Sept. 4, 1962 W. C. LINTON 3,052,781

FUSEHOLDER

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Fig. 1.

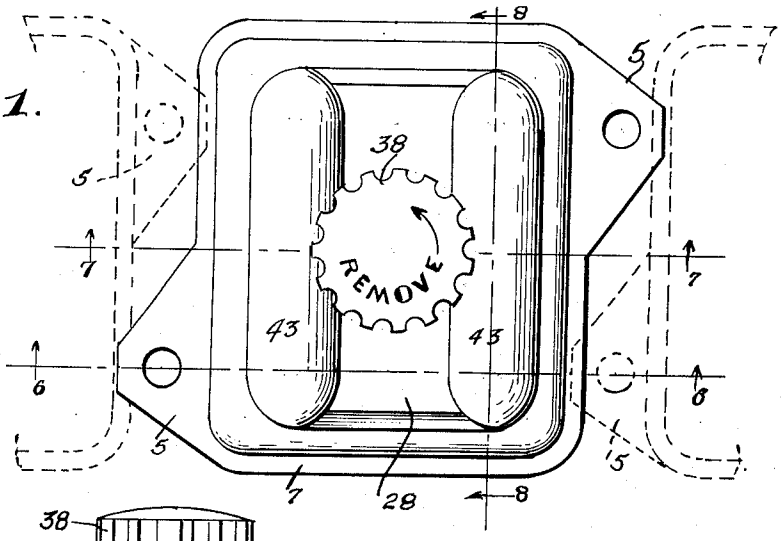


Fig. 2.

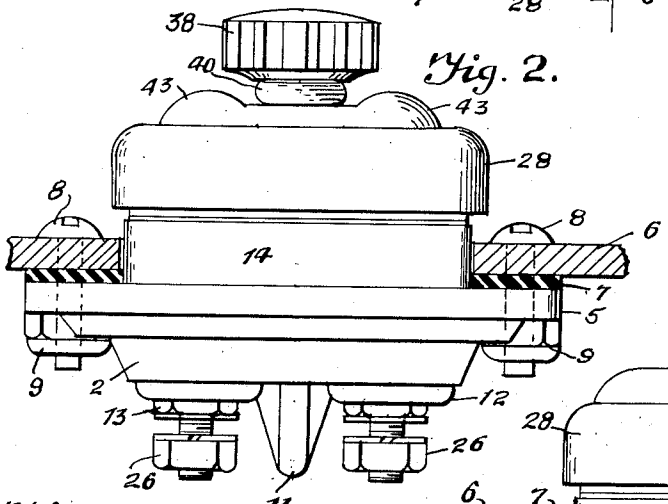


Fig. 3.

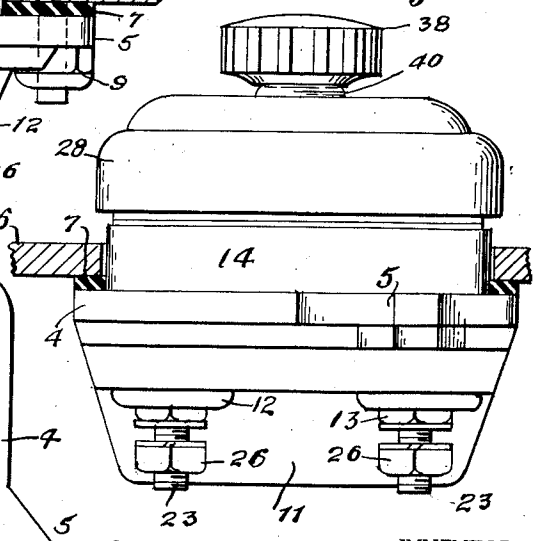
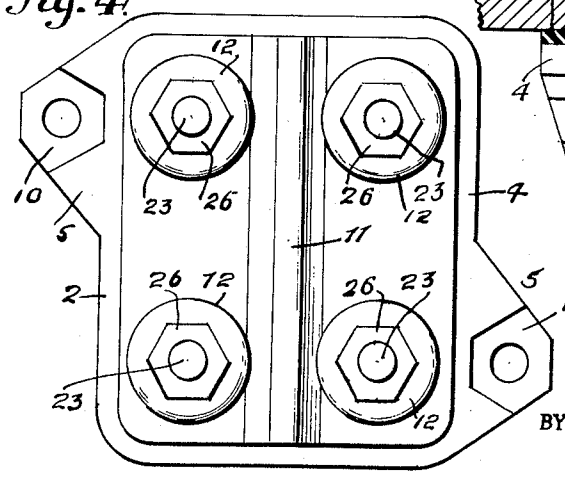


Fig. 4.



