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(54) **Device for the protection of appliances**

(57) Device for protecting an apparatus of an air-conditioning unit placed on a wall or resting on a floor or another support surface from atmospheric agents, vandalism or theft and method for simplified and quick assembly of such a device, without the need for prior disassembly of the apparatus needing to be protected.

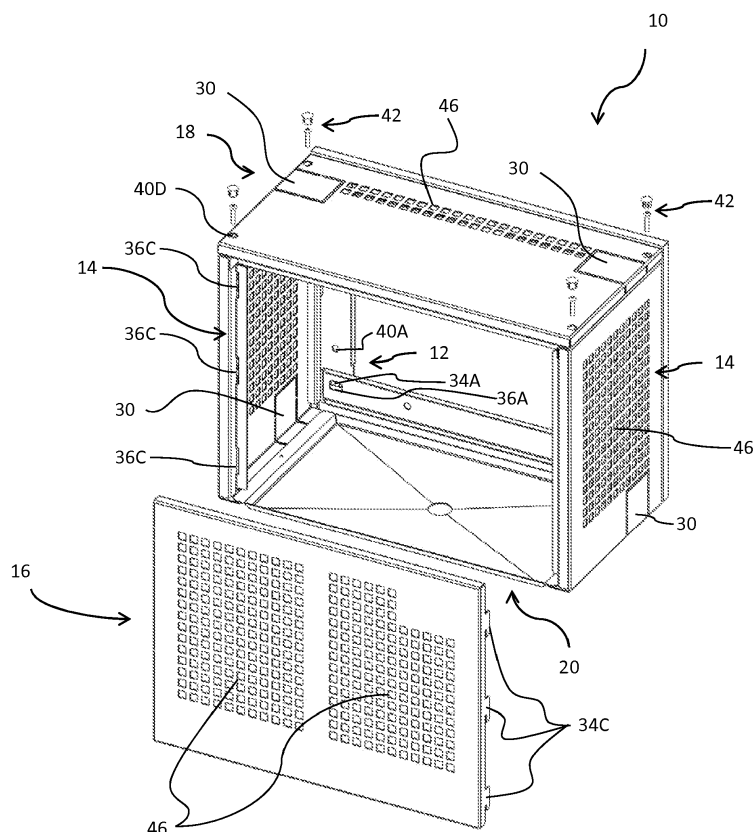


Fig.1

Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention concerns a device that acts as a box for protecting and securing various apparatuses, especially for external exchanger units for air conditioning systems hung on the wall of buildings or rested on a floor or other support surface and a method for fixing such a device.

STATE OF THE ART

[0002] Continuous developments have been made in the field of air conditioning systems both for private homes and for larger structures.

[0003] Concerning this there is an increasing demand for devices for keeping the exchanger units of conditioning systems, both new and already installed, safe from acts of vandalism, theft and tampering, and from wear, from atmospheric agents and external influences that can compromise its operation.

[0004] Such devices can also be installed to cover indoor exchanger units thus improving their appearance. Consequently, there is a continuous improvement of devices that cover the exchanger units in terms of functionality, safety and their appearance.

[0005] Various devices are currently on the market to satisfy such a requirement. Patent US 6430954, for example, presents a device for the protective covering of an outdoor exchanger unit that comprises a frame made up of vertical supports and lower and upper stays that make up a generally cubicle-shaped structure. Such a device, however, does not protect the exchanger unit from possible damage and/or tampering carried out by vandals, animals or other agents and nor does it provide a device that can be quickly and easily installed.

PURPOSES OF THE INVENTION.

[0006] A purpose of the present invention is to provide a device, for protecting external exchanger units of an air conditioning system, which is quick and simple to assembly.

[0007] A further purpose of the present invention is to provide a device for protecting external exchanger units of an air conditioning system from acts of vandalism and/or theft, as well as from direct exposure to the sun and from bad weather, overcoming the drawbacks of the prior art.

