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ADAPTER UNIT FOR ELECTRIC WIRING SYSTEMS

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2 Sheets-Sheet 1

Fig. 1.

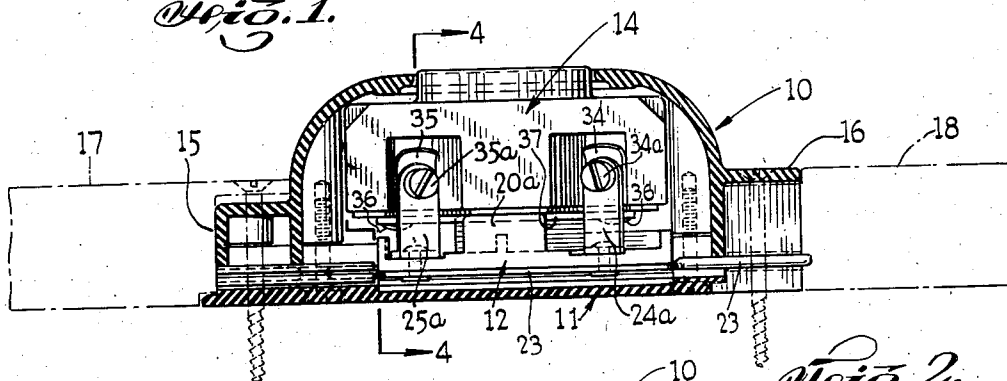


Fig. 2.

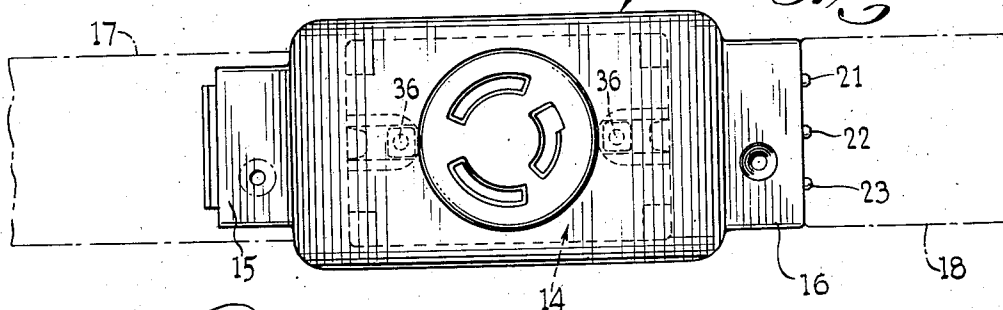


Fig. 3.

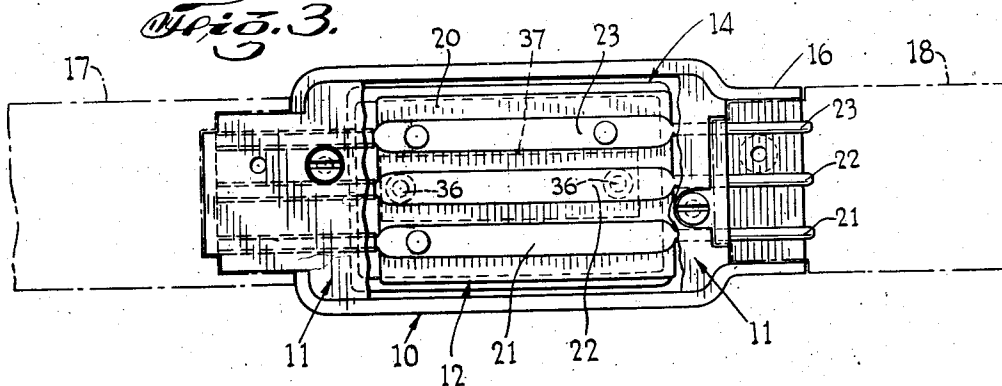
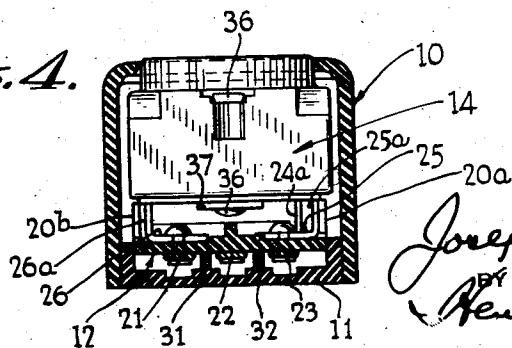


Fig. 4.



