

[54] HOLDER FOR ELECTRIC FUSES

[75] Inventor: Angelo Urani, St. Louis, Mo.

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

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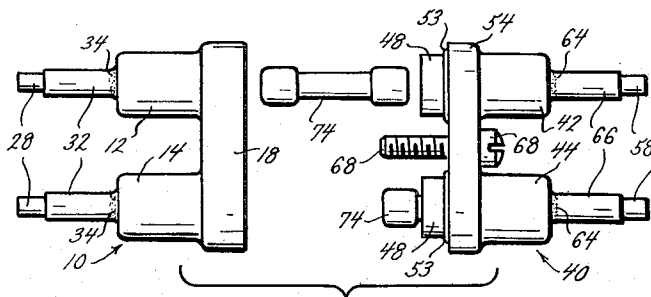
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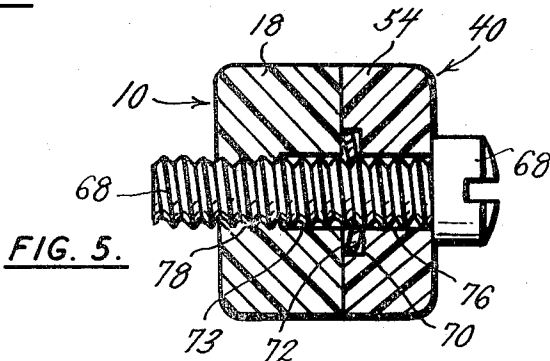
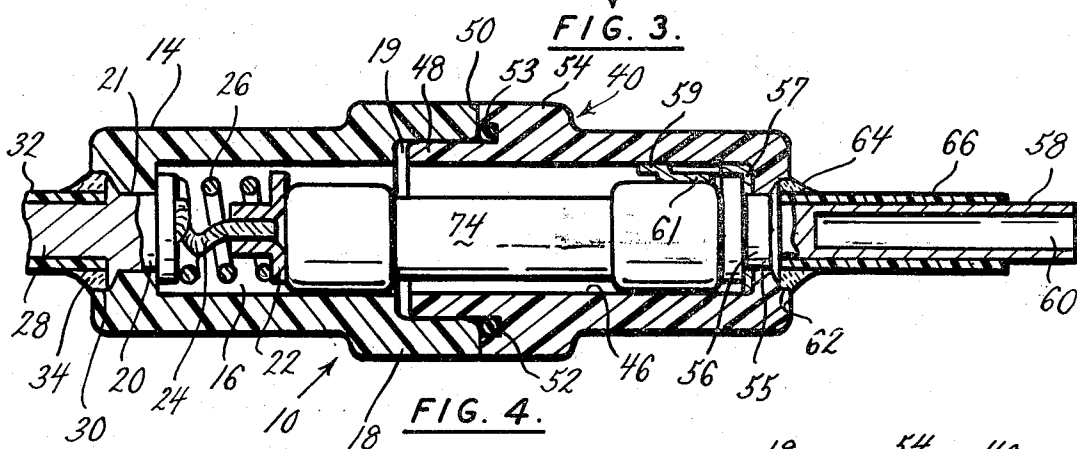
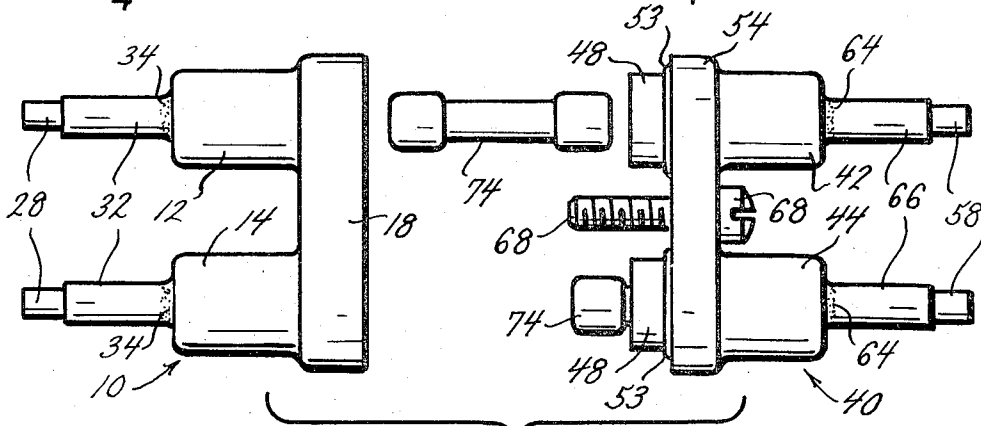
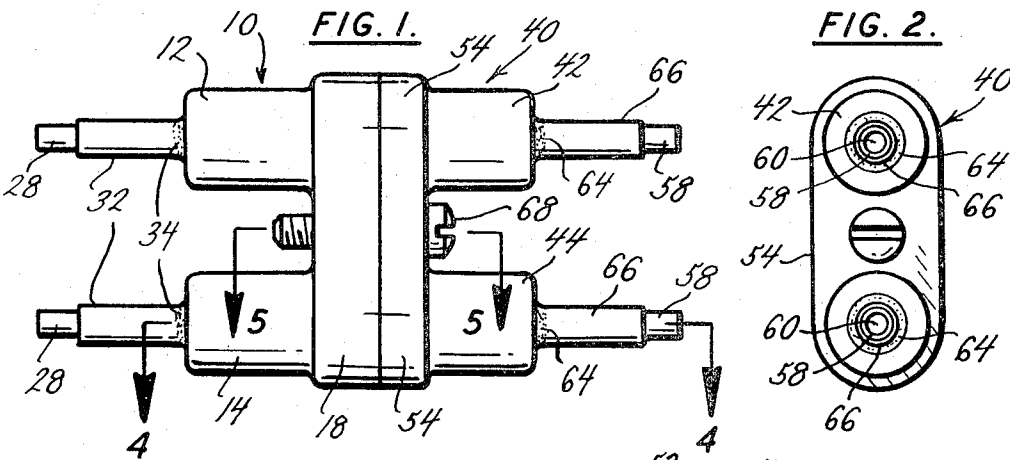
Attorney, Agent, or Firm—Rogers, Ezell & Eilers