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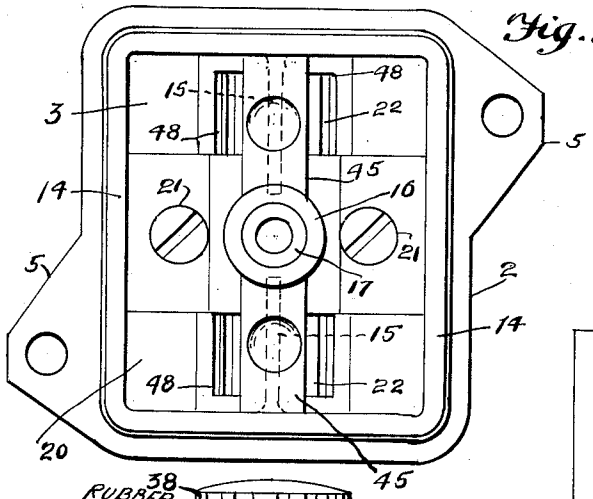
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Fig. 5.



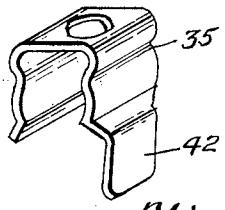


Fig. 9.

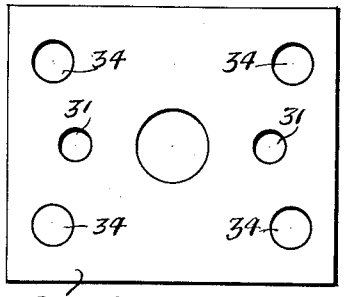


Fig. 10.

Fig. 6.

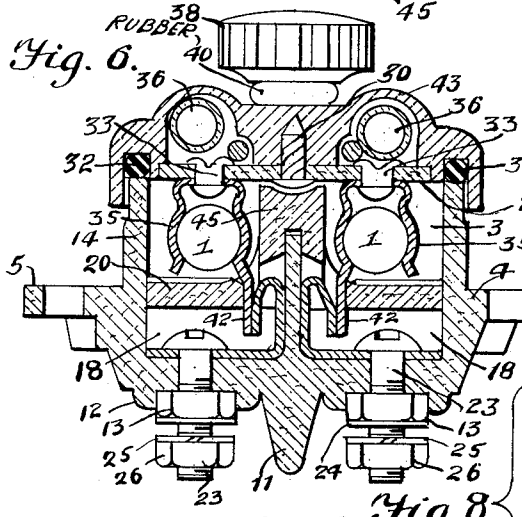


Fig. 8.

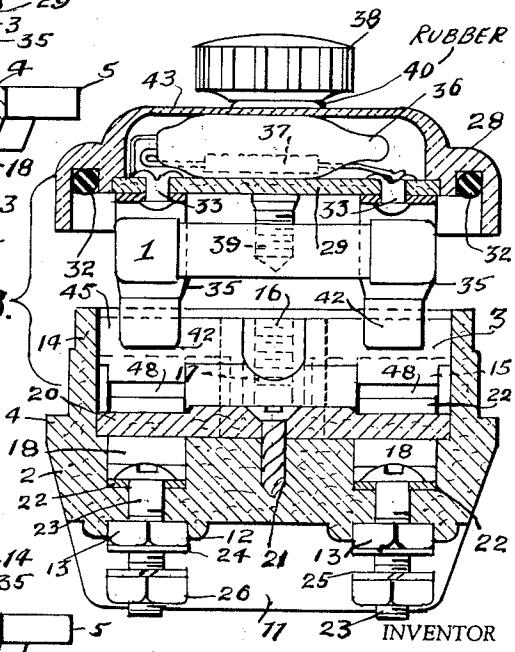
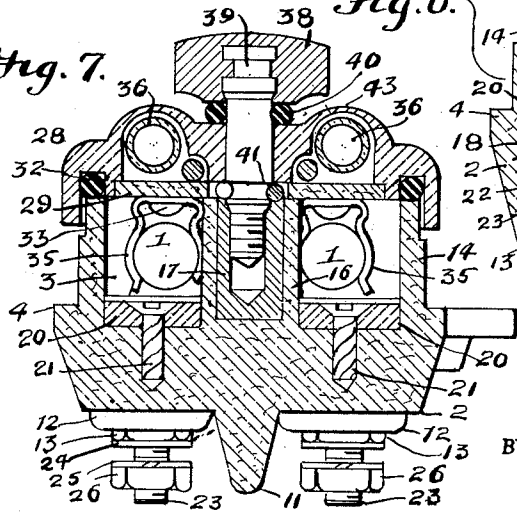


Fig. 7.



