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(54) A wall socket.

(57) A wall socket, especially a double wall socket structure with a cover frame or a multiple cover frame, to be attached onto an attaching frame (5) on the mounting box. According to the present invention the symmetric axis of the outlet openings (6) inside the space defined by the attaching frame (5) is at an angle inclined relative to the sides of a rectangular wall socket (10) and that the cover frame or the multiple cover frame (20) defines at least one assembly opening (30) corresponding the shape of the double wall socket (10).

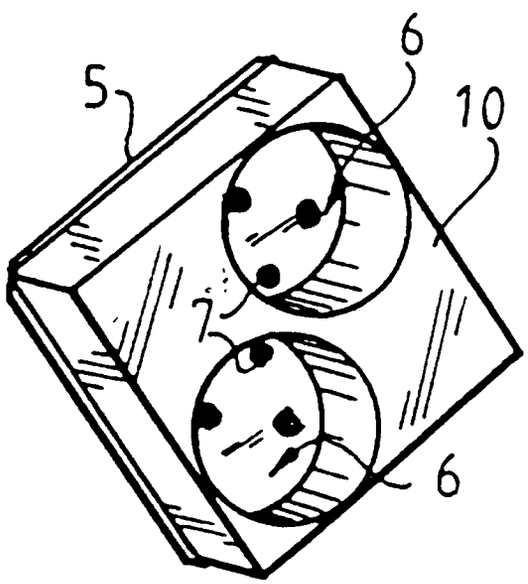

FIG. 5

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The present invention relates to a double wall socket for supply of electricity, and especially to a double wall socket structure provided with a cover frame or a multiple cover frame.

The number of electrical apparatuses in offices and households is continuously growing which results in a continuously increasing demand for wall sockets everywhere.

This increasing demand for wall sockets may, of course, be satisfied by connecting junction boxes with extension cords to the wall available socket. The disadvantage thereof is, however, the unsightly appearance of the assembly and the fact that such are only temporary solutions and cannot be recommended, especially not for long-term use, for reasons of electrical safety.

Separate double wall sockets to be connected to a single mounting box are already well known. Also two different double wall socket types arranged with a multiple cover frame to adjacent mounting boxes are known.

Figures 1 and 2 illustrate a first wall socket 1 of known type comprising two outlet openings 6 to be mounted on a multiple cover frame 2. The wall socket 1 is mounted to an opening 3 of the multiple cover frame 2 by means of a center plate 4 therein setting the outlet openings one above the other. The dimensions of said double wall socket 1 are, however, such that special cutters are required to form recesses 31 and 32 in the edges of the cover frame defining the opening 3 in order to allow the wall socket 1 to fit in its place and to enable the attachment thereof to an attaching frame 5 on the mounting box, whereby the multiple cover frame 2 is clamped between on one hand the attaching frame 5 and on the other hand partially the bottom of the wall socket 1 and partially the center plate 4.

Although the number of the outlets may be increased by using this kind of double wall socket structure, said structure has the disadvantage that the dimensions of the cover frame must be made considerably greater than the standardized dimensions because of the cuttings carried out by the special cutters. Moreover, a vertical double wall socket overlaps the cover frame and protrudes considerably from the level of the cover frame, which is mainly intended to be avoided by a flush mounting. On the other hand, said structure gives an unaesthetic impression of being a forced after-assembly of a wall socket.

Figures 3 and 4 illustrate a second additional wall socket 1' of known type comprising two outlet openings 6 in a multiple cover frame 2'. The wall socket 1' is assembled directly to the opening 3' of the multiple cover frame 2' with the outlet openings 6 adjacent to each other. The dimensions of said double wall socket assembly correspond the standard dimensions, which is why the double wall socket 1' fits to the cover frame 2' only in a parallel direction therewith and in practice the only alternative is to position it to either end of the cover frame 2', otherwise the number of the cover frame variations increase so much that the price of one frame increases disproportionately and the electric outfitter's and assembly shops have no possibility to maintain a covering selection in store. In the known embodiment in accordance with Figs. 3 and 4 the body of the wall socket 1' centralizes the cover frame and when attaching the wall socket 1' to the attaching frame 5 the cover frame 2' is secured between the attaching frame 5 and the wall socket 1'.

