May 5, 1953 W. KORECKI 2,637,793

SAFETY ELECTRIC FUSE CONNECTOR

Filed April 24, 1951 2 SHEETS—SHEET 1

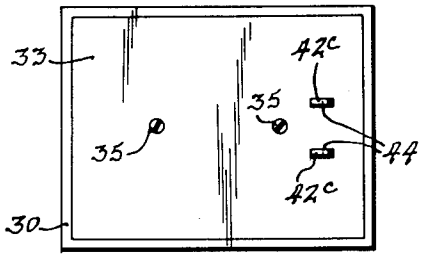


FIG. 1.

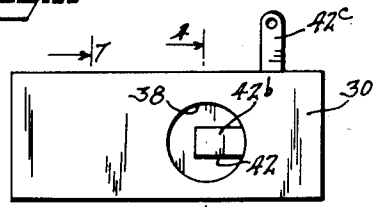


FIG. 2.

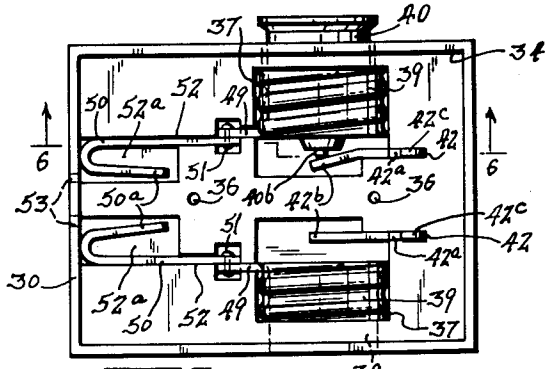


FIG. 3.

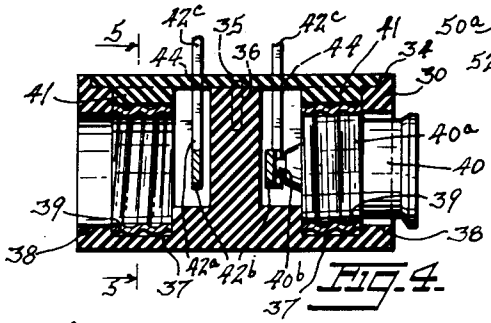


FIG. 4.

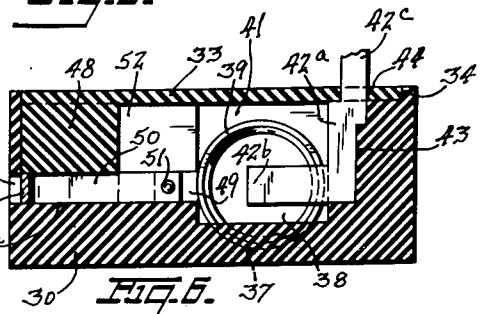


FIG. 6.

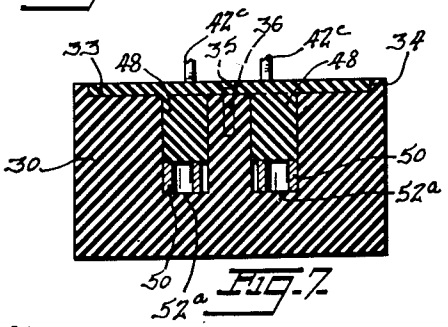


FIG. 7.

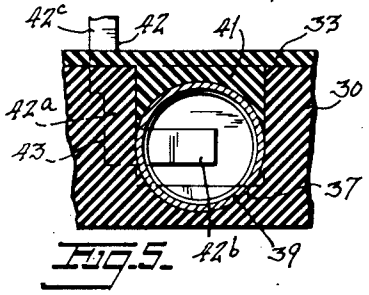


FIG. 5.

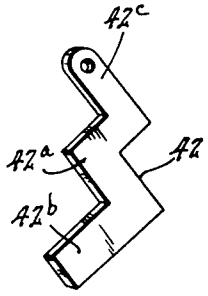


FIG. 8.

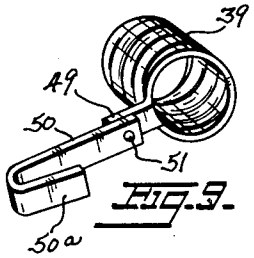


FIG. 9.