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Fig. 12.

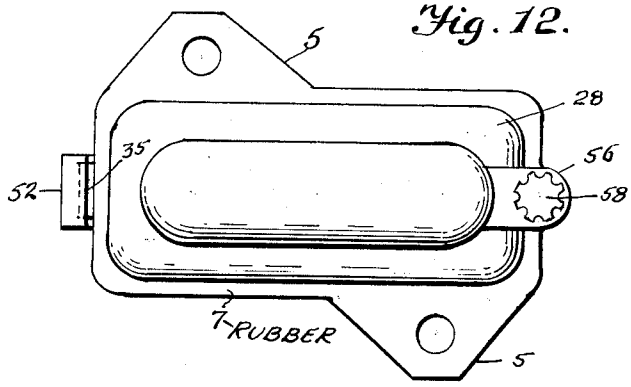


Fig. 13.

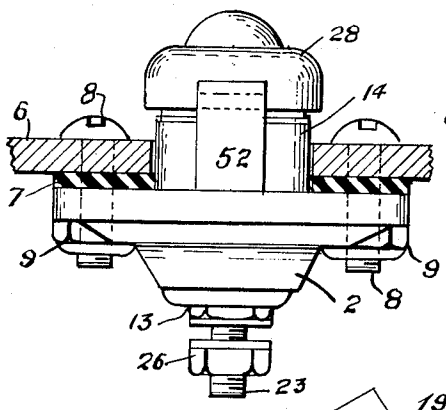


Fig. 14.

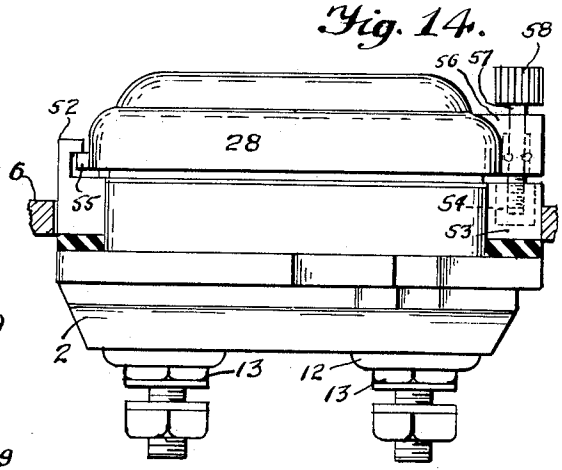


Fig. 11.

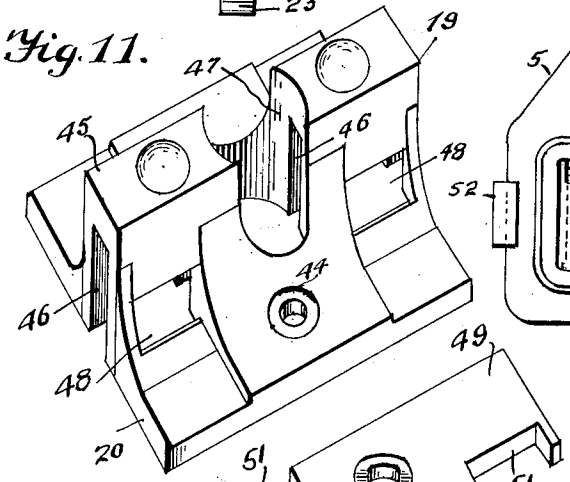


Fig. 15.

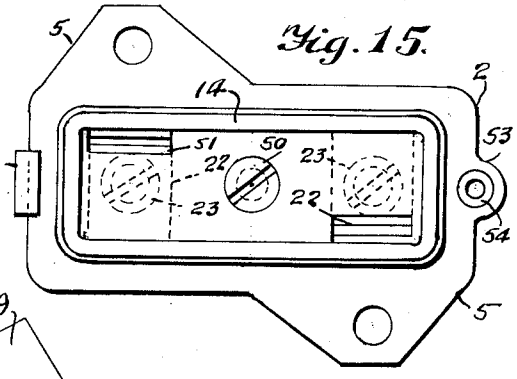


Fig. 16.