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ADAPTER UNIT FOR ELECTRIC WIRING SYSTEMS

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7 Claims. (Cl. 173-330)

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This invention relates to electric wiring devices, and particularly to adapters by means of which a standard form of outlet fixture may be employed in a wiring system of the type disclosed and claimed in my copending application Serial No. 398,030, filed June 14, 1941, which has matured into Patent No. 2,351,631, issued June 20, 1944. Such wiring system embodies a succession of standardized conductor units, electrically and mechanically interconnected in seriality to provide a wiring system of any desired length.

It is an object of the present invention to provide a unit capable of electrical and mechanical interconnection in seriality with other units. In such unit may be incorporated any form of standard outlet fixture which may have special attributes as desired, such as locking means for holding the attachment plug of an electrical accessory against accidental removal. A standard Hubbell "twist-lock" fixture is typical of those specialized commercial fixtures which may be employed in the present invention, although it is to be understood that the present invention is not limited to association with any one type of outlet fixture.

A preferred embodiment of the invention comprises a hollow housing or cap member of such internal capacity as to receive, completely within itself, the desired outlet fixture. Removably associated with said housing, to provide a closure for the otherwise open rear thereof, is a closure, so correlated with the housing as to form a male end and a female end for association with the complementary ends of the adjacent units of the wiring system.

Said closure has its inner surface shaped to receive and position a conductor block comprising a suitably formed plate of insulation material, on the bottom of which are the desired plurality of electricity conductors, preferably of flat cross section intermediate their ends for firm securement to the underside of the plate. At their respective opposite ends are terminals for connection with the terminals of the adjacent wiring units.

On the opposite face of said conductor plate are terminals of suitable shape, mechanically and electrically connected to the aforementioned conductors by rivets or other appropriate means. Each of said terminals has an upwardly extending post arranged for connection with a corresponding terminal member of the outlet fixture to be used therewith.

The parts are so arranged that the outlet fix-

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ture may be supported upon the conductor block, and its respective terminals secured to the upwardly extending posts of the terminals of said conductor block. By aperturing said upwardly extending posts, the screws with which outlet fixture terminals are conventionally equipped, may be passed through the apertured posts to secure them to the terminals of the outlet fixture.

The conductor block and the outlet fixture may be assembled and dropped into position within the housing, whereupon the closure of the housing, when positioned and secured, accurately locates the outlet and conductor block assembly within the housing in registry with a suitable opening through the outer wall of the hollow housing.

Other features and advantages will hereinafter appear.

In the drawings:

Fig. 1 is a side elevation of an embodiment of the invention, with the wall of the housing shown in section to disclose the structure therein;

Fig. 2 is a plan view of an embodiment of the invention;

Fig. 3 is a bottom view of the unit with a portion of the closure plate of the housing broken away to disclose the electricity conductors on the underside of the conductor block;

Fig. 4 is a vertical section taken on lines 4-4 of Fig. 1;

Fig. 5 is a bottom view of the outlet fixture positioned within the housing, with the bottom plate of the fixture removed to show the electricity conductors of such fixture; and

Fig. 6 is an exploded perspective of the completed structure, showing the relative association of the elements thereof.

Referring to the drawings, the illustrated embodiment of the invention comprises a hollow cap member 10, a closure 11 therefor, a conductor block 12 and an outlet fixture 14 associated therewith. As shown in Figs. 1 and 4, the closure 11 preferably fits within the side walls of the housing 10 and receives and supports the conductor block 12.

The cap 10 and closure 11 are so configured as to provide a male end 15 and female socket 16 respectively complementing a female socket and male end of wiring units 17 and 18, shown in broken lines in Fig. 1 and Fig. 2.

Conductor block 12, see Fig. 6, includes a base 20, preferably molded of insulation material such as "Bakelite" and the like; and in spaced relationship on one face, illustratively the underside of said base are the desired plurality of con-

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ductors, illustratively three, numbered 21, 22, 23. Said conductors may be tubes or rods of copper or brass, flattened intermediate their ends to rest firmly against the surface of the base 20. At one end, each conductor extends to provide a male connection end, and at its opposite end, each conductor has secured thereto a socket to receive the male connection of an adjacent conductor unit, whereby a series of units may be electrically interconnected in conjugate relationship.