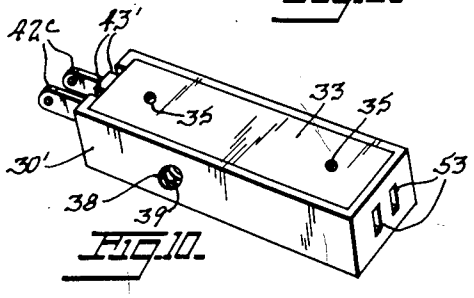


FIG. 10.

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SAFETY ELECTRIC FUSE CONNECTOR

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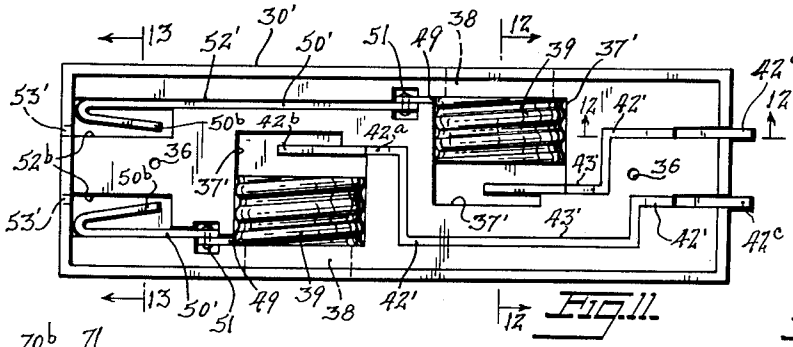


FIG. 11.

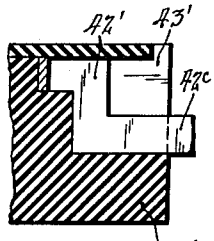


FIG. 12.

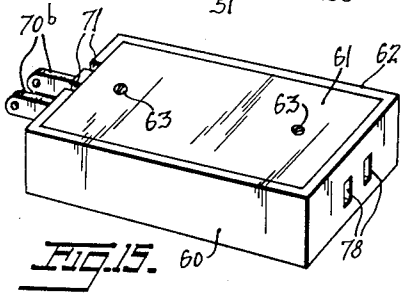


FIG. 15.

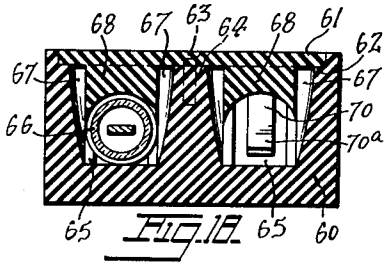


FIG. 18.

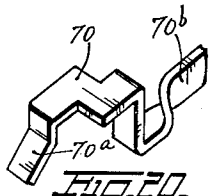


FIG. 20.

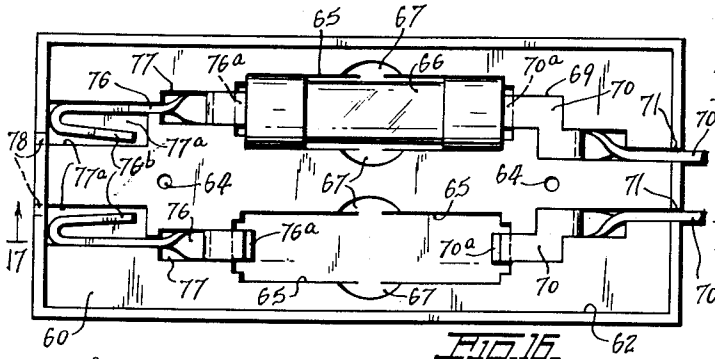


FIG. 16.

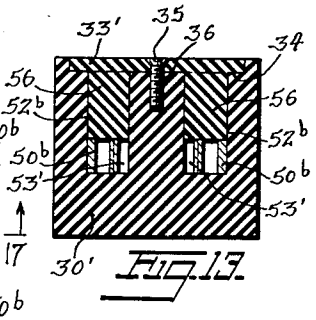


FIG. 13.

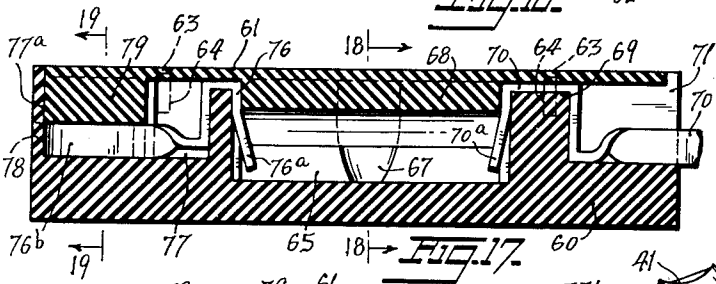


FIG. 17.

