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(54) **SURGE ARRESTER HAVING DISCONNECTOR HOUSED BY END CAP**

ÜBERSPANNUNGSABLEITER MIT EINER IN DER ENDKAPPE EINGEBAUTER
TRENNVORRICHTUNG

PROTECTEUR ANTISURTENSION A SECTIONNEUR LOGE DANS LE CAPUCHON D'EXTREMITÉ

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EP 1 002 350 B1

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Description

Technical Field of the Application

[0001] The present invention relates to a surge arrester for shunting electrical surges to ground. More particularly, the surge arrester of the present invention may have a disconnecter which disconnects the surge arrester from ground in the event of a failure of the surge arrester.

[0002] US Patent No. 4 404 614 which is considered to represent the closest prior art, discloses a surge arrester including an outer elongated housing and an inner liner. The outer housing is constructed of a material which will not break as a result of internal electrical arcing, specifically a relatively resilient, electrically insulating and non-tracking material which in a preferred embodiment is EPDM rubber. In order to add structural integrity to the arrester, its inner line is constructed of a high strength material, preferably resin impregnated fiberglass. That arrester has a housing having a conductive plug at one end, a ground disconnecter in the form of a pressure relief valve at the other end, and a number of valve elements, a gap assembly, and a spring within the housing between the conductive plug and the pressure relieve valve which includes a cup and a diaphragm.

Background of the invention

[0003] Overvoltage surges, which travel along an electric power distribution system and which are not properly averted or diverted, often damage transformers and other electrical equipment of the electric power distribution system, as well as the electrical equipment of residential, commercial and industrial customers supplied by the electric power distribution system. Consequently, surge arresters are commonly used in an electric power distribution system for shunting overvoltage surges to system ground before the overvoltage surges can damage the electrical equipment connected in, or to, the electric power distribution system.

[0004] Typical surge arresters used in electric power distribution systems can fail in a runaway condition. When such a failure occurs, the surge arrester may explode apart, potentially damaging nearby equipment and injuring anyone who happens to be near. Therefore, it has been a common prior art practice to provide surge arresters with fault disconnectors which open the circuits containing failed surge arresters. Usually, a fault disconnecter is connected between its corresponding surge arrester and ground so that, when the fault disconnecter activates upon failure of the surge arrester, the fault disconnecter separates the surge arrester from its ground connection. The separated ground connection not only disconnects the failed surge arrester from the electric power distribution system, but also provides a visible indication to a utility linesmen that the surge

arrester has failed.

[0005] A typical fault disconnecter includes a cartridge, which may contain a predetermined amount of gun powder, and which is heated as the surge arrester begins to fail. When the cartridge heats sufficiently, it explodes separating the surge arrester from its ground connection. The amount of gun powder that is used in the cartridge is sufficient to cause such separation but not sufficient to cause damage or injury.

[0006] The cartridge, and the other elements of the fault disconnecter, are contained within a disconnecter housing that is a separate component of the surge arrester, that has an internally threaded hole for threaded attachment to a housing of the surge arrester, and that has an external threaded ground connector for attachment to a ground lead. An electrical resistor, which is another element of the fault disconnecter and which is housed by the disconnecter housing, is electrically connected between a surge arrester terminal and the ground connector of the disconnecter. Accordingly, when the surge arrester fails, the current through the electrical resistor increases abnormally and generates enough heat to trigger the cartridge causing it to break the disconnecter housing and to separate the ground terminal from the surge arrester.

[0007] The use of a separate disconnecter housing increases the part count of a surge arrester which, in turn, increases the manufacturing cost of the surge arrester. The present invention is directed to a surge arrester which reduces part count.

[0008] The present invention provides a surge arrester as defined in claim 1 hereof. Other, preferred, features of the invention are defined in subsidiary claims.

[0009] These and other features and advantages of the present invention will become more apparent from a detailed consideration of the invention when taken in conjunction with the drawings in which:

Figure 1 illustrates a first embodiment of a surge arrester that includes a fault disconnecter according to the present invention;

Figure 2 is an exploded view of the fault disconnecter illustrated in Figure 1;

Figure 3 is an enlarged view of a second embodiment of a surge arrester according to the present invention;

Figure 4 illustrates a third embodiment of a surge arrester according to the present invention; and,

Figure 5 illustrates a fourth embodiment of a surge arrester according to the present invention.

Detailed Description

[0010] As shown in Figure 1, a surge arrester 10 includes a first terminal end 12 and a second terminal end 14. The first terminal end 12 includes a first connector 16 which is used to electrically connect the surge arrester 10 to a first electrical line. The second terminal end

14 includes a second connector 18 which is used to electrically connect the surge arrester 10 to a second electrical line. The first electrical line may be, for example, an electrically conducting lead which connects the first connector 16 to a high voltage line of an electrical power distribution system, and the second electrical line may be an electrically conducting lead which connects the second connector 18 to ground. Alternatively, however, the first electrical line may be, for example, an electrically conducting lead which connects the first connector 16 to ground, and the second electrical line may be an electrically conducting lead which connects the second connector 18 to a high voltage line of an electrical power distribution system.

[0011] The first connector 16 is threaded into a first end cap 20, and the second connector 18 is electrically connected to a second end cap 22 in a manner to be described below. The first and second end caps 20 and 22 are electrically conductive and, for example, may be formed from aluminum. A first surge arresting element 24 is in electrical contact with the first end cap 20, a second surge arresting element 26 is in electrical contact with the first surge arresting element 24, a third surge arresting element 28 is in electrical contact with the second surge arresting element 26, and a fourth surge arresting element 30 is in electrical contact with both the third surge arresting element 28 and the second end cap 22. Accordingly, a series circuit is formed between the first and second end caps 20 and 22. The surge arresting elements 24-30 may be metal oxide varistor blocks, for example, which conduct in the presence of surges in order to shunt the surge energy in the electric power distribution system between the first and second connectors 16 and 18.