[0008] Another purpose of the present invention is to provide a device for protecting external exchanger units of an air conditioning system that can easily be adapted to the various limitations presented by pre-existing exchanger units.

[0009] Another purpose of the present invention is to provide a device for protecting an external unit of an air conditioning system that is simple to make and inexpen-

sive.

[0010] Another purpose of the present invention is to provide a device that can be mounted both over newly installed units and over pre-existing apparatuses, both positioned on a wall and on the ground. According to an aspect of the present invention, these purposes are achieved by a device for protecting an external unit of an air conditioning system as specified in independent claim 1.

[0011] The dependent claims refer to preferred and advantageous embodiments of the invention.

[0012] Another purpose of the present invention is to obtain a quick and easy assembly method that does not require the prior disassembly of the external unit fixed to the wall.

[0013] According to an aspect of the present invention, these purposes are accomplished by a method for installing a device for protecting an external unit of an air conditioning system as specified in independent claim 18.

BRIEF DESCRIPTION OF THE DRAWINGS.

[0014] Further characteristics and advantages of the invention will become clearer from the description of a device for protecting apparatuses, illustrated for indicating purposes in the attached drawings, in which:

figure 1 is a front perspective view of the device for protecting apparatuses according to the present invention;

figure 2 is an exploded view of the device for protecting apparatuses according to figure 1;

figure 3 is a perspective view from below of a component of the device for protecting apparatuses according to figures 1 and 2;

figure 4 shows an enlarged detail of the component of the device according to figure 3.

EMBODIMENTS OF THE INVENTION.

[0015] With reference to the attached figures, a device 10 for protecting apparatuses, in particular exchanger units of air conditioning systems, according to the present invention, is illustrated.

[0016] In figures 1 and 2, the device 10 comprises at least one of the following components: a frame structure 12, a right and left side panel 14, a front panel 16, an upper panel 18 and a lower panel 20 for closing the device 10 and for collecting the condensation possibly produced by such apparatuses. The frame structure 2 comprises at least 2 portions, able to be reciprocally separated from one another. As illustrated in figure 2, the frame structure 12 has a substantially parallelepiped shape that comprises at least one dismountable cross-member 22. The remaining sides 24 of the frame structure 12 can be completely dismounted from one another and/or dismounted according to different combinations.

[0017] Such a frame structure 12 is configured in such a way to allow pipes and/or tubes of pre-existing exchanger units to pass during the assembly of the device 10.

[0018] As illustrated in figure 2, in the frame structure 12 there is a spirit level 26 that allows such a frame structure 12 to be positioned according to the desired inclination. Such a spirit level 26 can be positioned in various positions of the frame structure 12.

[0019] The frame structure 12, as illustrated in the figures, does not need attachment means, for example through screws, to be assembled since it is mounted in a coupled fashion, through the presence of fastening means 34A inserted in corresponding slots 36A. The fastening means 34A and the slots 36A can be positioned respectively on the dismountable cross-member 22 and/or on the remaining sides 24 of the frame structure 12 and vice-versa and they can also be positioned in a different way with respect to what has been illustrated.

[0020] There can also be spacing means, made from metal or another material suitable for the purpose, to space the frame structure 12 from the wall by a desired distance and/or to raise the device 10 from the ground. This can be particularly useful when there are special assembly requirements. Such spacing means also have an anti-vibration function and can be fixed to the side panels 14 through suitable attachment means (not illustrated) and corresponding holes.

[0021] The side panels 14, as illustrated in the figures, do not need attachment means for example using screws, since they are assembled in a coupled fashion, through the presence of fastening means 34B arranged in the rear part of the side panels 14 and inserted in corresponding slots 36B positioned on the side walls of the frame structure 12. The fastening means 34B and the slots 36B can be positioned on the side panels 14 and/or on the frame structure 12 and vice-versa, and they can also be positioned in a different way with respect to what has been illustrated.