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3,052,781

FUSEHOLDER

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Filed Apr. 4, 1958, Ser. No. 726,439
3 Claims. (Cl. 200—133)

The present invention relates to holders capable of housing standard cartridge type fuses having among its principal objects to provide a so-called dead front fuseholder whereby a maximum number of fuses may be mounted upon a panel board utilizing a minimum amount of space at both sides of the panel board.

Other objects of the invention will hereinafter be in part obvious and in part pointed out as the description continues.

In the drawings:

FIG. 1 is a top plan view of a twin fuseholder.

FIG. 2 is a side plan view of the fuseholder as mounted upon a panel board.

FIG. 3 is an opposite side plan view.

FIG. 4 is a bottom plan view.

FIG. 5 is a top plan view of the body of the fuseholder with its cover removed.

FIG. 6 is a vertical sectional view of a complete fuseholder taken on the line 6—6 of FIG. 1 in the direction of the arrow points.

FIG. 7 is a vertical sectional view of the same taken on the line of 7—7 of FIG. 1 in the direction of the arrow points.

FIG. 8 is a vertical sectional view taken on the line 8—8 of FIG. 1 in the direction of the arrow points with the cover separated from the body of the fuseholder.

FIG. 9 is a perspective view of one of the fuse clips.

FIG. 10 is a plan view of the insulating panel.

FIG. 11 is a perspective view of the insulating insert for the twin fuseholder.

FIG. 12 is a top plan view of the fuseholder for housing a single fuse.

FIG. 13 is an end elevation of the same as applied to a panel board.

FIG. 14 is a side elevation of the same.

FIG. 15 is a plan view of the same with the cover removed, and

FIG. 16 is a perspective view of the insulating insert for the same.

In these drawings, the numeral 1 indicates a standard cartridge type fuse of the 3AB or 3AG class which are ¼" in diameter and 1¼" long, but by slightly enlarging the fuseholder but maintaining its design, the 4AB class fuses may be employed and even up to the 5AB class fuse known as the midget size fuse having a diameter of 13/32" and a length of 1½" may be utilized.

The fuseholder comprises a body 2 molded preferably from glass fiber alkyd or diallyl pthalate insulating materials substantially of a rectangular configuration in plan view with an open end recess 3 capable of receiving one or more fuses 1. A flange 4 projects from the opposite sides of the body 2 with the apertured ears 5 so that a plurality of fuseholders may be snugly arranged upon the outer face of a panel board 6 in a manner as illustrated in dotted lines in FIGURE 1 of the drawings. A single gasket 7 is seated upon the flange 4 and ears 5 so as to rest upon the rear face of the panel board 6. By tightening the mounting hardware such as the bolts 8 and elastic stop nuts 9 a water tight seal will be established between the body 2 and panel board 6. These nuts 9 are each seated within a recess 10 formed with the lower face of ear 5. Projecting from and molded in the lower face of the body 2 is a fin 11 and also circular projections 12 each having a recess for receiving a hex nut 13.

The side walls 14 of the body 2 extend through a rectangular shaped opening formed within the panel board 6 and the outer or upper extremities of these side walls 14 protrude from the outer face of the panel board as is best illustrated in FIGS. 2, 3, 13 and 14 of the drawings. A partition wall 15 may also be formed within the body 2 for dividing the recess 3 into two sections each capable of receiving a fuse 1. With the central portion of this wall 15 there is formed a circular section 16 of greater height than that of the wall and having an internally threaded metal insert 17 molded therein. Wells 18 are formed in the bottom portion of the body 2 and the upper ends of each open within the recess 3.

A spring contact member 22 is seated within each well 18 of the body and are retained therein by means of the terminal bolts 23 and hex nuts 13 connected to the latter. These terminal screws or bolts 23 are each provided with a flat washer 24, a lockwasher 25 and another hex nut 26, whereby the conventional electrical conductor may be attached thereto. The free end of each spring contact 22 project within a recess 48 formed within the insulating insert 19.

The cap or cover 28 is preferably molded from a translucent material such as alpha melamine having recesses formed therein the open ends of which are covered by an insulating panel 29 and the latter being secured thereto by means of the drive screws 30 which latter extend through the openings 31 formed within this insulating panel. An O ring 32 seated within the cover 28 is adapted to rest upon the upper ends of the side walls 14 so as to establish a water tight seal between the cover and body 2. Rivets 33 extend through the openings 34 formed through the insulating panel for attaching the fuse clips 35 thereto. The lead wires of the lamps 36 and resistors 37 are so connected to the rivets 33 that one set of each will be connected in series with the fuse clips 35, but in parallel with a fuse 1 when retained therein as is best illustrated in FIGURE 8 of the drawings.

