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(54) **Heating apparatuses such as pellet-fired stoves and thermostoves**

(57) The finding concerns heating apparatuses such as pellet-fired stoves and thermostoves, characterised in that they have three spaces arranged side-by-side and aligned in the horizontal direction. The three main components of the apparatus, i.e. the fuel-loading tank, the combustion chamber and the smoke aspirator, are arranged inside said spaces.

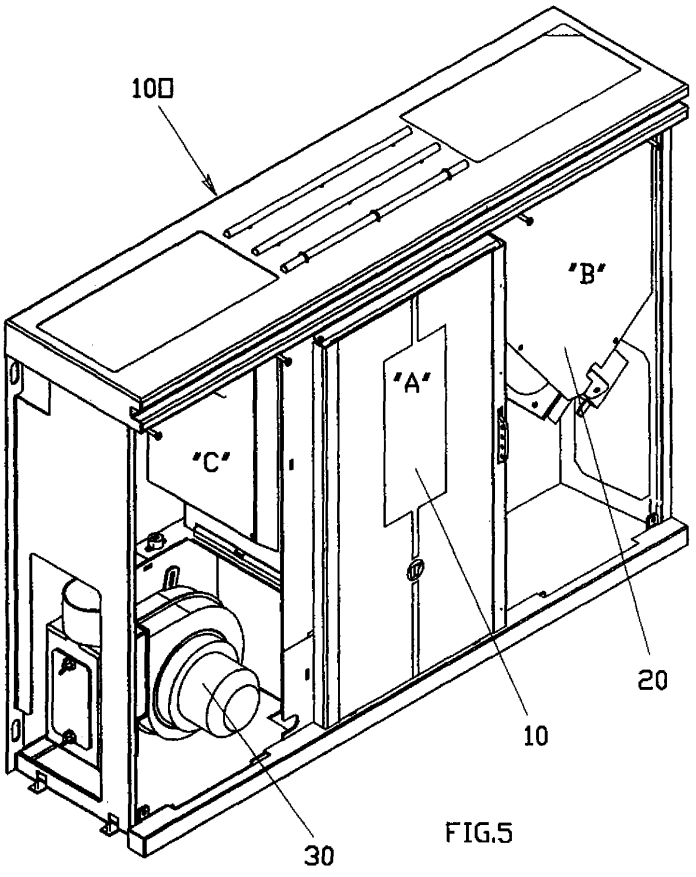

FIG.5

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Description

[0001] The present finding concerns heating apparatuses such as pellet-fired stoves and thermo-stoves.

[0002] As is well known, current pellet-fired stoves and thermo-stoves, commonly used, in particular in homes, are parallelepiped in shape, with a substantially square base.

[0003] This configuration with vertical extension is a consequence of the fact that the operating members, substantially represented by the fuel tank, the furnace, the electroventilator for cooling the stove body, the smoke-expulsion motor and the electronic operation control apparatus, are arranged on top of one another.

[0004] Moreover, the base bulk of these types of stoves (for example quoting the most frequent dimensions: base 0.5 m and height 1 m) is often problematic due to the small size of the rooms where they are arranged.

[0005] The purpose of the present finding is to make pellet-fired stoves and thermo-stoves that are configured so as exploit the available space in the best possible way.

[0006] A further purpose of the finding is to make pellet-fired stoves and thermo-stoves, which are aesthetically different to known stoves and thermo-stoves.

[0007] Specifically, the purpose of the present finding is to make pellet-fired stoves and thermo-stoves that can easily be arranged in confined spaces such as corridors and that also constitute a furnishing element.

[0008] Finally, another purpose of the finding is to make pellet-fired stoves and thermo-stoves in which access to the internal components is made substantially easier.

[0009] Such purposes are accomplished by making a stove of the type described above, characterised in that it has a bulk in which the depth dimension is substantially smaller than the width and height dimensions.

[0010] Constructively, such a purpose is accomplished with a stove in which the three main components, i.e. the fuel-loading tank, the combustion chamber and the smoke aspirator, are each arranged inside a single space and where said three spaces are side-by-side in the horizontal direction when the machine is assembled.

