Feb. 14, 1961

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2,972,030

FUSED PLUG-IN RECEPTACLE

Filed March 26, 1959

FIG. 1

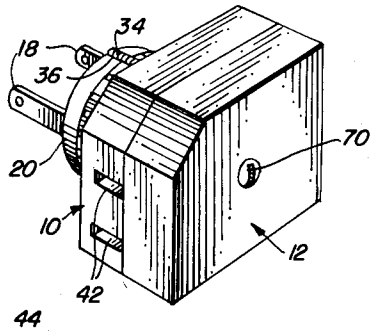


FIG. 2

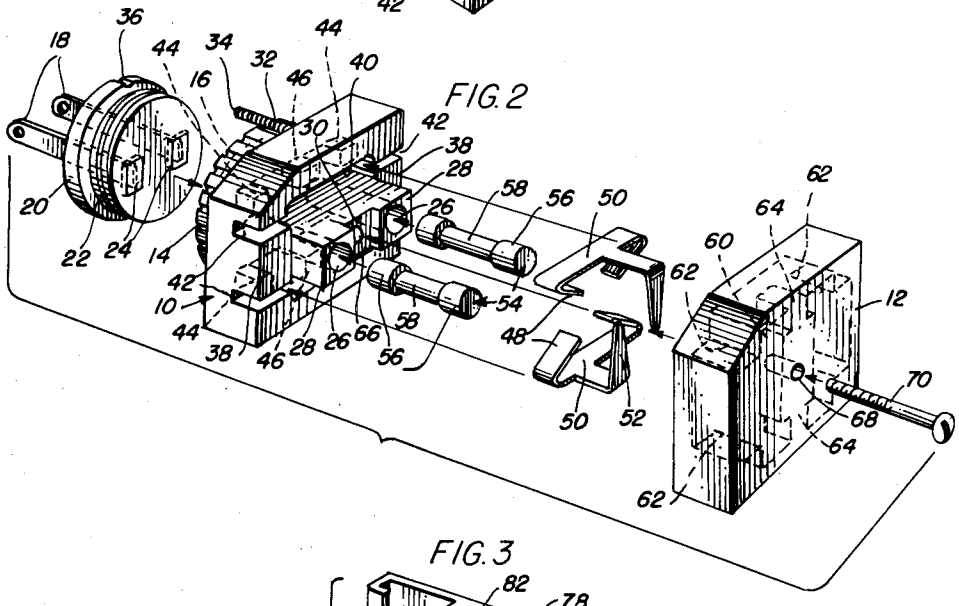
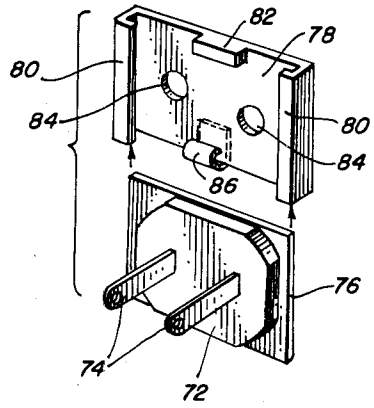


FIG. 3



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United States Patent Office 2,972,030 Patented Feb. 14, 1961

2,972,030

FUSED PLUG-IN RECEPTACLE

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Filed Mar. 26, 1959, Ser. No. 802,247

10 Claims. (Cl. 200—115.5)

This invention relates in general to a plug-in receptacle for multiple connections having a plurality of fuses therein, adapted to be used in connection for blade receptacle outlets commonly used for house, power and lighting circuits.

In most lighting and small power circuits for homes, offices, factories, and the like, it is customary to provide a number of outlet receptacles in different rooms for ordinary household and lighting plug-in connections, but the fuses for such connections are usually located at a point remote from the outlet receptacle frequently in a switch or fuse box which if not inaccessible, is in a remote location not easily accessible. It is also customary to provide a multiple outlet plug which may be insered in such a receptacle, but this plug only increases the possibility of blowing a fuse at the remote location because of the multiple circuits applied thereto.

The present invention provides a bladed plug with a compact attachable multiple receptacle having a separate removable fuse for each blade and conductor.

It is therefore an important object of the invention to provide a fused receptacle for multiple blade connections in which a separate conductor is provided for a pair of conductor connections, each connection having a separate, easily accessible and removable fuse.

A further object of the invention is to provide a simple combined receptacle for multiple bladed connection which may be releasably attached to an ordinary bladed plug having a screw fitting.

Still a further object of the invention is to provide a bladed plug with a screw connection in combination with a multiple fused plug receptacle which is attachable thereto by a screw socket and has means for insuring electrical connection between the bladed plug and the receptacle attached thereto.

Still a further object of the invention is to provide a plug receptacle having a plurality of opposite blade receivers of identical construction each of which makes a separate connection with a fuse for one side of a circuit, the blade receivers being resiliently seated in the receptacle and resiliently engaging the fuses to insure a continuous electrical contact with the fuse.

