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(54) Electrical outlet

(57) The present invention relates to an electrical outlet, in particular a telecommunications outlet, comprising a housing having at least one opening, said outlet further comprising for each opening a shutter, each shutter being resiliently hold in a closed position by resilient means wherein the shutter is provided for closing said opening, each shutter being provided for being moved towards an open position enabling to plug in a cable in a connector accessible through said opening. According to the invention, each shutter forms an integral part with said resilient means.

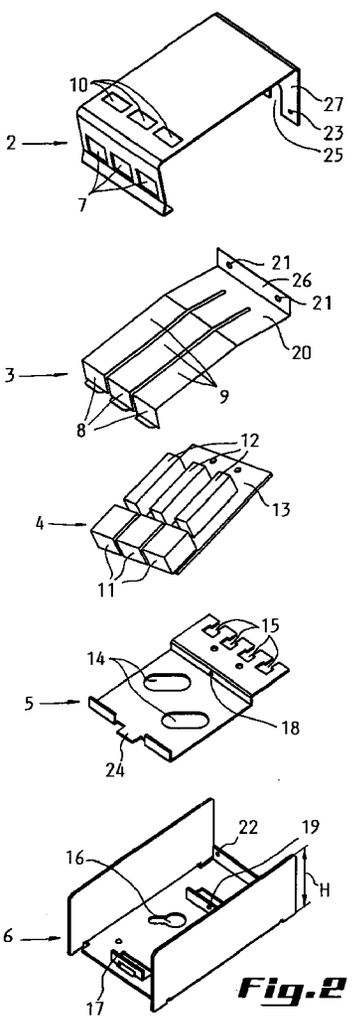

Fig.2

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Description

The present invention relates to an electrical outlet, in particular a telecommunications outlet, comprising a housing having at least one opening, said outlet further comprising for each opening a shutter, each shutter being resiliently hold in a closed position by resilient means wherein the shutter is provided for closing said opening, each shutter being provided for being moved towards an open position enabling to plug in a cable in a connector accessible through said opening.

Such an outlet is for example known from Alcatel 6800 Cabling System, "Product Catalogue" p. 40-45 (for example reference ACS-450.206) and is provided for connecting in particular telecommunications equipment such as telephones, data processing terminals and the like. The outlet is in its turn provided to be connected to a cable network.

In the known outlets, the housing comprises a front plate fitting in a cover plate. The connector(s) is (are) provided in a connector unit forming a part of the housing and which comprises further electronic components. The shutter serves to close the opening in case no cable is connected to a connector of the outlet which is accessible through the opening, in order to protect the connector unit for example from dust present in the environment. The housing and the shutter are conventionally made of plastic material and the resilient means is conventionally formed by a metal spring having a first leg removably engaging with the housing and a second leg removably engaging with the shutter and being provided for pushing the shutter in a closed position.

Optionally an EMC-kit is provided on the outlet. Such a kit comprises a metal housing, provided for housing the connector unit, and a front metallic plate provided for closing the metal housing. The front metallic plate is provided with at least one opening for providing access to said connector upon connecting a cable, whereby each opening corresponds to the opening(s) provided in the housing. This EMC kit forms a Faraday cage around the connector unit, which provides a good protection i.a. against interference between the environment and the connector.

The drawback of the known outlets is that the shutter mechanism comprises two different components, i.e. the shutter and the spring, for protecting the connector from the environment when no cable is connected to the connector. Moreover, upon assembling said shutter mechanism, care has to be taken that the spring does not disengage from the shutter.

It is an object of the invention to provide an outlet which has a shutter mechanism which can easily be mounted in the outlet without having to take care that the resilient means disengages from the shutter.

To this object, the outlet according to the invention is characterised in that each shutter forms an integral part with said resilient means.

Since the shutter is integrally formed with the resilient means, instead of two different components according to the state of the art, it can more easily be mounted in the outlet. By providing that each shutter forms an integral part with the resilient means, the resilient means can not disengage from the shutter.

According to a first preferred embodiment of the outlet according to the invention, said resilient means is fixedly mounted to said housing, in particular by means of at least one rivet. This enables to prevent a disengagement of the resilient means from the outlet.

According to a second preferred embodiment of the outlet according to the invention, said resilient means comprises at least one flexible leg, each leg being provided with one of said shutters. This resilient means is easy to manufacture and presents the advantage that, when more than one leg is provided, each shutter can be moved independently from each other.

According to a third preferred embodiment of the outlet according to the invention, said housing and said shutter(s) are made of metal, coated with metal or injected with metal particles. This enables to form a Faraday cage without having to use an additional EMC-kit such as in the state of the art. Moreover, since the shutter also comprises metal, a better Faraday cage is formed and a better protection against interference is in particular formed, whereas in the outlet according to the state of the art, interference could be caused since the opening(s) is (are) closed by shutter(s) made of plastic.