[0012] An arrester housing 32 houses the first and second end caps 20 and 22 and the surge arresting elements 24, 26, 28, and 30. As is known, the arrester housing 32 may be an insulating polymeric or porcelain housing having a plurality of polymeric or porcelain water sheds 34. A mounting bracket 36 is provided in order to mount and support the surge arrester 10 to a utility pole or other apparatus of an electric power distribution system.

[0013] As shown in Figures 1 and 2, the second end cap 22 has a first end 40 which is in electrical contact with the fourth surge arresting element 30. The second end cap 22 also has a second end 42 which comprises a wall 44 forming a recess 46. A fault disconnecter 47 includes a cartridge 48 which is contained within an end 50 of the second connector 18. The fault disconnecter 47 also includes a first electrically conductive washer 52 abutting the end 50 of the second connector 18, a second electrically conductive washer 54 abutting an internal wall 58 of the second end cap 22, and a resistor 56 sandwiched between the first and second electrically conductive washers 52 and 54. A plastic cup 59 contains the first and second electrically conductive washers 52 and 54 and the resistor 56 when the fault disconnecter

47 is assembled as shown in Figure 1. Thus, the plastic cup 59 insulates the resistor 56 and the first and second electrically conductive washers 52 and 54 from the wall 44 of the second end cap 22 forcing fault current to flow from the second end cap 22 through the second electrically conductive washer 54, through the resistor 56, through the first electrically conductive washer 52, and through the second connector 18.

[0014] The wall 44 of the second end cap 22 has a circumferential groove 60 therearound. During assembly of the surge arrester 10, the surge arresting elements 24, 26, 28, and 30 are stacked between the first and second end caps 20 and 22. The stack formed by the surge arresting elements 24, 26, 28, and 30 and the first and second end caps 20 and 22 is wrapped with a fiber glass weave in order to retain the surge arresting elements 24, 26, 28, and 30 and the first and second end caps 20 and 22 in the stack. The arrester housing 32 is applied to the wrapped stack of the surge arresting elements 24, 26, 28, and 30 and the first and second end caps 20 and 22 as shown in Figure 1. For example, the arrester housing 32 may be molded directly on the wrapped stack of the surge arresting elements 24, 26, 28, and 30 and the first and second end caps 20 and 22.

[0015] The arrester housing 32 is mounted to the mounting bracket 36 by inserting the wall 44 through an opening 62 in the mounting bracket 36 as shown in Figure 1. The mounting bracket 36 may have a first recess 64 and a second recess 66 which are concentric with respect to one another. The first recess 64 is formed by a generally cylindrical wall 68 of the mounting bracket 36. The generally cylindrical wall 68 may have an internal taper. As the second end cap 22 is pushed through the opening 62 in the mounting bracket 36, a flange 70 of the second end cap 22 enters the second recess 66 of the mounting bracket 36, and the taper of the generally cylindrical wall 68 causes an end portion 72 of the arrester housing 32 to be squeezed between the generally cylindrical wall 68 and the flange 70 of the second end cap 22. As a result of this squeezing action, the end portion 72 acts as a gasket or seal at the second terminal end 14 in order to isolate the interior of the arrester housing 32 from the external environment. When the arrester housing 32 is fully pressed into the opening 62 of the mounting bracket 36 so that the circumferential groove 60 is accessible, a snap ring 73 is snapped into the circumferential groove 60 in the wall 44 of the second end cap 22 to thereby clamp the surge arrester 10 to the mounting bracket 36 with enough force to maintain the seal by the end portion 72 between the generally cylindrical wall 68 and the flange 70 of the second end cap 22.

[0016] A subassembly 74 is formed by inserting the second connector 18, with the cartridge 48 inserted in the end 50, through the plastic cup 59 until the plastic cup 59 abuts a flange 76 at the end 50 of the second connector 18, and by inserting the first electrically conductive washer 52 into the plastic cup 59 until the first

electrically conductive washer 52 abuts the flange 76 at the end 50 of the second connector 18. The resistor 56 is inserted into the plastic cup 59 until the resistor 56 abuts the first electrically conductive washer 52, and the second electrically conductive washer 54 is placed on top of the resistor 56. The subassembly 74 is then inserted into the recess 46 of the second end cap 22 until the second electrically conductive washer 54 abuts the internal wall 58, leaving a space 78 as shown in Figure 1. The space 78 is filled with an epoxy potting material in order to hold the subassembly 74 in electrical contact with the second end cap 22.

[0017] Accordingly, the recess 46 in the second end cap 22 forms a disconnecter housing for the fault disconnecter 47 so as to eliminate the need for a separate housing for the fault disconnecter 47.

[0018] Instead of using the snap ring 73 in the circumferential groove 60 of the second end cap 22 to clamp the first and second end caps 20 and 22, the surge arresting elements 24, 26, 28, and 30, and the arrester housing 32 to the mounting bracket 36, the second end cap 22 may be threaded into the mounting bracket 36. To this end, the second end cap 22 may be externally threaded at a region 80 as shown in Figure 3.

[0019] As shown in Figure 1, the arrester housing 32 is formed over the first end cap 20 so as to provide a seal in cooperation with a flange 90 of the first connector 16. This seal at the first terminal end 12 isolates the interior of the arrester housing 32 from the external environment. Alternatively, the arrester housing 32 may be configured with an integral O-ring 92 as shown in Figure 4. The integral O-ring 92 fits within an annular groove 94 about a first end cap 20A in order to provide a seal at the first terminal end 12 that isolates the interior of the arrester housing 32 from the external environment.