[0011] Again constructively, the aforementioned three spaces can be separable from one another, making a structure of the stove consisting of three distinct modules that can, therefore, be positioned so as to modify their relative position.

[0012] Specifically, by keeping the space/module of the combustion chamber in a central or intermediate position it is possible to position the module of the fuel loader to the side, for example to the right, of said module, and to position the module with the smoke aspirator to the side, for example to the left; all of this makes it easier to position the stove in the home, said operation being fundamental to be able to heat the home uniformly.

[0013] In practice, a stove is made that has a bulk in which the base width and height dimensions substantially exceed the depth dimension.

[0014] The finding shall be better understood from the description of some possible embodiments thereof, given as a non-limiting example, with the help of the attached tables of drawings, where:

Figs. 1-4 (table I) represent three perpendicular views and a perspective view from the outside of the stove according to the finding;

Figs. 5-6 (table II) represent two perspective views, front and rear respectively, of a first embodiment of the stove according to the finding;

Figs. 7-8 (table III) represent two perspective views, front and rear respectively, of a second embodiment of the stove according to the finding;

Figs. 9-10 (table IV) represent two possible arrangements, on the floor and on a wall respectively, of the stove according to the finding.

[0015] As can be seen in figures 1-4, the stove and thermo-stove according to the finding has a substantially parallelepiped fairing, where three side-by-side spaces, respectively indicated with reference letters A, B and C, can be identified. Moreover, the depth dimension K is substantially smaller than the width and height dimensions.

[0016] Constructively, the three main components of the machine, i.e. the fuel-storage tank, the combustion chamber and the smoke aspirator, obviously as well as other auxiliary devices, necessary for the operation of the machine, are arranged inside each of the three spaces A, B and C.

[0017] In a preferred embodiment of the finding (see figs. 5-6), the compartment, wholly indicated with reference numeral 10, which comprises the combustion chamber with the main smoke passage, the ash collection drawer, the heat exchanger and the inspection openings, is inserted in the central space A; the compartment, wholly indicated with reference numeral 20, which comprises the fuel storage tank, the loading opening and the device (Archimedean screw) for transporting the pellets into the furnace is inserted in the space B; the compartment, wholly indicated with reference numeral 30, which comprises the smoke aspirator, complete with its support and the flue for the smoke coming from the combustion chamber, is inserted in the space C.

[0018] In a second embodiment (see figs. 7-8), without affecting the central space A, the side space B, in addition to containing the compartment 20 (pellet loader), is also used to contain the compartment 30.1 (smoke aspirator) that is advantageously positioned below the aforementioned compartment 20.

[0019] In this way the space C, remaining empty, becomes a "technical space" intended to contain other accessory components of the stove.

[0020] In particular, with this constructive solution, in thermo-stoves, i.e. stoves intended to feed a central heating system, the equipment, such as the valves, the pumps and the other devices that regulate the operation of the system, is inserted in the space C, with undoubted economic advantages.

[0021] Finally, the finding foresees that the stove and thermo-stove according to the finding, thanks to the special arrangement of its main internal components, has one of the three bulk dimensions, i.e. the depth, substantially small (for example 250 mm) for which reason the stove or thermo-stove can be placed up against a wall of a small room without problems of bulk (see fig. 9).

[0022] Again thanks to the aforementioned low bulk, the stove or thermo-stove, equipped with suitable fittings, can be positioned hanging on a wall, to thus act as an innovative furnishing element (see fig. 10) in addition to being a low-bulk heating apparatus.

Claims

1. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, said apparatuses being **characterised in that** they have three spaces arranged side-by-side and aligned in the horizontal direction, the main components of the apparatus, i.e. the fuel-loading tank, the combustion chamber and the smoke aspirator, being arranged inside said spaces.

2. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, according to claim 1, **characterised in that** the three spaces can be separated from each other by making a support structure consisting of three distinct modules, which can be arranged so as to invert their position with respect to each other.

3. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, according to claim 2, **characterised in that** they have a substantially parallelepiped fairing (100), inside of which three spaces (A,B,C) arranged side-by-side can be defined and **in that** they have a bulk in which the depth dimension (K) is substantially smaller than the width and height dimension of the entire apparatus.

4. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, according to claim 3, **characterised in that** inserted in the central space (A), positioned centrally, there is the compartment (10), which comprises the combustion chamber with the main smoke passage, the ash collection drawer, the heat exchanger and the inspection openings, inserted in the space (B), positioned at the side, there is the compartment (20), which comprises the fuel storage tank, the opening for loading and the device for transporting the pellets into the furnace; inserted in the space (C), positioned at the side, in a position opposite the other side space (B), there is the compartment (30), which comprises the smoke aspirator, complete with its support and the flue for the smoke coming from the combustion chamber.

5. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, according to claim 3, **characterised in that** the side space (B), in addition to containing the compartment (20) that comprises the pellet loader, is also used to contain the compartment (30.1), which comprises the smoke aspirator, said second compartment (30.1) being positioned below the aforementioned compartment (20).

6. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, according to claim 5, **characterised in that** one of the side spaces (C) constitutes a technical space, intended to contain the accessory components of the apparatus.

7. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, according to claim 6, **characterised in that** the equipment, such as the valves, the pumps and the other devices that regulate the operation of the heating unit fed by said apparatuses, is housed in the side space (C).

8. HEATING APPARATUSES SUCH AS PELLET-FIRED STOVES AND THERMO-STOVES, according to one or more of the previous claims, **characterised in that** it can be positioned suspended, possibly applied to a wall, to act as low-bulk furnishing elements.