According to a fourth preferred embodiment of the outlet according to the invention, said housing comprises a base plate provided to be closed by a cover plate. This forms a housing easy to be assembled.

The invention will now be described by means of the annexed figures, which represent a preferred embodiment of the outlet according to the invention.

Figure 1 is a perspective view of a preferred embodiment of the outlet according to the invention.

Figure 2 is an exploded view of Figure 1.

Figures 1 and 2 illustrate an outlet, for example a telecommunications outlet 1 according to the invention. Such an outlet is provided to be placed in a cable network in order to connect telephones, data processing terminals and the like. It is clear that the outlet according to the invention is not limited to telecommunications networks but it could also be used in another electrical network.

According to the Figures, the outlet comprises the following main components, which will be described further in detail : a housing 27, provided for enclosing resilient means 3, a connector unit 4 and optionally an intermediary component 5.

The housing 27 preferably comprises two components, fitting into one another. As illustrated in the figures, the two components are formed by a cover plate 2 and a base plate 6, provided with corresponding snap connection means 22, 23, enabling a simple mounting. More details about the mounting of the outlet according to the invention will be described hereunder.

The cover plate 2 is provided with at least one opening 7. According to the Figures, the outlet comprises three openings, but it will be clear that it could be provided with more or less openings, and even only one opening. For each opening 7, a shutter 8 (Figure 1) is provided for closing the corresponding opening 7. This closing is performed by the resilient means 3 which are provided for resiliently holding the shutters 8 in a closed position wherein each shutter 8 closes its corresponding opening 7. This closed position is clearly illustrated in Figure 1. In this position, the outlet is internally protected against i.a. dust present in the environment.

The cover plate 2 preferably comprises recesses 10 or the like provided for applying labels thereon indicating the signal supplied at the concerned connector.

Each shutter 8 is provided in the outlet in such a manner that it can be moved towards an open position. In this position, a cable (not shown) can be plugged in a connector 11, for example an RJ45 connector, provided on the connector unit 4 of the outlet. Each connector 11 is accessible through its corresponding opening 7 in the cover plate 2. The connector unit 4 is typically formed by a printed circuit board 13 comprising said connectors 11 and further electronic components 12.

According to the invention, each shutter 8 forms an integral part with the resilient means 3. The resilient means are for example formed by a number of flexible legs 9 corresponding to the number of shutters 8. The legs 9 have a common base 20 and are each provided with one of said shutters 8. The common base 20 comprises an extremity with a fixing member 26 extending in a direction which is preferably essentially opposite to the extension direction of the shutters. This enables to limit the height dimension of the cover plate. The fixing member 26 is fixed to the plane 27 of the cover plate 2 in such a manner that the legs can be moved up- and downwardly. The fixing member 26 is fixed to the housing, for example, as illustrated, by means of rivets (not shown) placed through holes 21 in the fixing member and corresponding holes (not shown) in the cover plate 2. According to another embodiment, each leg is separately provided and fixed to the housing. The advantage of the resilient means provided with legs is that each shutter can be moved separately. According to another embodiment, the resilient means are removably mounted to the housing.

As shown in Figure 2, the legs 9 of the resilient means are preferably bent in such a manner that a contact between the legs and the connectors 11 or the other electronic components 12 is prevented. This enables also to obtain an outlet, having a limited height H, since legs which are not bent should be placed relatively higher in order to avoid an electrical contact with the connector unit 4.

Preferably, as already mentioned, the outlet is also provided with an intermediary component 5. This component 5 fits on the base plate 6, for example by means of a lip 24, which is provided for being inserted in a slot 17 of the base plate 6, and further snap connection means 18, 19. The intermediary component is provided for supporting the connector unit 4 and prevents a contact between the connector unit 4 and screws (not shown) used for fixing the base plate to a wall or floor, as will be explained further. The connector unit 4 is placed on the intermediary component 5 for example by means of rivets (not shown).

Upon mounting the outlet according to the invention in a cable network, the base plate 6 is fixed to a wall or to the floor, for example by means of screws (not shown) through openings 16. In a further step, the intermediary component 5, onto which the connector unit is fixed, is placed on the base plate 6 by first inserting lip 24 into slot 17 and then snapping the connection 18, 19. The intermediary component comprises screw head apertures 14 for receiving the screw heads (not shown) and network cable guiding means 15 for guiding the cables from the network towards the connector unit. The intermediary component is shaped in such a manner that a contact between the screw heads and the connector unit is prevented.

In a further step, the network cables are appropriately connected to the connector unit. Then the cover plate 2, onto which the resilient means 3 are fixed as explained hereinabove, is snapped on the base plate 6 whereby the network cables (not shown) pass through inlets 25 provided in the cover plate 2.