[0020] Instead of configuring an integral O-ring according to the integral O-ring 92 shown in Figure 4, an integral O-ring 100 may be provided as shown in Figure 5. The integral O-ring 100 is integrally formed in the arrester housing 32 at its top and defines an opening 102 through which the first connector 16 extends so that it may be threaded into the first end cap 20. The integral O-ring 100 fits within an annular recess 104 formed in a flange 106 of the first connector 16. As the first connector 16 is threaded into the first end cap 20, the integral O-ring 100 is tightly squeezed into the annular recess 104 and cooperates with the flange 106 in order to provide a seal at the first terminal end 12 that isolates the interior of the arrester housing 32 from the external environment.

[0021] Certain modifications of the present invention have been discussed above. Other modifications will occur to those practicing in the art of the present invention. For example, the first connector 16 and the first end cap 20 are shown as being separate elements. Instead, the first connector 16 and the first end cap 20 may be formed as a single, integrated, electrically conductive element.

[0022] Also, four surge arresting elements 24, 26, 28,

and 30 are shown in Figure 1 as being electrically connected between the first and second end caps 20 and 22. However, any number of surge arresting elements may be provided between the first and second end caps 20 and 22 depending upon the voltage carried by the electric power distribution system and/or depending upon the particular construction of the surge arresting elements.

[0023] Moreover, as described above, the surge arrester 10 is assembled in the following order. First, the surge arresting elements 24, 26, 28, and 30 are stacked between the first and second end caps 20 and 22, the stack formed by the surge arresting elements 24, 26, 28, and 30 and the first and second end caps 20 and 22 is wrapped with a fiber glass weave, and the arrester housing 32 is applied to the wrapped stack of the surge arresting elements 24, 26, 28, and 30 and the first and second end caps 20 and 22. Second, this arrangement is then secured to the mounting bracket 36. Third, the subassembly 74 is applied to the second end cap 22. Instead, the surge arrester 10 may be assembled in any desired order. For example, the surge arresting elements 24, 26, 28, and 30 may be first stacked between the first and second end caps 20 and 22, the stack formed by the surge arresting elements 24, 26, 28, and 30 and the first and second end caps 20 and 22 may be wrapped with a fiber glass weave, and the arrester housing 32 may be applied to the stacked surge arresting elements 24, 26, 28, and 30 and first and second end caps 20 and 22. Second, the subassembly 74 may be applied to the second end cap 22. Third, the resulting arrangement may be then secured to the mounting bracket 36.

[0024] Additionally, the first and second end caps 20 and 22 may be referred to as surge arresting elements insofar as they facilitate the surge arresting function described above.

[0025] Furthermore, the plastic cup 59 may be formed of any type of electrical insulating material other than plastic.

[0026] Also, an electrically conductive spring, such as a spring washer, may be inserted between the second electrically conductive washer 54 and the internal wall 58.

[0027] Accordingly, the description of the present invention is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the best mode of carrying out the invention. The details may be varied substantially without departing from the invention as defined in the appended claims.

Claims

1. A surge arrester (10) having a surge arresting element (24, 26, 28, and/or 30), a first end cap (20) arranged to electrically connect the surge arresting element (24, 26, 28, and/or 30) to a first electrical

line, a second end cap (22) electrically connected to the surge arresting element (24, 26, 28, and/or 30), and a fault disconnecter (47) arranged to electrically connect the second end cap (22) to a second electrical line, wherein the surge arresting element (24, 26, 28, and/or 30) is arranged to conduct in the presence of a surge, wherein the second end cap (22) has first and second ends (40 and 42), wherein the fault disconnecter (47) is arranged to disconnect the surge arresting element from the second electrical line in the event of a fault, the surge arrester **BEING CHARACTERIZED in that;**

the first end (40) of the second end cap (22) is in direct electrical engagement with the surge arresting element (24, 26, 28, and/or 30), the second end (42) of the second end cap (22) is recessed (46) to form a disconnecter housing, the second end cap (22) is substantially conductive throughout, and the fault disconnecter (47) is housed within the disconnecter housing formed by the second end cap (22).

2. The surge arrester of claim 1 wherein the first electrical line is a power line.
3. The surge arrester of claim 1 or claim 2 wherein the first and second end caps (20 and 22) are in electrical contact with the surge arresting element.
4. The surge arrester of any preceding claim wherein the surge arresting element (24, 26, 28, and/or 30) is a metal oxide varistor.
5. The surge arrester of any preceding claim further comprising a mounting bracket (36) arranged to support the surge arresting element (24, 26, 28, and/or 30), the first and second end caps (20 and 22), and the fault disconnecter (47).
6. The surge arrester of any preceding claim further comprising a fastener (73) arranged to fasten the surge arresting element (24, 26, 28, and/or 30), the first and second end caps (20 and 22), and the fault disconnecter (47) to the mounting bracket (36) so that the mounting bracket (36) is clamped between the second end cap (22) and the fastener (73).
7. The surge arrester of claim 1 wherein, the surge arresting element (24, 26, 28, and/or 30) comprises a plurality of surge arresting elements (24, 26, 28, and 30).
8. The surge arrester of any preceding claim wherein the second electrical line is substantially at ground.
9. The surge arrester of any preceding claim wherein the first and second end caps (20 and 22) are in electrical contact with the surge arresting element (24, 26, 28, and/or 30).

10. The surge arrester of any preceding claim wherein the arrester housing (32) has a protrusion in the form of an O-ring (92), and wherein the protrusion is arranged to form a seal with respect to the first end cap (20).

11. The surge arrester of any preceding claim wherein the first end cap (20) has first and second ends, wherein the second end is in electrical engagement with the surge arresting element (24, 26, 28, and/or 30), and wherein the arrester housing (32) forms a seal over the first end of the first end cap (20).