The fuse clips 35 are of a standard design with the exception of a contact prong or blade 42 formed therewith engageable with the upper free ends of the spring contacts 22 whereby each fuse 1 may be connected in series with one set of terminal studs so that when a fuse blows a lamp 36 connected in parallel therewith, but in series with its terminal studs, will glow indicating the blown or ruptured conditions of the fuse and the light from each lamp will be emitted through and from the thin translucent wall 43.

That form of fuseholder shown in FIGS. 1 to 11 of the drawings is for housing two identical fuses and an insulating insert 19 molded from the same material as that of the base 2 provided wtih two oppositely extending base sections 20 capable of fitting snugly within the recess of the body and resting upon the bottom thereof so as to cover the four wells 18 formed therein. Drive screws 21 extend through the openings 44 of this insulating insert 19 for retaining the latter within the recess 3 of the body. A vertically extending partition 45 is also formed within this insulating insert 19 and has a slot 46 formed therein for receiving the partition wall 15 of the body and a central recess 47 through which extends the central section 16 of this partition wall. Four openings 48 are also formed through this insulating insert for receiving the upper free ends of the spring contacts 22. When this insulating insert is secured within the recess of the body it is obvious that no live parts such as the contacts 22 and terminal studs 23 are so exposed as would permit contact therewith which would likely cause shock or damage to the electrical system.

To retain and permit withdrawal of the cover 28 from the body a knob 38 is provided having a stud insert 39

and the latter has a threaded end having detachable engagement with the threads of the insert 17. An O ring 40 extends around the stud 39 above the cover so as to effect a water tight seal between the stud and the opening of the cover through which it extends. A split lock ring 41 when seated within an annular recess provided in the stud 39 retains the latter to the cover for not only permitting this stud to rotate, but causing the cover to be withdrawn from the body by manually pulling the knob 38 when the threaded end of the stud is released from the insert 17 of the body.

When this cover is removed from the body the twin fuses 1 will be carried therewith and so exposed that they may be replaced. When again applying the cover to the body the blades 42 of the fuse clips will be guided through the openings 48 of this insulating insert 19 so as to have spring engagement with the contact 22. The fin 11 formed with the bottom of the body is provided for insulating the adjacent terminal 23 and their attached wire conductors from one another.

When employing a single fuseholder as shown in FIGS. 12 to 16 of the drawings, an insulating insert 49 is retained by means of the drive screws 50 within the recess of the body so as to cover the two spring contacts 22 and terminal stud 23. This insulating insert has the opening 51 formed therein so as to permit the blades 42 of the fuse clips to engage the spring contacts 22.

As a means for retaining the cover 28 upon the body 2 the latter has formed with one end thereof a hook projection 52 and its opposite end with an extension 53 in which is seated an internally threaded insert 54. The cover has a lug 55 formed with one end thereof engageable wtih the hook of the projection 52 and its opposite end with a projection 56 through which extends a stud 57. This stud 57 has a knob 58 secured to one thereof and a threaded end engageable with the threaded insert 54. A split lock ring is secured to this stud so that when the latter is released from the insert 54 the cover can be raised by manually pulling upon the knob 58. In applying this cover to the body the lug 55 is first inserted under the hook of the projection 52 and that end of the cover carrying the knob 58 is forced downwardly until the threaded end of the stud 57 aligns with the threaded insert 54 and by rotating this knob this cover will be securely attached to the body. The side flanges formed with the cover extend over the walls 14 to prevent lateral movement of the cover with respect to the body.

The body and cap or cover therefor are preferably impregnated with a composition so that together with the O rings 32 and 40 no air, water or moisture vapors can enter the recess 3 of the body as would likely impair the successful operation of the fuse 1 housed therein. A completely sealed fuseholder of this character is most desirable when installed in aircraft maneuvering at high altitudes as well as underwater craft.

Upon a panel board of limited size or area can now be mounted a maximum number of fuses when nested together or illustrated in FIGURE 1 of the drawings. Also where there is but a limited space behind the panel board a fuseholder of this design and construction is necessary as in an actual and practical device the terminal studs 23 extend from the panel board for a distance of about three fourths of an inch.