Although the number of outlets may be increased by using this kind of double wall socket structure and it is possible to eliminate the disadvantages of the protruding flush mounting, said wall socket has the disadvantage that the holes in the outlet openings are in pairs one after another, which substantially complicates, for example, the insertion of angle plugs and/or plugs provided with a transformer to adjacent outlet openings. Also, a double wall socket always requires a special multiple cover frame provided with extended frame openings, which again adds the number of required mounting tools and if it is later necessary to replace the double wall socket with another apparatus to be mounted to the multiple cover frame, for example, a signal light, sound signaling device, guiding device, a display unit, a measuring device, a switch, a teleconnection, or the like device, the demand for which apparatuses continuously increases, there is no other alternative than to replace, if still possible, the whole multiple cover frame to a new one corresponding the intended use. Said known wall socket assembly in accordance with Figures 3 and 4 and especially the cover frame therewith has the additional disadvantage that the outlet openings are considerably small, so the after-assembly of accessories may not always be possible.

The object of the present invention is on one hand to eliminate or minimize the disadvantages and defects of the conventional double wall socket assemblies and the undesired effects caused by them and, on the other hand, to minimize the space required by a wall socket and to create a new and compact double wall socket assembly to fit to the standardized dimensions and to be readily assembled to single mounting boxes and especially to adjacent mounting boxes so that the number of outlet openings can be maximized, and also, when required, each of the mounting boxes of the combination may be provided with a double wall socket, whereby all the objects of the flush mounting are achieved and at the same time the mounting also gives a more aesthetic impression.

This object is achieved by a double wall socket assembly in accordance with the present invention, the characteristics of which are defined in the appended claims.

The present invention is based on the basic inventive concept of minimizing the space required for a double wall socket, in other words the size of a double wall socket equals the size of a mounting box, and of enabling the assembly of adjacent double wall sockets to adjacent mounting boxes, by locating the outlet openings preferably to the corners of a rectangular box so that the symmetric line going through the outlet openings is inclined relative to the sides of the box. Due to this kind of positioning it is possible to mount double wall sockets one beside another to adjacent mounting boxes and if required it is possible to insert several adjacent double wall sockets in a wall socket structure with a multiple cover frame. Due to the inclined positioning of the outlet openings it is possible to locate an angle plug, a transformer plug or like plug requiring a lot of space to each outlet opening of the combination.

In addition to the fact that all the openings of a multiple cover frame having the same size may be provided with double wall sockets, yet another advantage worth mentioning is that the openings in the cover frame are made as large as is possible considering the electric standards and the material strength, whereby the size of the outlet opening in the cover frame does not limit the mounting of the accessories and their wiring, which again makes the future mountings easier.

The present invention is described more in detail below, by way of example, with reference to the accompanying drawings, in which

Fig. 5 is a perspective illustration of a double wall socket in accordance with the present invention; and

Fig. 6 is a perspective view illustrating a cover frame in accordance with the present invention.

Figures 5 and 6 illustrates a double wall socket 10 to be attached with attaching screws 7 in the outlets 6 to the attaching frame 5 in the mounting box, which frame has a connecting portion connecting to the phase conductors. The double wall socket 10 is a rectangular - preferably a square - double wall socket with a center plate. The wall socket 10 is dimensioned to equal the space defined by the mounting box and to fit to the tolerances of the standardized dimensions so that the width of the double wall socket is slightly, approximately 1 mm, smaller than the diameter of the round attaching frame on the mounting box or the width and height (approximately 71 mm) of a square attaching frame 5. Thus the frame width and the need of material of the multiple cover frame 20 located between the wall socket 10 and the attaching frame 5 may be minimized according to the present invention. The frame width may be decreased below 5 mm, even below 2 mm.

According to the present invention the location of a double wall socket 10 into a cover frame of standard dimensions is made possible by the present invention by locating the outlet openings 6 of the double wall socket 10, as distinct from the conventional ones, so that the symmetric axis of the outlet openings is not parallel to the sides of the wall socket 10. In the preferred embodiment of the invention in accordance with Fig. 5 the symmetric axis is at a 45° angle relative to the sides, in other words the outlet openings 6 are located at the corners of the rectangular housing of the double socket. It must be emphasized that there is no reason within the present standard dimensions to substantially change the above-mentioned angle from said 45°, because otherwise the wall socket 10 does not fit within the standard dimensions.

