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(54) Title: REFRIGERATED COMPARTMENT HAVING REDUCED DIMENSIONS

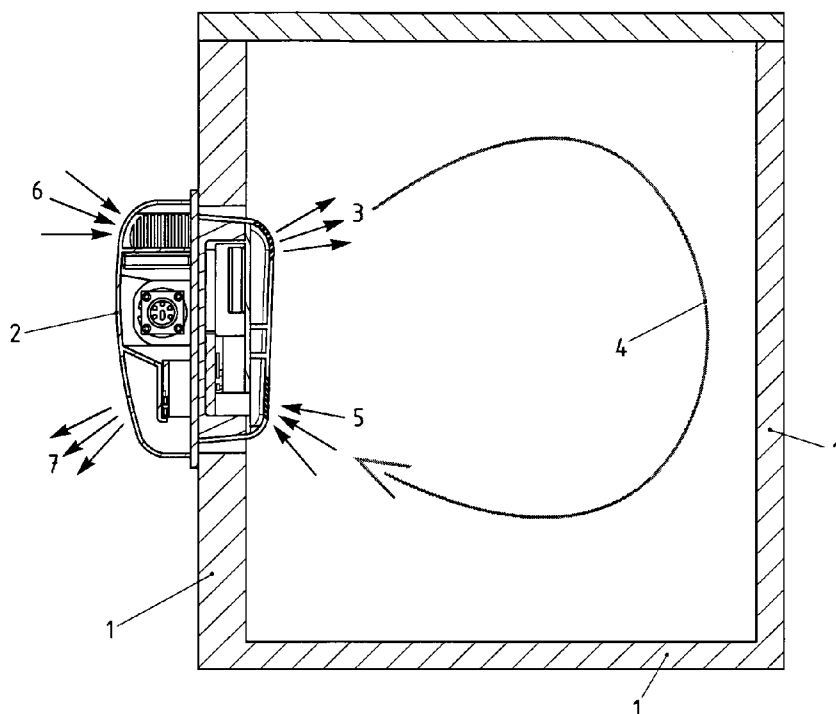


Fig. 1

(57) Abstract: The present invention refers to a refrigerated compartment having reduced dimensions, wherein the novelty basically resides in that said compartment comprises a compact refrigeration system (2) installed on one of the compartment walls (1), said system comprising a microcompressor (11, 22, 30), wherein said compartment walls (1) are thermoin-sulated.



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“REFRIGERATED COMPARTMENT HAVING REDUCED DIMENSIONS”

FIELD OF THE INVENTION

The present invention refers to a refrigerated compartment having reduced dimensions, such as, for example, boxes used in hospital area for storing and transporting vaccines, human or animal organs, blood pouches, or even for other purposes such as, for example, storage and transport of food products, as well as electronic equipments.

BACKGROUND OF THE INVENTION

As already widely known, there are small refrigerated compartments using thermoelectric technology. This technology has low efficiency, mainly when ambient temperature is higher, thus limiting its use with batteries, once autonomy time is reduced.

OBJECTS AND ADVANTAGES OF THE INVENTION

The object of the present invention is to provide a refrigerated compartment having reduced dimensions, with a compact refrigeration system having high efficiency and a substantially higher autonomy time compared to that of the prior art using battery.

This object is achieved by means of a refrigerated compartment having reduced dimensions comprising a compact refrigeration system installed on one of the compartment walls; said system comprising a microcompressor, and wherein the compartment walls are thermoinsulated.

This system may operate, for instance, in a voltage ranging from 12 to 220 volts, and termoinsulation may consist of, for example, expanded polystyrene or polyurethane.

Next, the invention will be described in more details by example on the basis of the attached figures.

BRIEF DESCRIPTION OF DRAWINGS

FIGURE 1 – is a side sectional view of a first embodiment of the compartment of the invention;

FIGURE 2 – is an exploded perspective view of a refrigeration system used in the compartment of figure 1;

FIGURE 3 – is a side sectional view of a second embodiment of the compartment of the invention;

FIGURE 4 – is a sectional view of other type of refrigeration system used in the compartment of figure 3;

FIGURE 5 – is a side sectional view of a third embodiment of the compartment of the invention;

FIGURE 6 – is a front view of the compartment of figure 5; and

FIGURE 7 – is an exploded perspective view of the embodiment of Figure 5.