As will be noted in FIGURE 8 of the drawings, the cover 28 when removed from the body 2 carries both fuses 1 therewith whereupon the blow fuse can be replaced and when the cover is again placed upon the body, the fuses can again function. Also when the cover is removed from the body, the free ends of the contacts 22 are so covered by the insulated inserts as to prevent one directly coming in contact therewith as would likely cause a shock and as the fuses and their clips are carried by the cover this fuseholder has the desirable features of the so-called dead front fuseholder.

I claim:

1. A dead front fuseholder comprising a body molded from insulating materials and having an open end recess formed therein, a partition wall formed with said body and extending within said body for dividing the open end recess into two compartments, said body having wells formed therein two of which being arranged within each compartment, a spring contact mounted within each well of said body, a central section of greater height and formed with said partition wall, an internally threaded metal insert secured within said central section, a cover for closing the open end recess within said body, a threaded stud connected to said cover and being in threaded engagement with said internally threaded insert secured to said central portion of said partition wall for attaching said cover to said body, fuse clip secured to said cover for retaining a cartridge type fuse with each compartment of the open end recess formed within said body, a protective insert molded from plastic insulating materials, a partition molded with said protective insert and having a recess formed therein for received said partition wall formed with said body, means for securing said protective insert to said body whereby said partition thereof will insulate the cartridge type fuses from one another when the latter are retained within the compartments of the open end recess formed within said body, a base section formed with the lower end of said partition of said protective insert fitting snugly within each compartment of the recess of said body, said base section of said protective insert extending over the wells formed in said body for insulating the cartridge type fuses from said spring contact terminals therein, and blades formed with said fuse clip secured to said cover and extending through openings formed in said base section of said protective insert for contact with said spring terminals.

2. A dead front fuseholder for removably retaining standard cartridge type fuses upon a panel board comprising a body molded from insulation materials in a substantially rectangular configuration in plan view and having an open end recess formed therein capable of receiving a cartridge type fuse, said body having an exterior narrow shoulder, a gasket seated upon said shoulder for and resting upon the lower face of the panel board, said body shoulder extending entirely around a medial portion of and dividing said body into an upper and lower section, the upper section of said body when mounted upon a panel board only extending through an opening within the panel board and beyond the outer face thereof, apertured ears extending contiguous with and from said shoulder, one each of said ears being arranged at opposite sides of said body adjacent the opposite ends thereof, whereby a plurality of bodies may be mounted in nested relations to one another upon the panel board by intermeshing the ears of adjacent bodies, attaching hardware for connecting said apertured ears to the rear face of the panel board, contact terminals extending through the lower section of said body to within the opened end recess formed within said body, and a cover detachably connected to said body for closing the open end recess therein.

3. A dead front fuseholder comprising a body molded from insulating materials having an open end recess, an integral bottom and communicating wells formed therein, a contact terminal extending through said body bottom to within each well and secured to said body, a cover for closing the open end of the recess formed within said body, fuse clips connected to said cover for retaining a plurality of cartridge type fuses thereto and suspending the same within the open end recess of said body, a partition wall integral with said body separating said wells into pairs thereof and extending into and across said body recess a separable and removable protective insert molded of plastic materials and having a bottom recess, means detachably securing said plastic insert upon the bottom of said open end recess of said body with said insert bottom recess mating with said partition wall, a partition provided on said protective insert and positioned for separating the

cartridge type fuses from one another, flanges formed with said protective insert and each extending over one of said pairs of said wells formed with said body for insulating said contact terminals from the cartridge type fuses suspended within the open end recess of said body and said protective insert having openings formed for the insertion therethrough of said fuse clips for contacting said terminals and connecting the cartridge type fuses in series therewith.

References Cited in the file of this patent

UNITED STATES PATENTS

1,455,566	Briggs	May 15, 1923
2,077,319	Gueff	Apr. 13, 1937
2,117,346	Millis	May 17, 1938
2,137,919	Lorenz	Nov. 22, 1938
2,417,692	Kline	Mar. 18, 1947
2,581,308	Smith	Jan. 1, 1952
2,617,847	Cole	Nov. 11, 1952
2,740,017	Luce et al.	Mar. 27, 1956
2,783,331	Sundt	Feb. 26, 1957
2,875,295	Lindeman	Feb. 24, 1959

FOREIGN PATENTS

8,913 of 1899	Great Britain	Oct. 7, 1899
482,317	Great Britain	Mar. 28, 1938
486,336	Great Britain	June 2, 1938
844,387	France	Apr. 17, 1939
543,429	Great Britain	Feb. 25, 1942
1,128,731	France	Aug. 27, 1956
634,752	Great Britain	Mar. 29, 1950
765,577	Great Britain	Jan. 9, 1957