[0022] The lower edges 32 of the side panels 14 have a width such as to allow a lower panel 20 to rest on it that acts to close the device 10 and to collect condensation.

[0023] The front panel 16 is fixed to the device 10 through fastening means 34C. In particular, such fastening means 34C are positioned on the side walls of the front panel 16 and are inserted in corresponding slots 36C arranged in the front part of the side panels 14.

[0024] The fastening means 34C and the slots 36C can be positioned on the front panel 16 and/or on the side panels 14 and vice-versa, and they can also be positioned in a different way with respect to what has been illustrated.

[0025] Thanks to the presence of such fastening means 34C, it has been possible to eliminate the fixing, through screws, of the front panel 16 to the side panels 14, in such a way obtaining quick, simple and cost-effective assembly of the device 10.

[0026] The upper panel 18, as illustrated in the figures,

is assembled in a coupled fashion, through the presence of fastening means 34D, arranged on the rear side of the upper panel 18 and inserted in corresponding slots 36D positioned on the upper part of the frame structure 12. The fastening means 34D and the slots 36D can be positioned on the upper panel 18 and/or on the frame structure 12 and vice-versa, and they can also be positioned in a different way with respect to what has been illustrated.

[0027] The upper panel 18, in its front part, also has a front edge 44 that allows better coupling with the device 10.

[0028] As illustrated in the figures, the side panels 14, the front panel 16 and/or the upper panel 18 have perforated and/or grated areas 46 that act as structural reinforcement suitable for reducing excessive distortion of the worked plate or of the material from which the device 10 is made, and that allow an effective exchange of air and allow possible condensation formed inside the device 10 to escape.

[0029] Such non-perforated areas can have a different geometry and/or shape from that illustrated here and/or an arrangement such as to make them effective for the predetermined purposes.

[0030] It is possible to have non-perforated areas, for example illustrated in figure 2 with reference numeral 38, in which it is possible to position adhesive labels and/or another material and/or to print/etch a logo or another distinctive mark in order to personalise the device 10.

[0031] The side panels 14 and/or the upper panel 18 have pre-fractured areas 30 that are positioned in the rear and/or lower part of such panels. The pre-fractured areas 30, however, can also have other positions, according to the requirements of apparatuses protected by the device 10 according to the invention.

[0032] Such pre-fractured areas 30 have been introduced to facilitate the assembly and/or disassembly of the device 10 in the case of pre-existing apparatuses. In this way the device 10 adapts to protect apparatuses that have pipes and/or tubes, previously installed arranged in set positions, without needing to dismount the pre-existing apparatus and/or to change position of previously installed pipes.

[0033] The pre-fractured areas 30 are defined by pre-perforated and/or pre-cut lines 48.

[0034] As illustrated in detail in figure 4, the pre-perforated and/or pre-cut lines 48 of the pre-fractured areas 30 have slits 50 and transversal baffles 52. Such transversal baffles 52, which correspond to shorts sections made of the same material as the device 10, join the panel itself to the inner part of the pre-fractured area 30. However, the transversal baffles 52 can consist of different materials with respect to the rest of the device 10 and/or have a different thickness, in particular shorter, with respect to the remaining material that makes up the panel itself.

[0035] The transversal baffles 52 can be easily cut and/or removed by using common tools, such as cutting

tools and/or pliers and/or shears, and they allow easy and precise removal of the pre-fractured areas 30 from the device 10.

[0036] Such pre-fractured areas 30, therefore, have the possibility of being removed from the device 10 when it is necessary to create an opening that allows pre-existing pipes and/or tubes to pass. However, when this is not necessary, they remain whole, without creating need-less openings; the device 10, in this way, allows better protection and safety of the apparatus inside it.

[0037] The lower panel 20 is optional, especially for devices rested on the ground. In particular, for devices suspended above the ground, such a lower panel 20 can consist of a metallic material such as metal plate and/or thermoformed plastic material and can also perform the function of covering the bottom of the apparatus enclosed by the device 10 in an aesthetically pleasing manner.

