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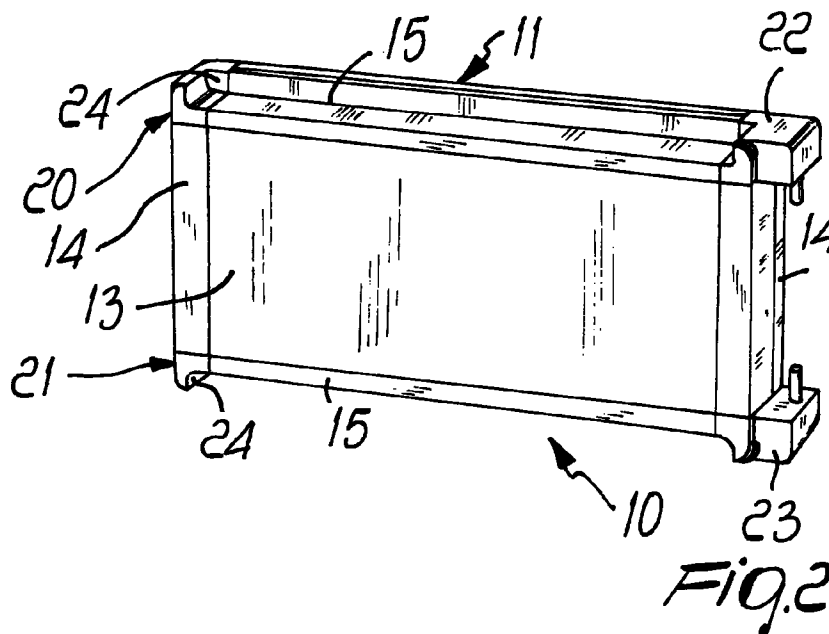
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(54) Door for commercial furniture

(57) The present invention relates to a door (10) for commercial furniture, characterized in that it comprises a folded metallic front plate (12), a folded metallic rear plate (13), and a frame (14,15) made of plastics. The front and rear plates (12,13) constitute, in association with the frame (14,15), the box-like body (11) of the door,

which can be filled with thermally insulating material such as foamed polyurethane or the like. Respective lugs (28) extend monolithically from two corner regions (22,23) of the frame (14,15) that are arranged at the ends of a common edge, each lug (28) forming the male or female component of an external back hinge.



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Description

The present invention relates to a door for commercial furniture.

Conventional doors for commercial furniture, such as refrigerators for bars and restaurants, are currently available.

Typically, such doors are made of sheet metal.

More specifically, they are usually composed of two metal sheets, for example made of stainless steel, which are blanked, bent, and mutually joined so as to form a box-like structure which, in the case of use in refrigerators or in pieces of furniture requiring particular heat insulation features, is filled with foamed insulating material, such as polyurethane or the like.

Conventional doors, besides having handle-like elements, which are provided to the user for closing and opening and are obtained either by pressing the front metal sheet or by welding separate parts prior to assembly, also have elements for rotatable coupling to the pieces of furniture for which they are intended.

These rotatable coupling elements typically constitute the male or female component of a hinge associated with the corresponding component, which is fixed to the piece of furniture, when the door is assembled.

Substantially two different embodiments for these hinge components related to the door are currently known.

A first embodiment entails, in a back region of the door, the application of an internal reinforcement plate for each hinge element to be applied, said plate being perforated together with the back of the door, thus connecting the male or female hinge element externally to said door by means of screws or other threaded elements.

A second embodiment entails the formation, at the transverse edges of the door, of seats providing the female components of the hinges, or the fixing of pivots providing the male components of said hinges.

The above described conventional embodiments, despite achieving their purpose, are not free from drawbacks.

In particular, the first embodiment is rather complicated from the point of view of production, since it is necessary to fix the plate, usually by welding, perforate said plate, and apply the hinge element, which is a separate part, prior to assembly.

Furthermore, in this embodiment, with prolonged use, plays may form in the threaded couplings, consequently causing poor operation of the door.

The second embodiment has the main drawback that, in order to achieve door closure and opening, it must provide for chamfering of the corner of the piece of furniture that corresponds to the hinges; its opening kinematics would in fact unavoidably make it interfere with said corner, as experience has shown.

