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(54) **Grille box for the protection of appliances**

(57) Grille box (1) for the protection from atmospheric elements, vandalism and theft, of appliances hanging on a wall or resting on a floor or other support surface. Said

box (1) allows easy and quick assembling which does not require the prior disassembly of the appliance to protect.

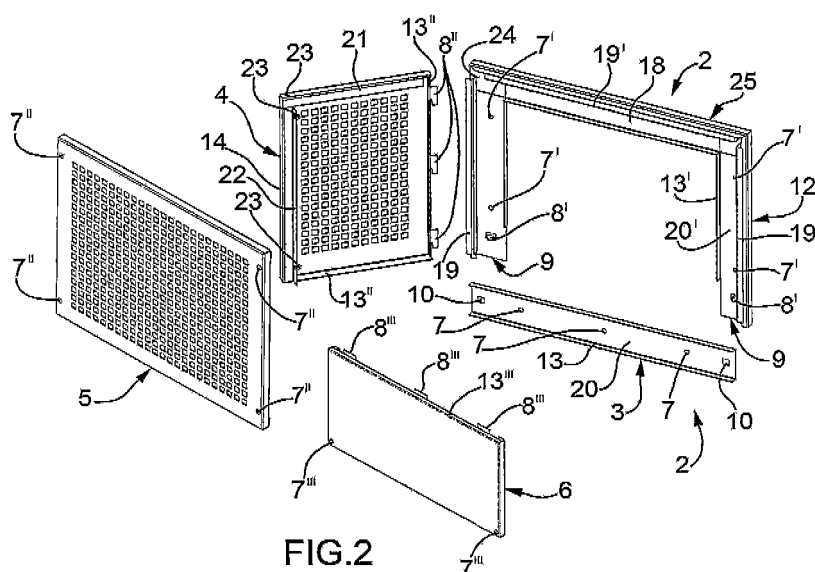


FIG.2

Description

TECHNICAL FIELD OF THE INVENTION

[0001] This invention relates to a device of a box shape for the protection and safety of appliances, particularly for the external exchange units in air conditioning systems hanging on the wall of buildings or resting on the floor or other support surface.

PRIOR ART

[0002] Over the past few years, the conditioning systems and the like have become constantly common in private homes and public buildings and this has led to the consequent increase in the presence of exchange units of air conditioning systems located on the external walls of these buildings.

[0003] However, due to the fact that these units are located externally, they are constantly subjected to atmospheric elements, the presence of animals, as well as acts of vandalism, theft, etc.

[0004] The need to protect these external units from the action of the aforementioned elements is being increasingly felt.

[0005] There are a number of appliances available on the market which have the purpose of protecting the external units of air conditioners: in particular, small roof structures are available which protect from atmospheric elements, and metal bars which act as a cage around the wall units to prevent their theft. Furthermore, grille boxes are available which act as a cage for the external air conditioning units which protect from both bad weather conditions and vandalism.

[0006] A first drawback of these appliances lies however in the fact that, to be mounted, the pre-existing unit fixed to the wall must be disassembled and removed.

[0007] A further drawback lies in the fact that to produce and install these grille boxes, many screws and nuts are required to fix the various elements together. These drawbacks make the positioning of the protective boxes more complicated, and increase the time required for both assembly and in the event of the repair or replacement of damaged parts, with a consequent increase in costs. Furthermore, as they are often exposed to the elements, the probability exists that the nuts become rusty and become blocked on the screw stem, causing foreign bodies to catch between the screw and the nut and prevent their smooth screwing action.

OBJECTS OF THE INVENTION

[0008] One object of this invention is the protection of the external units from vandalism and/or theft, as well as from direct exposure to the sun and, particularly in Northern European countries, from bad weather, overcoming the drawbacks of the known art.

[0009] A further object of this invention is to develop a

masking system for external units located on the walls of private homes or in public places.

[0010] A further object of this invention is to develop a grille box which is simple to produce.