[0038] The frame structure 12 and the upper panel 18 have holes, 40A and 40D respectively, consisting of threaded openings that allow corresponding attachment means 42 to pass, possibly in the form of screws and/or other means commonly used for this purpose so as to be able to fix and close the device 10.

[0039] In particular, through these attachment means 42 the frame structure 12 is fixed to the wall and the upper panel 18 is fixed to the side panels 14. Such side panels 14, indeed, in their upper part have holes 40B corresponding to the holes 40D of the upper panel and to the attachment means 42.

[0040] The fastening means 34A, 34B, 34C and 34D can have a protruding and/or L-shaped and/or bayonet coupling and/or hooked configuration and/or any further configuration on the market. The slots 36A, 36B, 36C and 36D can be recesses and/or openings of various kinds corresponding to the fastening means 34A, 34B, 34C and 34D.

[0041] The attachment means 42 can comprise means that cannot be opening with normal tools but only with special instruments so as to ensure better protection from theft and/or acts of vandalism.

[0042] The device 10 can consist of sheets of strong metallic material that is easy to work, as well as being relatively cost-effective, like for example steel plate or similar, which can be suitably bent and shaped, and/or thermoformed plastic materials and/or other suitable materials, and/or shock-resistant, and in any case not easily damaged with normal tools. In this way, the safety of the exchanger units ensured by the device 10 is maintained.

[0043] There can also be further safety devices such as key locks, padlocks, etc.

[0044] An attachment method for a device 10 for protecting apparatuses, comprising the steps of providing at least one frame structure 12 of substantially parallelepiped shape and/or a right and/or left side panel 14 and/or a front panel 16 and/or an upper panel 18, in which said frame structure 12 comprises at least two separable portions comprising at least one dismountable cross-member 22 and/or some remaining sides 24, connecting

said at least one dismountable cross-member (12) to said remaining sides 24, in which said connection step comprises a step of locking said at least one dismountable cross-member 22 together with said remaining sides 24 through fastening means 34A. Such a method also comprises the steps of providing at least one pre-fractured area 30, in at least one from said side panels 14 and/or said front panel 16 and/or said upper panel 18, defined by pre-perforated and/or pre-cut lines 48 comprising slits 50 and transversal baffles 52, easily removing said transversal baffles 52 by using cutting tools, and removing said at least one pre-fractured area 30.

[0045] The present invention thus conceived can undergo numerous modifications and variants all of which are covered by the scope of protection of the claims.

Claims

1. Device (10) for protecting apparatuses comprising at least one from: a frame structure (12) shaped substantially like a parallelepiped and/or a right and/or left side panel (14) and/or a front panel (16) and/or an upper panel (18), said frame structure (12) comprising at least two separable portions comprising at least one dismountable cross-member (22) and/or some remaining sides (24) **characterised in that** said at least one dismountable cross-member (22) and said remaining sides (24) can be connected through fastening means (34A).
2. Device (10) according to claim 1, wherein at least one of said side panels (14) and/or of said front panel (16) and/or of said upper panel (18) has at least one pre-fractured area (30) to make it easier to mount and dismount said device (10) in the case of pre-existing apparatuses equipped with fixed pipes and/or tubes.
3. Device (10) according to claim 1 or 2, wherein said pre-fractured areas (30) are defined by pre-perforated and/or pre-cut lines (48) or wherein said pre-perforated and/or pre-cut lines (48) comprise slits (59) and easily removable transversal baffles (52) that act as a coupling for the cutting and removal of said pre-fractured areas (30).
4. Device (10) according to any one of the previous claims, wherein said fastening means (34A) of said frame structure (12) are assembled in a jointed fashion together through corresponding slots (36A).
5. Device (10) according to any one of the previous claims, wherein said side panels (14) are assembled in a jointed fashion on said frame structure (12) through fastening means (34B) and corresponding slots (36B).