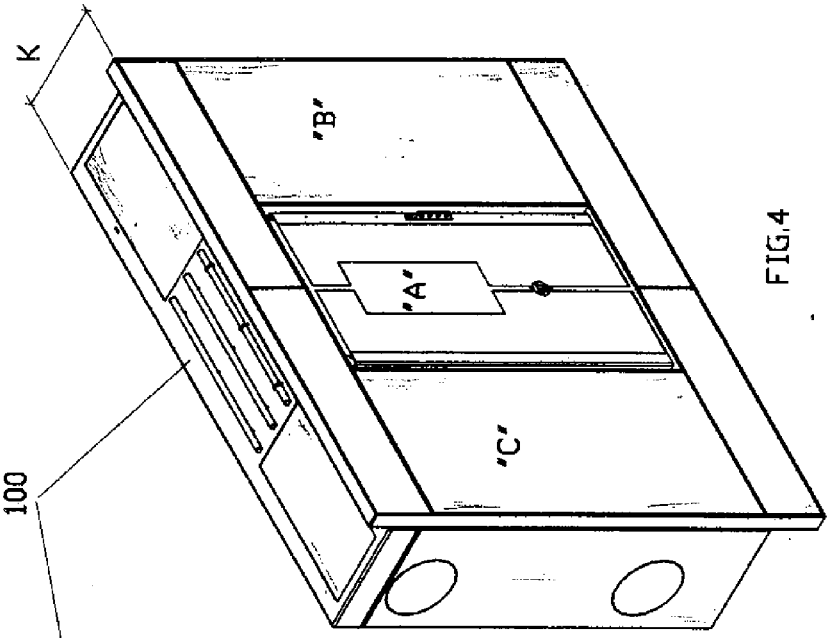

FIG.4

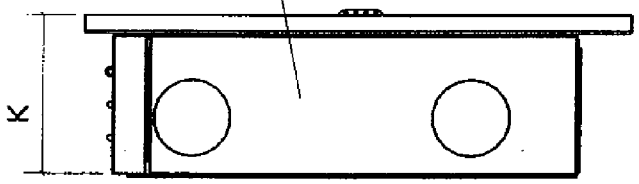

FIG.3

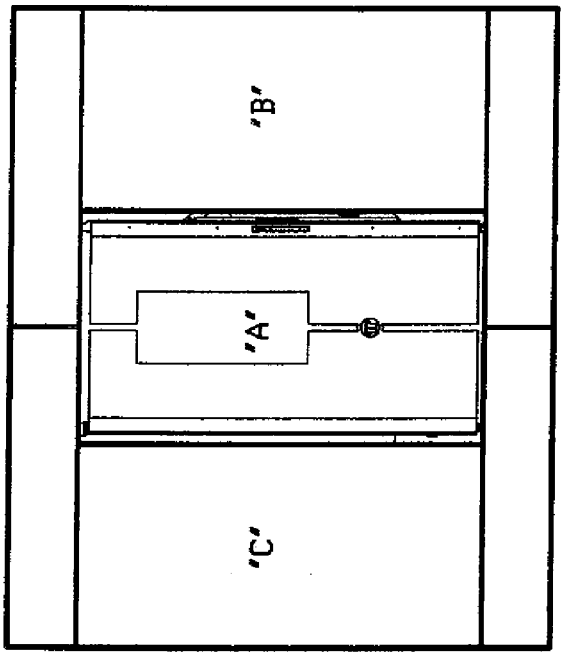

FIG.1

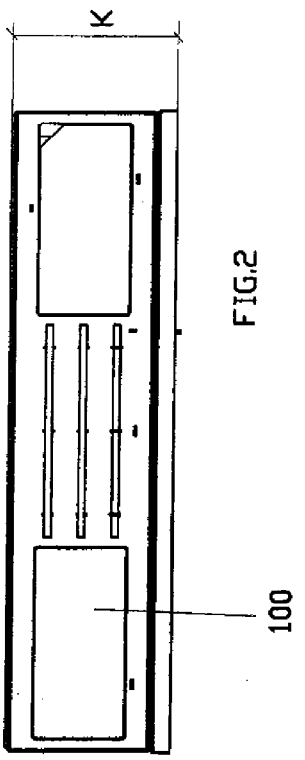

FIG.2

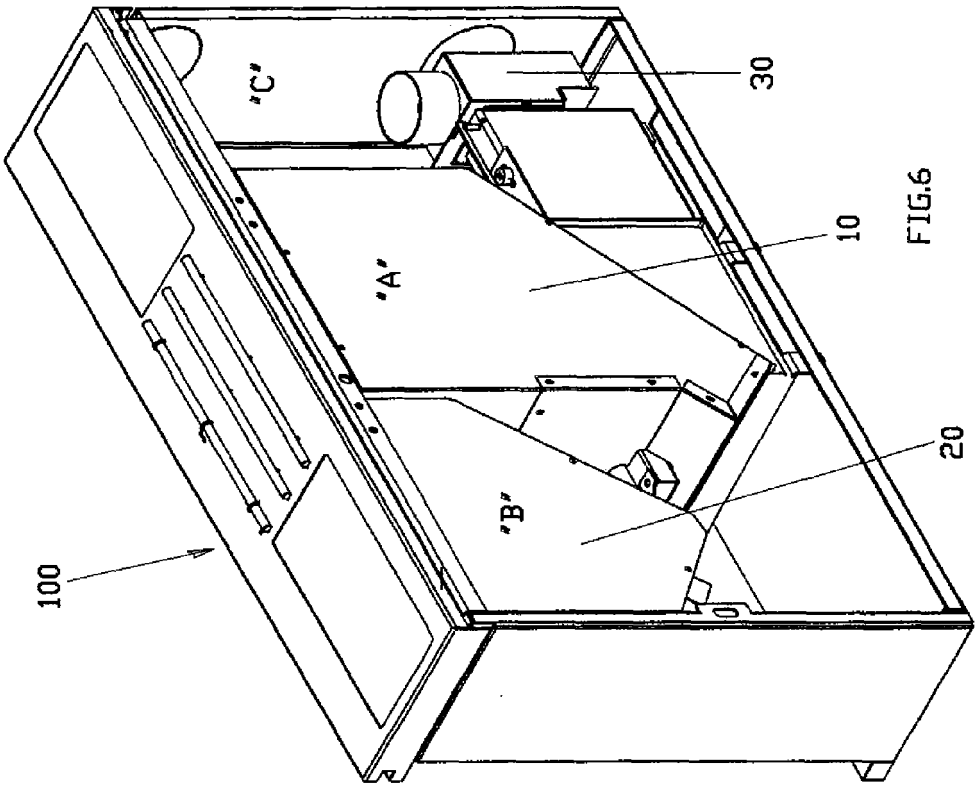

FIG.6

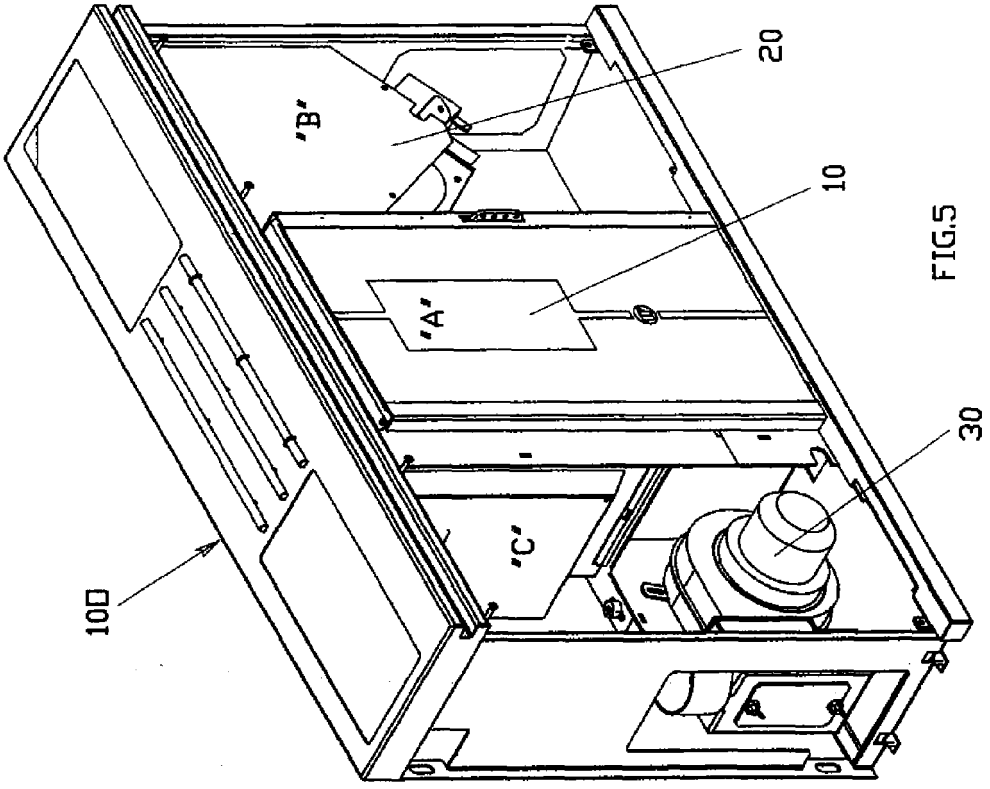

