United States Patent [19]

Huibrechtse

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[54] **SERVICE FITTING FOR WIRING SYSTEMS**

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[73] Assignee: **General Electric Company**, New York, N.Y.

[22] Filed: **Dec. 10, 1973**

[21] Appl. No.: **423,076**

[30] **Foreign Application Priority Data**

Dec. 15, 1972 Canada 159007

[52] **U.S. Cl.** **174/48;** 220/3.94

[51] **Int. Cl.** **H02g 3/10**

[58] **Field of Search** 174/48, 49; 220/3.94, 3.92; 52/220, 221

[56] **References Cited**

UNITED STATES PATENTS

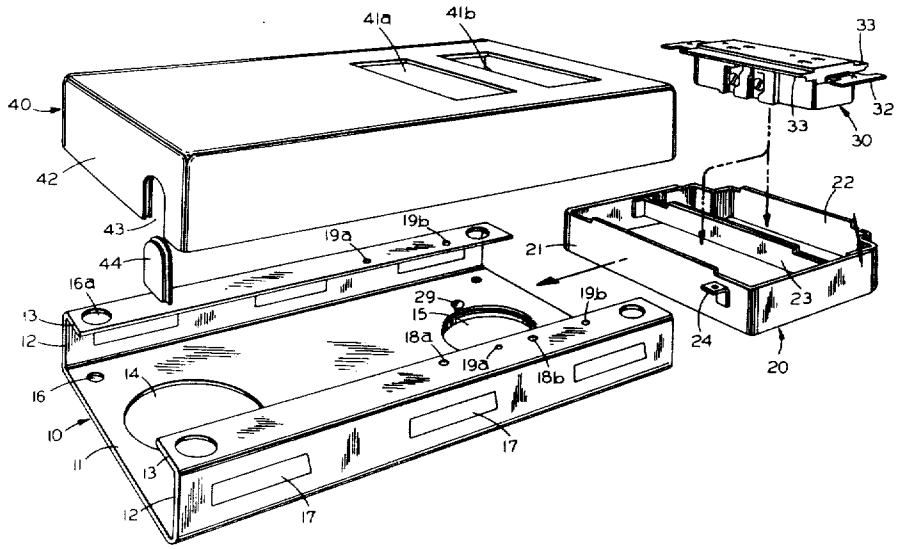
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Attorney, Agent, or Firm—Paul E. Rochford; Philip L. Schlamp; F. L. Neuhauser

[57] **ABSTRACT**

A unified electrical fitting for use with underfloor ducting, the fitting carrying both high tension i.e. 118 or 236 v. receptacles, and telephone connectors or the like. A complete separation of the high tension system is ensured permitting access to the low tension system with inherent safety.