However, the present invention is not limited to said 45°, since there are often situations in electrical mountings when the standards cannot be used and the assembly space and the number of outlets are determined by other features than standards. By locating the outlet openings 6 in a multiple wall socket so that the symmetric axis thereof is at an angle relative to the side of the box, space can be saved in both vertical and horizontal directions.

As it can be seen in Figs. 5 and 6 each assembly space or outlet opening 30 in the multiple cover frame 20 in accordance with the present invention is of the same form and size, which minimizes in practice the amount of the cover frame variations required. The width of a square assembly space 30 is according to the invention slightly smaller than the width of a double socket, whereby the cover frame 30 remains in the assembly between the attaching frame 5 and the double socket 10 at the same time as the double socket due to its square shape centralizes itself to the assembly space 30.

To ensure the centralization of the double socket 10 it is preferable to make the edge of the multiple cover frame determining the assembly space 30 tapered or step-like, whereby the double socket 10 when being secured to its place partially yields inside the frame. Alternatively, the bottom of the double socket may be provided with protrusions, which fit inside the cover frame 20 and centralize the socket 10 and the frame 20 relative to each other.

The invention is described above by means of an exemplifying embodiment, which is not intended to restrict the scope of invention. It is clear to those skilled in the art that a number of variations is possible and/or become apparent in the accom-

panying claims which alone determine the scope of invention.

Reference signs in the claims are intended for better understanding and shall not limit the scope.

Claims

1. A wall socket, especially a double wall socket structure with a cover frame or a multiple cover frame to be attached to an attaching frame (5) on a mounting box, **characterized** in that the symmetric axis of the outlet openings (6) is at an angle inclined relative to the sides of a rectangular wall socket (10) for fitting the double wall socket (10) into the space defined by the attaching frame (5) and the cover frame or the multiple cover frame (20) is substantially frame-like defining at least one assembly opening (30) corresponding the shape of a double wall socket (10).

2. The wall socket in accordance with claim 1, **characterized** in that the outlet openings (6) are substantially at the corners of the wall socket (10).

3. The wall socket in accordance with claim(s) 1 and/or 2, **characterized** in that the wall socket (10) is substantially square, whereby the symmetric axis is preferably at a 45° angle relative to the sides of the double wall socket (10).

4. The wall socket in accordance with one of claims 1-3, **characterized** in that the cover frame (20) has a rectangular assembly opening (30) of the shape of the wall socket (10), the inner dimensions of which opening are at least partially smaller than the corresponding peripheral dimensions of the wall socket (10) and that the width of the cover frame (20) are such that the outer edge of the cover frame extends outside the outer frame of the wall socket (10) being installed to the assembly opening (30).

5. The wall socket in accordance with one of claims 1-3, **characterized** in that the multiple cover frame is provided with several rectangular assembly openings (30) of the shape of the wall socket (10) and having all the same shape and the same size, the inner dimensions of each of which are at least partially smaller than the corresponding outer dimensions of the wall socket (10) and that the width of the multiple cover frame (20) is such that the outer edges of the multiple cover frame (20) extend outside the outer frame of the wall socket (10) to be located to the assembly opening (30).

6. The wall socket in accordance with claims 4 or 5, **characterized** in that the width of the edges of the cover frame or multiple cover frame (20) is preferably less than 5 mm, even less than 2 mm and that the size of a square assembly opening is within 65-70 mm x 65-70 mm.

7. The wall socket in accordance with claim 6, **characterized** in that the edges determining the assembly opening (30) of the cover frame are either tapered or step-like to receive the wall socket.

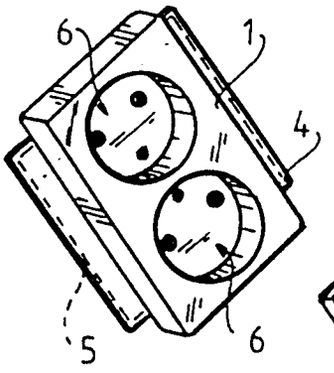

FIG. 1.

