electrically bond said one terminal of said indicating fuse to said first terminal of said power-supplying electric fuse.

5. A power-supplying fuse which has a housing, a terminal adjacent one end of said housing, a terminal adjacent the other end of said housing, a fusible element electrically connecting said terminals, an opening in the first said terminal, an annular mounting on said first said terminal surrounding and extending inwardly of said first said terminal and extending inwardly of said housing, and enclosed self-contained indicating fuse which has a casing of insulating material and which has terminals at the opposite ends of said casing and which has terminals at the opposite ends of said casing and which has one of said terminals telescoped within said annular mounting, the indicator of said indicating fuse normally being held in retracted position within said one terminal of said indicating fuse, said indicating fuse being supported in cantilever fashion by said annular mounting and having the other terminal thereof disposed inwardly of said housing, said other terminal of said indicating fuse being displaced radially outwardly of, and out of engagement with, said fusible element, said indicating fuse having said indicator thereof held in register with said opening in said first said terminal by said annular mounting, said fusible element normally carrying essentially all of the current flowing between said terminals of said power-supplying fuse and thus normally enabling said indicator of said indicating fuse to be held in nonindicating position, said indicating fuse responding to the fusing of said fusible element to cause said indicator thereof to move outwardly to indicating position, a sleeve of insulation encasing said other terminal of said indicating fuse, and said sleeve of insulation keeping said other terminal of said indicating fuse from engaging any part of said fusible element of said power-supplying electric fuse.

6. A power-supplying electric fuse as claimed in claim 1 wherein an elongated support of insulating material is disposed between said terminals of said power-supplying electric fuse, wherein said fusible element of said power-supplying electric fuse, wherein said fusible element of said power-supplying electric fuse is wound onto said elongated support, and wherein mounting brackets at the inner faces of said terminals of said power-supplying electric fuse hold and support the ends of aid elongated support.

7. A power-supplying electric fuse which has a housing, a terminal adjacent one end of said housing, a terminal adjacent

the other end of said housing, a fusible element electrically connecting said terminals, an opening in the first said terminal, an annular mounting on said first said terminal surrounding said opening and extending inwardly of said first said terminal and extending inwardly of said housing, an enclosed self-contained indicating fuse which has a casing of insulating material and which has terminals at the opposite ends of said casing and which has one of said terminals telescoped within said annular mounting, the indicator of said indicating fuse normally being held in retracted position within said one terminal of said indicating fuse, said indicating fuse being supported in cantilever fashion by said annular mounting and having the other terminal thereof disposed inwardly of said housing, said other terminal of said indicating fuse being displaced radially outwardly of, and out of engagement with, said fusible element, said indicating fuse having said indicator thereof held in register with said opening in said first said terminal by said annular mounting, said said fusible element normally carrying essentially all of the current flowing between said terminals of said power-supplying fuse and thus normally enabling said indicator of said indicating fuse responding to the fusing of said fusible element to cause said indicator thereof to move outwardly to indicating position, an elongated support of insulating material disposed between said terminals of said power-supplying electric fuse, said fusible element of said power-supplying electric fuse being wound into said elongated support, and mounting brackets at the inner faces of said terminals of said power-supplying electric which hold and support the ends of said elongated support, the mounting bracket at the inner face of said first said terminal of said power-supplying electric fuse being fixedly spaced from said annular mounting on said first said terminal of said power-supplying electric fuse, whereby said mounting bracket at the inner face of said first said terminal of said power-supplying electric fuse will coact with said annular mounting on said first said terminal of said power-supplying electric fuse to hold said one terminal of said indicating fuse a fixed and predetermined distance from the adjacent end of said elongated support.

8. A power-supplying electric fuse which has a housing, a terminal adjacent one end of said housing, a terminal adjacent the other end of said housing, a fusible element electrically connecting annular terminal, an opening in the first said disposed an annular mounting on said first said terminal surrounding said opening and extending inwardly of said first said terminal and extending inwardly of said housing, an enclosed self-contained indicating fuse which has a casing of insulating material and which has terminals at the opposite ends of said casing and which has one of said terminals telescoped within said annular mounting, the indicator of said indicating fuse normally being held in retracted position within said one terminal of said indicating fuse, said indicating fuse being supported in cantilever fashion by said annular mounting and having the other terminal thereof disposed inwardly of said housing, said other terminal of said indicating fuse being displaced radially outwardly of, and out of engagement with, said fusible element, said indicating fuse having said indicator thereof held in register with said opening in said first said terminal by said annular mounting, said fusible element normally carrying essentially all of the current flowing between said position, of said power-supplying fuse and thus normally enabling said indicator of said indicating fuse to be held in nonindicating position, said indicating fuse responding to the fusing of said fusible element to cause said indicator thereof to move outwardly to indicating position, a sleeve of insulation encasing said other terminal of said indicating fuse, and insulating washer within said sleeve of insulation spacing a disk from said carries an arc-gap terminal in spaced relation to said other terminal of said indicating fuse, said arc-gap terminal and said other terminal of said indicating fuse being bridged by an arc whenever said fusible element of said power-supplying electric fuse is fused, and said arc causing said indicating fuse to permit said indicator thereof to move outwardly to indicating position.

9. A power-supplying electric fuse which has a housing, a terminal adjacent one end of said housing, a terminal adjacent the other end of said housing, a fusible element electrically connecting said terminals, an elongated support of insulating material disposed between said terminals, said fusible element being wound onto said elongated support, and mounting brackets at the inner faces of said terminals, said mounting brackets holding and supporting the ends of said elongated support and thereby fixing the positions of said ends of said elongated support relative to said terminals, said mounting brackets having support-engaging surfaces with unstressed spacings therebetween which are smaller than the width of said elongated support, whereby said support-engaging surfaces of said brackets must be stressed as said ends of said elongated support are moved into engagement with said mounting brackets, the restorative forces developed within said mounting brackets as said mounting brackets are so stressed thereafter holding said elongated support fixed relative to said mounting brackets and thus fixed relative to said housing.