6. Device (1) according to any one of the previous claims, wherein said front panel (16) is fixed to said side panels (14) through fastening means (34C) and corresponding slots (36C). 5
7. Device (10) according to any one of the previous claims, wherein said upper panel (18) is assembled to said frame structure (12) through fastening means (34D) and corresponding slots (36D). 10
8. Device (10) according to any one of the previous claims, wherein at least one from said frame structure (12), said upper panel (18) and said side panels (14) have holes (40A, 40B, 40D) corresponding to attachment means (42) for their attachment, respectively, to a wall and/or to said side panels (14) and/or to said upper panel (18), and/or wherein said device (10) comprises said attachment means (42) that comprise screws and/or other means suitable for fixing and closing said device (10). 15 20
9. Device (10) according to any one of the previous claims, wherein said fastening means (34A, 34B, 34C and 34D) comprise projecting and/or L-shaped and/or bayonet coupling and/or hooked configurations, etc. and/or wherein said slots (36A, 36B, 36C and 36D) comprise recesses and/or openings and/or other configurations suitable for making them match up with said fastening means (34A, 34B, 34C and 34D). 25 30
10. Device (10) according to any one of the previous claims, wherein said device (10) has a lower panel (20) for closing said device (10) and for collecting the condensation possibly produced by such apparatuses and/or wherein said side panels (14) have a lower edge (32) suitable for allowing a lower panel (20) to rest on it. 35
11. Device (10) according to any one of the previous claims, wherein said frame structure (12) has a spirit level (26). 40
12. Device (10) according to any one of the previous claims, wherein said device (1) comprises spacing means (28), made from metal or another material suitable for the purpose, to space said frame structure (12) from the wall to which it is fixed, to lift said device (1) from the ground and with anti-vibration capability. 45 50
13. Device (10) according to any one of the previous claims, wherein said side panels (14) and/or said front panel (16) and/or said upper panel (18) have perforated areas (46) and/or areas (38) in which it is possible to apply and/or print a distinctive mark. 55
14. Method for attaching a device (10) for protecting ap-

paratuses, comprising the steps of:

providing at least one frame structure (12) shaped substantially like a parallelepiped and/or a right and/or left side panel (14) and/or a front panel (16) and/or an upper panel (18), wherein said frame structure (12) comprises at least two separable portions comprising at least one dismountable cross-member (22) and/or some remaining sides (24) connecting said at least one dismountable cross-member (12) to said remaining sides (24), **characterised in that said** connection step comprises a step of locking said at least one dismountable cross-member (22) together with said remaining sides (24) through fastening means (34A).

15. Attachment method according to claim 18, comprising the following steps:

providing at least one pre-fractured area (30), in at least one from said side panels (14) and/or said front panel (16) and/or said upper panel (18), defined by pre-perforated and/or pre-cut lines (48) comprising slits (50) and transversal baffles (52), easily removing said transversal baffles (52) by using cutting tools, and removing said at least one pre-fractured area (30).