[0011] A further object of this invention is to obtain a system that is easy and quick to assemble which does not require the prior disassembly of the external unit fixed to the wall.

[0012] A further object of this invention is to produce an appliance in resistant material that is easy to process and relatively cheap.

[0013] A further object of this invention is to make available a grille box in a range of sizes in order to be adapted to the various types of external unit present on the market, and which can be made to measure following the specifications provided by the user.

[0014] A further object of this invention is to make available a grille box which can be mounted on both newly installed and pre-existing appliances.

[0015] A further object of this invention is to obtain an appliance that covers external units fixed to the wall as well as those resting on the floor or on other support surfaces.

[0016] These objects are achieved by a protective grille box as claimed in the independent claim 1.

[0017] The dependent claims refer to preferred and advantageous embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS.

[0018] Further characteristics and advantages of the invention will be made clearer by the description of a protective grille box, illustrated as an example in the attached drawings, in which:

figure 1 is a perspective front view of the protective grille box according to this invention;

figure 2 is an exploded view of the protective grille box shown in figure 1;

figure 3 is a perspective front view illustrating the assembly of some elements of the box shown in figures 1 and 2;

figure 4 is an enlarged detail and in an interrupted view of the box shown in figure 3;

figure 5 shows a perspective front view illustrating the fixing of the box shown in the previous figures;

figure 6 shows a perspective front view of a further version of the box resting on the floor or other support surface and one of its elements shown in the previous figures.

EMBODIMENTS OF THE INVENTION

[0019] Referring to the attached figures, a grille box 1 is illustrated for the protection of appliances, particularly for external exchange units of air conditioning systems, according to this invention.

[0020] In the version illustrated in figures 1-5, a grille

box 1 is represented for appliances fixed outdoor to a wall, while figure 6 shows a grille box 1 for appliances resting on the floor P or other support surface.

[0021] In figures 1-5, the grille box 1 comprises a frame 2 of a substantially parallelogram shape, which is fixed to the wall. Said frame 2, as illustrated in figure 2, can be composed of three fixed sides 18 joined together and a removable crosspiece 3 which constitutes the fourth side of the frame and assures the passage of the pipes of the external units during the assembly of the box 1.

[0022] The removable crosspiece 3 is in the shape of a section profile with a C-shaped transversal section which defines a central face 20 and side wings 13 which are perpendicular to the central face 20.

[0023] The three fixed sides 18 of the frame 2, on the other hand, have a central face 20', an internal side wing 13' and an external edge with an S-shaped section 19'.

[0024] In the version illustrated in figures 2-4, the three fixed sides 18 and the crosspiece 3 of the frame 2, along their central face 20' and 20 respectively, have holes 7' and 7 inside which fixing means are inserted which are used to lock the frame 2 and the crosspiece 3 against the wall of the building.

[0025] The crosspiece 3 has, on the central face 20, shaped openings 10, in this case rectangular, intended to receive corresponding interlocking hooks 8', in the form of L-shaped protrusions, which are placed by the free ends 9 of the frame 2.

[0026] The box 1 also comprises panels making up the side panels 4 which can be grilles, at least one front panel 5 which can also be a grille and at least one panel which constitutes a lower and/or upper base 6. In figures 2-4 it can be seen how the side panels 4 have an upper edge 21 which is folded inwards to form a U-shaped section, a lower L-shaped edge 13", an external side edge 14 having a U-shaped section to which a further wing 22 is added perpendicular to the side panel 4 and on which threaded openings 23 and an internal L-shaped side edge 13" are placed, from which the interlocking hooks 8" are obtained, in this case in the form of bayonet couplings.

[0027] Along the side edge 12 and upper edge 25 of the frame 2 and, in particular, in the most internal part 24 of the S-shaped section 19' of both edges 12 and 25, openings 10' are obtained, in this case slot shaped, intended to receive the corresponding interlocking hooks 8", in the form of bayonet couplings, of the side panels 4.