[57] ABSTRACT

In some electrical installations, each side of each circuit is equipped with an electric fuse; and, in such installations, it is desirable that the fuses for the two sides of any given circuit be close to each other and be readily accessible. The present invention provides a fuseholder which holds the fuses for the two sides of a circuit so they are close to each other and so they are readily accessible.

5 Claims, 5 Drawing Figures





HOLDER FOR ELECTRIC FUSES

DESCRIPTION OF THE PRIOR ART

Urani Pat. No. 3,710,296 discloses a metal plate which supports the female portions of two "in-the-line" fuseholders, discloses a further metal plate which supports the male portions of those two "in-the-line" fuseholders, and discloses an elongated metal screw which coacts with those metal plates to selectively hold those female and male portions in assembled relation. Although those metal plates are completely and effectively isolated from the electrically "live" parts of those two "in-the-line" fuseholders, it has been suggested that those metal plates be eliminated.

SUMMARY OF THE INVENTION

The present invention provides a fuseholder which can releasably hold a pair of cartridge-type electric fuses and which has no exposed metal parts. That fuseholder has two generally cylindrical sections and a bridge section that are molded as a unit from insulating material to constitute a male body portion, and has two further generally-cylindrical sections and a further bridge section that are molded as a second unit from insulating material to constitute a female body portion. Those two units are selectively movable into and out of assembled relation by a screw of non-metallic material.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing,

FIG. 1 is a side elevational view of one preferred embodiment of fuseholder that is made in accordance with the principles and teachings of the present invention,

FIG. 2 is an elevational view of the right-hand end of the fuseholder of FIG. 1,

FIG. 3 is an exploded side elevational view of the fuseholder of FIG. 1,

FIG. 4 is a sectional view, on a larger scale, through a portion of the fuseholder of FIG. 1, and it is taken along the plane indicated by the line 4-4 in FIG. 1, and

