

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 645 829 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

12.04.2006 Bulletin 2006/15

(51) Int Cl.:

F28F 9/00 (2006.01)

F28B 1/06 (2006.01)

(21) Application number: **05077298.7**

(22) Date of filing: **10.10.2005**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

Designated Extension States:

AL BA HR MK YU

(30) Priority: **08.10.2004 NL 1027204**

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(54) **Housing**

(57) A housing (1) for a component in an air-treatment system, such as a cooler, or a condenser for an air-conditioning system, the housing (1) including in all instances a frame with, minimally, lateral walls (5) and

air passages enabling an air stream to stream past the component; its frame contains minimally one, for the most part level, plate-shaped element (11) and minimally one elongated section (10), with this section being attached alongside the plate-shaped element (11).

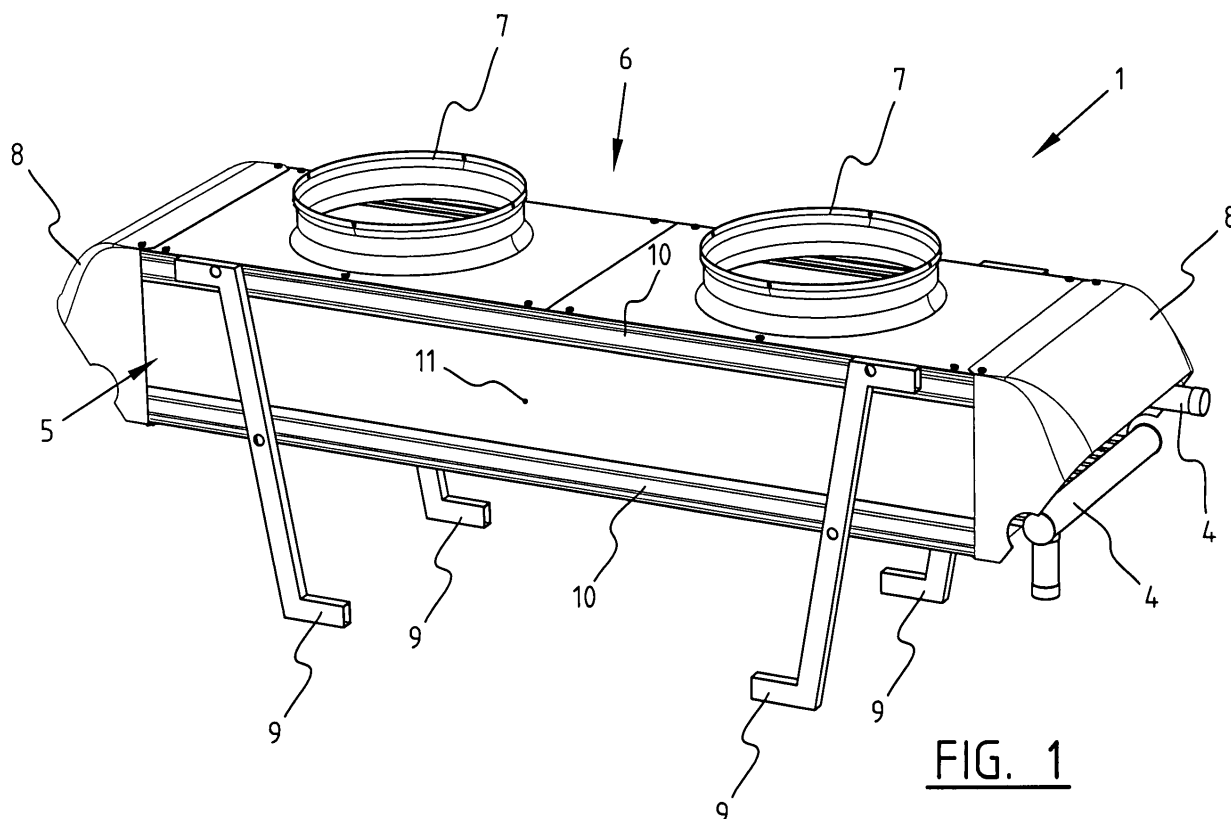


FIG. 1

EP 1 645 829 A2

Description

[0001] The present invention is a housing for a component in an air-treatment system, such as a cooler, or a condenser for an air-conditioning system; the housing includes in all instances a frame with, minimally, lateral walls and air passages enabling an air stream to stream past the component.