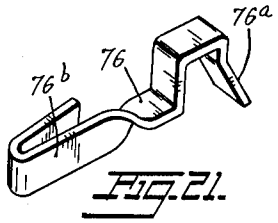


FIG. 21.

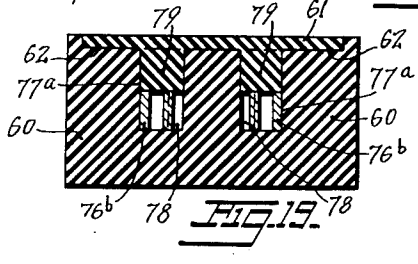


FIG. 19.

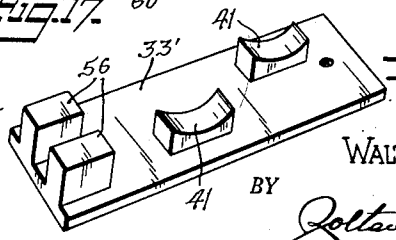


FIG. 14.

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UNITED STATES PATENT OFFICE

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SAFETY ELECTRIC FUSE CONNECTOR

Walter Korecki, Brooklyn, N. Y.

Application April 24, 1951, Serial No. 222,717

6 Claims. (Cl. 200—115.5)

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This invention relates to a double fused member for use with a conventional electric outlet receptacle.

More particularly, the present invention proposes the construction of a double fused member for use between the usual electric outlet receptacle and the plug of an electric appliance in a manner to provide complete protection for the electric appliance regardless of whether the person has an understanding of the principles of electricity or not.

Another object of the present invention proposes constructing the double fused member to be inserted into any outlet receptacle with either side connected to the positive lead of the receptacle and so automatically interpose a fuse in that positive lead.

A further object of the present invention proposes constructing the double fused member so that it has a pair of spaced prongs which can be pressed into and pulled out of the outlet receptacle in a manner so that the same can be quickly and easily transferred between outlet receptacles and be ready for instantaneous use.

Still further, the present invention proposes mounting fuses of lower amperage in the fused member which are of a slightly lower amperage than the fuses of the source of electric current so that if a short circuit should develop in the appliance a fuse of the member will be blown leaving the main source of current intact thus eliminating the need for groping in the dark to find the fuses of the main source of electric current for replacement purposes.

Another object of the present invention proposes mounting the fuses in the member so that regardless of the appliance which is connected thereto by having its plug inserted into the receptacle, that appliance will be brought under the independent protection of the member fuses.

The present invention further proposes constructing the fused member for plugging into a conventional wall outlet receptacle to have connected thereto electrical appliances such as lamps, vacuum cleaners, irons, home movie projectors, electric drills, hand polishers of the type used on automobiles, electric hedge trimmers, and the like.

A further object of the present invention proposes constructing the receptacle so that blown fuses can be quickly and easily replaced by new ones when necessary.

Still another object of the present invention proposes constructing the receptacle to use fuses of the screw-in type or of the cartridge type.

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It is a further object of the present invention to construct a fused electric outlet receptacle which is simple and durable and which can be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is an elevational view of a double fused member constructed in accordance with the present invention.

Fig. 2 is a side view of the member.

Fig. 3 is an enlarged view similar to Fig. 1, but with the removable wall taken off and with a fuse screwed into one side of the member.

Fig. 4 is an enlarged transverse sectional view taken on the line 4—4 of Fig. 2 and with a fuse screwed into one side of the member.

Fig. 5 is a partial longitudinal sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a longitudinal sectional view taken substantially on the line 6—6 of Fig. 3.

Fig. 7 is an enlarged transverse sectional view taken on the line 7—7 of Fig. 2.

Fig. 8 is a perspective view of one of the inlet strips used in the form of the invention shown in Figs. 1 to 7.

Fig. 9 is a perspective view of one of the outlet strips and associated part used in the form of the invention shown in Figs. 1 to 7.

Fig. 10 is a perspective view of the double fused member constructed in accordance with a modification of the present invention.