DETAILED DESCRITPTION OF THE INVENTION

Figure 1 depicts a first embodiment of the compartment in accordance with the invention, with all thermoinsulated walls 1 and a compact refrigeration system 2 installed on one of the walls. From this figure it can be noted that cold air (see arrows 3) exits said cooler system, circulates within the compartment to cool the package (see arrow 4) and returns to the refrigeration system (see arrows 5). Arrows 6 show ambient air entering the system and arrows 7 show hot air exiting said system.

Figure 2 depicts an exploded perspective view of a compact refrigeration system used in the compartment in accordance with the invention, said system comprising a front cover 8, a fan 9, a condenser 10, a microcompressor 11, a structural plate 12, an insulation 13, a vacuum panel 14, an evaporator 15, a flow guide 16 and a rear cover 17.

Figure 3 depicts a second embodiment of said compartment in accordance with the invention, with all thermoinsulated walls 1, and another type of compact refrigerator system 2 which is installed on one of the walls. It can be observed from this figure that cold air (see arrows 3) exits the refrigeration system 2, circulates within said compartment in both sides (see arrow 4) and returns to the refrigeration system (see arrows 5). Arrows 6 show ambient air entering the system and arrows 7 show hot air exiting the system.

Figure 4 depicts a sectional view of another type of refrigeration system 2 utilized in the compartment of figure 3, said system comprising an evaporator fan 18, an insulation 19, an evaporator 20, a condenser 21, a microcompressor 22 and a condenser fan 23.

Figure 5 depicts a side sectional view of a third embodiment of the compartment in accordance with the invention, with thermoinsulated walls 1 and a compact refrigeration system 2 installed on the compartment front wall 24. In this embodiment, compartment 1 has a rectangular box shape vertically disposed. The refrigeration system 2 has outer plane surfaces, which bend towards the air inlet and outlet openings. From this figure, it can be noted that cold air exits the refrigeration system 2 through a lower inner opening (see arrow 3), circulates within the compartment to cool the package and returns to the refrigeration system by entering the top inner opening (see arrow 5). Ambient air enters the system through lower outer opening (see arrow 6) and hot air exits said system through said top outer opening (see arrow 7).

Figure 6 is a front view of the refrigerated compartment of figure 5.

Figure 7 depicts an exploded perspective view of the embodiment shown in figure 5, where compartment 1 and front 25, intermediate 26 and rear 27 portions of the compact refrigeration system 2 used in the compartment in accordance with the invention can be seen. This figure shows some inner

components of said refrigeration system 2, such as fans 28, a condenser 29, a microcompressor 30 and an evaporator 31.

In addition to these embodiments described above, the same inventive concept can apply to other alternatives and possibilities of using the present invention.

Therefore, it should be understood that the present invention is to be construed in a broad manner, and its coverage is determined under the terms of the appended claims.

CLAIMS

1. Refrigerated compartment having reduced dimensions, **CHARACTERIZED** in that it comprises a compact refrigeration system (2) installed on one of the walls (1) of the compartment, said system comprising a microcompressor (11, 22, 30), wherein said compartment walls (1) have a thermoinsulation.

2. Compartment, in accordance with claim 1, **CHARACTERIZED** in that the refrigeration system (2) operates at a voltage preferably in the range of 12 to 220 volts.

3. Compartment, in accordance with claim 1, **CHARACTERIZED** in that thermoinsulation consists of an expanded polystyrene layer.

4. Compartment, in accordance with claim 1, **CHARACTERIZED** in that said thermoinsulation consists of a polyurethane layer.

5. Compartment, in accordance with claim 1, **CHARACTERIZED** in that it consists of a vaccine storage box.

6. Compartment, in accordance with claim 1, **CHARACTERIZED** in that it consists of an organ storage box.

7. Compartment, in accordance with claim 1, **CHARACTERIZED** in that it consists of a food storage box.

8. Compartment, in accordance with claim 1, **CHARACTERIZED** in that it consists of a cabinet for electronic equipments.