FIG. 5 is a sectional view, on the scale of FIG. 4, through another portion of the fuseholder of FIG. 1, and it is taken along the plane indicated by the line 5-5 in FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing in detail, the numeral 10 generally denotes a body portion of an in-the-line fuseholder; and that body portion includes a generally-cylindrical section 12 which has an elongated recess, not shown, therein, includes a generally-cylindrical section 14 which has an elongated recess 16 therein, and includes a transversely-directed bridge section 18. The generally-cylindrical sections 12 and 14 and the bridge section 18 are molded as a unit without interfaces from a plastic material such as a phenolic resin. A cylindrical recess 19 is provided in the righthand end of the generally-cylindrical section 14, as shown by FIG. 4; and a similar recess, not shown, is provided in the right-hand end of the generally-cylindrical section 12. As shown by FIG. 4, the thickness of the bridge section 18 is greater than the axial dimension of the cylindrical recess 19; and that thickness also is greater than the axial dimension of the counterpart of that cylindrical recess.

A terminal 20 has a cylindrical portion thereof staked within a passage 21 in the outer end of the generally-cylindrical section 14; and that terminal has an enlarged disk-like inner end which is within the elongated recess 16. That disk-like inner end has a diameter larger than the diameter of the passage 21, and hence that disk-like inner end prevents movement of terminal 20 outwardly relative to the generally-cylindrical section 14. The terminal 20 has a reduced-diameter elongated portion 28 which is encased by a length 32 of heat-shrinkable tubing. A mass 34 of cement, such as an epoxy cement, bonds the inner end of the heat-shrinkable tubing 32 within a recess 30 in the left-hand end of the generally-cylindrical section 14. As indicated by FIGS. 1 and 3, the generally-cylindrical section 12 also has a terminal with a reduced-diameter portion 28, and also has a length 32 of heat-shrinkable tubing telescoped over that reduced-diameter portion.

The numeral 22 denotes a movable contact which is disposed within the elongated recess 16 in the generally-cylindrical section 14. The diameter of that movable contact will be sufficiently smaller than the diameter of the elongated recess 16 to permit unrestricted movement of that movable contact relative to that elongated recess. A helical compression spring 26 is disposed within the elongated recess 16 in the generally-cylindrical section 14; and one end of that spring bears against the disk-like inner end of the terminal 20 while the other end of that spring bears against the left-hand face of the movable contact 22. A flexible conductor 24 is fixedly secured, and electrically connected, to the terminal 20 and also to the movable contact 22.

The numeral 40 generally denotes a further body portion of the fuseholder; and that body portion includes a generally-cylindrical section 42 which has an elongated recess, not shown, therein, includes a generally-cylindrical section 44 which has an elongated recess 46 therein, and includes a transversely-directed bridge section 54. The generally-cylindrical sections 42 and 44 and the bridge section 54 are molded as a unit without interfaces from a plastic material such as a phenolic resin. The numeral 48 denotes an annular projection on the bridge section 54 which is dimensioned to extend into the cylindrical recess 19 in the bridge section 18 of the body portion 10. The annular projection 48 is coaxial with the generally-cylindrical section 44; and a counterpart annular projection, not shown, is provided on the bridge section 54 in register with the generally-cylindrical section 42. That counterpart annular projection will be essentially identical to the annular projection 48; and it will extend into the cylindrical recess, not shown, at the right-hand end of the generally-cylindrical section 12 which is essentially identical to, and which is the counterpart of, the cylindrical recess 19.

The numeral 50 denotes that portion of the left-hand face of the bridge section 54 which extends radially outwardly beyond the annular projection 48; and that portion of that face serves as an abutment. Specifically, the portion 50 of the left-hand face of the bridge section 54 will receive the right-hand face of the bridge section 18 of the body portion 10 whenever the body portions 10 and 40 are in assembled relation. The numeral 52 denotes a shallow annular recess in the portion 50 of the left-hand face of the bridge section 54; and that shallow annular recess encircles the annular projection 48. An O-ring 53 has the major portion

thereof disposed within the shallow annular recess 52; but the left-hand surface of that O-ring will coact with the right-hand face of the bridge section 18 to provide a moisture-resistant seal when the body portions 10 and 40 are assembled together. A similar annular recess and a similar O-ring are provided in the bridge section 54 in register with the generally-cylindrical section 42.