[0002] Comparable housings are generally known.

[0003] An example is the housing published in European patent application 1.239.255.

[0004] Up to now comparable housings have had the disadvantage that particularly their lateral walls could only be produced by means of complex and costly production processes, leading to the formation of ridges, deposits and canals of various types on the lateral walls, due in particular to the complex process of providing walls to originally level or flat, plate-shaped elements. When assembled as a housing, these level or flat, plate-shaped elements are thus extensively worked, something not beneficial to the structural integrity of the housing. The rigidity and strength of conventional housings must also be increased through the addition of, e.g., box beams, or tubes, for support.

[0005] In the case of the present invention, the objective has been to correct, or at least substantially reduce the drawbacks of the above-mentioned method; a housing made in accordance with the present invention contrasts with others in that its frame contains minimally one, for the most part level, plate-shaped element and minimally one elongated section, with this section being attached alongside the plate-shaped element. In this way, the functionalities required of the frame can be realised in the section, and most work on the level, plate-shaped elements can largely be dispensed with, which work, when using the conventional method, was necessary in order to realise the functionalities required of the housing. One possibility is a support which would make it possible to place the component on top of the housing, etc. Based on the present invention, a substantial improvement has thus been realised over the conventional method.

[0006] In a preferred version, a housing based on the present invention displays the characteristic whereby minimally one of the sections contains a gripping instrument for selective gripping of an edge of the plate-shaped element. Thus, the cohesion between the sections and the plate-shaped element are optimised and, as a result, to an equal extent the rigidity and strength of the housing, without an additional need for supporting tubes or similar reinforcement measures. In such a version, the gripping instrument can include means of fastening, for fastening the plate-shaped element and the sections to one another. This further improves the rigidity and strength of the housing.

[0007] A housing in a preferred version of the invention displays the characteristic whereby minimally one of the sections in its length is hollow for its entire length. In particular, such a section can be an extrusion section, made,

e.g., of aluminium, with its hollowness contributing to material economy effectively without adversely affecting the rigidity and strength of the sections. In a preferred version, the rigidity and strength of the sections are, however, even further optimised, through the use of minimally one reinforcement rib in the cavity.

[0008] In a preferred version, a housing based on the present invention displays the characteristic whereby minimally one of the sections includes a stop which projects outwardly in relation to the section's length for the purpose of bearing or enclosing the component. Preferably, such a stop should be included as an integral part of the section involved and be produced together with the sections, and primarily (but not exclusively) be extruded. In a housing configuration that is primarily symmetrical in relation to the component, such a stop can also serve, not to bear the component on top, but rather to enclose it, together with another stop on a section located opposite, which is essentially capable of bearing the component.

[0009] In a version featuring reinforcement ribs in a cavity and a stop projecting in the direction of the section's length, it is useful for the stop and the reinforcement rib to lie in one another's extensions. This enables optimising of the load-bearing capacity or grip strength of the stop, as it facilitates the distribution of forces acting on the stop over the parts of the section enclosing the cavity, as well as over the reinforcement rib in the interior of the cavity.

[0010] In another preferred version, a housing based on the present invention displays the characteristic whereby minimally one of the sections contains one or more corbelled cavities that merge in the direction of its length and are outwardly open, for the purpose of mounting, within it, selectively adjustable coupling means, such as the heads of hammerhead bolts. By using such coupling means, the posts or legs of the housing in which the component is mounted in an operational state, are easy to adjust. It should be emphasised that such housings with components within them are often mounted on the roofs of buildings, and that the adjustability of their posts or legs can be especially easy in such cases, this in connection with (reinforcement) platforms on which the housings containing components must in turn be positioned.