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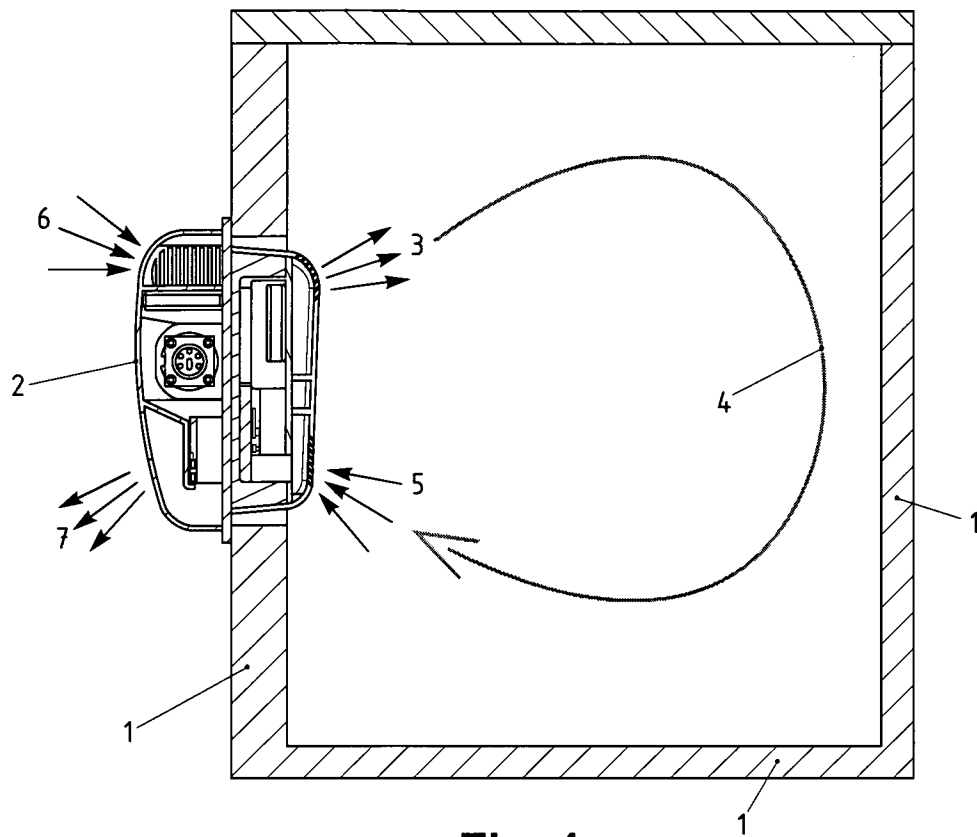