Furthermore, although both embodiments are reversible, that is to say, doors manufactured as described above can be fitted equally to the right side or

to the left side of the piece of furniture, the formation of handles by pressing the front metal sheet or the application of said separately provided handles eliminates the above mentioned reversibility, and this requires not only greater skill on the part of the assembly personnel but also separate production lines.

Finally, both embodiments have systems for hinging to the piece of furniture that are clearly visible and therefore certainly do not have an optimum aesthetic effect.

A principal aim of the present invention is to provide a door that solves the drawbacks of the conventional types pointed out above, in particular by offering complete reversibility, as well as an opening and closing kinematics that never makes it interfere with the piece of furniture.

In relation to this aim, an object of the present invention is to provide a door that is constructively very simple and is obtained while preserving, if not improving, good structural strength features.

Another object of the present invention is to provide a door having a pleasant aesthetics and in which the handles are concealed adequately for this purpose.

Another object of the present invention is to provide a door that allows easy cleaning and does not have regions where dirt accumulates, with a high bacteriological risk.

Another object of the present invention is to provide a door that can be manufactured with conventional technologies and the costs whereof are competitive with those of currently commercially available doors.

Another object of the present invention is to provide a door that is ergonomically competitive with conventional models.

This aim, these objects, and others which will become apparent hereinafter are achieved by a door for commercial furniture, according to the invention, characterized in that it comprises the following combination of elements:

- a folded metallic front plate;
- a folded metallic rear plate;
- a frame made of plastics;

said front and rear plates constituting, in association with said frame, the box-like body of said door, which can be filled with thermally insulating material such as foamed polyurethane or the like; respective lugs extending monolithically from two corner regions of said frame that are arranged at the ends of a common edge, each lug forming the male or female component of an external back hinge.

Further characteristics and advantages of the present invention will become apparent from the detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is an axonometric front view of a door according to the invention;

figure 2 is an axonometric rear view of the door according to the invention;

figure 3 is an axonometric view of a detail of the door according to the invention;

figure 4 is an axonometric exploded view of two details related to a door according to the invention; figure 5 is a partially sectional front view of details, upon assembly, of the door according to the invention;

figure 6 is an axonometric view of another detail of the door according to the invention;

figure 7 is a transverse sectional view of a further detail of the door according to the invention.

With reference to figures 1 to 7, a door for commercial furniture, according to the invention, is generally designated by the reference numeral 10.

The door 10 is constituted by a box-like body 11 formed by associating a front metal plate 12, a rear metal plate 13, two tubular uprights 14, and two likewise tubular cross-members 15.

In particular, the front plate 12 and the rear plate 13 are both folded and made, in this case, of plastic-coated sheet metal, whereas the two uprights 14 and the two cross-members 15 are constituted by an extruded element made of plastics.

Furthermore, the two cross-members 15 are identical one another and are substantially L-shaped, so that each one forms a concealed handle, their concave portions being directed towards the piece of furniture (not shown in the figures) on which the door 10 will be mounted.

The association between the front plate 12, the rear plate 13, the uprights 14, and the cross-members 15 occurs by mutual interlocking.

In particular, both the uprights 14 and the cross-members 15 have, in outer edge regions 16 and along their entire length, two flexible flaps 17 and 18 having respective facing free ends; the flap 17 accommodates by abutment, in its inner part, the folded portion of the front metal plate 12, whereas the flap 18 provides a stop element ensuring the fixing of said plate.

The rear plate 13 is fixed to the uprights 14 and to the cross-members 15 by insertion in slots 19 formed therein and in which its folded portion produces slight interference.

The uprights 14 and the cross-members 15 substantially produce a perimetric frame for the front plate 12 and for the rear plate 13; said frame is fixed further by four corner elements designated by the reference numerals 20 to 23 in the figures.

In particular, the corner elements 20 and 21 are identical one another, and each one is constituted by a shaped body 24 preferably made of injection-molded plastics and from which two substantially prism-shaped mutually perpendicular pins, not shown in the figures, protrude; each one of said pins fits respectively inside the cavities of a corresponding upright 14 and of a corresponding cross-member 15.