[0011] In another preferred version, a housing based on the present invention can display the characteristic whereby minimally one of the sections contains one or more cavities that merge in the direction of its length and are outwardly open, for the purpose of mounting, within it, selectively energisable coupling means, such as the threaded ends of screws or bolts. The adjustability of these should perhaps be regarded as less optimal; nevertheless, means of mounting can be fitted in such open cavities for the purpose of mounting components whose adjustability is less crucial than that in connection with, e.g., legs or posts for cover plates, other coverings, etc., whose mounting is less dependent on its environment

when employing a housing based on the present invention.

[0012] Below, the present invention shall be described in greater detail employing the version featured in the enclosed technical drawings. This version shall be used here as a non-limiting example, with identical or similar components and parts, with the same reference numbers, being indicated in the drawings.

Fig. 1 presents a perspective view of the housing based on the present invention in the assembled state;

Fig. 2 presents the housing in Fig. 1 in a disassembled or exploded view;

Fig. 3 and 4 together present a detail view of the housing based on Fig. 1 and 2;

Fig. 5 presents another detail of the housing based on Fig. 1 and 2.

[0013] Fig. 1 presents a perspective view of the housing based on the present invention. Fig. 2 shows a condenser (2) fitted as a component in the housing serving this purpose. However, a housing can be realised with equal success for a cooler based on the present invention. The condenser (2) has been fitted between two mounting plates (3) and is connected to an air-treatment system (not shown) via connections (4).

[0014] The housing (10) itself includes lateral walls (5), assembled, in a manner described below in detail, using cover plates (6) in which air holes have been made, and coverings (8) which stand in an assembled state on posts (9), fitted, in a manner also described below in detail, to the lateral walls (5).

[0015] The lateral walls (5) comprise essentially two sections, designed as two elongated angle sections (10) with, between them, an essentially level, plate-shaped element (11), which is enclosed by the angle sections (10) in a manner described below in detail.

[0016] Fig. 3 shows how the angle section (10), which preferably should be an extruded section made, e.g., of aluminium, includes a gripping instrument (12) for gripping the plate-shaped element (11). This gripping instrument includes a short leg (13) and a long leg (14) fitted with a stop (15), against which the plate-shaped element (11) leans, and as a result tends to tilt and to press against the short leg (13). A configuration similar or identical to that of angle section 10 is realised in the case of the angle section opposite. The gripping instrument (12) can be said to include means of fastening, in that the short leg (13) has a sharp tip which extends itself toward the plate-shaped element (11), and as a result of the tendency of the plate-shaped element (11) to tilt around the stop (15), the sharp tip (16) is pressed into the plate-shaped element (11). It should be noted that the sharp tip (16) can also be a sharp ridge or something similar.

[0017] The angle section (10) also includes a cavity (17) that is enclosed by material of the angle section (10). The interior of the cavity (17) is fitted with reinforcement

ribs (18), and the combination of a cavity (17) with reinforcement ribs (18) ensures that the angle section (10) is sufficiently rigid and strong to fulfil its intended function of maintaining the tension of a housing for the intended component.

[0018] The angle section (10) also has an outwardly opening cavity which extends itself in the direction of the length of angle section 10. Bolts (20) and other fasteners as can be fitted in it, or alternatively, screws as well, for which reason the inside of cavity 19 is profiled or ribbed. The bolts (20), as fasteners, can be used to mount the covering (8), as shown in Fig. 1 and 2, and equally for fitting covering plates (6).

[0019] Further, the angle sections (10) also have two outwardly opening, corbelled cavities (21), in which hammerhead bolts (22) or other selectively adjustable coupling devices are fitted, with which the mounting plates (3) of the component designed as a condenser can be mounted onto the legs (23).

[0020] In addition, the angle sections (10) have ridges (24) which function as stops for bearing or clamping the component designed as a condenser and the accompanying mounting plates (3). Minimally one of these ridges (24), which forms a stop, extends itself into the extension of a reinforcement rib (18) in order to realise optimal force distribution if the component designed as a condenser (2) rests upon the ribs.