The upper face of the block 20 has suitable upstanding side walls 28a, 29b, see Fig. 6, and carries lugs usually corresponding in number to the number of conductors.

The respective lugs 24, 25, 26 are preferably stampings of relatively heavy brass or copper, and have a base portion and an upstanding post 24a, 25a and 26a, respectively. A rivet passing through a lug, the base 20, and a conductor, electrically connects said lug to the conductor and fixes the lugs and conductor securely on opposite sides of the base 20.

As appears in Figs. 4 and 6, the upstanding wall formations 27, 28 and 29, 30 at the ends of the closure 11 operate to separate the terminals at the ends of the conductors 21, 22, 23 by defining channels within which said terminals are individually confined. Centrally of the plate 11 are relatively lower walls, 31, 32, see Fig. 4, which, per se, provide a surface upon which the conductor block 12 may be supported. The plate 11 is also provided with insulating walls which, being positioned between adjacent conductors, form electrically isolated chambers for the respective conductors.

The outlet fixture 14 is typical of any standard commercial unit supporting within a block of insulation material two or more contacts for connection to the blades of an attachment plug. The illustrated fixture 14 is a three-contact terminal, for 220 volt heavy duty service such as is required for portable drills or other power tools employed in industry.

Such outlet fixtures have their respective contacts arranged for connection to power leads by means of bus-bars, as 33, 34, 35, respectively terminating in vertical connection surfaces with which it is likewise conventional to employ binding screws, as 33a, 34a, 35a, to secure electricity conductors thereto.

Pursuant to the present invention, vertical posts 24a, 25a, 26a of the lugs 24, 25, 26 are positioned to fit outside of, and in contact with, the vertical connection surfaces of the respective bus-bars of the outlet fixture. By providing a suitable aperture through each of the said vertical posts, said apertures registering with the screw-threaded apertures in the bus-bars of the outlet fixture, the screws thereof, ordinarily employed to connect power-source leads to said terminals may be passed through the apertures of the respective posts 24a, 25a, 26a and into the connection terminals of the outlet fixture, thereby serving to electrically connect the terminals of such fixture with the conductors of the unit, and to support and secure the outlet fixture to the connection block 12.

Frequently, see Fig. 4, the body parts of electric outlet fixtures are secured together by means of rivets 36 which pass through the body and attach to a metal plate 37 on the underside thereof. To eliminate any possibility of short-circuit of such a metal plate with the respective conductors of the conductor block, the walls 28a and 29b act as spacers which, by engaging the bottom of the

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body of fixture 14, support the same clearly above the conductors of the conductor block.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made provided they do not depart from the scope of the claims.

I claim:

1. A unit of an electric wiring system embodying conductor units arranged for electrical and mechanical interconnection in seriatim, comprising a conductor block having electricity conductors disposed on one face thereof in mutually insulated, spaced relationship and having terminals extending from each end of said block, electrically conductive lugs disposed on the opposite face of said conductor block and mechanically and electrically interconnected with said conductors, an outlet fixture having connection terminals mechanically and electrically connected to said lugs; a cap member to removably receive said interconnected fixture and conductor block, and a closure member for said cap, said closure member supporting said conductor block in operative position, and having spaced longitudinally extending walls at each end to provide channels for individually receiving the extending terminals of said conductors, and having, intermediate its ends, spaced longitudinally extending walls to provide channels for individually receiving the said electricity conductors.

2. A unit of an electrical wiring system embodying conductor units arranged for electric and mechanical interconnection in seriatim; said unit comprising a housing having an open bottom and openings at its opposite ends adjacent its open bottom; a closure member for the open bottom of said housing; a block of electrically insulating material provided with parallelly arranged grooves extending from its opposing ends; electrical conductors disposed in said grooves respectively; posts of electrical conducting material secured to said insulating block and having extensions arranged to connect with said electrical conductors respectively; electrical outlet means disposed upon said insulating block; and electrical terminals carried by said outlet means and connected respectively with the contact elements of said outlet means, said electrical terminals being arranged to electrically connect with said posts respectively; said cover enclosing said insulating block, said outlet means and the body portions of said electrical conductors, the opposite end portions of said electrical conductors extending through the said opposite end openings of the cover.