The numeral 56 denotes a terminal which is staked within a passage 55 in the outer end of the generally-cylindrical section 44; and the inner end of that terminal has a larger-diameter disk-like portion disposed within the elongated recess 46. The terminal 56 has a reduced-diameter portion 58 that is telescoped through an annular member 57 within the elongated recess 46; and that annular member has an ear 59 which has a resilient finger 61 punched inwardly therefrom. The reduced-diameter portion 58 extends through and beyond the passage 55, and the outer end of that reduced-diameter portion is enclosed by a length 66 of heat-shrinkable tubing. That reduced-diameter portion has an elongated recess 60 therein into which a conductor can be telescoped; and that reduced-diameter portion can then be crimped onto that conductor. Similar elongated recesses are provided in the outer ends of the reduced-diameter portions 28 and in the outer end of a further reduced-diameter portion 58 of a terminal which is associated with the generally-cylindrical section 42. The left-hand end of the length 66 of heat-shrinkable tubing can be held solidly in position within a recess 62 in the right-hand end of the generally-cylindrical section 44 by a mass 64 of cement such as an epoxy cement. As shown particularly by FIGS. 1-3, a length 66 of heat-shrinkable tubing encases the greater portion of the length of the reduced-diameter portion 58 of the terminal which is associated with the generally-cylindrical section 42.

The numeral 68 denotes a screw of a sturdy and rugged non-metallic material; and that screw extends through an un-threaded opening 76 in the bridge section 54 of the body portion 40, as shown particularly by FIG. 5. The numeral 72 denotes a retainer of fibre which has an opening therein that accommodates the threaded shank of the screw 68; and that retainer is disposed within a recess 70 in the left-hand face of the bridge section 54. The threaded shank of the screw 68 extends through an un-threaded recess 73 in the bridge section 18 of the body portion 10, and then extends through a threaded opening 78 in that bridge section, as shown particularly by FIG. 5. The un-threaded recess 73 facilitates rapid and easy alignment of the threaded shank of the screw 68 with the threaded opening 78.

The movable contact 22, which is disposed within the elongated recess 16 in the generally-cylindrical section 14, and the corresponding movable contact in the elongated recess within the generally-cylindrical section 12 are dimensioned to accommodate the left-hand terminals of cartridge-type electric fuses 74. The finger 61 on the ear 59 of the annular member 57, within the elongated recess 46 in the generally-cylindrical section 44, and the finger on the ear of the corresponding annular member, within the elongated recess in the generally-cylindrical section 42, will have restorative forces developed therein as the right-hand terminals of the cartridge-type electric fuses 74 are telescoped into those elongated recesses. As a result, the engagements between those fingers and those right-hand terminals are

sufficiently snug to cause those cartridge-like electric fuses to remain within the elongated recess 46 and within the corresponding elongated recess in the generally-cylindrical section 42 whenever the body portions 10 and 40 are separated. However, any moderate pulling forces which are applied to the lefthand terminals of the cartridge-type electric fuses 74 will be effective to withdraw those cartridge-type electric fuses from the elongated recess 46 and from the elongated recess in the generally-cylindrical section 42.