Fig. 1

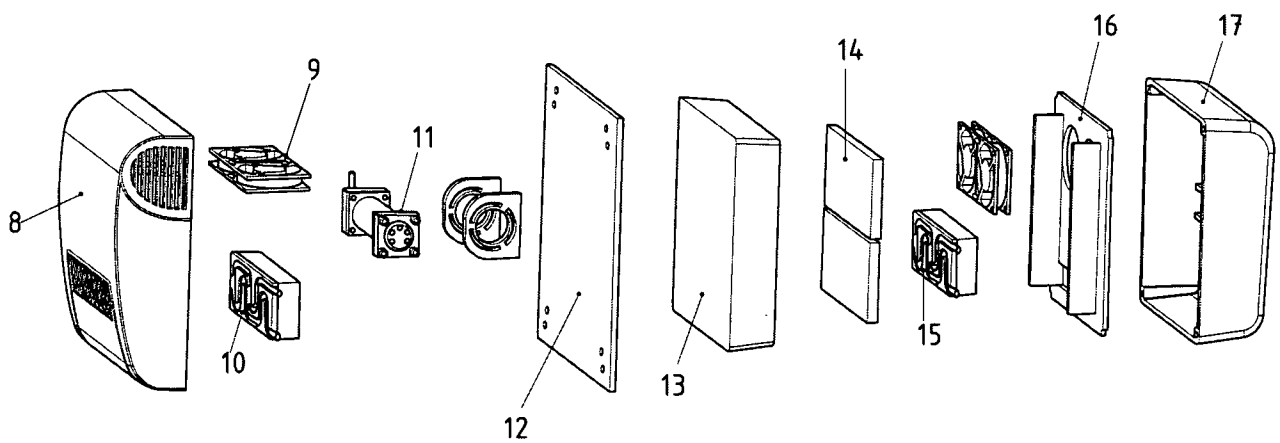


Fig. 2

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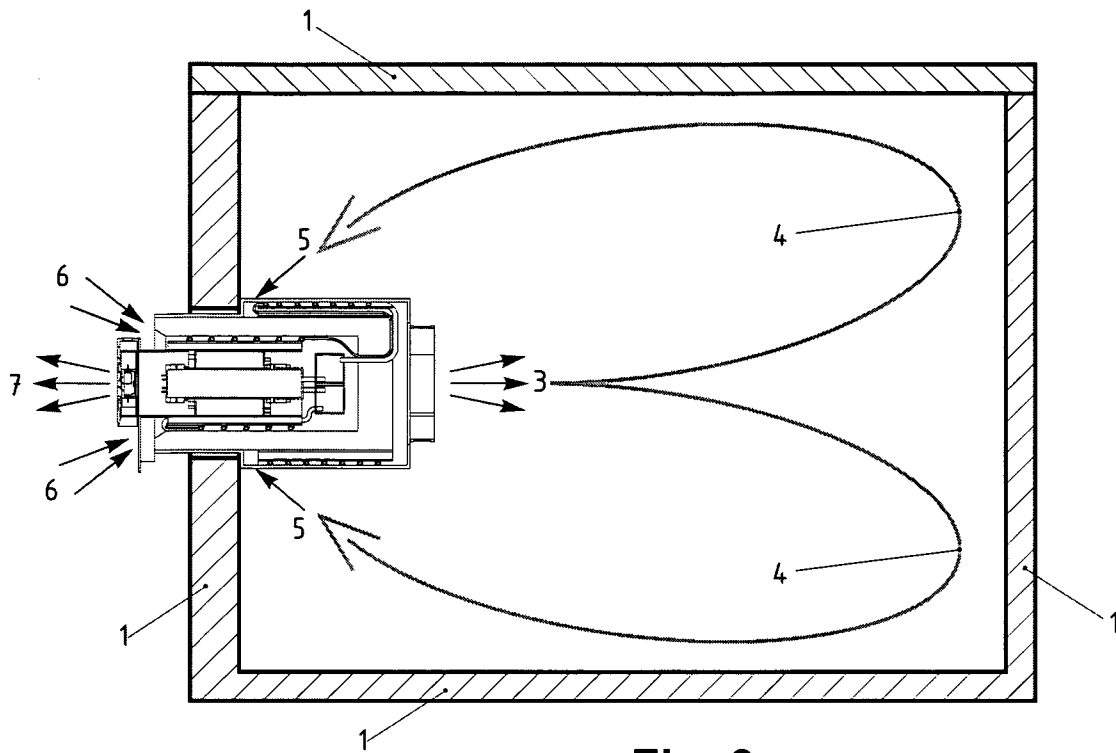