Other objects of the invention will appear in the specification and will be more apparent from the accompanying drawings in which,

Fig. 1 is a perspective view of a plug-in receptacle in accordance with this invention.

Fig. 2 is an exploded perspective view of the parts of a fused plug-in receptacle as shown in Fig. 1; and

Fig. 3 is a perspective view of a slidably connected blade support and receptacle cover, forming a substitute for the corresponding connecting parts as shown in Fig. 2.

This invention is intended to be applied and used in connection with an ordinary twin bladed plug connector. When the fuse receptacle is disengaged from the plug, the fuses are easily accessible and replaceable.

Referring now more particularly to the drawings, a fuse receptacle comprising a receptacle base **10** and a receptacle cover **12** therefor, relatively separable from each other, and one of the parts as the base is formed at its outer side with an attachment ring **14** having inner threads **16** either integral or fixedly attached to the base.

A fixture connecting plug **20** is provided at one side with projecting spaced blades **18** at the other side with a circular outwardly threaded portion **22** adapted to fit into the attachment ring **14** and to closely engage the inner threads **16** thereof. The inner ends of the blades **18** may be turned over outwardly to form contacts **24** which are closely adjacent the face of the base **10** within the ring **14**.

Within the receptacle base and projecting through it are circular bores **26** spaced apart and registering with the contacts **24** of the fixture plug when it is attached to the receptacle base. At the other or inside of the base are projections **28** through which the circular bores extend with a connecting partition **30** less in height than the projections **28**. To insure that the contacts **24** are located opposite the ends of the bores **26** when the fixture plug **20** is inserted in the attachment ring **34**, a projection **32** is fixed in one edge of the attachment ring **14** and preferably has a yielding extremity **34** which extends beyond the surface of the ring and is adapted to be seated in a notch **36** in one edge of the fixture plug so that when the fixture plug is threaded into the attachment ring **14**, the contacts **24** will register with the adjacent ends of the circular bores **26** in the receptacle base.

The two projections **28** and the connecting partition **30** extend relatively lengthwise through the central portion of the receptacle base where they join with end portions **38** with a recess **40** at each side thereof having notches **42** through a portion of the rim of the receptacle base at each end of the recess and at each side of the central end portion **38**.

A pair of notches **42** at each side of the partition **38** are spaced to receive the blades of a connector plug such as the blades **18** of the plug **20**. At the bottom of each recess **40** and at the ends thereof are inner abutments **44** formed integral therewith and projecting approximately to the bottom of the notches **42**, and between each pair of abutments at the side thereof is a side abutment **46** which extends only partially across its corresponding recess, and is of approximately the same height from the bottom of the recess as the abutment **44**.

A spring strip contact conductor **50** is provided for each recess **40** and comprises a metal strip of uniform width with bent ends **48** extending oppositely inward on the same side of and intermediate the length of the strip and with an upwardly and overhanging spring contact tongue **52** substantially overlying the extremity of one end **48**. Each spring contact strip is substantially the same width as the blade **18** of a fixture plug and when a strip conductor **50** is inserted in one of the recesses **40** with the intermediate portion outwardly, the contact tongue **52** will directly and closely overlie one bore **26** in a projection **28**. The other strip conductor **50** will be reversed and oppositely applied in the opposite recess **40** to extend over the opposite bore **26**. The bent ends **48** of each conductor **50** are supported by its corresponding end abutments **44** and the intermediate connecting portion of the strip is supported by its side abutment **46** to hold the spring tongue **52** relatively in its projecting relation overlying one of the bores **26** so that when both contact conductors **50** are in place, the fingers will overlie both of the bores **26**.

Each bore **26** is of a diameter and length to closely receive an electric conductor fuse **54** of predetermined current capacity having metal contact ends **56** and an intermediate covered fuse section **58**, the combined length of which is sufficient to extend entirely through the bores **26** of the receptacle base **10** which is preferably made of

an easily moldable light-weight plastic material so that when one end of a fuse is in engagement with one of the contacts 24 of a fixture plug 20, the other end of the fuse extends just beyond the opposite end of its projection 28 so that it will be engaged and held yieldingly in electrical contact and in proper position by its corresponding contact tongue 52 of its spring contact conductor 50.

The receptacle cover 12 is also preferably of the same or a similar insulating material as that of the receptacle base; the inside is recessed with a transverse partition 60 and corner abutments 62. The corner abutments are of the same depth as the rim of the cover which extend sufficiently from the ends to engage the bent ends 48 of the two strip conductors 50 when they are in place and to hold them against relative lateral movement. This leaves the bent ends 48 opposite the end notches 42 so that they are free to resiliently engage the blades of a fixture plug inserted therein. The central portion of the partition 60 extends only partially from the bottom of the recess in the cover but sufficiently to be seated in the reduced portion 30 of the connecting partition of the receptacle base, but with partition portions 64 at the ends of the partition 60 which are of the same height as the rim of the cover so that these partition portions 64 extend between the connecting portions of the opposite contact tongues 52 when the base and cover are connected with the conductors 50 therein.