11 Claims, 1 Drawing Figure



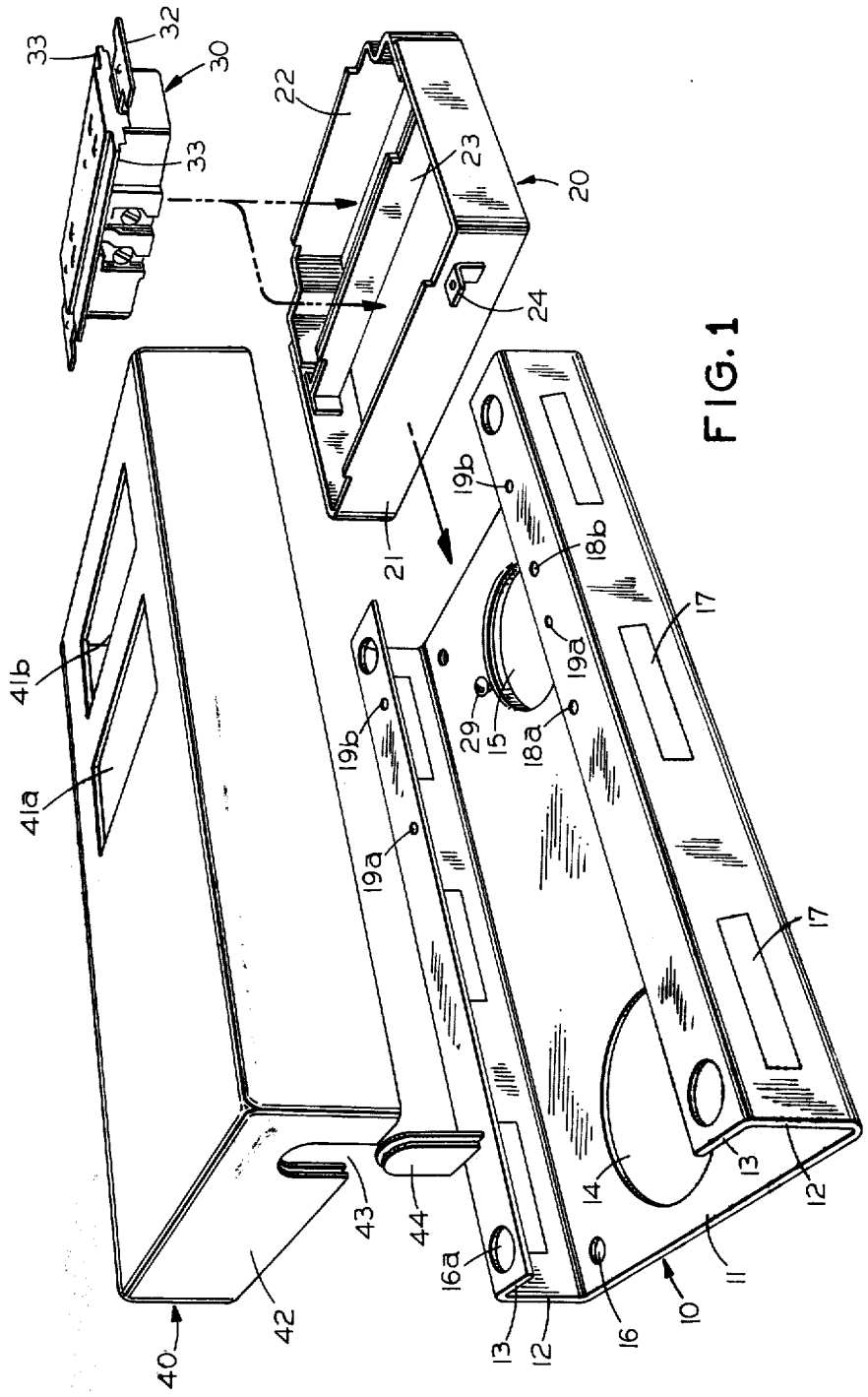

33
32
30
22
23
20
33
24
21
19b
18b
17
19a
41b
29
15
18a
19b
41a
19a
17
13
14
12
43
44
16a
11
10
16
13
12
42
40

FIG. 1

SERVICE FITTING FOR WIRING SYSTEMS

BACKGROUND OF THE INVENTION

This invention relates to improvements in electrical fittings for use with embedded electrical conduit systems.

Underfloor conduit systems using metal ducting have long been employed in the building industry, particularly in the construction of office buildings. Such systems are described in e.g., U.S. Pat. No. 2,125,366, Aug. 12, 1938 to Young et al., and Canadian Pats. Nos. 489,465, Jan. 6, 1953 and 493,561, June 9, 1953 both to Wiesmann.

Normal practice is to carry high tension, i.e., 118 or 236V wiring through a separate duct from that carrying the low tension, e.g., telephone or office communication wiring; the ducts are generally run closely parallel and form a grid network underfloor. The ducts may be fitted with inserts, through which the wiring is brought to the surface for connection to outlets, prior to being embedded. An alternative method is to lay the ducts without inserts and pierce through the overfill and duct to place an outlet precisely where required over a duct run. Conventionally, separate fittings are employed for the convenience receptacles, which usually terminate the high tension wiring, and for the low tension wiring outlet. There is an obvious economy if the two types of fitting can be unified simply in one housing.

Conventional practice is also to pass multijunction telephone connectors of the Amphenol type through the housing, leaving the connectors floating or clipped outside. It is considered physically preferable and aesthetically desirable to contain the connectors within the housing. It is apparent that where the housing also has high tension connections there should be a physical and electrical separation of the functions because the systems are not compatible.