Fig. 11 is an enlarged elevational view of Fig. 10, but with the removable wall taken off.

Fig. 12 is a partial longitudinal sectional view taken on the line 12—12 of Fig. 11.

Fig. 13 is a transverse sectional view taken on the line 13—13 of Fig. 11.

Fig. 14 is an inside perspective view of the removable wall used in the form of the invention shown in Figs. 10 to 13.

Fig. 15 is a perspective view similar to Fig. 10, but illustrating a still further modification of the present invention.

Fig. 16 is an enlarged elevational view of Fig. 15 but with the removable wall taken off and a cartridge fuse shown in position in one of the cavities.

Fig. 17 is a longitudinal sectional view taken

substantially on the line 17—17 of Fig. 16 with the removable wall in position.

Fig. 18 is a transverse sectional view taken on the line 18—18 of Fig. 17.

Fig. 19 is a transverse sectional view taken on the line 19—19 of Fig. 17.

Fig. 20 is a perspective view of one of the inlet strips used in the form of the invention shown in Figs. 15 to 19.

Fig. 21 is a perspective view of one of the outlet strips used in the form of the invention shown in Figs. 15 to 19.

The double fused member, according to the first form of the present invention shown in Figs. 1 to 9, is designed to use fuses of the screw-in type. The receptacle includes a main body 30 which is molded as an integral unit of hard rubber, one of the "Bakelite" thermosetting plastics (phenol formaldehyde resin), a thermoplastic synthetic resin (polystyrene—polymer of styrene usually prepared from ethylene and benzene) or other similar materials (natural or synthetic) having dielectric properties.

The front or top face of the main body 30 is provided with a removable wall 33. The removable wall is preferably molded of the same dielectric material used for molding the body 30. The removable wall 33 has the same general shape as the body 30, but is of a peripheral size just slightly smaller than the peripheral size of the body so as to fit into a complementary recess 34 in the front or top face of the body 30. The recess 34 is of a depth corresponding to the thickness of the wall 33 so that the outer face of the wall and the front or top face of the main body 30 are flush, as shown in Figs. 4, 6 and 7. The removal wall 33 is retained in position by several screws 35 which pass through holes in the wall and which are threaded into complementary threaded recesses 36 formed in the main body 30.

The main body 30 beneath the removable wall 33 has several cavities 37 for fuses and which continue into holes 38, see particularly Figs. 2 to 4, which open outward to the opposed sides of the main body. Positioned within each of the cavities 37, there is a cylindrical metallic shell 39. The shells 39 have their axes parallel to the axes of the respective holes 38 and are formed to include a thread. Screw-in type fuses 40 are passed through the holes 38 and threaded into the metallic shells 39, as shown at the top of Fig. 3 and on the right side of Fig. 4. Such fuses 40 have the usual threaded metallic shell contacts 40^a, see Fig. 4, for making electrical contact with the metallic shells 39 when the fuses are screwed into position. In addition, the fuses 40 include the usual end contacts 40^b, see Figs. 3 and 4. The metallic shells 39 are retained against rotating while the fuses 40 are being screwed into and out of those shells by means which will become clear as this description proceeds.

Means is provided on the removable wall 33 for retaining the shells 39 down in position within the cavities 37. That means comprises projections 41 integrally molded on the inner face of the wall which are in alignment with the cavities 37. The projections 41 depend into the cavities 37 and have their bottom ends rounded, see Figs. 5 and 6, to fit snugly over the top of the metallic shells 39. From Figs. 4 and 5, it is apparent that the outer portions of the cavities 37 are somewhat deeper than the inner portions thereof retaining the shells 39 from moving axially inward within the cavities and holding the shells in position beneath the projections 41, see particularly Fig. 4.

Arranged in connection with each of the cavities 37, there is a metallic inlet strip 42 fitted into a suitable recess 43 molded into the main body 30. When the removable wall 33 is in position, the inlet strips 42 are fixedly retained in position in their recesses 43, see Figs. 4 and 6. The inlet strips 42 are formed of springy metal and have vertical portions 42^a extended into the main body away from the removable wall 33, see Fig. 6. At one end, each of the vertical portions 42^a of the inlet strips 42 continue into inner portions 42^b which have their free ends arranged on the axes of the shells 39 to be engaged by the end contacts 40^b of the fuses 40, see Figs. 3 and 4. The relationship between the shells 39 and the inner portions 42^b is such that when the fuses 40 are screwed tightly into position, the inner portions 42^b are flexed just slightly to make good electrical contact with the end contacts 40^b of the fuses as clearly shown in Figs. 3 and 4.