3. A unit of an electrical wiring system embodying conductor units arranged for electrical and mechanical interconnection in seriatim; said unit comprising a housing having an open bottom and openings at its opposite ends adjacent its open bottom; a closure member for the open bottom of said housing, said closure member being provided with parallelly arranged grooves extending from its opposing ends; a block of electrically insulating material provided at its bottom face with parallelly arranged grooves extending from its opposing ends mating respectively with said grooves of said closure member; electrical conductors disposed in said grooves respectively; posts of electrical conducting material secured to said insulating block and having extensions arranged to connect with said electrical conductors respectively; electrical outlet means disposed upon said insulating block; and

electrical terminals carried by said outlet means and connected respectively with the contact elements of said outlet means, said electrical terminals being arranged to electrically connect with said posts respectively; said cover enclosing said insulating block, said outlet means and the body portions of said electrical conductors, the opposite end portions of said electrical conductors extending through the said opposite end openings of the cover.

4. A unit of an electrical wiring system embodying conductor units arranged for electrical and mechanical interconnection in seriatim; said unit comprising a housing having an open bottom and openings at its opposite ends adjacent its open bottom, said housing at its said opposite ends respectively having male and female formations thereat; a closure member for the open bottom of said housing; a block of electrically insulating material provided with parallelly arranged grooves extending from its opposing ends; electrical conductors disposed in said grooves respectively; posts of electrical conducting material secured to said insulating block and having extensions arranged to connect with said electrical conductors respectively; electrical outlet means disposed upon said insulating block; and electrical terminals carried by said outlet means and connected respectively with the contact elements of said outlet means, said electrical terminals being arranged to electrically connect with said posts respectively; said cover enclosing said insulating block, said outlet means and the body portions of said electrical conductors, the opposite end portions of said electrical conductors extending through the said opposite end openings of the cover.

5. A unit of an electrical wiring system embodying conductor units arranged for electrical and mechanical interconnection in seriatim; said unit comprising a housing having an open bottom and openings at its opposite ends adjacent its open bottom; a closure member for the open bottom of said housing; a block of electrically insulating material provided with parallelly arranged grooves extending from its opposing ends; electrical conductors disposed in said grooves respectively; posts of electrical conducting material secured to said insulating block and having extensions arranged to connect with said electrical conductors respectively; electrical outlet means disposed upon said insulating block; and electrical terminals carried by said outlet means and connected respectively with the contact elements of said outlet means, said electrical terminals being arranged to mechanically frictionally and electrically connect with said posts respectively; said cover enclosing said insulating block, said outlet means and the body portions of said electrical conductors, the opposite end portions of said electrical conductors ex-

tending through the said opposite end openings of the cover.

6. A unit of an electrical wiring system embodying conductor units arranged for electrical and mechanical interconnection in seriatim; said unit comprising a housing having an open bottom and openings at its opposite ends adjacent its open bottom; a closure member for the open bottom of said housing, said closure member being provided with parallelly arranged grooves extending from its opposing ends; a block of electrically insulating material provided at its bottom face with parallelly arranged grooves extending from its opposing ends mating respectively with said grooves of said closure member; electrical conductors disposed in said grooves respectively; posts of electrical conducting material secured to said insulating block and having extensions arranged to connect with said electrical conductors respectively; electrical outlet means disposed upon said insulating block; and electrical terminals carried by said outlet means and connected respectively with the contact elements of said outlet means, said electrical terminals being arranged to mechanically frictionally and electrically connect with said posts respectively; said cover enclosing said insulating block, said outlet means and the body portions of said electrical conductors, the opposite end portions of said electrical conductors extending through the said opposite end openings of the cover.

7. A unit of an electrical wiring system embodying conductor units arranged for electrical and mechanical interconnection in seriatim; said unit comprising a housing having an open bottom and openings at its opposite ends adjacent its open bottom, said housing at its said opposite ends respectively having male and female formations thereat; a closure member for the open bottom of said housing; a block of electrically insulating material provided with parallelly arranged grooves extending from its opposing ends; electrical conductors disposed in said grooves respectively; posts of electrical conducting material secured to said insulating block and having extensions arranged to connect with said electrical conductors respectively; electrical outlet means disposed upon said insulating block; and electrical terminals carried by said outlet means and connected respectively with the contact elements of said outlet means, said electrical terminals being arranged to mechanically frictionally and electrically connect with said posts respectively; said cover enclosing said insulating block, said outlet means and the body portions of said electrical conductors, the opposite end portions of said electrical conductors extending through the said opposite end openings of the cover.

JOSEPH F. O'BRIEN.