Normal circumstances will call for the low tension connectors to be changed on occasion; with the type of convenience receptacles that are generally employed with high tension wiring wherein the terminals and wiring are exposed when the cover is removed, such exposure would represent an unacceptable hazard for a person who merely wishes to change a telephone connection, for example. This could be overcome by rendering the high tension system inactive while carrying out the operation, but experience shows that unless such inactivation is mandatory it is rarely carried out.

OBJECTS OF THE INVENTION

A unified fitting is one object of this invention.

It is a further object of my invention to provide a unified and economic fitting which possesses inherent safety.

Other objects and advantages of the invention will be in part apparent and in part pointed out in the description which follows.

SUMMARY OF THE INVENTION

In the fitting of my invention the receptacle is made to completely enclose the compartment of the housing in which it is contained so that when the cover of the housing is removed the high tension system can remain fully operative with absolutely no danger to unskilled personnel. In the preferred embodiment of the invention which is to be described the covers are molded from a resilient plastic material and are a snap fit upon the base. A wide range of coloring can be employed in these moldings such that they can be chosen to match any decor; because they can be removed in complete safety the covers can be readily changed by, for example, a secretary, in order to match any changed decor.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing, which illustrates the preferred embodiment of the invention, is shown an exploded perspective view of the fitting.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The fitting is comprised by four major elements, a base structure **10**, a high tension compartment subassembly **20**, convenience receptacle **30** and cover **40**. Base structure **10** is comprised of a base **11**, a pair of facing side walls **12** the upper portions **13** of which are inwardly turned to lay parallel to base **11**. The opposing open ends of the base **11** have holes **14** and **15**, these serving as means through which low tension and high tension wires can be brought into the housing from corresponding duct inserts laying below. In the embodiment illustrated, the centre to centre distance of holes **14** and **15** is 17 cms; this distance may be varied, of course, according to a desired distance apart of pairs of duct inserts carrying high tension and low tension wiring. Where holes are to be pierced through overfill and duct, for which type of installation this housing is most specifically utilizable, holes will be sawn through the concrete corresponding to the center to centre distance of the holes in base **11**. Structure **10** is fixed to the floor through fixing points **16**; holes **16*a*** are found in inwardly turned walls **13** so as to give access to the fixing points. In this illustrated embodiment the method of fixing differs from the norm in that it is usual to pass a nipple through the wire inlet hole, which nipple screws tightly into an underlying metal insert which in turn is firmly affixed to the underlying duct; neither nipple nor insert are shown in the illustration but these are well known in the art. Such method of fixing where there are two inlet points on the one base requires a more precise location of the inserts than is usually found. It is therefore preferred to employ a plastic bushing through which wires pass from the duct into the present housing, and to separately affix the base structure to the floor with either screws or nails through the fixing points **16**. While almost any bushing may be employed to protect the wires, a bushing which is particularly adapted to this use is described in my copending application referenced below.

The high tension compartment subassembly **20** is comprised of C shaped wall **21**, end wall **22**, and divider wall **23**, spot welded to form a rigid unit. Wall **22** is shaped so as to give access to fixing points **16** located at the high tension end of the base without exposing an operator to a shock hazard should the wiring be connected. While in the illustration space for two pairs of receptacles is shown it is envisaged that devices will be required having a lesser number of receptacles, leaving greater space for low tension connectors. In such instances the high tension compartment may be made of the same end stamping **22** and a smaller C wall **21**, with divider wall **23** being omitted. It should be noted that the divider wall does not reach the bottom of the compartment, for space is left underneath through which wires may pass. Rather the divider wall serves to sup-

port and locate the flanges of receptacles **30** employed with the device. Compartment **20** slides into base structure **10** and is attached firmly to it; in the illustration lug **24** is held by a screw through hole **18***a*, in the case where two pairs of receptacles are fitted, or **18***b* in the case where a lesser number is desired. In this manner grounding continuity between base **10** and subassembly **20** is assured. The unit as a whole is grounded through a connecting screw **29.** In its attached positon, the high tension subassembly surrounds the hole through which the high tension wiring is to be passed through the base, and creates an open compartment which will contain all high tension connections.

One convenience duplex receptacle is shown in the figure generally as **30**; the second duplex employed in this embodiment is not shown. In the preferred form of the duplex illustrated, this has a flange **33** which fits over the high tension compartment so as to completely enclose it from the top. It is apparent that flange **33** need not be integral with the receptacle, but that a subsidiary cover surrounding the receptacle could be employed. The integral design is preferred as there is no danger of a subsidiary cover being removed to expose potentially hazardous connections. The receptacles **30** are fixed to the wall **13** via ears **32** in the usual manner, threaded holes **19***a* and **19***b* being provided for this purpose.