The ends of the vertical portions 42^a of the inlet strips 42 continue into end portions 42^c which are extended through complementary holes 44 formed in the removable wall 33. The outwardly projected end portions 42^c are provided to be plugged into a conventional electric outlet receptacle.

Each of the shells 39, as best shown in Fig. 9, is formed at its inner end and on one side thereof with a laterally extended lug 49. Provided for each of the shells 39 there is a metallic outlet strip 50. One end of each of the outlet strips 50 is secured to the lug 49 of its respective shell by means of a pin 51. The lugs 49 and outlet strips 50 are fitted within suitable recesses 52 molded within the body. The other ends of the outlet strips 50 continue into U-shaped springy contact portions 50^a located within enlarged portions 52^a of the recesses 52.

The end of the body 30 is formed with spaced holes 53 through which the spaced prongs of the conventional electric plug are to be passed to enter the enlarged portions 52^a of the recesses 52 to make electrical contact with the contact portions 50^a of the outlet strips 50. The springiness of the contact portions 50^a permits the plug prongs to be forced into the enlarged portions 52^a of the recesses and to then bear rigidly against the sides of the plug prongs.

At one end, the bottom face of the removable wall 33 is formed with a pair of spaced projections 48, see Figs. 6 and 7, which extend into the enlarged portions 52^a of the recesses 52 and hold the contact portions 50^a in position against the bottom walls of the enlarged portions 52^a of the recesses. The spaced projections 48 also function to retain the contact portions 50^a of the outlet strips 50 in alignment with the spaced holes 53 to be engaged by the prongs of the inserted plug.

With the contact portions 50^a of the outlet strips 50 located within the enlarged portions 52^a of the recesses 52 and with the projections 48 engaged with those contact portions 50^a, it will be appreciated that the shells 39 will be held against possible rotation while the fuses 40 are being screwed into and out of the shells. At the same time, when the wall 33 is removed, the sets of inlet strips 42 and outlet strips 50 and associated shells 39 can be removed from the respective recess and cavities of the main body 30 for

cleaning of contact surfaces or any other adjustments that may be required.

From the foregoing description, it is apparent that the double fused member of the present invention provides complete protection of any electrical appliance connected therewith independent of the usual fuses in the source of electric current. The fuses of the member are completely exposed for replacement when blown out and if the fuses of the member are of lower amperage than those used in the source, the fuses of the receptacle will be blown before the fuses of the main source eliminating the need for groping in the dark to replace blown fuses of the source.

In the modification of the invention shown in Figs. 10 and 14, the fused receptacle is of a slightly different shape. The main body 30' and its removable wall 33' are of a slightly different shape and the cavities 37' for receiving the fuses are offset with relation to each rather than being axially aligned as in the first form of the invention.

To compensate for the offset arrangement of the cavities 37', the inlet strips 42' and their mounting recesses 43' are of a slightly different shape, but include the same portions as the strips 42 of the first form of the invention.

The holes 53', as in the previous form of the invention, for receiving the spaced prongs of the plug of the electric appliance are formed in the end of the main body 30' opposed to the end from which the end portions 42^c of the inlet strips 42 extend. Inwardly of the holes 53, the main body is formed with the enlarged portions 52^b of the recesses 52' in which the outlet strips 50' are located. Within the enlarged portions 52^b of the recesses 52', the outlet strips 50' are formed with end aligned U-shaped contact portions 50^b to be engaged by the prongs of the plug inserted through the openings 53.

To permit insertion and removal of the outlet strips 50', the recesses 52' are somewhat deeper than the width of the strips 50'. Therefore, to retain the contact portions 50^b of the outlet strips 50' well down within the enlarged portions 52^b of the recesses and in alignment with the holes 53', the inner face of the wall 33' is formed with a second set of depending projections 56. The projections 56, as shown in Fig. 13, extend into the enlarged portions 52^b of the recesses 52' and engage the contact portions 50^b of the outlet strips 50' holding those contact portions against the base wall of the recesses.

In all other respects, the form of the invention shown in Figs. 10 to 14 is similar to that illustrated in Figs. 1 to 9 and like reference numerals identify like parts in all of the views.