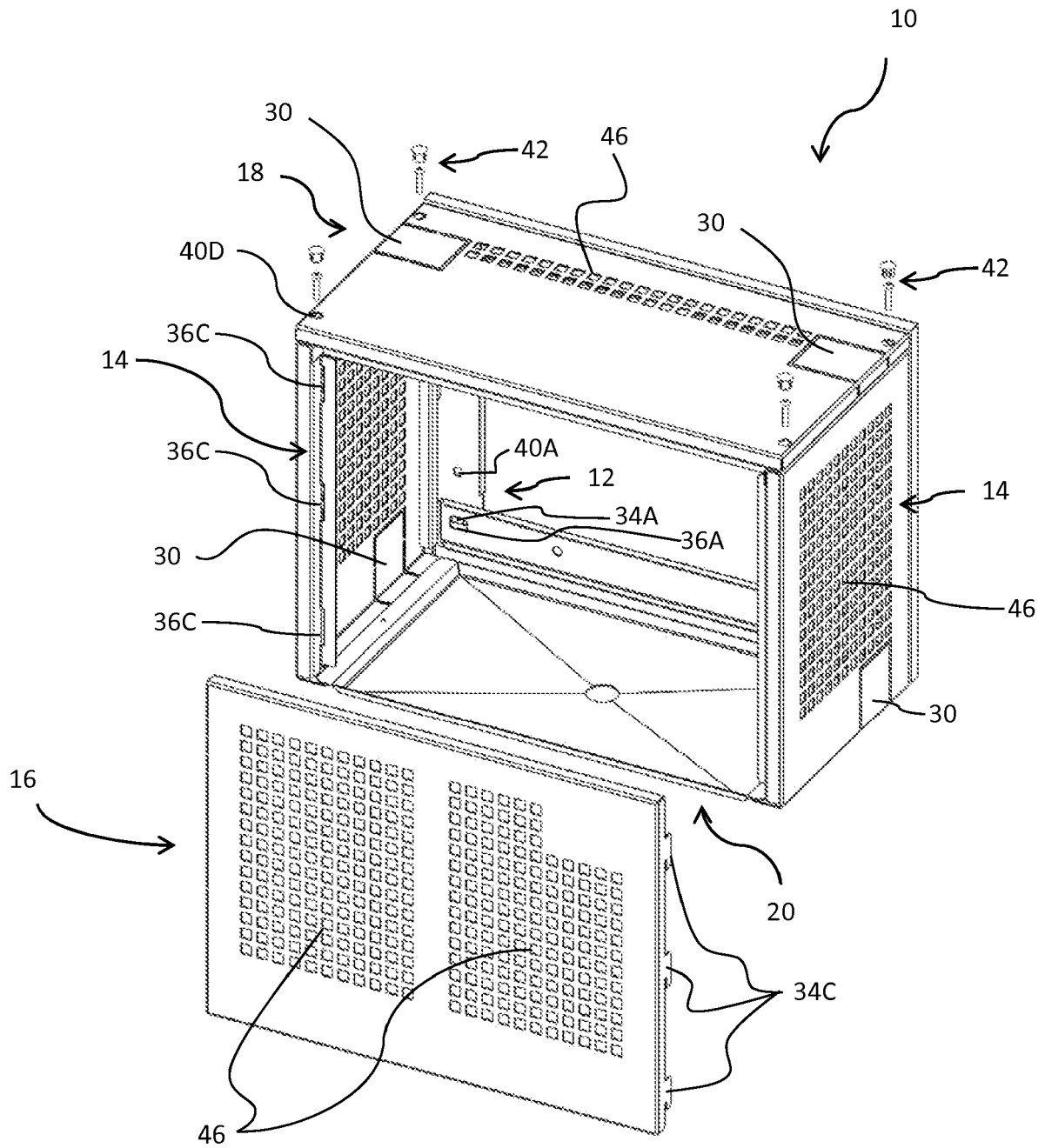


Fig.1

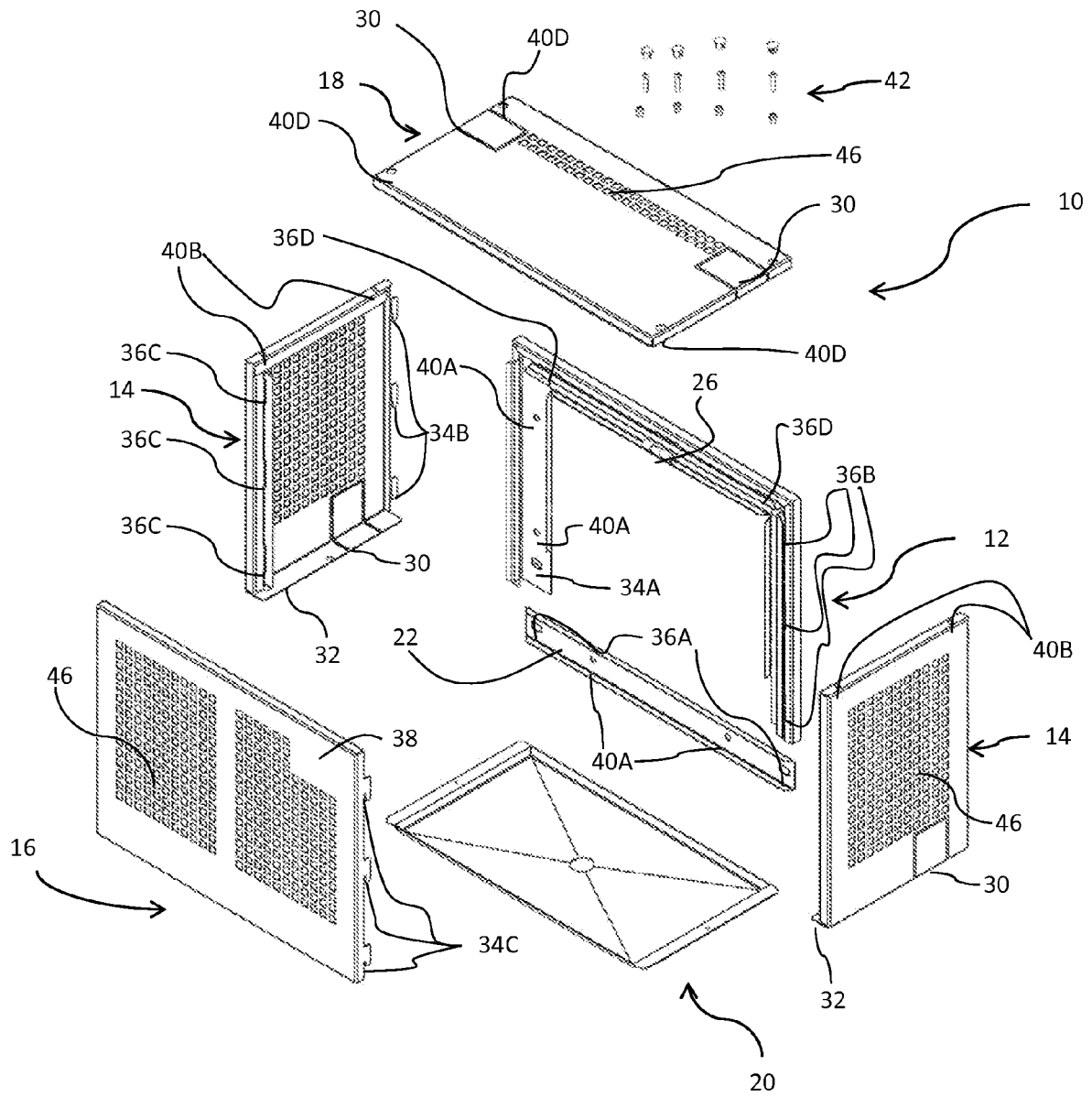


Fig.2

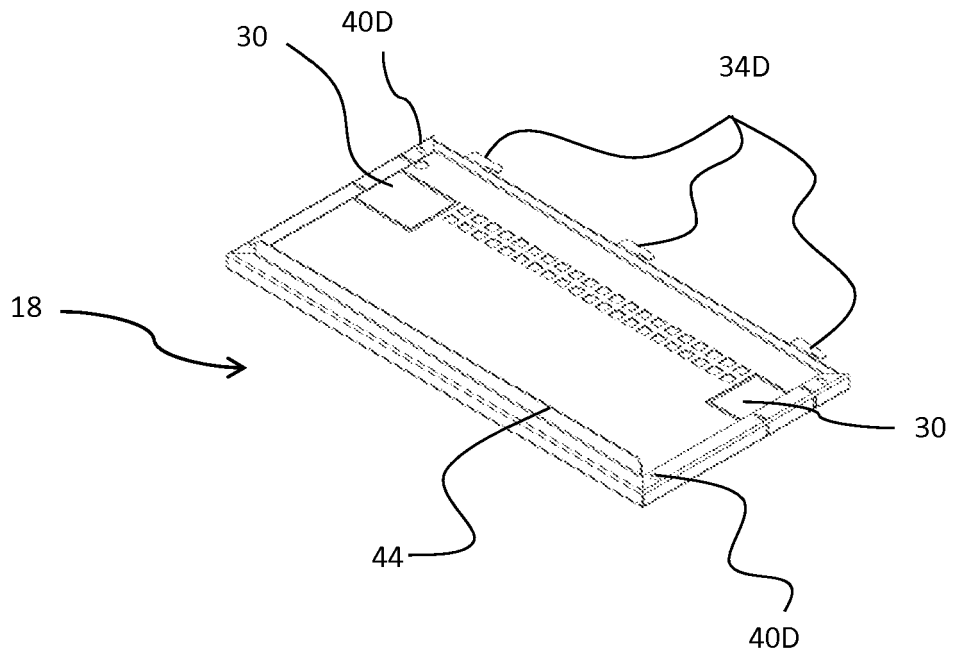


Fig.3