In using the fuseholder provided by the present invention, the right-hand terminals of a pair of cartridge-type electric fuses 74 will be telescoped into the elongated recess 46 and into the corresponding elongated recess in the generally-cylindrical section 42; and those terminals will be pressed into holding engagement with the annular member 57 and with the corresponding annular member within those elongated recesses. The telescoping of those terminals into those elongated recesses can be done without any risk of electrical shock because the body portion 40 is, and will be, plainly marked as the "load" body portion of the fuseholder. Thereafter, the body portion 10 which is, and which will be, plainly marked as the "line" body portion of the fuseholder will be set so the elongated recess 16 therein is in register with the elongated recess 46 and so the corresponding elongated recesses in the generally-cylindrical sections 12 and 42 are in register. At such time, the bridge section 18 of the body portion 10 and the bridge section 54 of the body portion 40 will be moved toward each other to cause the free end of the threaded shank of the screw 68 to pass through the un-threaded recess 73 in the bridge section 18 and into engagement with the threaded opening 78 in that bridge section. Shortly before the free end of the threaded shank of screw 68 is moved into the un-threaded recess 73, the lefthand terminals of the cartridge-type electric fuses 74 will enter the cylindrical recess 19 and the corresponding cylindrical recess in the bridge section 18 of the body portion 10. Thereafter, as the free end of the threaded shank of screw 68 is moved through the un-threaded recess 73 and into engagement with the threaded opening 78 in the bridge section 18, the left-hand faces of the left-hand terminals of the cartridge-type electric fuses 74 will approach the outer ends of the elongated recess 16 within the generally-cylindrical section 14 and of the corresponding elongated recess in the generally-cylindrical section 12; and the annular projection 48 and its counterpart annular projection will approach the outer ends of the cylindrical recess 19 and of its counterpart cylindrical recess in the bridge section 18 of the body portion 10. Subsequently, as the threaded shank of screw 68 is threaded into the threaded opening 78 in the bridge section 18, the annular projection 48 and its counterpart annular projection will enter the cylindrical recess 19 and its counterpart cylindrical recess in that bridge section; and then the left-hand faces of the left-hand terminals of the cartridge-type electric fuses 74 will engage the movable contact 22 and its counterpart movable contact. At the time those left-hand faces of those left-hand terminals move into engagement with the movable contact 22 and its counterpart movable contact, the bridge section 18 and the generally-cylindrical sections 12 and 14 will be coacting with the bridge section 54 and the generally-cylindrical sections 42 and 44 to enclose those cartridge-type electric fuses. Consequently, even if an arc

were to develop as those left-hand faces of those left-hand terminals moved into engagement with those movable contacts, that arc would be confined within the fuseholder. Continued rotation of the screw 68 will cause the body portions 10 and 14 to move into engagement; and thereupon, the confronting faces of the bridge sections 18 and 54 will essentially abut each other. At such time, those bridge sections will coact with each other to constitute a sturdy two-piece beam which, in the said one preferred embodiment, is thirteen-sixteenths of an inch wide and is three-quarters of an inch thick, and hence makes the fuseholder rigid and strong. Also, at such time, the peripheries of those bridge sections will be disposed radially outwardly of the O-ring 53 and of its counterpart O-ring; and those peripheries will coact with the confronting faces of those bridge sections to completely protect those O-rings against contact with foreign objects.

The screw 68 will be rotated in the opposite direction whenever it is desirable to free the body portions 10 and 40 for movement away from each other. The left-hand faces of the left-hand terminals of the cartridge-type electric fuses 74 will move out of engagement with the movable contact 22 and its counterpart movable contact before the annular projection 48 and its counterpart annular projection move out of the cylindrical recess 19 and its counterpart cylindrical recess. Consequently, if any arcing were to occur as the body portions 10 and 40 were being moved apart, that arcing would be wholly enclosed by those body portions.

It will be noted that all portions of the fuseholder, other than the outer ends of the reduced-diameter portions of the terminals, are non-metallic in nature; and, after those outer ends have been crimped onto the bared ends of conductors, insulating tape will completely encase and insulate those outer ends. It should also be noted that the bridge sections 18 and 54 precisely and rigidly hold the generally cylindrical sections of the two body portions in precise registry with each other.

Whereas the drawing and accompanying description have shown and described a preferred embodiment 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 two-pole "in-the-line" fuseholder which can hold two cartridge-type electric fuses at the same time and which comprises a first rigid member that has a first generally-cylindrical portion and a second generally-cylindrical portion and a bridge portion which are formed as a unit without interfaces therebetween, a first recess within said first generally-cylindrical portion which can accommodate one end of a first cartridge-type electric fuse, a second recess within said second generally-cylindrical portion which can accommodate one end of a second cartridge-type electric fuse, said bridge portion holding said first and said second generally-cylindrical portions fixedly spaced apart with the axes of said first and second recesses parallel, a third recess in said bridge portion which is coaxial with, but which has a larger diameter than, said first recess, said third recess being in communication with, and serving as the entrance for, said first recess, a fourth recess in said bridge portion which is coaxial with, but which has a larger diameter than, said second