FIG.5

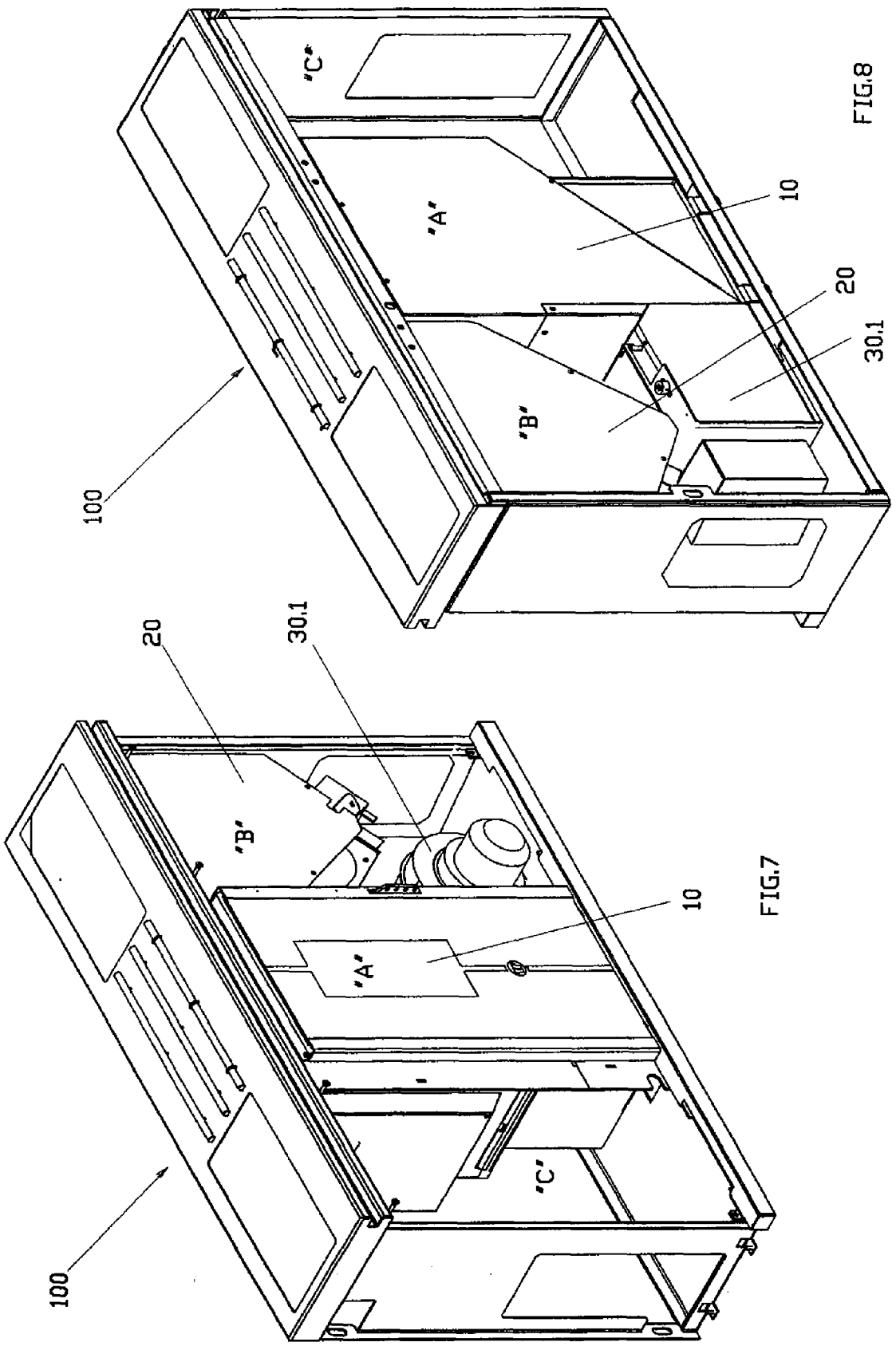

FIG.8

FIG.7

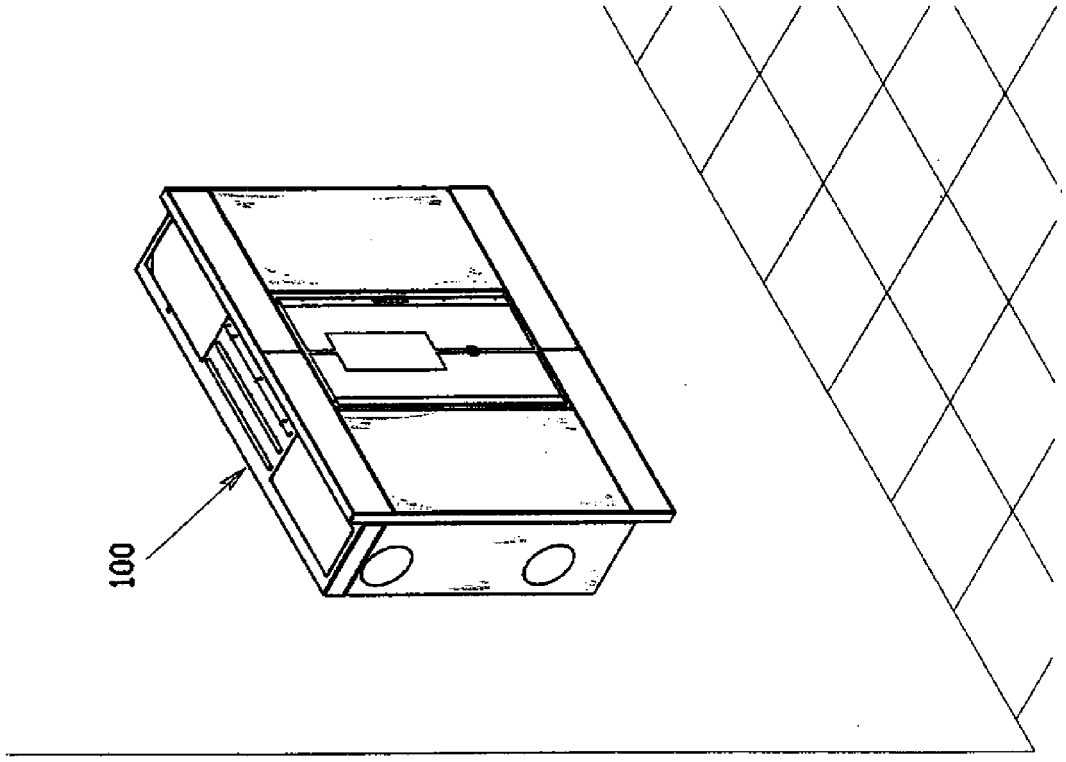

FIG.10

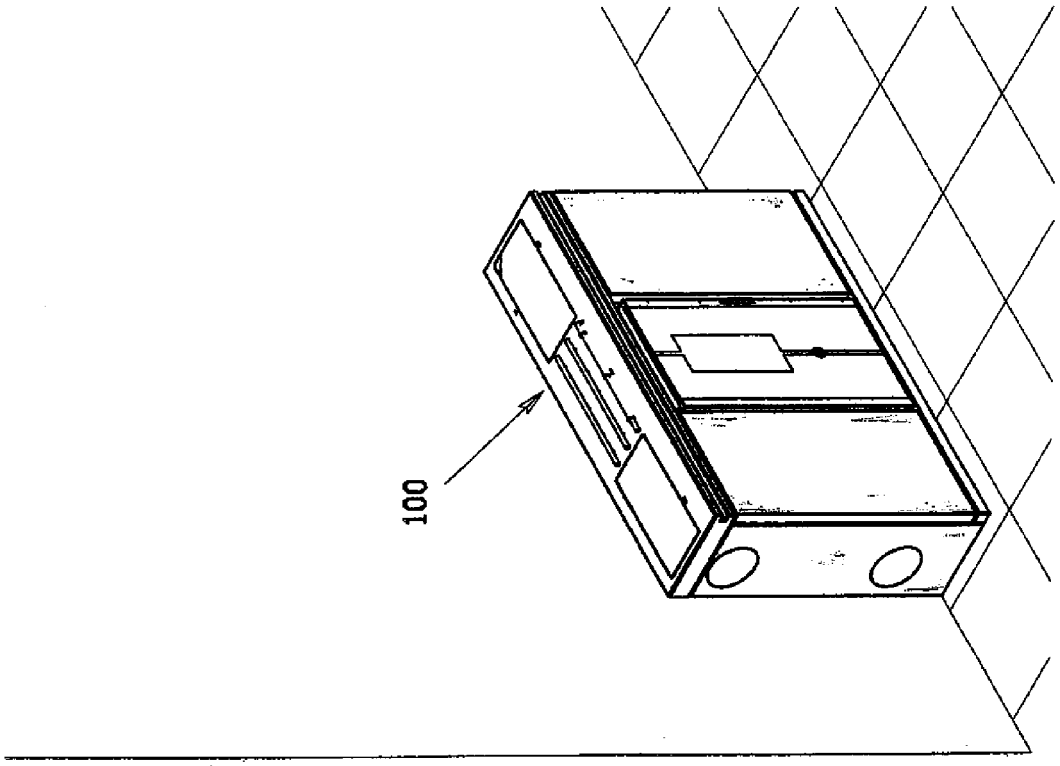

FIG.9

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EUROPEAN SEARCH REPORT

Application Number
EP 08 10 5923

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 455 136 A (LOHBERGER HEIZ & KOCHGERAETE T [AT]) 8 September 2004 (2004-09-08) * claims; figures *	1-4,6,7	INV. F24B1/02
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TECHNICAL FIELDS SEARCHED (IPC)

F24B
F24C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	6 March 2009	Rohr, Peter

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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06-03-2009

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82