[0028] Having mounted the side panels 4 and the crosspiece 3 to the fixed sides 18 of the frame 2, at least one upper panel 6 is mounted.

[0029] As illustrated in figures 2 and 5, the upper panel 6 has, in the rear part, a wing 13" from which interlocking hooks 8" have been obtained, which may have the form of bayonet couplings and which slot into the corresponding openings 10', which may have the shape of slots, present in the most internal part 24 of the S-shaped section 19' of the upper edge 25 of the frame 2.

[0030] Furthermore the upper panel 6 has, at the front,

at least one pair of holes 7", corresponding to the threaded openings 23 placed on the front of the edge 21 with U section of the side panels 4.

[0031] The front panel 5 of box 1 also has holes 7", corresponding to threaded openings 23 obtained in a further wing 22 present on the side edge 14 and perpendicular to the side panel 4, which allow the passage of fixing elements 15 which may have the form of screws and/or other commonly used means for such purpose in order to be able to fix and close the protective grille box 1.

[0032] A lower base (not shown in the figures) may or may not be present according to the needs of the user.

[0033] The interlocking hooks 8', 8", 8"" may have a protruding, L-shaped, bayonet coupling conformation, or any further conformation used on the market and appropriate to be used with the box 1. The corresponding openings 10, 10' may be indentations, slots, openings of various shapes and styles that are suitable for receiving the aforementioned hooking means 8', 8", 8"".

[0034] Furthermore, special plugs or other locking elements may be used (not illustrated in the figures) which are inserted in the free spaces after having hooked the interlocking hooks 8', 8", 8"" into the openings 10, 10' and are used to prevent further movement and accidental openings of the said interlocking means.

[0035] The edges of the side panel 4 and of the other elements of the box 1, where not necessarily demanded by the type of box 1 and its assembly, may have different sections and shapes, all falling within the field of protection of this invention. These edges form areas of contact and support for the various elements which offer greater stability and protection for the box 1.

[0036] At least one of the side panels 4, the front panel 5 and the upper panel 6 can be made up of more than one panel (not shown in the figures).

[0037] The upper panel 6 can be of a flat or undulated conformation, or have any other type of conformation, or be mounted horizontally or sloping to allow the drainage of atmospheric elements, and may also be a grille.

[0038] Also the side panels 4 and the front panel 5 can be grilles, mesh or with various designs and shapes according to the needs of the user.

[0039] Figure 6 shows a version of the grille box 1 for external units and appliances positioned on a floor P or other support surfaces. It can be seen how the elements of the box 1 and the assembly system are basically the same, and present only modifications to the shape and orientation in order to adapt to the various types of appliance to be protected. In particular it can be seen how the structure of the removable crosspiece 17 is different, having an S-shaped section 19 on one edge which was not present on the crosspiece 3.

[0040] The fixing means 15 can be visible or hidden by cover hole plugs 16 in plastic or other materials to prevent deterioration caused, e.g. by atmospheric elements.

[0041] The structure of the box 1 can be composed of slabs of metal materials, which are resistant and easily

processed, as well as being relatively cheap, such as steel sheet or the like, which can be appropriately bent and shaped at the edges.

[0042] They may also be fitted with further safety devices such as key locks, padlocks, etc.

[0043] The invention thus conceived is susceptible to numerous modifications and variants all of which fall within the concepts of the invention expressed in the attached claims.