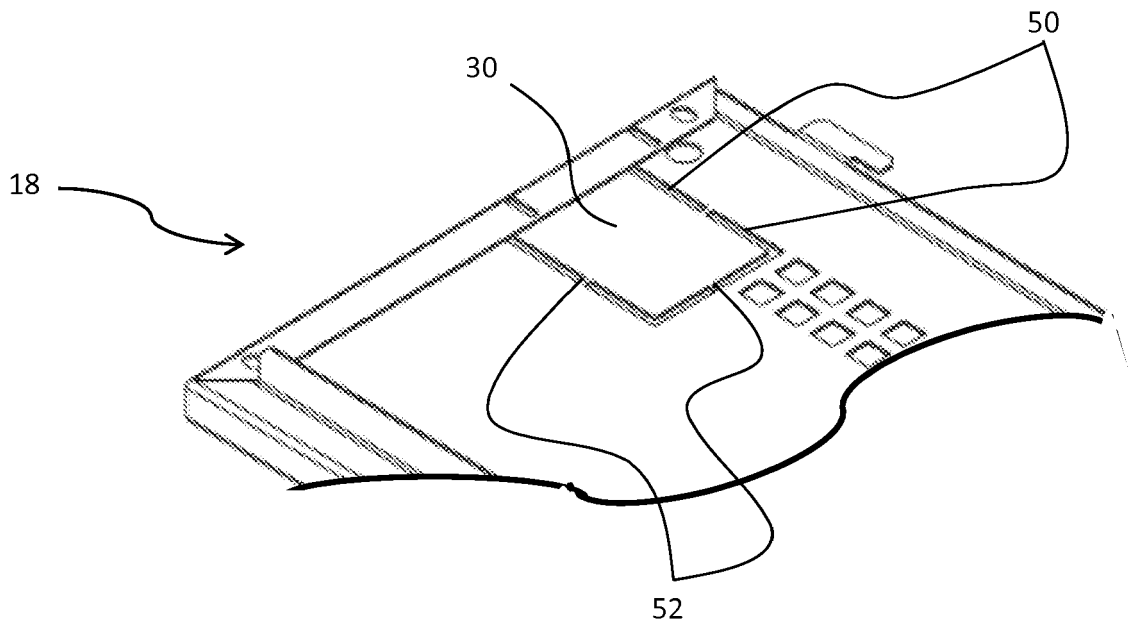


Fig.4



EUROPEAN SEARCH REPORT

Application Number
EP 10 19 4899

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 April 2011	Examiner Valenza, Davide
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 19 4899

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