In a preferred embodiment of the outlet according to the invention, the housing 27 and the resilient means 3 are made of metal. In this way, the outlet according to the invention forms a cage of Faraday which shields the internal part of the outlet from electromagnetic radiation originating from the environment and vice versa. Since the shutter is also made of metal, the internal part is even better protected with respect to outlets according to the state of the art, wherein each opening is only closed by a shutter made of plastic. Consequently, the outlet according to the invention improves the Faraday cage properties thereof. According to another embodiment, the housing and the resilient means are coated with metal or injected with metal particles instead of being made of metal in order to form a Faraday cage.

Claims

1. An electrical outlet, in particular a telecommunications outlet, comprising a housing having at least one opening, said outlet further comprising for each opening a shutter, each shutter being resiliently hold in a closed position by resilient means wherein the shutter is provided for closing said opening, each shutter being provided for being moved towards an open position enabling to plug in a cable in a connector accessible through said opening, characterised in that each shutter forms an integral part with said resilient means.

2. The outlet according to claim 1, characterised in that said resilient means is fixedly mounted to said housing.

3. The outlet according to claim 2, characterised in that said resilient means is fixedly mounted to said housing by means of at least one rivet.

4. The outlet according to any one of the preceding claims, characterised in that said resilient means comprises at least one flexible leg, each leg being provided with one of said shutters.

5. The outlet according to claim 4, characterised in that each leg comprises a first extremity provided with one of said shutters extending in a first direction and a second extremity, opposite to said first extremity provided with a fixing member extending in a second direction, essentially opposite to said first direction.

6. The outlet according to claim 5, characterised in that each leg is bent.

7. The outlet according to any one of the claims 1 to 6, characterised in that said housing and said shutter(s) are made of metal.

8. The outlet according to any one of the claims 1 to 6, characterised in that said housing and said shutter(s) are coated with metal.

9. The outlet according to any one of the claims 1 to 6, characterised in that said housing and said shutter(s) are injected with metal particles.

10. The outlet according to any one of the preceding claims, characterised in that said housing comprises a base plate provided to be closed by a cover plate.