recess, said fourth recess being in communication with, and serving as the entrance for, said second recess, said bridge portion encircling both said third and said fourth recesses and extending radially outwardly in all directions beyond both said third and said fourth recesses to constitute a sturdy and rugged protection for both said third and said fourth recesses, said bridge portion having a thickness greater than the axial dimension of either said third or said fourth recess and being coextensive with and extending axially beyond both said third and said fourth recesses, a second rigid member that has a third generally-cylindrical portion and a fourth generally-cylindrical portion and a second bridge portion which are formed as a unit without interfaces therebetween, a fifth recess within said third generally-cylindrical portion which can accommodate the other end of said first cartridge-type electric fuse, a sixth recess within said fourth generally-cylindrical portion which can accommodate the other end of said second cartridge-type electric fuse, said second bridge portion holding said third and said fourth generally-cylindrical portions fixedly spaced apart with the axes of said fifth and sixth recesses parallel, an annular projection on said second bridge portion which is coaxial with said fifth recess and which extends axially outwardly from said second bridge portion, said annular projection having an outer diameter which is slightly smaller than the diameter of said third recess in the first said bridge portion to enable said annular projection to telescope into said third recess, said annular projection having an inner diameter greater than that of said other end of said first cartridge-type electric fuse, a second annular projection on said second bridge portion which is coaxial with said sixth recess and which extends axially outwardly from said second bridge portion, said second annular projection having an outer diameter which is slightly smaller than the diameter of said fourth recess in said second bridge portion to enable said second annular projection to telescope into said fourth recess, said second annular projection having an inner diameter greater than that of said other end of said second cartridge-type electric fuse, the first said annular projection extending into said third recess and thus into the first said bridge portion whereby said first said bridge portion also surrounds and protects said first said annular projection, said second annular projection extending into said fourth recess and thus into said first said bridge portion whereby said first said bridge portion also surrounds and protects said second annular projection, and a screw which releasably holds said first and said second rigid members in assembled relation.

2. A two-pole in-the-line fuseholder as claimed in claim 1 wherein said second bridge portion has a shallow annular recess therein which surrounds and is concentric with the first said annular projection on said second bridge portion, wherein a resilient sealing element has a portion thereof disposed within said shallow annular recess but has a further portion thereof extending outwardly from said shallow annular recess to coact with a portion of the first said bridge portion to form a seal, wherein said second bridge portion has a second shallow annular recess therein which surrounds and is concentric with said second annular projection on said second bridge portion, wherein a second resilient sealing element has a portion thereof disposed within said second shallow annular recess but has a further portion thereof extending outwardly from said shallow annular

recess to coact with a further portion of said first said bridge portion to form a second seal, and wherein the edges of said first said and said second bridge portions are displaced outwardly relative to the first said and said second sealing means and are disposable in close proximity to each other to protect said first said and said second sealing means.