Fig. 3

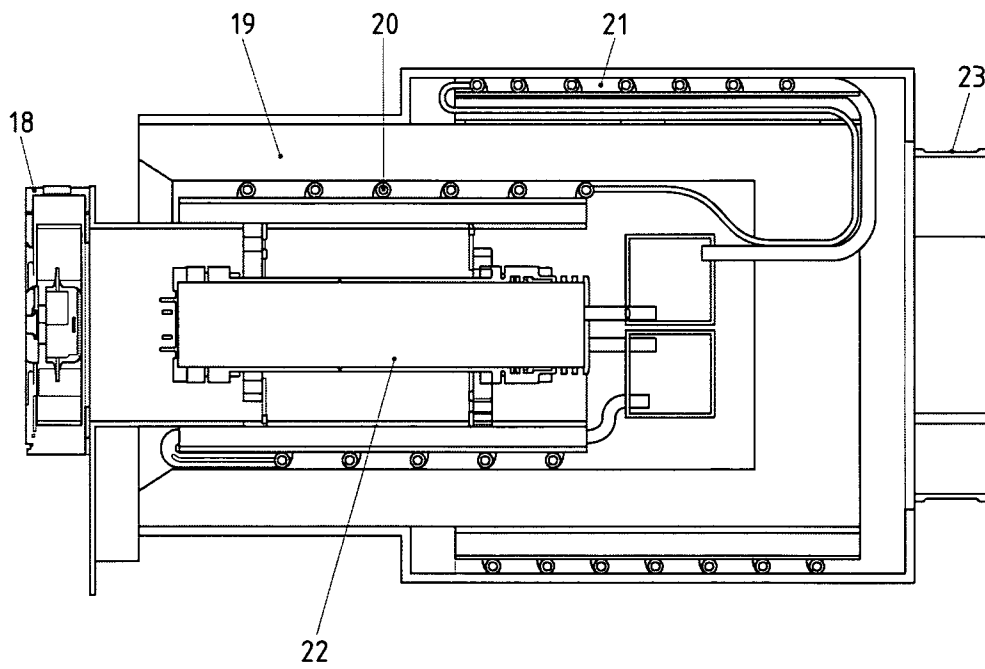


Fig. 4

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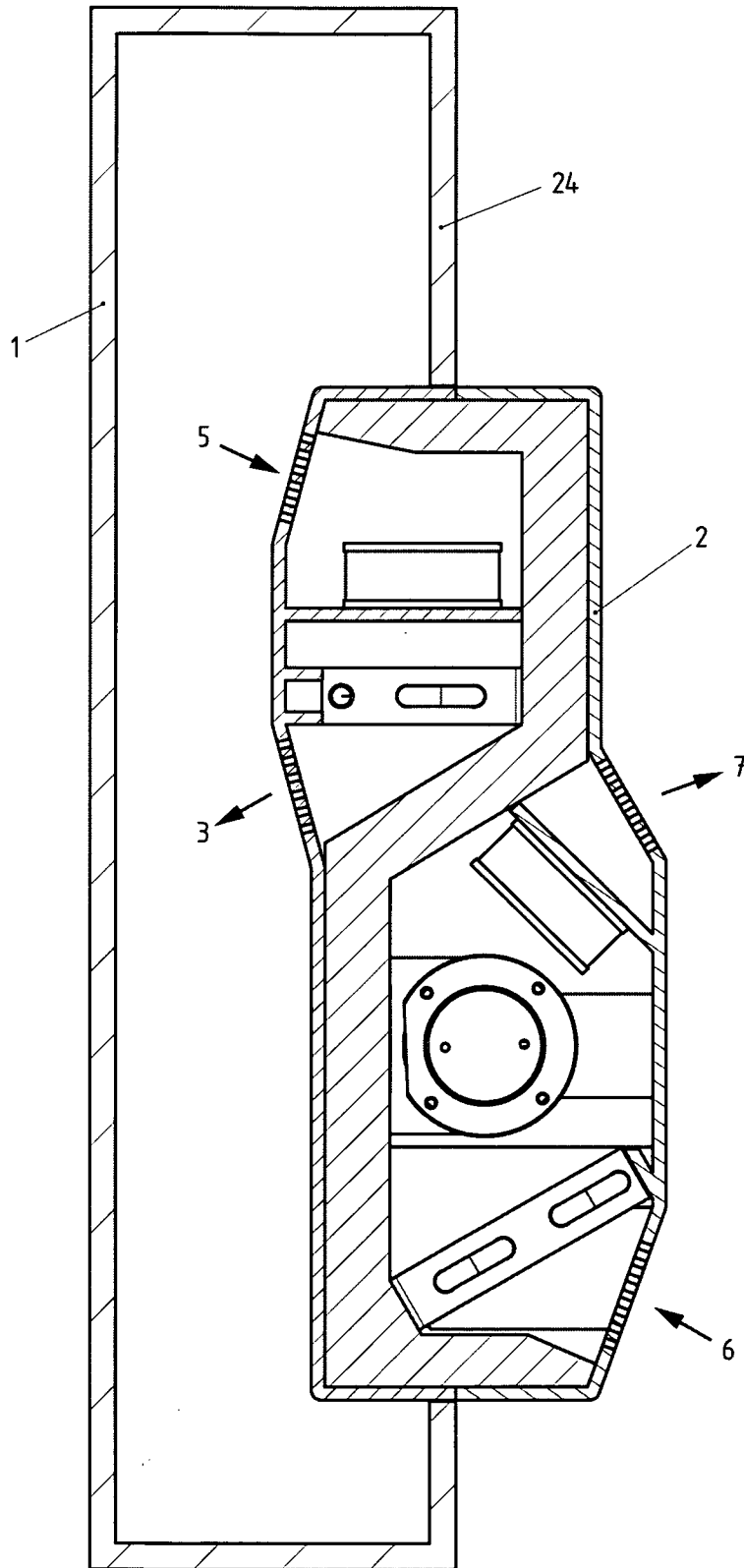


Fig. 5

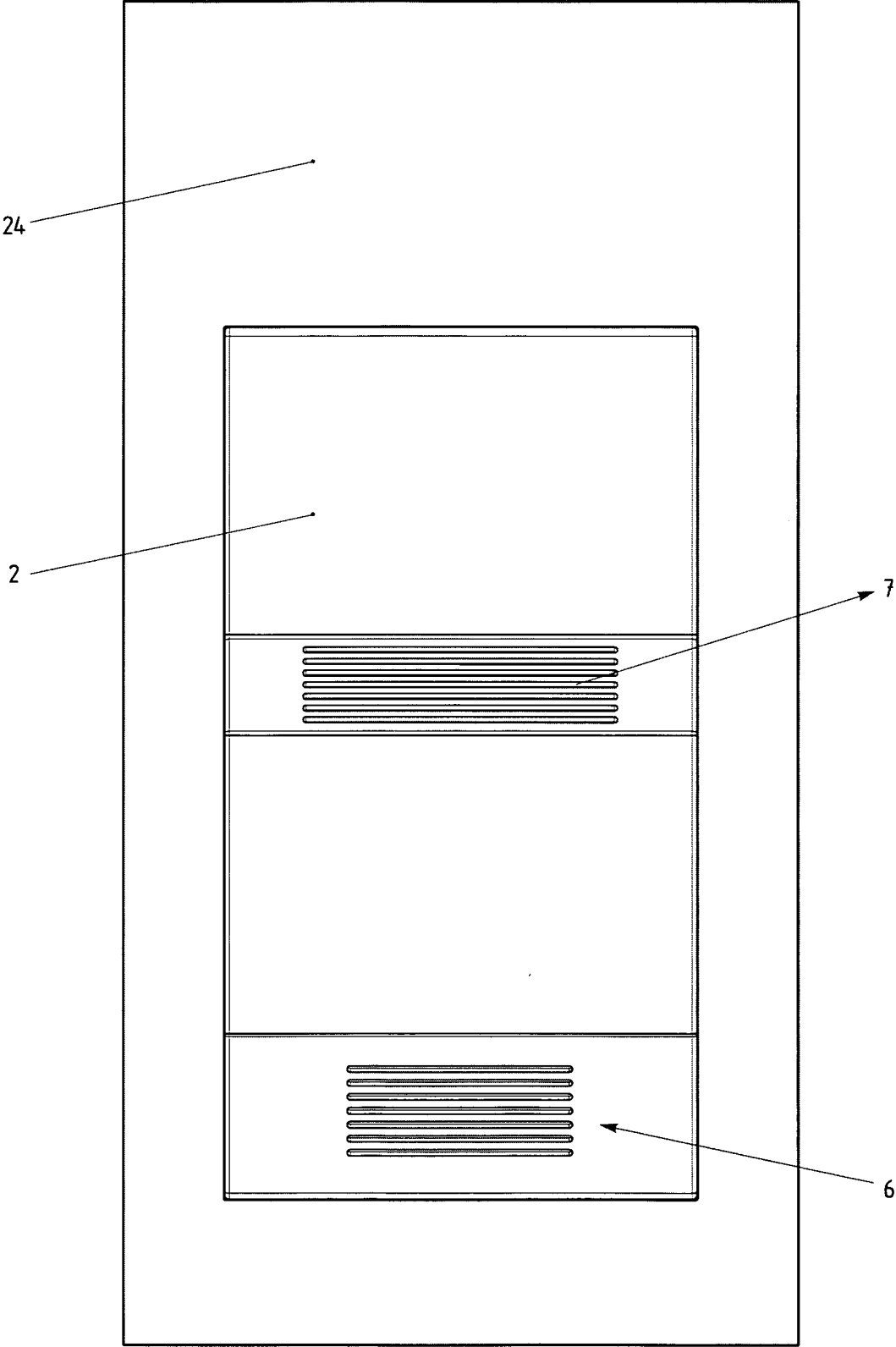


Fig. 6

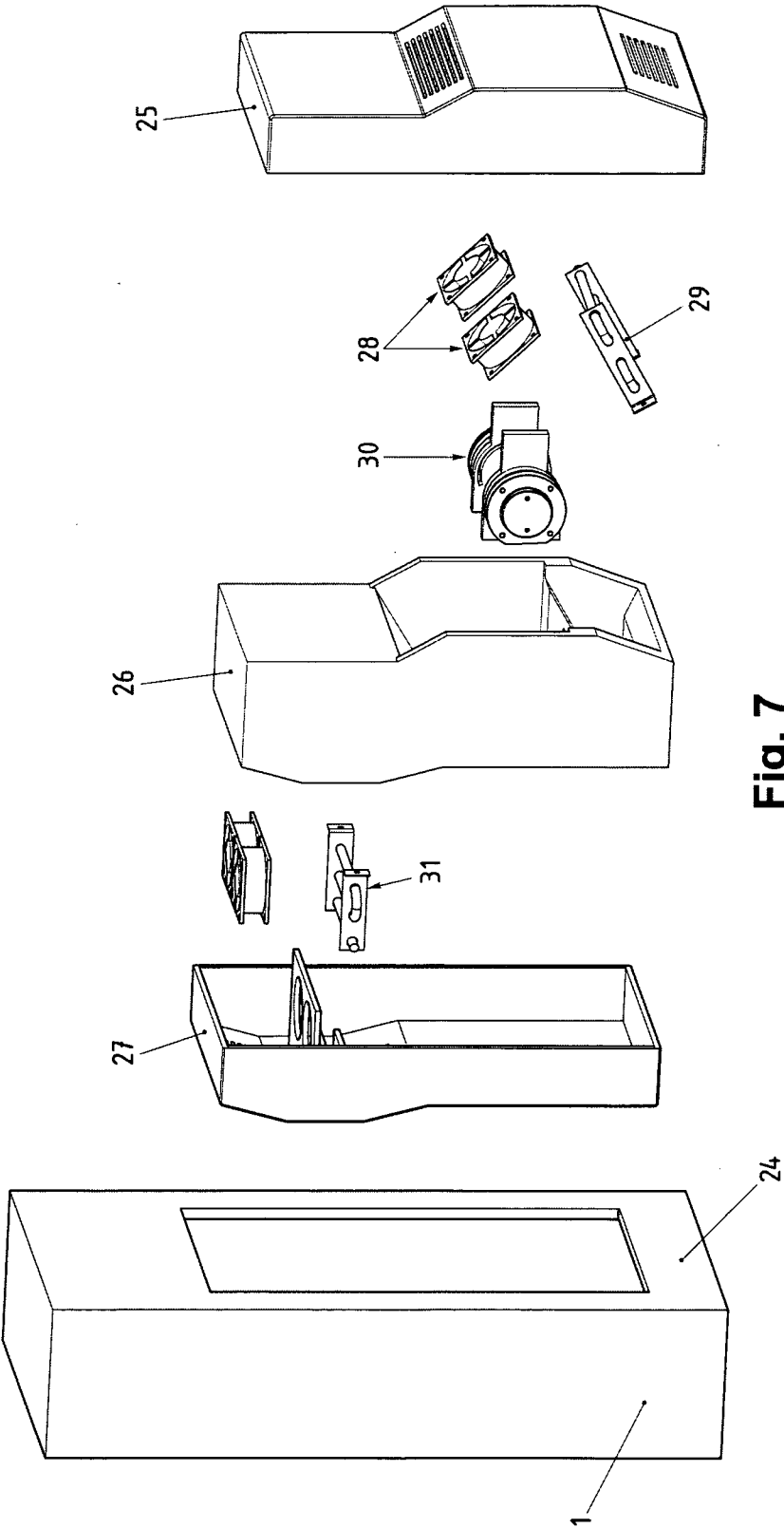


Fig. 7