The modification of the invention shown in Figs. 15 to 21 is designed to use fuses of the cartridge type. The modified double fused member includes a main body 60 and a removable wall 61. The main body 60 and the removable wall 61 are preferably molded of any one of the dielectric materials mentioned in connection with the description of the first form of the invention. The removable wall 61 is fitted into a recess 62 molded in the top or front face of the main body 60 and is retained in position by means of screws 63, see Figs. 15 and 17. The screws 63 pass through holes in the wall 61 and they are threaded into complementary threaded recesses formed in the main body 60.

Within the confines of the recess 62, the main body 60 is formed with laterally spaced longitudinally extending cavities 65 for receiving fuses of the cartridge type. At the top of Fig. 16 and at the left side of Fig. 18, such a cartridge fuse 66 is shown in position within one of the cavities 65. On opposite sides of the cavities 65, the material of the main block 60 is formed with notches 67, see Figs. 16 to 18, providing clearance for the ends of one's fingers to obtain a grip on the fuses 66 to pull them out of the cavities 65.

Means is provided on the inner face of the removable wall 61 for holding the fuses 66 in position within the cavities 65. That means comprises projections 68, see Figs. 17 and 18, which depend from the inner face of the removable wall 61 into the tops of the cavities 65. As shown most clearly in Fig. 18, the inner ends of the projections 68 are rounded to fit over the tops of the fuses 66 securely retaining them in position in the cavities 65.

Mounted within suitable recesses 69 formed in the main body 60 at adjacent ends of the cavities 65, there are electric inlet strips 70. The inlet strips 70 are formed of springy metallic material and have flexible end portions 70^a extend downward within the adjacent ends of the cavities 65 to make electrical contact with the adjacent end contacts of the fuses 66. The other end portions 70^b of the inlet strips 70 are bent to extend at right angles to the main portion thereof and are projected from slots 71 formed in the end of the main body 60. The end portions 70^b are to be plugged into a conventional outlet receptacle.

Extending from the opposite sides of the cavities 65, there are electric outlet strips 76 located within suitable recesses 77 formed in the main body 60. The outlet strips 76 are also formed of springy metallic material and at one of their ends are formed with flexible end portions 76^a for making electrical contact with the end caps at the other ends of the fuses 66. Intermediate of their ends, the outlet strips 76 are twisted and have their other ends bent into U-shaped contact portions 76^b located within enlarged portions 77^a of the recesses 77. The adjacent end of the main body is formed with spaced holes 78 to admit the spaced prongs of the plug of the electrical appliance to be connected to the source of electric current through the fused outlet receptacle.

As in the form of the invention shown in Figs. 10 to 14, the enlarged portions 77^a of the recesses 77 are somewhat deeper than the width of the U-shaped contact portions 76^b of the outlet strips 76. Therefore, the inner face of the removable wall is formed with a pair of spaced projections 79, see particularly Figs. 17 and 19, which engage the U-shaped contact portions 76^b holding them against the base wall of the enlarged portions 77^a of the recesses 77 and in alignment with the holes 78.

The form of the invention shown in Figs. 15 to 21 provides a double fused member employing cartridge type fuses which affords complete protection to any electrical appliance connected thereto. When the fuses are blown out and require replacement, the removable wall 61 is taken off by removing the screws 63 and then removing and replacing the blown fuse or fuses 66 as the case may be. When replacement is completed the wall 61 is remounted in position to hold all of the parts of the receptacle in position in their respective cavities or recesses.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications com-

ing within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A double fused member for screw-in type fuses comprising a body of insulation material having a removable wall, cavities within said body for fuses, a circular threaded metallic shell positioned within each of said cavities, said shell including a laterally extending lug, means on said wall retaining said shells in a fixed position within said cavities, said retaining means comprising projections depending from said wall into said cavities, inlet strips having one of their ends projected into said cavities to make electrical contact with said fuses and having their other ends projected from one end of said body to have a source of electric current connected thereto, and outlet strips engaging the lugs of said shells and leading therefrom to be engaged by the spaced prongs of the inserted plug of an electric appliance, said body having holes extending through the sides of the main body in axial alignment with said shells to threadedly receive screw-in type fuses extended into the body through said holes in the sides of the body.