In order to bind the cover 12 upon the receptacle base, the base is formed with a screw opening 66 centrally thereof preferably between the bores 26 and extending through the reduced connecting partition 30, and the cover is formed with a threaded opening 68 centrally located in the transverse partition 60 so that a corresponding threaded screw 70 may be inserted from the inside of the attachment ring 14 of the receptacle base clamping the cover tightly on the opposite side of the base and correspondingly securing the spring conductors 50 in place to engage the ends of the fuses 54.

With this construction, the fuses may be inserted and removed from the base and its cover when they are tightly secured together by a fastening screw 70 before a fixture plug 20 is applied thereto, and when the fixture plug is applied, its contacts 24 will firmly engage the corresponding ends of the fuses and press them against the contact tongues 52. The screw 70 may be inserted through the outside of the cover in a similar manner if the fixture plug is permanently secured to the receptacle base. The receptacle base and cover are preferably substantially square or rectangular and approximately the same transverse dimensions as the attachment ring 14 with a depth only slightly greater than the length of a fuse so that the fuse receptacle may be made of light and inexpensive insulating material adding very little in size to the ordinary fixture plug, but adding materially to the use and convenience of such a plug by locating both fuses for the separate conductors in the plug itself where they are easily accessible for repair and replacement, thereby saving a trip to a panel board which may be remotely located in a hall or basement at a considerable distance from the ordinary location of a receptacle outlet.

Instead of the fixture plug having a screw base as shown more clearly in Fig. 2, a fixture plug base 72 having blades 74 may be provided with a rectangular back plate 76 and an adjacent face portion 78 of a receptacle corresponding to the base 10 is provided with under cut ribs 80 at opposite edges, the under cut portions of which are adapted to engage the corresponding edges of the back plate 76 to make a slidable engagement therewith. At one side of the face portion is a projection 82 which acts as an abutment to engage the corresponding edge of the back plate 72 to limit its movement and to locate the inner connected ends of the blade 74 which have terminals like the contacts 24 in Fig. 2 and locate them opposite the circular bores 84 adapted to engage the conductor ends of fuses inserted in the receptacle base to which this back plate 76 is connected or of which it forms a part. To retain the back plate 76 in proper engaging position opposite the bores 84, the edge of the back plate 76 opposite the projection 82 is provided with a spring tongue 86 preferably attached at the back of the plate 76 and rounded over the edge and movable resiliently to allow the back plate 76 to slide over the spring tongue when the fixture plug base is slidably applied to the back plate and the rounded portion of the tongue springing over the edge of the back plate 76 to hold it yieldingly in its proper place. To remove the back plate and the plugs from the face portion 78 of the receptacle, the spring tongue 86 is depressed sufficiently to allow the back plate 76 to engage the tongue and to hold it in depressed position as the back plate is removed, and similarly depressing the tongue when it is applied.

This modified construction may be substituted for the circular threaded plug 20 of Fig. 2, the threaded attaching ring 14, and the positioning projection 32 with its yielding extremity 34 which holds these parts in their proper relation with respect with each other.

While a preferred construction and a modified connector have been described in some detail, they should be regarded by way of illustration and example rather than as a restriction or limitation thereof, as many changes in the construction, combination and arrangement of the parts may be made without departing from the spirit and scope of the invention.

I claim:

1. A fused plug-in receptacle comprising a bladed plug adapted to be inserted in an electric outlet receptacle, means forming a fuse receptacle having a base secured to the plug, the inner ends of the blades terminating in separate contacts adjacent the wall of the base, the base formed with bores extending therethrough and registering with the said contacts and with transverse recesses at the sides of the bores, fuses inserted in said bores, contact members seated in the recesses extending transversely of the base, each having a contact tongue extending therefrom and overlying one of the bores and adapted to engage the adjacent end of a fuse in the corresponding bore and to press it resiliently against the blade contact, the contact members having means extending in the recesses to opposite ends of the base from said tongues for engaging blades of other connectors, and a cover for the receptacle adapted to engage the contact members in the receptacle and to hold them firmly in place.