12. The surge arrester of any preceding claim further comprising an arrester housing (32) arranged to house the surge arresting element (24, 26, 28, and/or 30) and the first and second end caps (20 and 22).

13. The surge arrester of claim 8 further comprising a mounting bracket (36) arranged to support the surge arresting element (24, 26, 28, and/or 30), the first and second end caps (20 and 22), the arrester housing (32), and the fault disconnecter (47).

14. The surge arrester of claim 13 wherein the arrester housing (32) is arranged to form a seal with respect to the mounting bracket (36) and the second end cap (22).

15. The surge arrester of claim 13 or claim 14 further comprising a fastener (73) arranged to fasten the surge arresting element (24, 26, 28, and/or 30), the first and second end caps (20 and 22), the arrester housing (32), and the fault disconnecter (47) to the mounting bracket (36) so that mounting bracket (36) is clamped between the second end cap (22) and the fastener (73).

16. The surge arrester of claim 15 wherein the arrester housing (32) is arranged to be wedged between the mounting bracket (36) and the second end cap (22) when the mounting bracket (36) is clamped between the second end cap (22) and the fastener (73) so as to form a seal.

17. The surge arrester of claim 15 or claim 16 wherein the mounting bracket (36) has first and second recesses (64 and 66), wherein the first recess (64) is formed by a wall (68) of the mounting bracket (36), wherein the wall (68) is tapered, wherein the second recess (66) is arranged to receive a flange (70) of the second end cap (22), and wherein the arrester housing (32) is arranged to be wedged between the tapered wall (68) of the mounting bracket (36) and the flange (70) of the second end cap (22) when the mounting bracket (36) is clamped between the second end cap (22) and the fastener (73) so as to form

a seal.

Patentansprüche

1. Überspannungsableiter (10), mit einem Überspannungsableitelement (24, 26, 28 und/oder 30), einem ersten Endverschluß (20), der vorgesehen ist, um das Überspannungsableitelement (24, 26, 28 und/oder 30) mit einer ersten elektrischen Leitung elektrisch zu verbinden, einem zweiten Endverschluß (22), der elektrisch mit dem Überspannungsableitelement (24, 26, 28 und/oder 30) verbunden ist, und einem Fehlertrennschalter (47), der vorgesehen ist, um den zweiten Endverschluß (22) mit einer zweiten elektrischen Leitung elektrisch zu verbinden, wobei das Überspannungsableitelement (24, 26, 28 und/oder 30) vorgesehen ist, um beim Auftreten eines Spannungsstoßes zu leiten, wobei der zweite Endverschluß (22) erste und zweite Enden (40 und 42) hat, wobei der Fehlertrennschalter (47) so angeordnet ist, daß er im Fehlerfall das Überspannungsableitelement von der zweiten elektrischen Leitung trennt, der Überspannungsableiter **dadurch gekennzeichnet ist, daß** das erste Ende (40) des zweiten Endverschlusses (22) mit dem Überspannungsableitelement (24, 26, 28 und/oder 30) direkten elektrischen Kontakt hat, das zweite Ende (42) des zweiten Endverschlusses (22) eine Aussparung (46) aufweist, um ein Gehäuse für den Trennschalter zu formen, der zweite Endverschluß (22) durchgängig eine hohe Leitfähigkeit aufweist und der Fehlertrennschalter (47) innerhalb des Trennschaltergehäuses untergebracht ist, das mit Hilfe des zweiten Endverschlusses (22) gebildet wird.
2. Überspannungsableiter nach Anspruch 1, wobei die erste elektrische Leitung eine Starkstromleitung ist.
3. Überspannungsableiter nach Anspruch 1 oder Anspruch 2, wobei die ersten und zweiten Endverschlüsse (20 und 22) elektrisch mit dem Überspannungsableitelement verbunden sind.
4. Überspannungsableiter nach einem der vorhergehenden Ansprüche, wobei das Überspannungsableitelement (24, 26, 28 und/oder 30) ein Metalloxid-Varistor ist.
5. Überspannungsableiter nach einem der vorhergehenden Ansprüche, weiter umfassend eine Halterung (36), die vorgesehen ist, um das Überspannungsableitelement (24, 26, 28 und/oder 30), die ersten und zweiten Endverschlüsse (20 und 22) und den Fehlertrennschalter (47) zu halten.
6. Überspannungsableiter nach einem der vorhergehenden Ansprüche, weiter umfassend ein Befestigungselement (73), das vorgesehen ist, um das Überspannungsableitelement (24, 26, 28 und/oder 30), die ersten und zweiten Endverschlüsse (20 und 22) und den Fehlertrennschalter (47) an der Halterung (36) zu befestigen, so daß die Halterung (36) zwischen dem zweiten Endverschluß (22) und dem Befestigungselement (73) festgeklemt wird.
7. Überspannungsableiter nach Anspruch 1, wobei das Überspannungsableitelement (24, 26, 28 und/oder 30) aus einer Vielzahl von Überspannungsableitelementen (24, 26, 28 und 30) zusammengesetzt ist.
8. Überspannungsableiter nach einem der vorhergehenden Ansprüche, wobei die zweite elektrische Leitung im wesentlichen auf Erdpotential liegt.
9. Überspannungsableiter nach einem der vorhergehenden Ansprüche, wobei die ersten und zweiten Endverschlüsse (20 und 22) mit dem Überspannungsableitelement (2, 4, 26, 28 und/oder 30) elektrisch verbunden sind.
10. Überspannungsableiter nach einem der vorhergehenden Ansprüche, wobei das Ableitergehäuse (32) ein vorstehendes Teil (92) in Form eines O-Rings aufweist, und wobei das vorstehende Teil so angeordnet ist, daß es für den ersten Endverschluß (20) eine Abdichtung bildet.
11. Überspannungsableiter nach einem der vorhergehenden Ansprüche, wobei der erste Endverschluß (20) erste und zweite Enden aufweist, wobei das zweite Ende mit dem Überspannungsableitelement (24, 26, 28 und/oder 30) elektrisch verbunden ist und wobei das Ableitergehäuse (32) eine Abdichtung über dem ersten Ende des ersten Endverschlusses (20) bildet.
12. Überspannungsableiter nach einem der vorhergehenden Ansprüche, weiter umfassend ein Ableitergehäuse (32), das vorgesehen ist, um das Überspannungsableitelement (24, 26, 28 und/oder 30) und die ersten und zweiten Endverschlüsse (20 und 22) aufzunehmen.
13. Überspannungsableiter nach Anspruch 8, weiter umfassend eine Halterung (36), die vorgesehen ist, um das Überspannungsableitelement (24, 26, 28 und/oder 30), die ersten und zweiten Endverschlüsse (20 und 22), das Ableitergehäuse (32) und den Fehlertrennschalter (47) zu halten.
14. Überspannungsableiter nach Anspruch 13, wobei das Ableitergehäuse (32) so angeordnet ist, daß es

eine Abdichtung zwischen der Halterung (36) und dem zweiten Endverschluß (22) bildet.

15. Überspannungsableiter nach Anspruch 13 oder Anspruch 14, weiter umfassend ein Befestigungselement (73), das vorgesehen ist, um das Überspannungsableitelement (24, 26, 28 und/oder 30), die ersten und zweiten Endverschlüsse (20 und 22), das Ableitergehäuse (32) und den Fehlertrennschalter (47) an der Halterung (36) zu befestigen, so daß die Halterung (36) zwischen dem zweiten Endverschluß (22) und dem Befestigungselement (73) festgeklemmt wird. 5
16. Überspannungsableiter nach Anspruch 15, wobei das Ableitergehäuse (32) so angeordnet ist, daß es zwischen der Halterung (36) und dem zweiten Endverschluß (22) festgekeilt werden kann, wenn die Halterung (36) zwischen dem zweiten Endverschluß (22) und dem Befestigungselement (73) festgeklemmt ist, um eine Abdichtung zu bilden. 10
17. Überspannungsableiter nach Anspruch 15 oder Anspruch 16, wobei die Halterung (36) erste und zweite Aussparungen (64 und 66) aufweist, wobei die erste Aussparung (64) von einer Wand (68) der Halterung (36) gebildet wird, wobei die Wand (68) konisch zulaufend ist, wobei die zweite Aussparung (66) so ausgebildet ist, daß sie einen Flansch (70) des zweiten Endverschlusses (22) aufnehmen kann, und wobei das Ableitergehäuse (32) so angeordnet ist, daß es zwischen der konisch zulaufenden Wand (68), der Halterung (36) und dem Flansch (70) des zweiten Endverschlusses (22) festgekeilt werden kann, wenn die Halterung (36) zwischen dem zweiten Endverschluß (22) und dem Befestigungselement (73) festgeklemmt wird, so daß eine Abdichtung gebildet wird. 15
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Revendications

1. Parafoudre (10) comprenant un élément parafoudre (24, 26, 28 et/ou 30), un premier embout (20) disposé pour connecter électriquement l'élément parafoudre (24, 26, 28 et/ou 30) à une première ligne électrique, un second embout (22) connecté électriquement à l'élément parafoudre (24, 26, 28 et/ou 30), et un déconnecteur de défaut (47) disposé pour connecter électriquement le second embout (22) à une seconde ligne électrique, dans lequel l'élément parafoudre (24, 26, 28 et/ou 30) est disposé pour être conducteur en la présence d'une surtension, dans lequel le second embout (22) comporte des première et seconde extrémités (40 et 42), dans lesquelles le déconnecteur de défaut (47) est disposé pour déconnecter l'élément parafoudre de la seconde ligne électrique en cas de défaut, le 45
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parafoudre ETANT **CARACTERISE en ce que** ;

La première extrémité (40) du second embout (22) est en engagement électrique direct avec l'élément parafoudre (24, 26, 28 et/ou 30), la seconde extrémité (42) du second embout (22) est encastrée (46) pour former un logement de déconnecteur, le second embout (22) est substantiellement conducteur sur sa longueur, et la déconnexion de défaut (47) est logée dans le logement de déconnecteur formé par le second embout (22).

2. Parafoudre selon la revendication 1, dans lequel la première ligne électrique est une ligne à haute tension.
3. Parafoudre selon la revendication 1 ou la revendication 2, dans lequel les premier et second embouts (20 et 22) sont en contact électrique avec l'élément parafoudre.
4. Parafoudre selon l'une des revendications précédentes, dans lequel l'élément parafoudre (24, 26, 28 et/ou 30) est un varistor fabriqué avec un oxyde métallique.
5. Parafoudre selon l'une des revendications précédentes, comprenant en outre un support de montage (36) disposé pour supporter l'élément parafoudre (24, 26, 28 et/ou 30), les premier et second embouts (20 et 22) et le déconnecteur de défaillance (47).
6. Parafoudre selon l'une des revendications précédentes, comprenant en outre une fixation (73) disposée pour fixer l'élément parafoudre (24, 26, 28 et/ou 30), les premier et second embouts (20 et 22), et le déconnecteur de défaut (47) au support de montage (36), afin que le support de montage (36) soit maintenu entre le second embout (22) et la fixation (73).
7. Parafoudre selon la revendication 1, dans lequel l'élément parafoudre (24, 26, 28 et/ou 30) comprend une pluralité d'éléments parafoudres (24, 26, 28 et/ou 30).
8. Parafoudre selon l'une des revendications précédentes, dans lequel la seconde ligne électrique est substantiellement mise à la terre.
9. Parafoudre selon l'une des revendications précédentes, dans lequel les premier et second embouts (20 et 22) sont en contact électrique avec l'élément parafoudre (24, 26, 28 et/ou 30).
10. Parafoudre selon l'une des revendications précédentes, dans lequel le logement de parafoudre (32) comprend une protubérance sous la forme d'un

joint torique (92), et dans lequel la protubérance est disposée pour former un joint par rapport au premier embout (20).

de (70) du second embout (22) quand le support de montage (36) est maintenu entre le second embout (22) et la fixation (73) afin de former un joint.

11. Parafoudre selon l'une des revendications précédentes, dans lequel le premier embout (20) comprend des première et seconde extrémités, dans lesquelles la seconde extrémité est en engagement électrique avec l'élément parafoudre (24, 26, 28 et/ou 30), et dans lesquelles le logement de parafoudre (32) forme un joint sur la première extrémité du premier embout (20). 5 10
12. Parafoudre selon l'une des revendications précédentes, comprenant en outre un logement de parafoudre (32) disposé pour loger l'élément parafoudre (24, 26, 28 et/ou 30) et les premier et second embouts (20 et 22). 15
13. Parafoudre selon la revendication 8, comprenant en outre un support de montage (36) disposé pour soutenir l'élément parafoudre (24, 26, 28 et/ou 30), les premier et second embouts (20 et 22), le logement de parafoudre (32) et le déconnecteur de défaut (47). 20 25
14. Parafoudre selon la revendication 13, dans lequel le logement de parafoudre (32) est disposé pour former un joint par rapport au support de montage (36) et au second embout (22). 30
15. Parafoudre selon la revendication 13 ou la revendication 14, comprenant en outre une fixation (73) disposée pour fixer l'élément parafoudre (24, 26, 28 et/ou 30), les premier et second embouts (20 et 22), le logement de parafoudre (32) et le déconnecteur de défaut (47) au support de montage (36) afin que le support de montage (36) soit maintenu entre le second embout (22) et la fixation (73). 35 40
16. Parafoudre selon la revendication 15, dans lequel le logement de parafoudre (32) est disposé pour être calé entre le support de montage (36) et le second embout (22) quand le support de montage (36) est maintenu entre le second embout (22) et la fixation (73) pour former un joint. 45
17. Parafoudre selon la revendication 15 ou la revendication 16, dans lequel le support de montage (36) comprend des premier et second encastrlements (64 et 66), dans lesquels le premier encastrlement (64) est formé par une paroi (68) du support de montage (36), dans lequel la paroi (68) est taraudée, dans laquelle le second encastrlement (66) est disposé pour recevoir une bride (70) du second embout (22), et dans laquelle le logement de parafoudre (32) est disposé pour être calé entre la paroi taraudée (68) du support de montage (36) et la bri- 50 55

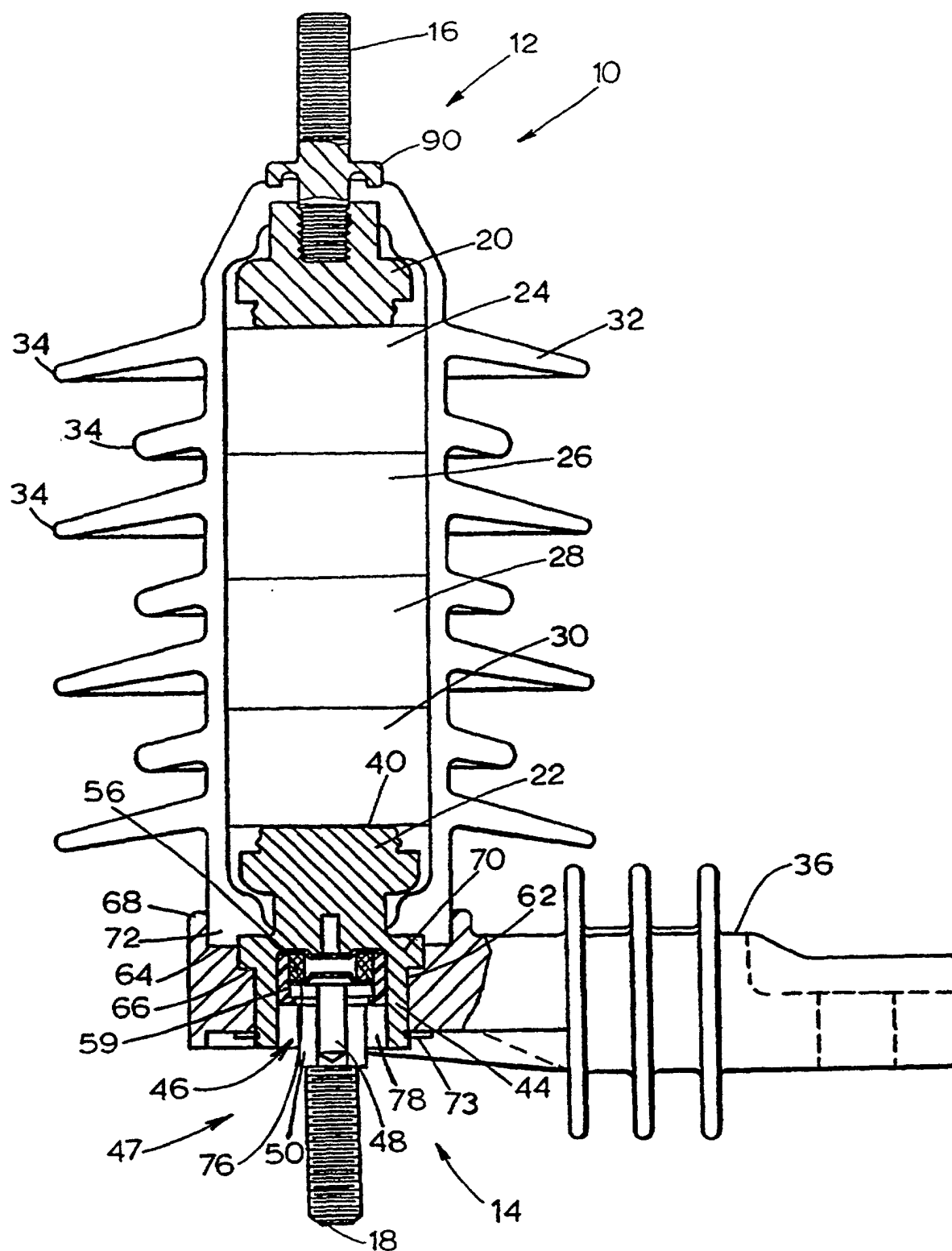


FIGURE 1

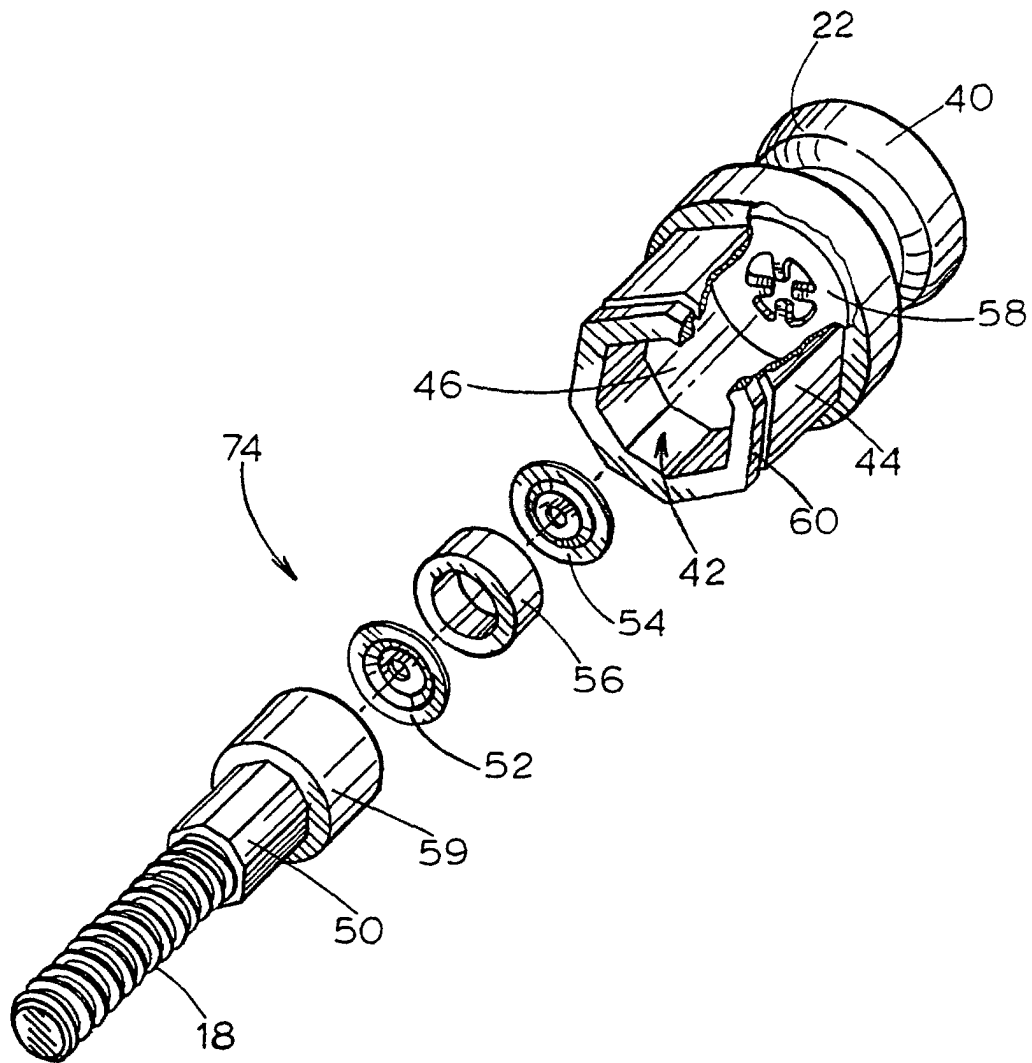


FIGURE 2

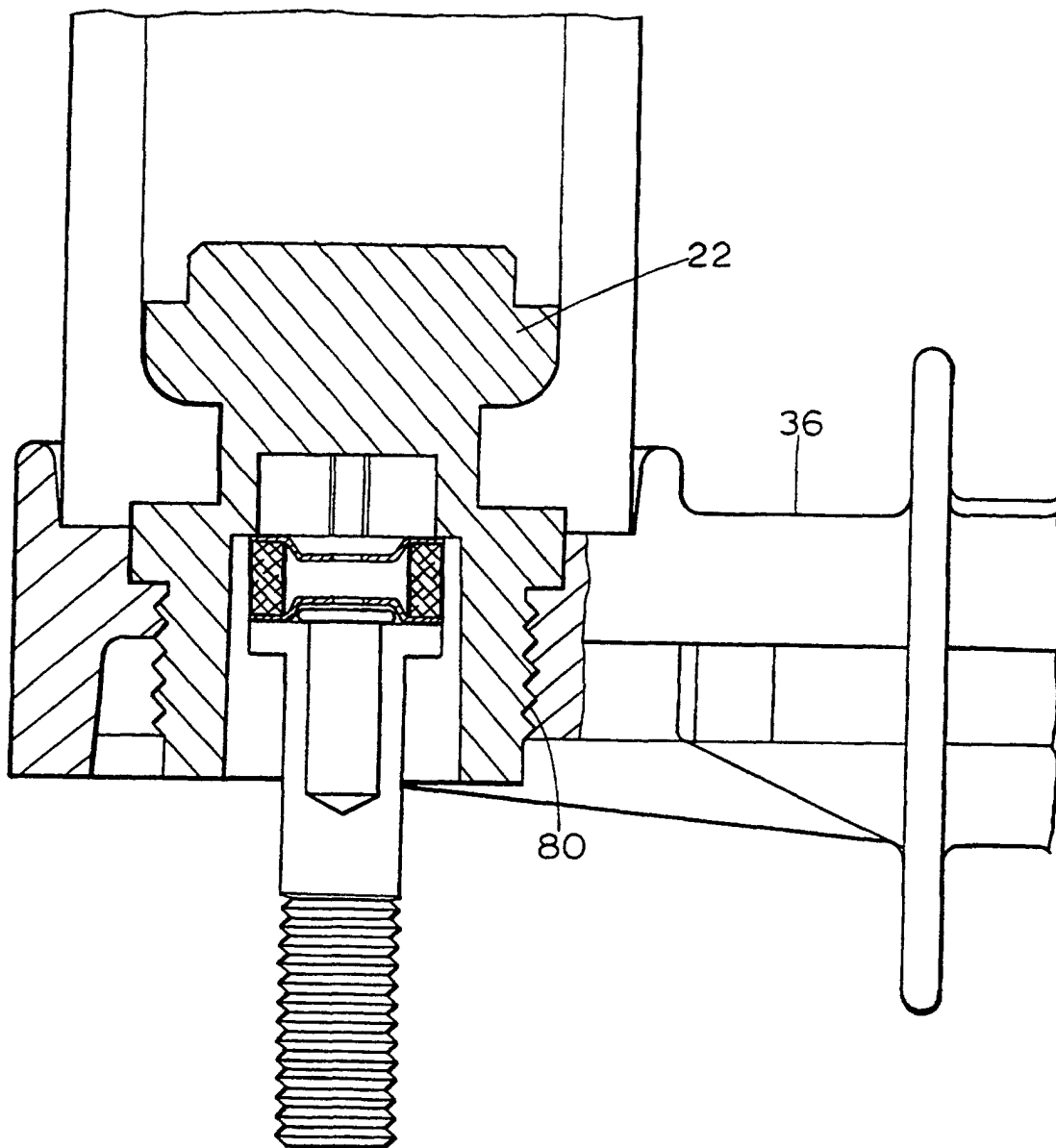


FIGURE 3

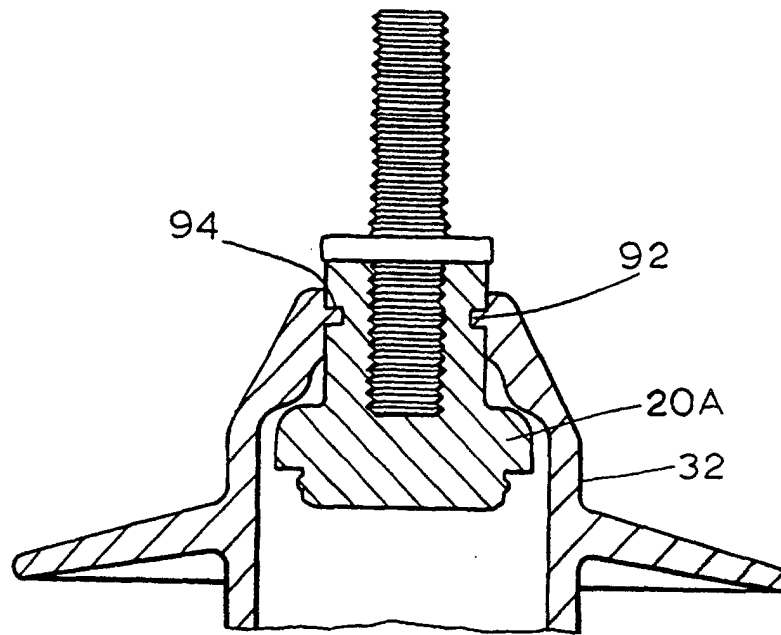


FIGURE 4

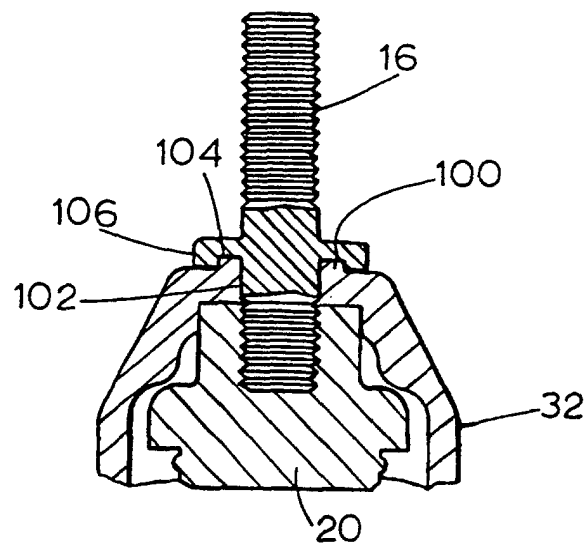


FIGURE 5