2. A double fused member for screw-in type fuses comprising a body of insulation material having a removable wall, cavities within said body for fuses, a circular threaded metallic shell positioned within each of said cavities, said shell including a laterally extending lug, means on said wall retaining said shells in a fixed position within said cavities, said retaining means comprising projections depending from said wall into said cavities, inlet strips having one of their ends projected into said cavities to make electrical contact with said fuses and having their other ends projected from one end of said body to have a source of electric current connected thereto, and outlet strips engaging the lugs of said shells and leading therefrom to be engaged by the spaced prongs of the inserted plug of an electric appliance, said body having holes extending through the sides of the main body in axial alignment with said shells to threadedly receive screw-in type fuses extended into the body through said holes in the sides of the body, each of said shells having a lug extending laterally from one side thereof and to which the ends of the outlet strips are secured.

3. A double fused member for screw-in type fuses comprising a body of insulation material having a removable wall, cavities within said body for fuses, a circular threaded metallic shell positioned within each of said cavities, said shell including a laterally extending lug, means on said wall retaining said shells in a fixed position within said cavities, said retaining means comprising projections depending from said wall into said cavities, inlet strips having one of their ends projected into said cavities to make electrical contact with said fuses and having their other ends projected from one end of said body to have a source of electric current connected thereto, and outlet strips engaging the lugs of said shells and leading therefrom to be engaged by the spaced prongs of the inserted plug of an electric appliance, said body having holes extending through the sides of the main body in axial alignment with said shells to threadedly receive screw-in type fuses extended into the body through said holes in the sides of the body, each of said shells having a lug extending laterally from one side thereof and to which the ends of the outlet strips are secured, said fuse retaining means comprising projections depending from said removable wall and into said cavities, said projections having their free ends rounded to fit about the shells.

4. A double fused member for screw-in type fuses comprising a body of insulation material having a removable wall, cavities within said body for fuses, a circular threaded metallic shell positioned within each of said cavities, said shell including a laterally extending lug, means on said wall retaining said shells in a fixed position within said cavities, said retaining means comprising projections depending from said wall into said cavities, inlet strips having one of their ends projected into said cavities to make electrical contact with said fuses and having their other ends projected from one end of said body to have a source of electric current connected thereto, and outlet strips engaging the lugs of said shells and leading therefrom to be engaged by the spaced prongs of the inserted plug of an electric appliance, said body having holes extending through the sides of the main body in axial alignment with said shells to threadedly receive screw-in type fuses extended to the body through said holes in the sides of the body, said shells being arranged in axial alignment within said body.

5. A double fused member for screw-in type fuses comprising a body of insulation material having a removable wall, cavities within said body for fuses, a circular threaded metallic shell positioned within each of said cavities, said shell including a laterally extending lug, means on said wall retaining said shells in a fixed position within said cavities, said retaining means comprising projections depending from said wall into said cavities, inlet strips having one of their ends projected into said cavities to make electrical contact with said fuses and having their other ends projected from one end of said body to have a source of electric current connected thereto, and outlet strips engaging the lugs of said shells and leading therefrom to be engaged by the spaced prongs of the inserted plug of an electric appliance, said body having holes extending through the sides of the main body in axial alignment with said shells to threadedly receive screw-in type fuses extended into the body through said holes in the sides of the body, said shells being axially offset from each other.

6. A double fused member for screw-in type fuses comprising a body of insulation material having a removable wall, cavities within said body for fuses, a circular threaded metallic shell positioned within each of said cavities, said shell including a laterally extending lug, means on said wall retaining said shells in a fixed position within said cavities, said retaining means comprising projections depending from said wall into said cavities, inlet strips having one of their ends projected into said cavities to make electrical contact with said fuses and having their other ends projected from one end of said body to have a source of electric current connected thereto, and outlet strips engaging the lugs of said shells and leading therefrom to be engaged by the spaced prongs of the inserted plug of an electric appliance, said body having holes extending through the sides of the main body in axial alignment with said shells to threadedly receive screw-in type fuses extended into the body through said holes in the sides of the body, said outlet strips

having end aligned U-shaped contact portions at their ends remote from said fuses and arranged within enlarged portions of recesses which mount said outlet strips, said body having holes in the end thereof in alignment with said enlarged portions for the passage of the prongs of the plug to make electrical contact with the contact portions of said outlet strips, and projections of said removable wall extended into the enlarged portions of said recesses and engaging said contact portions of said outlet strips holding them in alignment with said holes.

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