[0021] Finally, it should be noted that, as shown in Fig. 5, the post (9) in the corbelled open cavity (21) must be mounted on the angle sections (10) using hammerhead bolts (22). For this purpose, the post has a passage (25) for enabling a nut (26) to be lead through, and for screwing a ring (27) which can be screwed around the threaded end of the hammerhead bolt (22), if so desired.

[0022] When mounting, where adjustability is a high priority, corbelled-opening cavities (21) are used. This is desirable, e.g., where the posts (9) are used, including where it is often unclear in advance where these can be given sufficient support when a housing (1) based on the present invention is deployed, e.g., on the roof of a building. Further, highly adjustable coupling devices are also used to fit the mounting plates (3), which form part of the condenser (2), yielding greater freedom of choice for the condenser (2) type desired for a specific application. A larger or smaller condenser may be desirable, depending on the circumstances, and in turn depending on this, the mounting plate can easily be coupled to the angle sections at a suitable position along the length of the angle sections (10). However, where possibilities for adjustment are lower in priority, the open cavities (19) can be used, in which screws or bolts (20) can be screwed, as indicated in the sample version for mounting coverings (8) and covering plates, as shown in the figures. The cavity (17) is primarily intended for obtaining a stable fundament on the angle sections (10).

[0023] In view of the above, it shall be clear to the professional that within the context of the present invention, as defined in the enclosed conclusions, various supple-

mentary and alternative options and versions are possible, all of which must be regarded as versions of the present invention, to the extent that these do not deviate from the definitions in accordance with the conclusions, or the spirit of those conclusions.

[0024] Thus, alternative and supplementary sample versions can be mounted in yet other manners, e.g., for coupling the connections (4) with angle sections (10); and hammerhead bolts can be used, including for mounting cover plates (6) and mounting plates (3). Further, other posts (9) can be used than those shown in the figures, e.g., straight posts in place of the posts (9) shown in the figures in a diagonal orientation to one another, which posts however offer the smallest possible basis for deploying a housing (1). An extremely important aspect is that hardly any work is required to the plate-shaped elements (11) - which form the lateral walls or in any case serve a closing-off function -, and that the use of the angle sections (11) enables easy mounting of the other components, with the assembly of the angle sections (10) using the plate-shaped elements (11) essentially serving as a basis for mounting onto the unit of the other components, especially to the angle sections (10). The shiftability or adjustability of the various supplementary components and elements, such as the posts (9), is very significant, though not essential or crucial, and in any case central. Further, it is possible to realise a version with contrasting sections or with, on one or more sides of the housing, only a single (angle) section that can also aid supporting the component on the unit or suspending it from the unit. Sections can also be added in the lateral walls of the housing, which sections will then be located between the sections along the height or length of a plate-shaped element, in place of the specific angle sections of the version shown in the figures and described above.

with minimally one of the sections containing cavities along its length.

5. Housing in accordance with Conclusion 4, with minimally one reinforcement rib being fitted in the cavity.
6. Housing in accordance with minimally one of the above conclusions, with minimally one of the sections being fitted with a stop projecting outwardly in relation to its length, for bearing or enclosing the component.
7. Housing in accordance with Conclusions 5 and 6, with the stop and reinforcement rib lying in one another's extensions.
8. Housing in accordance with minimally one of the above conclusions, with minimally one of the sections having one or more outwardly opened corbelled cavities along its length, for purposes of mounting within it, selectively adjustable coupling devices, e.g., heads of hammerhead bolts.
9. Housing in accordance with minimally one of the above conclusions, with minimally one of the sections having one or more outwardly opened corbelled cavities along its length, for purposes of mounting within it, selectively energisable mounting devices, e.g., the threaded ends of screws or bolts.