Claims

1. Grille box (1) for the protection of appliances comprising a frame (2), side panels (4), a front panel (5) and an upper panel (6), **characterised by the fact that** said frame (2) comprises three fixed sides (18), joined together, and a removable crosspiece (3; 17), in such a way to allow the assembly of the grille box (1) without requiring the prior disassembly of the appliance to protect.
2. Box (1) as claimed in claim 1, wherein said frame (2) has holes (7, 7') to be fixed onto a wall with fixing means which can be visible or hidden by cover holes materials.
3. Box (1) as claimed in claim 1 or 2, wherein said removable crosspiece (3) is inserted on the frame (2) by means of interlocking hooks (8')
4. Box (1) as claimed in any of the previous claims, wherein said side panels (4) and said at least one upper panel (6) have interlocking hooks (8" and 8''') for the frame (2).
5. Box (1) as claimed in claim 3 or 4, wherein said interlocking hooks (8' , 8" , 8''') have a protruding, L-shaped, bayonet coupling conformation, or any further conformation or other types of fixing.
6. Box (1) as claimed in any of the previous claims, wherein said frame (2) has openings (10') to receive corresponding interlocking hooks (8'''), in the form of bayonet couplings, of the side panels (4).
7. Box (1) as claimed in any of the previous claims, wherein said at least one front panel (5) has holes (7'') suitable for allowing the passage of fixing elements (15) into corresponding threaded openings (23) of the side panels (4).
8. Box (1) as claimed in any of the previous claims, wherein said upper panel (6) is mounted horizontally or sloping.
9. Box (1) as claimed in any of the previous claims, wherein at least one of said side panels (4) or front panels (5) is shaped as a grille or a mesh and with various designs and shapes according to the needs of the user.
10. Box (1) as claimed in any of the previous claims, comprising a lower closing base.
11. Box (1) as claimed in any of the previous claims, wherein said crosspiece (3) is in the shape of a section profile with a C-shaped transversal section, defining a central face (20) and side wings (13) which are perpendicular to the central face (20).
12. Box (1) as claimed in any of the previous claims, wherein said crosspiece (17) has an edge with an S-shaped section (19).
13. Box (1) as claimed in any of the previous claims, wherein said three fixed sides (18) of the frame (2) have a central face (20'), an internal side wing (13') and an external edge with an S-shaped section (19').
14. Box (1) as claimed in claim 11 or 12, wherein said central faces (20, 20') have holes (7, 7') inside which fixing means are inserted which are used to lock the frame (2) and the crosspiece (3) against a wall.
15. Box (1) as claimed in any of the previous claims, wherein said side panels (4) have an upper edge (21) which is folded inwards to form a U-shaped section, a lower L-shaped edge (13''), an external side edge (14) having a U-shaped section and an internal L-shaped side edge (13'') from which the interlocking hooks (8'') are obtained.
16. Box (1) as claimed in claim 15, when claim 15 is dependant from any of the claims from 7 to 14, wherein to said external side edge (14) a further wing (22) is added perpendicular to the side panel (4) and on which said threaded openings (23) are placed.
17. Box (1) as claimed in any of the previous claims, wherein said upper panel (6) has, in the rear part, a wing (13''') from which interlocking hooks (8''') are obtained.
18. Box (1) as claimed in any of the previous claims, wherein the structure is composed of slabs of metal materials, which are resistant and easily processed, such as steel sheet or the like, which can be appropriately bent and shaped at the edges.
19. Box (1) as claimed in any of the previous claims, wherein further safety devices are provided such as key locks, padlocks, etc.

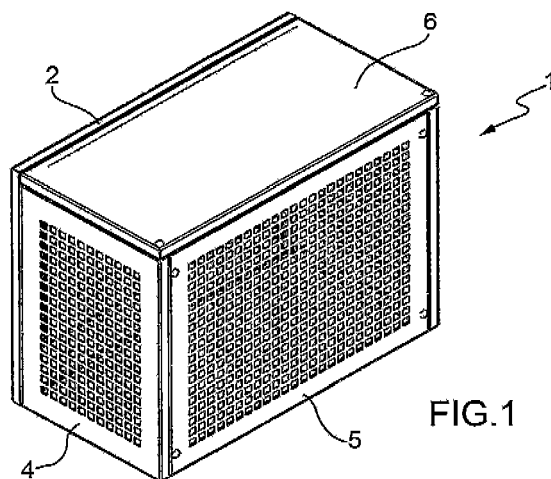


FIG.1

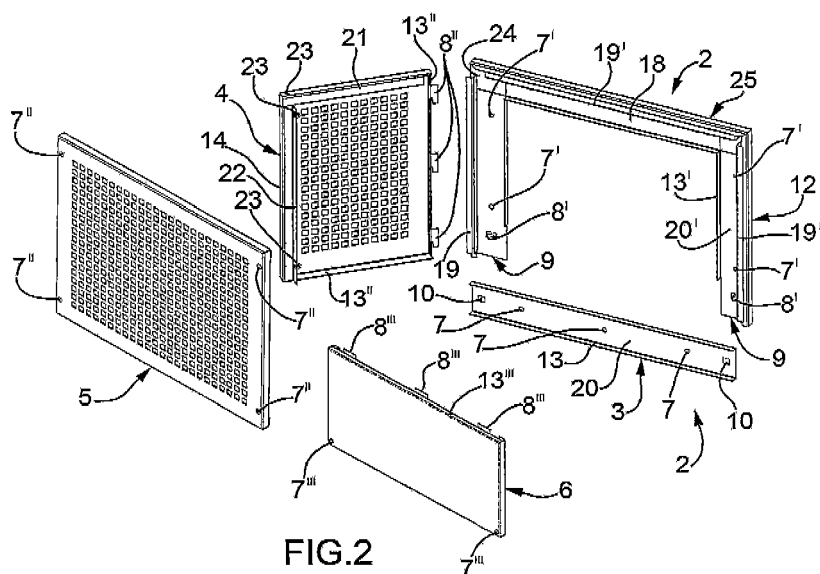


FIG.2

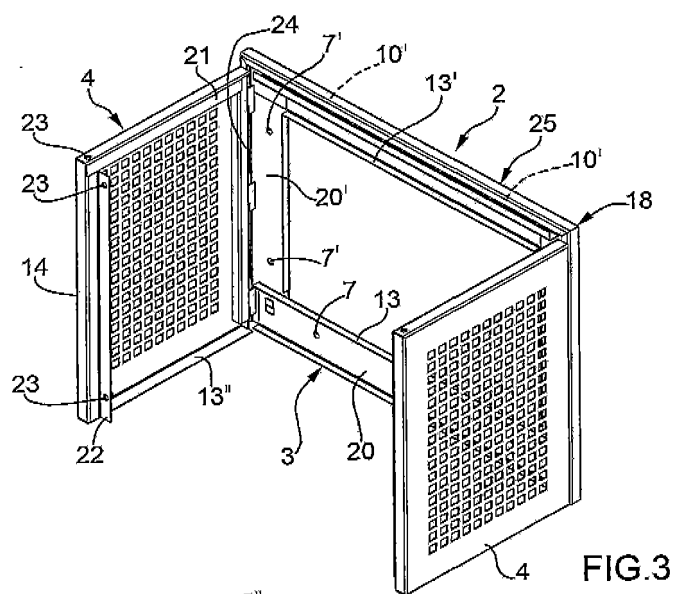


FIG.3

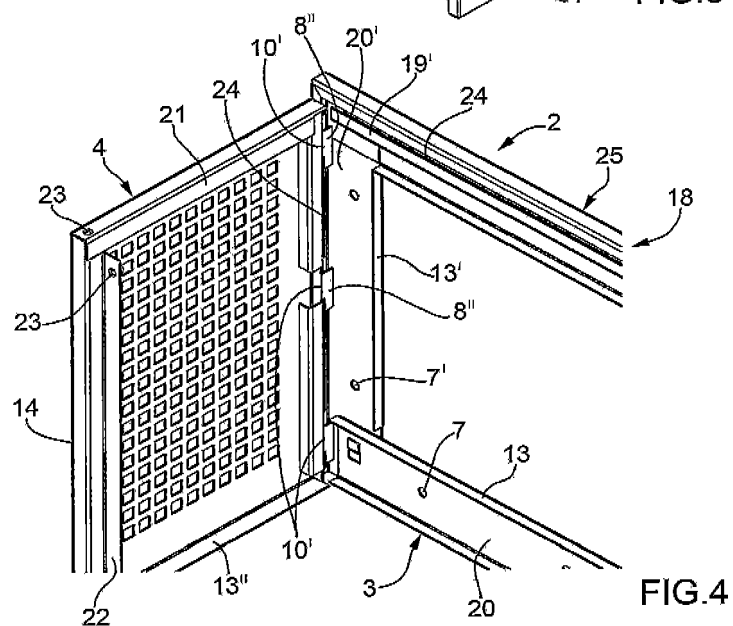
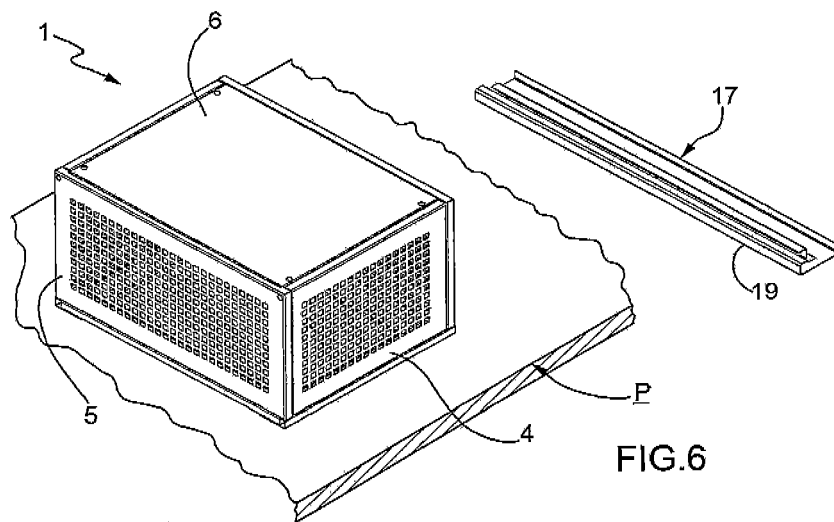
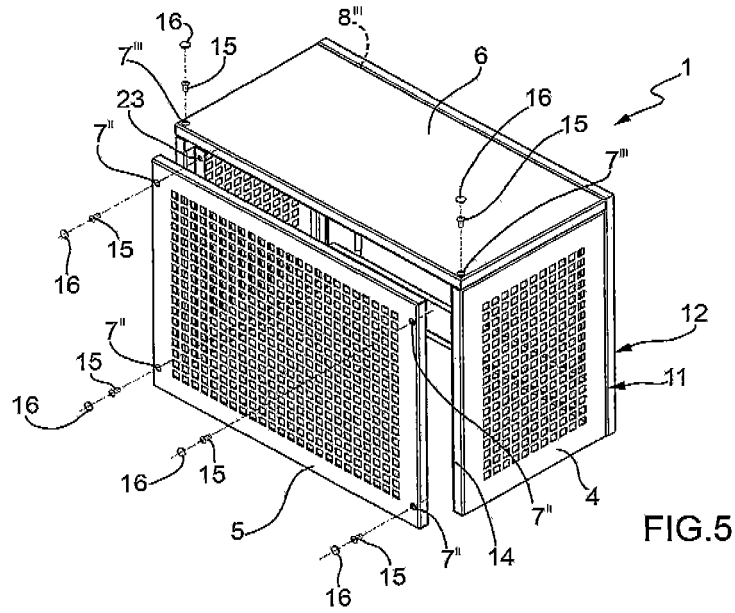


FIG.4





EUROPEAN SEARCH REPORT

Application Number
EP 08 01 8043

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 March 2009	Examiner González-Granda, C
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 08 01 8043

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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