2. A fused plug-in receptacle comprising a bladed plug adapted to be inserted in an electrical outlet receptacle, means forming a fuse receptacle having a base secured to the plug, the inner ends of the blades terminating in separate contacts adjacent the wall of the base, the base formed with bores extending therethrough and registering with said contacts and with transverse recesses at the sides of the bores, and fuses inserted in said bores, contact members seated in the recesses extending transversely of the base and each having a contact tongue extending therefrom overlying one of the bores and adapted to engage the end of a fuse in the corresponding bore and to press it resiliently against the blade contact, a cover for the receptacle adapted to engage the contact members and hold them in the receptacle, the receptacle base formed with projections through which said bores extend forming a longitudinal partition and with said recesses at each side of the partition with slots in the ends of the base through which blades of other connector plugs may be inserted, the ends of the conductors in the base being bent oppositely inward and positioned adjacent the said slots for engaging the blades of a plug inserted therethrough.

3. In a fused plug-in receptacle in accordance with claim 2, the recesses each having abutments at the ends and one side thereof, the conductors each comprising a

flat strip of conducting metal bent at the ends and having a tongue extending upwardly and over one of the bent ends for engaging one end of one of the fuses, the said conductors being reversible to fit in either of the receptacle recesses and the bent ends of each conductor engaging the end abutment in the recess and the intermediate side portion of the conductor engaging the intermediate abutment to hold the contact tongue in projecting position and against overturning.

4. In a fused plug-in receptacle in accordance with claim 3, the cover having end recesses with projecting at the outer corners forming abutments to engage over the outer exposed bent ends of the said conductors when seated in the receptacle base for additionally holding them in place.

5. In a fused plug-in receptacle in accordance with claim 2, projections from the inner side of the receptacle through which the said bores extend, the projections being spaced apart and a connecting partition between the said projections together forming a longitudinal partition in the receptacle and projecting from the inner open side thereof, and the cover for the receptacle having a transverse partition which engages the said intermediate connecting partition seating the cover on the said base, and screw means extending through the receptacle base and into the said transverse partition for binding the receptacle base and its cover tightly together.

6. A fused plug-in receptacle comprising a twin bladed plug adapted to have its blade inserted into an electric outlet receptacle, a closed insulating casing forming a fuse receptacle, means removably connecting the plug at one side of the casing, the plug blades having contact terminals adjacent the casing when so connected, the casing having bores extending from said terminals and recesses at opposide sides of the bores extending to opposite ends of the casing, fuses removably inserted in said bores to engage the blade terminals, two spring contact conductors to extend in said recesses to opposite ends of the casing at the opposite sides of the two fuses and each having a spring contact tongue to engage the corresponding end of one of the said fuses, and the casing having twin slots in the ends opposite the conductors connecting with the recesses to receive the blades of other fixture plugs inserted from the outside therein to make contacts with the conductors.

7. A plug-in receptacle in accordance with claim 6, in which the slots and recesses are open at opposite ends of the casing and the ends of the conductors therein are bent reversely to resiliently engage the blades of other fixture plugs inserted in said slots.

8. A plug-in receptacle in accordance with claim 6, in which the removable connection between the bladed plug and the insulating casing comprises a stop which positions the contact terminals to register with the ends of the fuses and to hold the fuses resiliently in place against the spring contact tongues of the said contact conductors.

9. A fused plug-in receptacle comprising a twin bladed plug adapted to be inserted into an electric outlet receptacle, a closed insulating casing forming a fuse receptacle, means removably connecting the plug at one side of the casing, the plug blades having contact terminals adjacent the casing when so connected, the casing having bores extending from said terminals, and recesses terminating at opposite ends of the casing, fuses removably inserted in said bores to engage the blade terminals, two spring contact conductors to extend in said recesses to opposite ends of the casing, and at opposite sides of the fuses, each having a spring contact tongue to engage the corresponding end of one of the fuses, the casing having twin slots in the ends connecting with the recesses to receive the blades of other fixture plugs inserted from the outside to make contact with the conductors, the bladed plug and the adjacent portion of the insulating casing provided with cooperating internal and external threaded portions by means of which the parts are removably connected and said stop means includes a resilient projection on one of the parts and a notch on the opposite part to engage the resilient projection when the contact terminals register with the ends of the fuses.

10. A fused plug-in receptacle comprising a twin bladed plug adapted to be inserted into an electric outlet receptacle, a closed insulating casing forming a fuse receptacle, means removably connecting the plug at one side of the casing, the plug blades having contact terminals adjacent the casing when so connected, the casing having bores extending from said terminals, and recesses terminating at opposite ends of the casing, fuses removably inserted in said bores to engage the blade terminals, two spring contact conductors to extend in said recesses to opposite ends of the casing, and at opposite sides of the fuses, each having a spring contact tongue to engage the corresponding end of one of the fuses, the casing having twin slots in the ends connecting with the recesses to receive the blades of other fixture plugs inserted from the outside to make contact with the conductors, the bladed plug and the adjacent portion of the insulating casing provided with cooperating interengaging slidable portions, one having a stop at one side to limit the movement of the other and the first one having a spring tongue engaging over the edge of the other to hold it in engagement with said stop when the said contact terminals register with the ends of the fuses.

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