Claims

1. Housing for an air-treatment component system, such as a cooler, or a condenser for an air-conditioning system; the housing includes in all instances a frame with, minimally, lateral walls and air passages enabling an air stream to stream past the component, with the section being attached along the plate-shaped element.
2. Housing in accordance with Conclusion 1, with minimally one of the sections being fitted with a clamping instrument for selective gripping of an edge of the plate-shaped element.
3. Housing in accordance with Conclusion 2, with the clamping instrument being fitted with means of fastening.
4. Housing in accordance with Conclusions 1, 2 or 3,

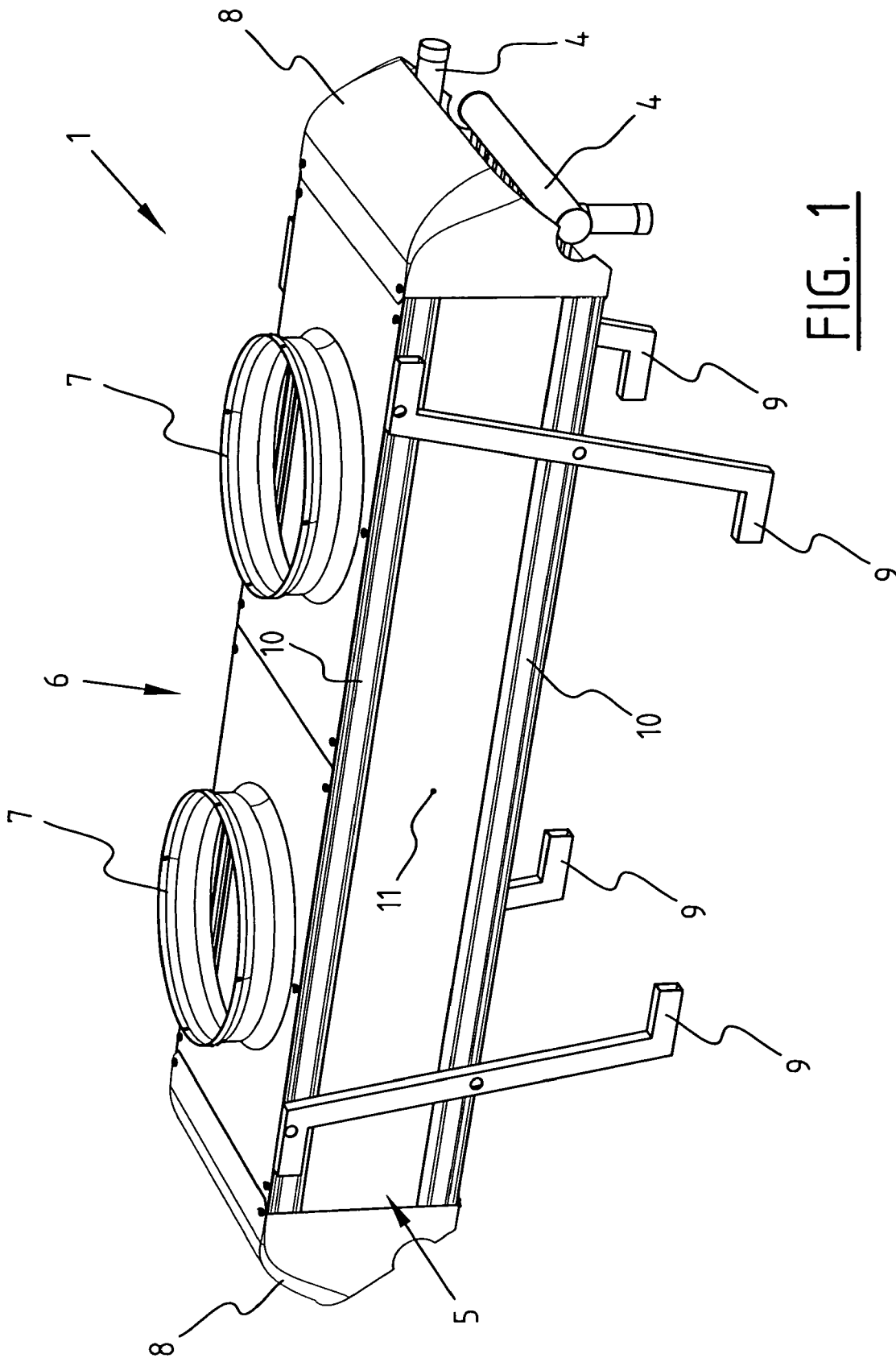


FIG. 1

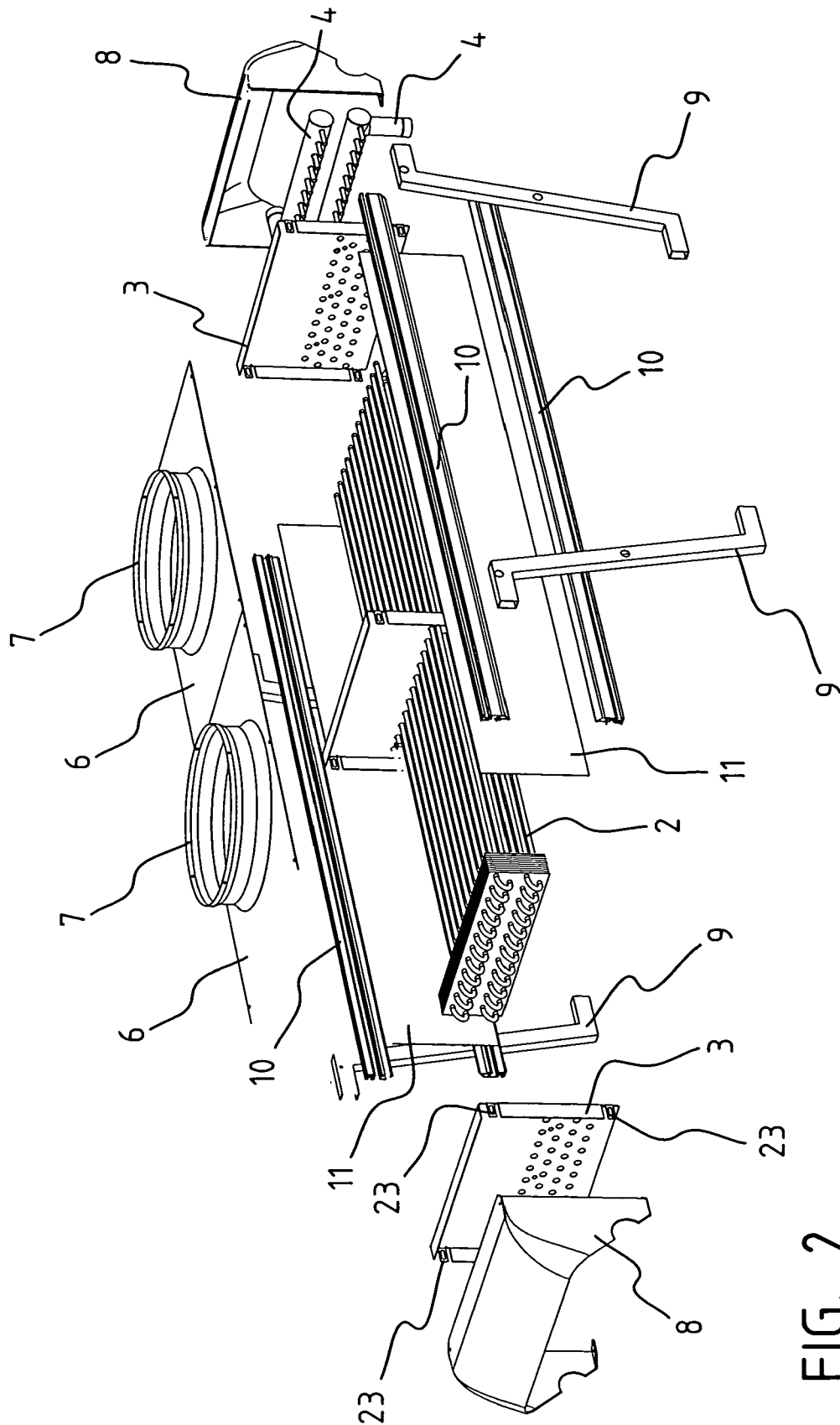


FIG. 2