3. A two-pole in-the-line fuseholder which can hold two cartridge-type electric fuses at the same time and which comprises a first rigid member that has a first generally-cylindrical portion and a second generally-cylindrical portion and a bridge portion which are formed as a unit without interfaces therebetween, said bridge portion constituting and defining one end of said first rigid member, a first recess within said first generally-cylindrical portion which extends inwardly from said one end of said first rigid member and which extends through said bridge portion and which can accommodate one end of a first cartridge-type electric fuse, a second recess within said second generally-cylindrical portion which extends inwardly from said one end of said first rigid member and which extends through said bridge portion and which can accommodate one end of a second cartridge-type electric fuse, said bridge portion holding said first and said second generally-cylindrical portions fixedly spaced apart with the axes of said first and second recesses parallel, a third recess in said bridge portion which extends inwardly from said one end of said first rigid member and which is coaxial with, but which has a larger diameter than, said first recess, said third recess being in communication with, and serving as the entrance for, said first recess, a fourth recess in said bridge portion which extends inwardly from said one end of said first rigid member and which is coaxial with, but which has a larger diameter than, said second recess, said fourth recess being in communication with, and serving as the entrance for, said second recess, said bridge portion encircling both said third and said fourth recesses and extending radially outwardly in all directions beyond both said third and said fourth recesses to constitute a sturdy and rugged protection for both said third and said fourth recesses, a second rigid member that has a third generally-cylindrical portion and a fourth generally-cylindrical portion and a second bridge portion which are formed as a unit without interfaces therebetween, a fifth recess within said third generally-cylindrical portion which can accommodate the other end of said first cartridge-type electric fuse, a sixth recess within said fourth generally-cylindrical portion which can accommodate the other end of said second cartridge-type electric fuse, said second bridge portion holding said third and said fourth generally-cylindrical portions fixedly spaced apart with the axes of said fifth and sixth recesses parallel, an annular projection on said second bridge portion which is coaxial with said fifth recess and which extends axially outwardly from said second bridge portion, said annular projection having an outer diameter which is slightly smaller than the diameter of said third recess in the first said bridge portion to enable said annular projection to telescope into said third recess, said annular projection having an inner diameter greater than that of said other end of said first cartridge-type electric fuse, a second annular projection on said second bridge portion which is coaxial with said sixth recess and which extends axially outwardly from said second bridge portion, said second annular projec-

tion having an outer diameter which is slightly smaller than the diameter of said fourth recess in said second bridge portion to enable said second annular projection to telescope into said fourth recess, said second annular projection having an inner diameter greater than that of said other end of said second cartridge-type electric fuse, the first said annular projection extending into said third recess and thus into said first said bridge portion whereby said first said bridge portion also surrounds and protects said first said annular projection, said second annular projection extending into said fourth recess and thus into said first said bridge portion whereby said first said bridge portion also surrounds and protects said second annular projection, a screw which releasably holds said first and said second rigid members in assembled relation, said screw releasably holding said first said and said second bridge portions in abutting relation, and said first said and said second bridge portions coacting, whenever they are in abutting relation, to constitute a rigid plural-section beam which strengthens and rigidifies said two-pole in-the-line fuseholder.

4. A two-pole in-the-line fuseholder which can hold two cartridge-type electric fuses at the same time and which comprises a first member that has a first generally-cylindrical portion and a second generally-cylindrical portion and a bridge portion which are formed as a unit without interfaces therebetween, said bridge portion constituting and defining one end of said first member, a first recess within said first generally-cylindrical portion which extends inwardly from said one end of said first member and which extends through said bridge portion and which can accommodate one end of a first cartridge-type electric fuse, a second recess within said second generally-cylindrical portion which extends inwardly from said one end of said first member and which extends through said bridge portion and which can accommodate one end of a second cartridge-type electric fuse, said bridge portion holding said first and said second generally-cylindrical portions spaced apart, a third recess in said bridge portion which extends inwardly from said one end of said first member and which is coaxial with, but which has a larger diameter than, said first recess, said third recess being in communication with, and serving as the entrance for, said first recess, a fourth recess in said bridge portion which extends inwardly from said one end of said first member and which is coaxial with, but which has a larger diameter than, said second recess, said fourth recess being in communication with, and serving as the entrance for, said second recess, said bridge portion encircling both said third and said fourth recesses and extending radially outwardly in all directions beyond both said third and said fourth recesses to constitute a sturdy and rugged protection for both said third and said fourth recesses, a second member that has a third generally-cylindrical portion and a fourth generally-cylindrical portion and a second bridge portion which are formed as a unit without interfaces therebetween, a fifth recess within said third generally-cylindrical portion which can accommodate the other end of said first cartridge-type electric fuse, a sixth recess within said fourth generally-cylindrical portion which can accommodate the other end of said second cartridge-type electric fuse, said second bridge portion holding said third and said fourth generally-cylindrical portions spaced apart, an annular projection on said second bridge portion