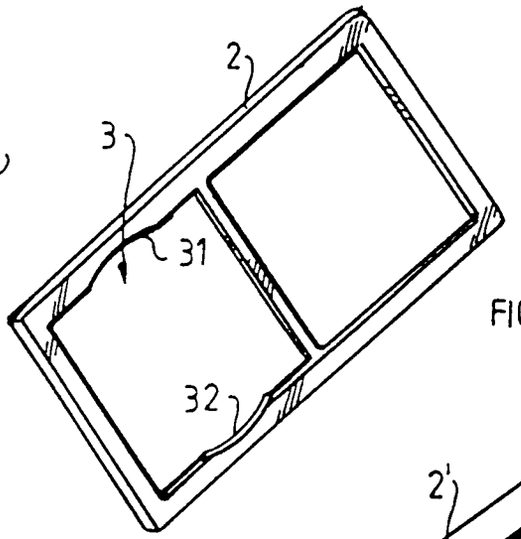

FIG. 2.

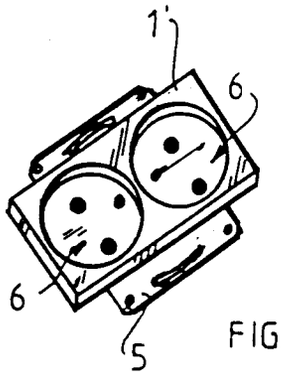

FIG. 3.

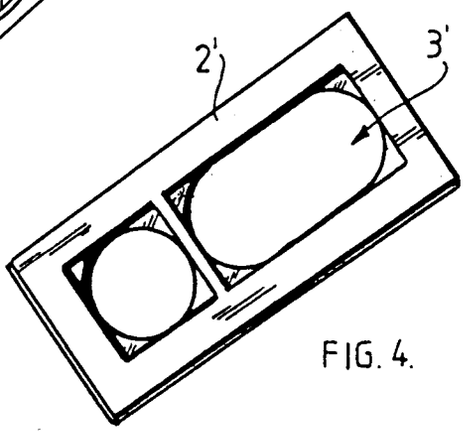

FIG. 4.

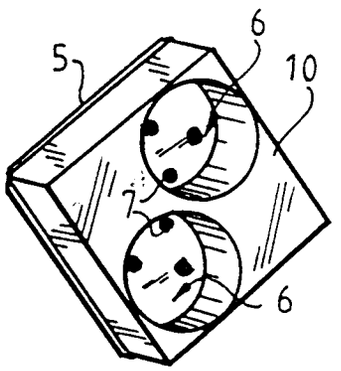

FIG. 5

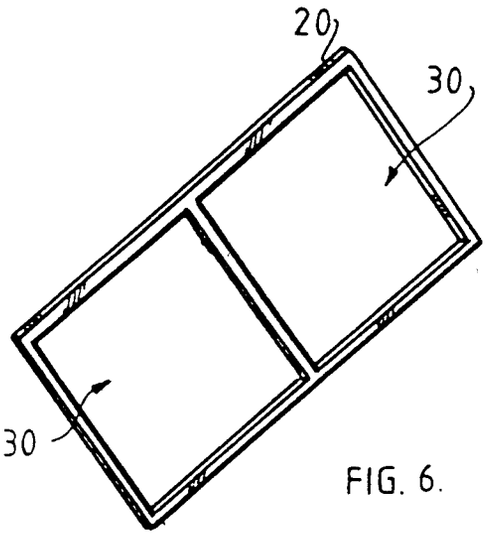

FIG. 6.

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EUROPEAN SEARCH REPORT

Application Number

EP 91 11 9459

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	DE-B-1 098 066 (GEBRUDER MERTEN) * column 3, line 48 - line 64; figure 1 *	1-3	H01R19/40
A	FR-A-2 613 544 (AKTIEBOLAGET ELECTROLUX) * page 2, line 21 - line 24; figure 1 *	1	
A	GB-A-2 177 856 (JIANN-SHYANG LIOU) * page 2, line 18 - line 35; figures 1,6 *	1	
A	DE-U-8 706 479 (KONG) * page 3, line 1 - line 7; figure 1 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

H01R
H02G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 FEBRUARY 1992	KOHLER J.W.

CATEGORY OF CITED DOCUMENTS

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