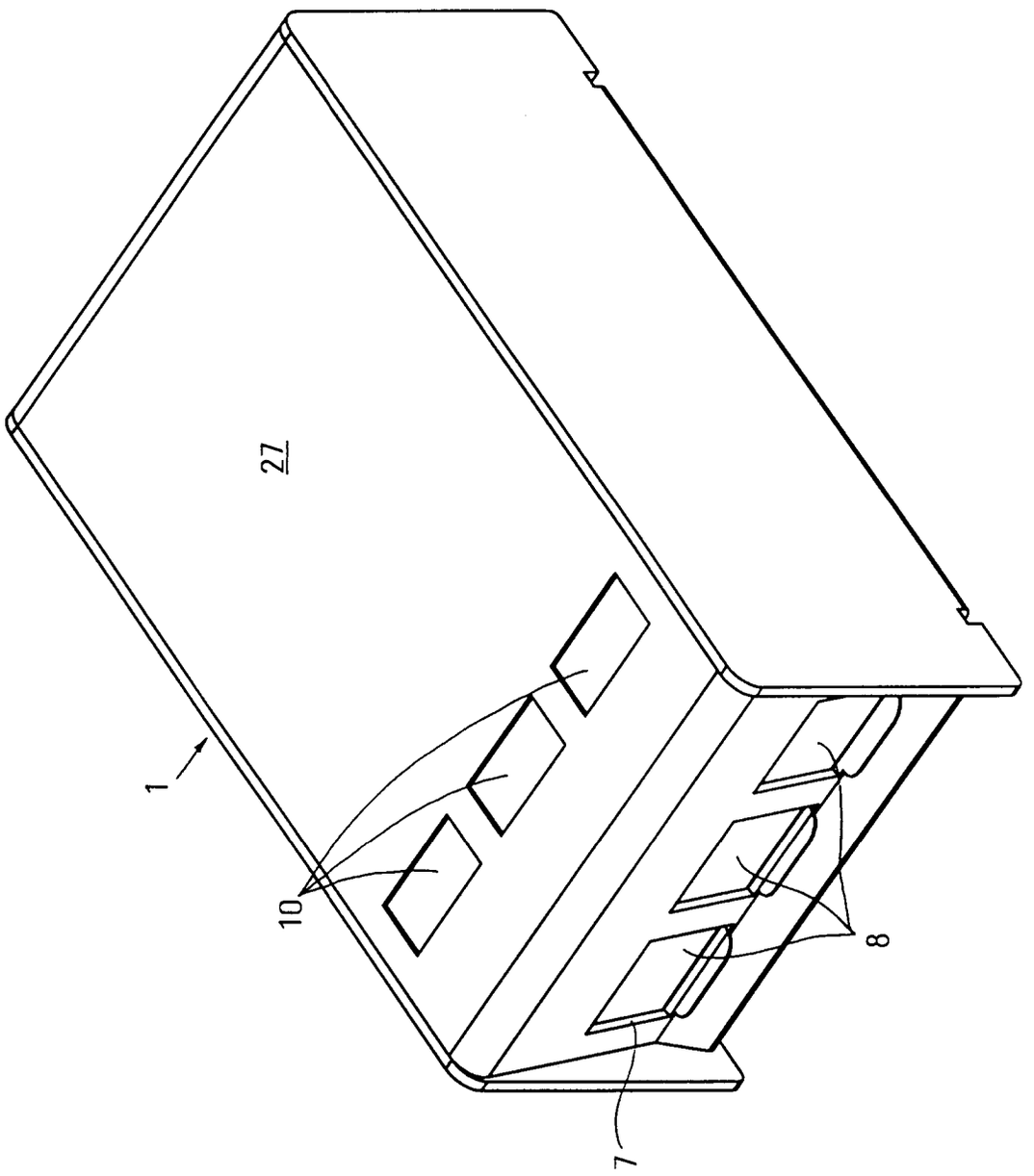

Fig.1

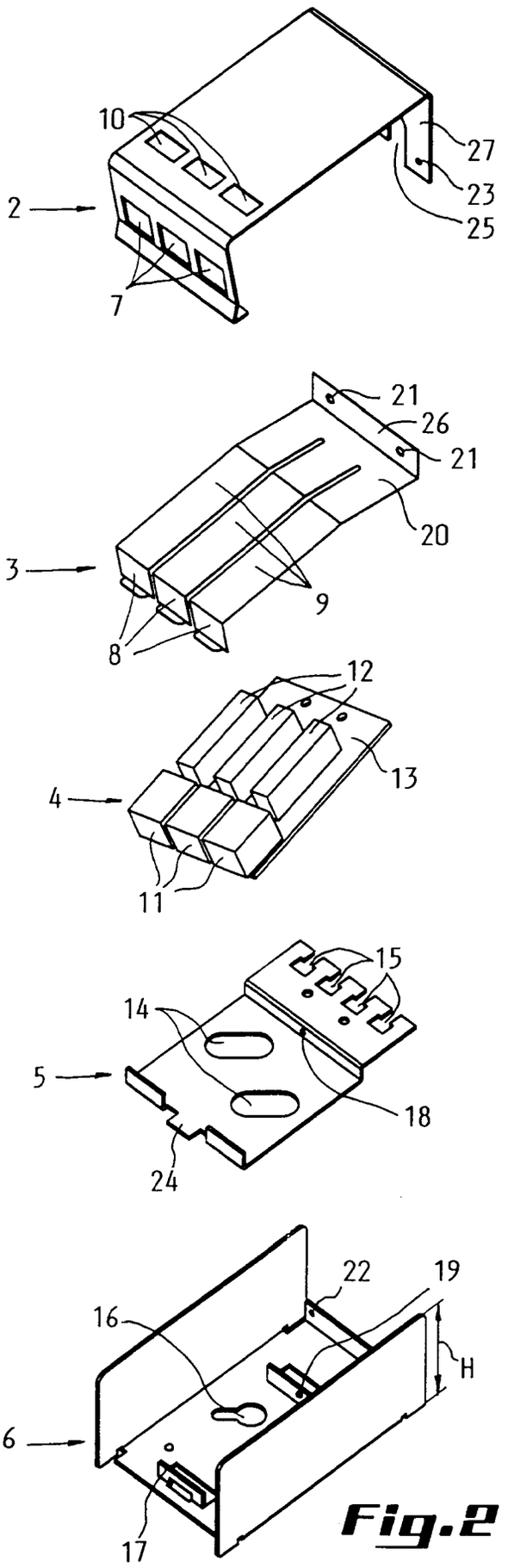

Fig.2

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EUROPEAN SEARCH REPORT

Application Number
EP 97 20 0002

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.6)
Y	US 5 224 868 A (C.C.TSENG) * column 1, line 35 - line 41 * * column 1, line 61 - column 2, line 10; figures 1,2 *	1,2,4,5	H01R3/00 H01R13/453
Y	FR 2 699 745 A (ROESCH) * page 7, line 31 - page 8, line 7; claim 1; figures 1,3,4 *	1,2,4,5	
A	DE 86 33 660 U (D.GRÄSSLIN) * page 4, paragraph 4 * * page 5, last paragraph - page 6, paragraph 3 * * page 7, paragraph 2; figures 1-3 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	23 May 1997	Alexatos, G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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