which is coaxial with said fifth recess and which extends axially outwardly from said second bridge portion, said annular projection having an outer diameter which is slightly smaller than the diameter of said third recess in the first said bridge portion to enable said annular projection to telescope into said third recess, said annular projection having an inner diameter greater than that of said other end of said first cartridge-type electric fuse, a second annular projection on said second bridge portion which is coaxial with said sixth recess and which extends axially outwardly from said second bridge portion, said second annular projection having an outer diameter which is slightly smaller than the diameter of said fourth recess in said second bridge portion to enable said second annular projection to telescope into said fourth recess, said second annular projection having an inner diameter greater than that of said other end of said second cartridge-type electric fuse, the first said annular projection extending into said third recess and thus into the first said bridge portion whereby said first said bridge portion also surrounds and protects said first said annular projection, said second annular projection extending into said fourth recess and thus into said first said bridge portion whereby said first bridge portion also surrounds and protects said second annular projection, a screw which releasably holds said first said bridge portion in confronting relation and immediately adjacent said second bridge portion, said screw being carried by one of said bridge portions and the other of said bridge portions having a threaded socket therein to accommodate the shank of said screw, and said other of said bridge portions having an unthreaded larger diameter passage through which said shank of said screw must pass to enter said threaded socket.

5. A two-pole in-the-line fuseholder which can hold two cartridge-type electric fuses at the same time and which comprises a first member that has a first generally-cylindrical portion and a second generally-cylindrical portion and a bridge portion, said bridge portion constituting and defining one end of said first member, a first recess within said first generally-cylindrical portion which extends inwardly from said one end of said first member and which extends through said bridge portion and which can accommodate one end of a first cartridge-type electric fuse, a second recess within said second generally-cylindrical portion which extends inwardly from said one end of said first member and which extends through said bridge portion and which can accommodate one end of a second cartridge-type electric fuse, said bridge portion holding said first and said second generally-cylindrical portions spaced apart, a third recess in said bridge portion which extends inwardly from said one end of said first member and which is coaxial with, but which has a larger diameter than, said first recess, said third recess being in communication with, and serving

as the entrance for, said first recess, a fourth recess in said bridge portion which extends inwardly from said one end of said first member and which is coaxial with, but which has a larger diameter than, said second recess, said fourth recess being in communication with, and serving as the entrance for, said second recess, said bridge portion encircling both said third and said fourth recesses and extending radially outwardly in all directions beyond both said third and said fourth recesses to constitute a sturdy and rugged protection for both said third and said fourth recesses, a second member that has a third generally-cylindrical portion and a fourth generally-cylindrical portion and a second bridge portion, a fifth recess within said third generally-cylindrical portion which can accommodate the other end of said first cartridge-type electric fuse, a sixth recess within said fourth generally-cylindrical portion which can accommodate the other end of said second cartridge-type electric fuse, said second bridge portion holding said third and said fourth generally-cylindrical portions spaced apart, an annular projection on said second bridge portion which is coaxial with said fifth recess and which extends outwardly from said second bridge portion, said annular projection having an outer diameter which is slightly smaller than the diameter of said third recess in the first said bridge portion to enable said annular projection to telescope into said third recess, said annular projection having an inner diameter greater than that of said other end of said first cartridge-type electric fuse, a second annular projection on said second bridge portion which is coaxial with said sixth recess and which extends outwardly from said second bridge portion, said second annular projection having an outer diameter which is slightly smaller than the diameter of said fourth recess in said second bridge portion to enable said second annular projection to telescope into said fourth recess, said second annular projection having an inner diameter greater than that of said other end of said second cartridge-type electric fuse, a screw which releasably holds said first said bridge portion in confronting relation with and immediately adjacent said second bridge portion, the first said annular projection being telescoped within said third recess in said first said bridge portion and said second annular projection being telescoped into said fourth recess in said second bridge portion whenever said first said and said second bridge portions are held in confronting relation with and immediately adjacent each other, whereby said first said bridge portion also surrounds and protects said first said and said second annular projections, both of said bridge portions and all of said generally-cylindrical portions having exterior surfaces which are devoid of metal, said screw being made of non-metallic material, and said bridge portions coacting to enclose and protect the central portion of the shank of said screw.

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