The cover is shown generally as **40**; the preferred form is a bottomless box which fits over and enshrouds the walls and base structure. This cover is molded in a tough, resilient, plastic material, for example ABS (acrylonitrile-butadiene-styrene) or a polycarbonate. Windows **41***a* and **41***b* are provided in the top of cover **40**; their profile corresponds to that of the front surface of the receptacles. When in position the flanges **33** of the receptacles are covered and the front surfaces are generally in the same plane as the cover top. End wall **42** remote from the windows is provided with a hole **43** and shutter **44** to form a convenient means for the outlet of low tension wires. Cover **40** is retained on the base structure **10** by coacting lips coined on the outer surface of side walls **12** and the inner surface of cover walls **45**; the lips on wall **12** are indicated as **17,** those on the cover wall are not shown.

It is apparent that many variations of the above embodiment may be made; thus, as example, it is not necessary to form walls **12** and **13** on the base **11**; modification of subassembly **20** can be made; for example the high tension compartment could be formed by side walls **12** and spaced ancillary walls at right angles to side walls **12.** These ancillary walls could be made by turning up the base or from separate stampings; many different design possibilities will be evident to achieve the desired result. While the cover has been indicated as being formed of a resilient plastic molding other more conventional cover means and means of fixing may obviously used. The scope of the invention is not to be taken as being limited to the precise means that are exemplified, but as delimited in the claims.

CROSS REFERENCE TO RELATED APPLICATION

This application relates to application Ser. No. 424,342 of Cornelis Huibrechtse filed Dec. 10, 1973 Attorney Docket 41WD-1651. It also relates to application Ser. No. 424,341 of Cornelis Huibrechtse and John Farley Rhodes filed Dec. 10, 1973, Attorney Docket 41WD-1648. Both applications are owned by the same assignee as this application.

What is claims as new and desired to be secured by Letters Patent of the United States is:

1. An electrical fitting for mounting over embedded conduit ducting comprising a base having two ends, means for passing high tension wires through said base adjacent a first end, separate means for passing low tension wires through said base adjacent a second end, walls defining an open compartment surrounding said means for passing high tension wires, said walls being fixedly connected relative to said base, a high tension outlet mounted within said compartment to substantially enclose said compartment, and a cover mounted on said base, said cover being provided with a window matching said high tension outlet and a means for the outlet of low tension wires remote from the window.

2. The fitting of claim **1** wherein the base is upturned to form a pair of side walls connecting said ends, and said compartment is formed between said side walls and a pair of spaced ancillary walls at right angles thereto fixedly connected relative to said base.

3. The fitting of claim **2** wherein the cover is made of a resilient material which enshrouds the base and sidewalls, and wherein lips coined in the outer surface of said side walls coact with lips correspondingly formed in the cover walls to retain said cover.

4. The fitting of claim **3** wherein the upper edge of said walls is inwardly turned to be parallel to said base to partially enclose said compartment.

5. The fitting of claim **3** wherein the high tension outlet has an integral flange which encloses said compartment.

6. The fitting of claim **3** wherein the high tension outlet combines with a subsidiary cover to enclose said compartment.

7. The fitting of claim **2** wherein the upper edge of said walls is inwardly turned to be parallel to said base to partially enclose said compartment.

8. The fitting of claim **2** wherein the high tension outlet has an integral flange which encloses said compartment.

9. The fitting of claim **2** wherein the high tension outlet combines with a subsidiary cover to enclose said compartment.

10. The fitting of claim **1** wherein the high tension outlet has an integral flange which encloses said compartment.

11. The fitting of claim **1** wherein the high tension outlet combines with a subsidiary cover to enclose said compartment.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,895,178

DATED : July 15, 1975

INVENTOR(S) : Cornelis Huibrechtse

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

The Assignee as recorded in said Letters Patent is incorrect.

It reads: General Electric Company, New York, NY

and it should read: Canadian General Electric Company Limited, Toronto, Canada

Signed and Sealed this

second Day of December 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks