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(54) Title: END COVER FOR A REFRIGERATOR DOOR

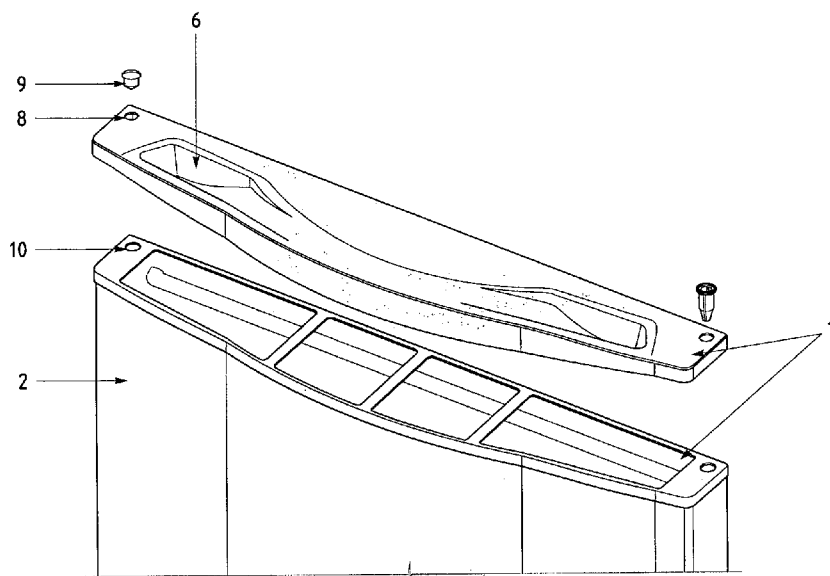


Fig.1

(57) Abstract: The present invention refers to an end cover (1) for the door of a refrigerator, or similar (2), which comprises an aesthetic finish part (3), a structural resistance part (4) which can be removably attached to the aesthetic finish part (3), and a sealing part (5) which can be removably attached to the aesthetic finish part (3), to the structural resistance part (4), or both. This modular aspect of the present invention (1) enables flexibility for the design of the cover (1), which results in the obtainment of a low-cost and simple-manufacturing cover.



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TITLE: "END COVER FOR A REFRIGERATOR DOOR"**FIELD OF THE INVENTION**

The present invention refers to an end cover for the door of a refrigerator, or similar, and, more specifically, a modular-type end cover.

5 BACKGROUND OF THE INVENTION

The closure of a refrigerated compartment of a refrigerator or a freezer is essential to guarantee suitable and efficient refrigeration. The entrance of hot air in the refrigerated compartment and the exit of cold air from the same affect the efficiency in the maintenance of the refrigeration and the energy consumption (excessive actuation of the compressor).

10 They can also cause the formation of water in the interior and exterior of the compartment due to the condensation phenomenon or the undesirable formation of ice. Thus, the manufacture of a refrigerator door is a very important factor to guarantee the efficient of such refrigerator.

15 The door of a refrigerator or a freezer generally comprises an external metallic plate and an internal coating made of plastic, between which an isolating material is injected (generally, polyurethane) and wherein the ends of the door are sealed with covers.

20 The end covers of the door can be capable of providing an efficient sealing in order to avoid the spillage or escape of polyurethane. Additionally, such end covers shall provide a suitable support for the hinge or articulation of the door and a nice aesthetic effect, preferably having a harmonized aspect with the other aesthetic details of the door and refrigerator.

25 Thus, the design of the cover shall be extremely careful, providing the necessary features, but without increasing, in an excessively manner, the cost of the final product. Since it is necessary to harmonize the cover with the design of the refrigerator, it is generally developed a specific cover for each product (refrigerator or similar), wherein the drawing of the internal part (non-exposed part) of the cover is optimized to provide suitable resistance and sealing.

Furthermore, taking into consideration the requirements of sealing, resistance and harmonization, the already known cover solutions are generally carried out using a single

material (generally, a plastic material), rendering the development of the cover more complex.

OBJECTIVES OF THE INVENTION

Thus, one of the objectives of the present invention is the provision of an end cover
5 for the door of a refrigerator, or similar, which meets the requirements of sealing, support and aesthetic finish, but which involves a simple and low-cost design.

Another objective of the invention is the provision of an end cover for the door of a refrigerator, or similar, having a modular configuration, which can be applied to several types of products, being only necessary to change one of the component parts of the module.

10 The present invention further aims to provide an end cover for the door of a refrigerator, or similar, which can be obtained from different materials, meeting more easily the requirements of sealing, support/resistance, harmonization, and modulation.

SUMMARY OF THE INVENTION

The present invention achieves the above-mentioned objectives by means of an
15 end cover for the door of a refrigerator, or similar, which comprises:

a structural resistance part;

an aesthetic finish part which can be removably attached to the structural resistance part; and a sealing part which can be removably attached to the aesthetic finish part, to the structural resistance part, or both.

20 In a preferred embodiment of the invention, the aesthetic finish part is sized to be fitted on the structural resistance part, and the sealing part is configured to be interposed between the structural resistance part and the refrigerator door, or similar. Preferably, the fit between the aesthetic finish part and the structural resistance part is effectuated by a snap-fit system.

25 In said preferred embodiment, the aesthetic finish part is manufactured using a first material, the structural resistance part is manufactured using a second material, said second material being different from the first one, and the sealing part is manufactured using a third material, said third material being different from the first and second ones.

The aesthetic finish part can have at least one handling recess, wherein, in this

case, the structural resistance part contains at least one cross opening configured to enable the passage of the handling recess.

The aesthetic finish part can further contain a passage orifice, which is sized to enable the easy passage of a locating pin, wherein, in this case, the structural resistance part has an orifice sized to receive such locating pin.

CONCISE DESCRIPTION OF THE DRAWINGS

The figures show:

Figure 1 – Figure 1 illustrates a cut view of a refrigerator door with a preferable embodiment of the end cover of the present invention.

Figure 2 – Figure 2 illustrates an exploded perspective view of the preferable embodiment of the end cover of the present invention.

Figure 3 – Figure 3 illustrates an inferior perspective view of the preferable embodiment of the end cover of the present invention.

Figure 4 – Figure 4 illustrates a cut view of a refrigerator door with a preferable embodiment of the cover end of the present invention. Such figure further illustrates the passage of a connection to the electronic interface of the refrigerator.

Figure 5 – Figure 5 shows a schematic illustration of the preferable fit medium of the component parts of the end cover of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will be described below, in a detailed manner, with basis on the examples of execution that are represented by the drawings.

Figure 1 shows a perspective view of the refrigerator door 2 (only part of it is shown) receiving an end cover 1, in accordance with a preferable embodiment of the present invention.

As better illustrated in figure 2, the cover 1 has a modular configuration and comprises an aesthetic finish part 3, a structural resistance part 4 to which the aesthetic finish part 3 is attached, and a sealing part 5 that is attachable to the structural resistance part 4.

This configuration results in a great flexibility for the design of the end cover 1, since

parts 3, 4, and 5 are independently manufactured, and they can be, for example, manufactured using different materials, which are suitable for a particular purpose.

Thus, the aesthetic finish part 3 can be manufactured using an aesthetically attractive material (such as, for example, a brighter material), without requiring that such material shall be strong enough to meet the requirement of structural resistance and without requiring that such material shall have any function of sealing. Additionally, as the function of part 3 is aesthetic, the thickness thereof can be reduced to diminish the cost of the material.

Preferably, the aesthetic finish part 3 is made of a thermoplastic polymeric material. However, materials such as ABS plastic, high impact polystyrene or polypropylene can be equally utilized.

As better illustrated in figures 2 and 3, the aesthetic finish part 3 is sized to be fitted on the structural resistance part 4, in such a way that, after installing the cover 1, the aesthetic finish part 3 is the only part visible to the user.

The aesthetic finish part 3 can further comprise a handling recess 6, whose function is to aid the user with opening the door 2.

In the embodiment illustrated by the drawings, the structural resistance part 4 is a holed part, whose function is to provide the required resistance for the cover 1, in order to form, in a suitable manner, the outline of the door, or provide the required resistance for the articulation.

Part 4 is sized to be introduced into the aesthetic finish part 3, wherein, after the insertion, such parts 3 and 4 remain juxtaposed.

Preferably, the structural resistance part 4 is made of a thermoplastic polymeric material. However, materials such as ABS plastic, high impact polystyrene or polypropylene can be equally utilized.

The holed configuration of the structural resistance part 4 enables the formation of openings 7 through which the walls of the handling recess 6 pass (see figure 3).

As better illustrated in figure 2, in the preferred embodiment of the invention, the sealing part 5 comprises a substrate that is conformed to the same outline of parts 3 and 4, which is interposed between the structural resistance part 4 and the end of the refrigerator

door 2. This substrate 5 can be obtained from any suitable material, preferably a flexible plastic or paper.

It shall be noted that, although the preferred embodiment provides the interposition of the sealing part 5 between the part 4 and the door 2, the sealing part 5 could be attached by a different manner, such as, for example, interposing the same between parts 3 and 4.

Figures 4 and 5 show, in detail, the assembly of the aesthetic finish part 3 on the structural part 4. In the preferred embodiment of the present invention, parts 3 and 4 are assembled by means of a pressure fit of snap-fit type, wherein one or more pins 9 are further provided, which are respectively located in one or more orifices 10 of the structural resistance part 4 and easily passes by the corresponding orifices 8 of the aesthetic finish part 3.

It shall be emphasized that the passage orifice 8 of the aesthetic finish part 3 is formed with a surplus destined for the passage of wires and cables. This surplus enables, for example, the passage of electrical cables of the refrigerator, without needing conduits or additional passages.

Accordingly, figure 4 shows, in a schematic manner, the passage of a wire 11 derived from the electronic interface 12 of the refrigerator door, such wire passing through the interior of the door and through the passage orifice 8 of the aesthetic finish part 3; in such a way that its end remains free for external connection.

Figure 5 shows, in detail, the snap-fit system involving the aesthetic finish part 3 and the structural resistance part 4.

Thus, in the preferred embodiment of the present invention, the edge of the aesthetic finish part 3 comprises a cross section 3t in the form of a reverse L, wherein the inferior end has a interlocking lug 13, and the edge of the structural resistance part 4 has an interlocking stop 14 that cooperates with the interlocking lug 13 to carry out the fit between the parts (see cross section 4t showed in figure 5).

It shall be understood, however, that any fit medium could be utilized within the scope of the present invention.

The main advantage of the cover 1 of the present invention addresses exactly in the

modular aspect thereof, which enables the component parts to be independently manufactured and designed in accordance with its purpose (aesthetics, resistance, and sealing). Thus, parts 3, 4, and 5 can be conformed to the most suitable outline, material, and size, enabling the development of optimized parts and the achievement of an improved cover having a low cost of manufacture.

Additionally, the modular configuration enables an easy substitution of any part. This is particularly useful for the aesthetic finish part, which can be substituted anytime it presents wear by use (increasing the durability of the cover 1).

Additionally, the modular aspect enables a batch production of the component parts, since the structural resistance part 4 and the sealing part 5 can be used in different types of product, and only the aesthetic finish part 3 shall meet the requirement of aesthetic harmonization with the design of the refrigerator (i.e., the cover 1 of the present invention can be utilized with products of different aesthetic features, provided that the finish part 3 is modified).

It shall be understood that the description provided with basis on the above-mentioned figures only refers to feasible embodiments for the end cover of the present invention. The real scope of the object of the present invention is defined in the appended claims.

SET OF CLAIMS

1. An end cover (1) for the door of a refrigerator, or similar (2), **CHARACTERIZED** in that it comprises:

a structural resistance part (4);

5 an aesthetic finish part (3) which can be removably attached to the structural resistance part (4); and

a sealing part (5) which can be removably attached to the aesthetic finish part (3), to the structural resistance part (4), or both.

2. An end cover (1), in accordance with claim 1, **CHARACTERIZED** in that the
10 aesthetic finish part (3) is sized to be fitted on the structural resistance part (4).

3. An end cover, in accordance with claim 2, **CHARACTERIZED** in that the aesthetic finish part (3) is fitted on the structural resistance part (4) by means of a fit of snap-fit type.

4. An end cover, in accordance with one of the preceding claims 1 to 3,
15 **CHARACTERIZED** in that the sealing part (5) is configured to be interposed between the structural resistance part (4) and the door of the refrigerator, or similar (2).

5. An end cover, in accordance with one of the preceding claims 1 to 4,
CHARACTERIZED in that the aesthetic finish part (3) is manufactured using a first material, the structural resistance part (4) is manufactured using a second material, said second
20 material being different from the first one, and the sealing part (5) is manufactured using a third material, said third material being different from the first and second ones.

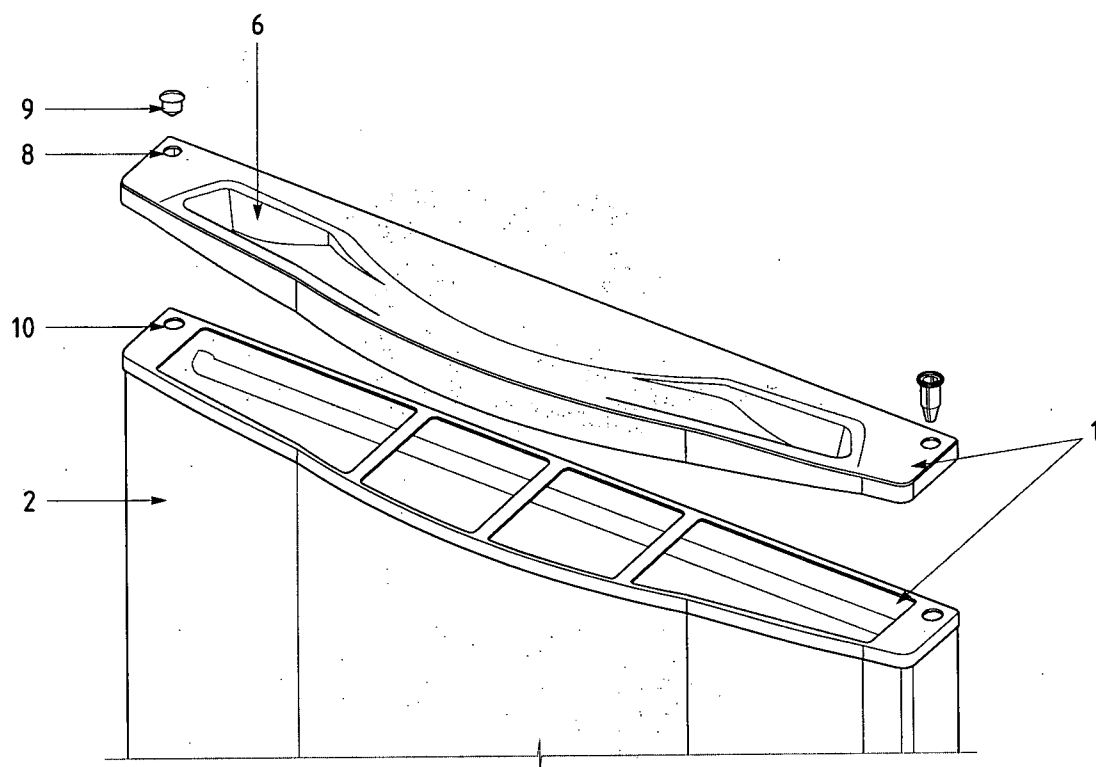
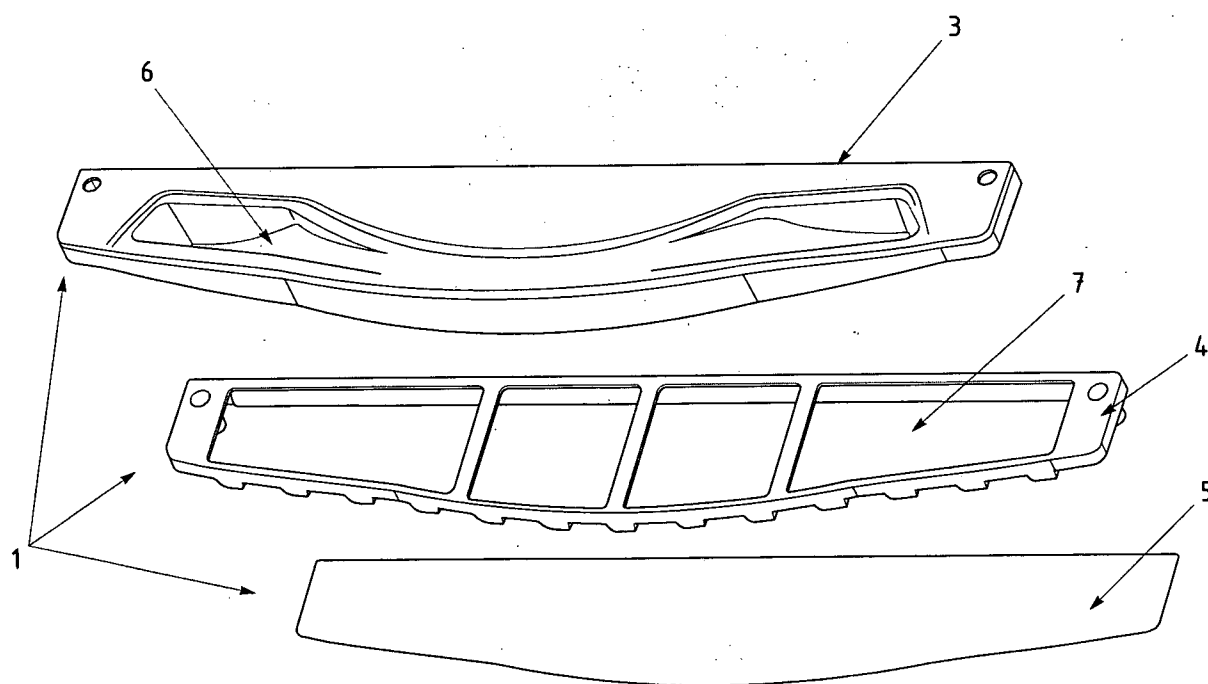
6. An end cover (1), in accordance with one of the preceding claims 1 to 5, **CHARACTERIZED** in that the aesthetic finish part (3) comprises at least one handling recess (6).

25 7. An end cover, in accordance with claim 6, **CHARACTERIZED** in that the structural resistance part (4) comprises at least one cross opening (7) being configured to enable the passage of the handling recess (6).

8. An end cover (1), in accordance with one of the preceding claims 1 to 7, **CHARACTERIZED** in that the aesthetic finish part (3) has a passage orifice (8) sized to

enable the easy passage of a locating pin (9).

9. An end cover (1), in accordance with claim 8, CHARACTERIZED in that the structural resistance part (4) has an orifice (10) that is sized to receive the locating pin (9).

**Fig.1****Fig.2**

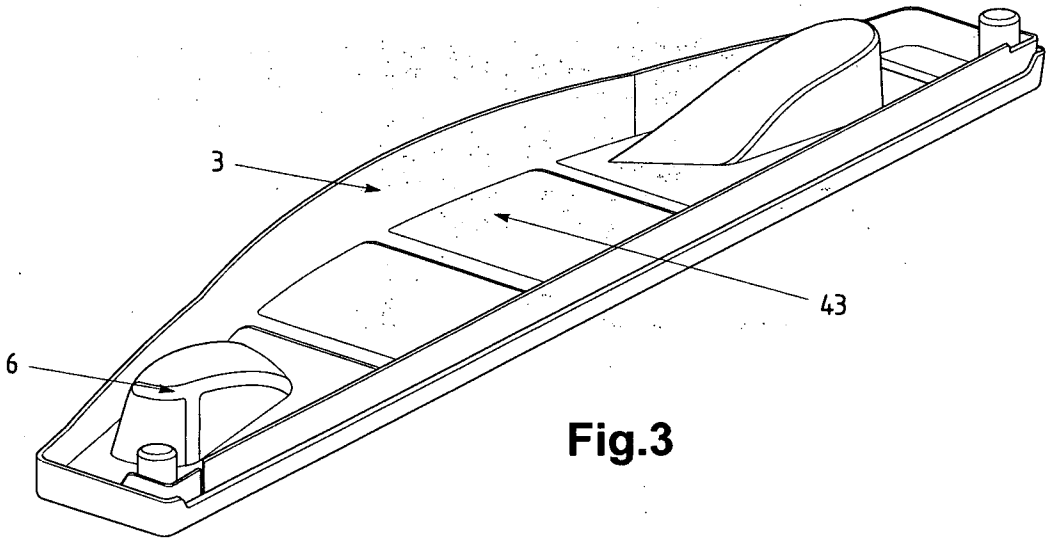


Fig.3

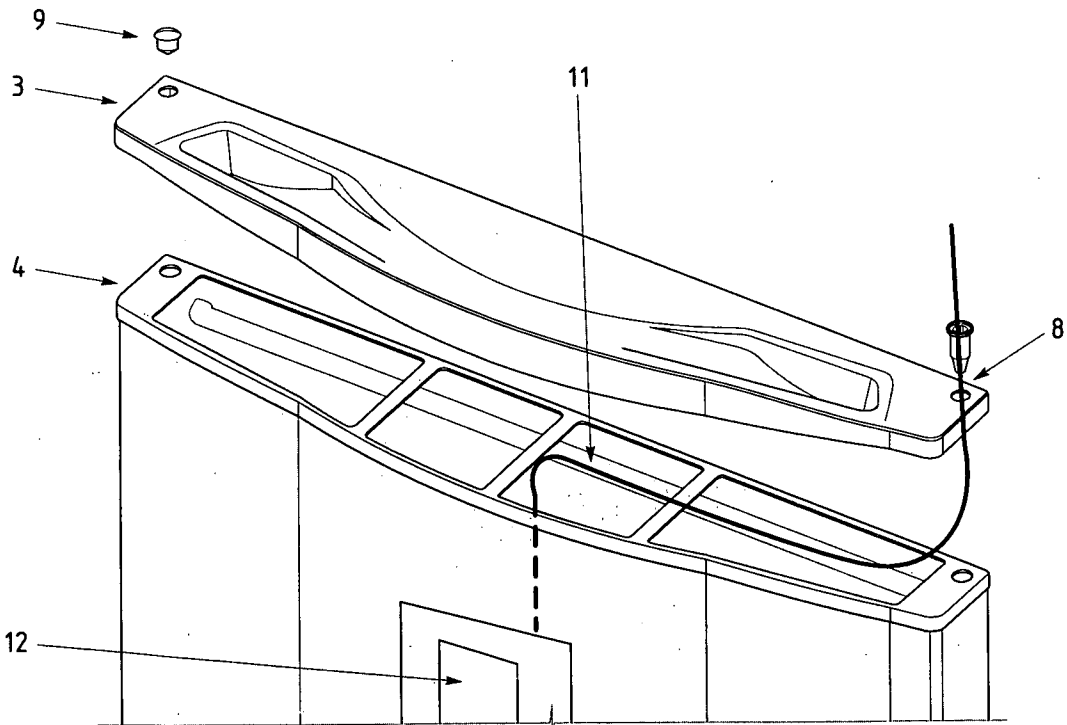


Fig.4