The corner elements 22 and 23 are identical one another, and each one is constituted by a body 25 preferably made of injection-molded plastics, from which two substantially prism-shaped and mutually perpendicular pins 26 and 27 protrude together with a substantially prism-shaped lug 28 that remains substantially on the plane of arrangement of said body 11.

In particular, each one of the pins 26 and 27 fits, upon assembly, in a corresponding cross-member 15 and upright 14.

The lug 28, in this case, is perforated so as to form a blind hole 29, inside which a pivot 30 is inserted; said pivot forms, in association with the lug 28, the male component of an external back hinge the female component whereof is rigidly coupled to the piece of furniture which, as mentioned, is not illustrated in the figures.

Furthermore, it should be noted that in a region of the body 25 that substantially corresponds to a corner of the door 10 after assembly has occurred, there is a radiused raised trimming portion 31 that constitutes a stop element and a register for the edge of the front plate 12.

Finally, there is a per se known magnetic closure, generally designated by the reference numeral 32. The body 11, once assembled, is filled with thermally insulating material, such as foamed polyurethane or the like.

In practice, it has been observed that the intended aim and objects have been achieved; in particular, it should be noted that the door according to the invention, in addition to considerable constructive simplicity, has considerable overall compactness and full reversibility, since substantially identical handles are provided at the cross-members.

It should also be noted that the hinge components related to the door, executed according to the invention, have considerable constructive simplicity, with a saving in production steps with respect to conventional types; they in fact require only assembly by simple insertion in the uprights and in the cross-members after being produced by injection-molding plastics or by virtue of another production process.

The hinge components according to the invention furthermore produce a door movement by virtue whereof said door never interferes with the piece of furniture on which it is mounted.

The particular formal execution of the hinge components furthermore causes them to be fully uniform from the visual point of view with the door, and this provides a pleasant aesthetic effect.

It should also be noted that the shape of the door according to the invention, being without regions that are particularly difficult to reach for cleaning after assembly, accordingly allows assured and effective hygiene.

Furthermore, the radiused lines, as well as the frame of tubular elements made of plastics, give the operator assurance of safe use without danger of cuts or other hazards.

The present invention is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept; thus, for example, instead

of inserting the pivot in the lug, it is possible to leave the hole therein, thus constituting the female component of the hinge, and the pivot can be provided monolithically with the lug.

Furthermore, all the details may be replaced with other technically equivalent elements. 5

In practice, the materials employed, as well as the dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs. 10 15

Claims

1. Door for commercial furniture, characterized in that it comprises the following combination of elements: 20

- a folded metallic front plate;
- a folded metallic rear plate;
- a frame made of plastics;

said front and rear plates constituting, in association with said frame, the box-like body of said door, which can be filled with thermally insulating material such as foamed polyurethane or the like; respective lugs extending monolithically from two corner regions of said frame that are arranged at the ends of a common edge, each lug forming the male or female component of an external back hinge. 25 30

2. Door according to claim 1, characterized in that its perimetric profile is shaped so as to form at least one handle that is concealed from sight by said front metal plate. 35

3. Door according to claim 1, characterized in that said frame comprises two tubular uprights, two tubular cross-members, and four corner elements, two of said corner elements, which upon assembly are arranged at the ends of a common upright or of a common cross-member, extending so that each one monolithically forms said lug that forms the male or female component of an external back hinge. 40 45

4. Door according to claim 3, characterized in that each one of said corner elements has two mutually substantially perpendicular pins that are inserted, upon assembly, in said cross-members and said uprights to provide a frame for said front metal plate and said rear metal plate. 50

5. Door according to claim 3, characterized in that said cross-members are substantially L-shaped, with a concave portion that is directed towards the piece of furniture on which said door is mounted, so as to 55

form handles that are concealed externally by said front metal plate.

6. Door according to one or more of the preceding claims, characterized in that said lugs that form components of respective hinges remain substantially on the plane of arrangement of said box-like body.
7. Door according to one or more of the preceding claims, characterized in that said front metal plate and said rear metal plate are connected to said uprights and to said cross-members by interlocking.

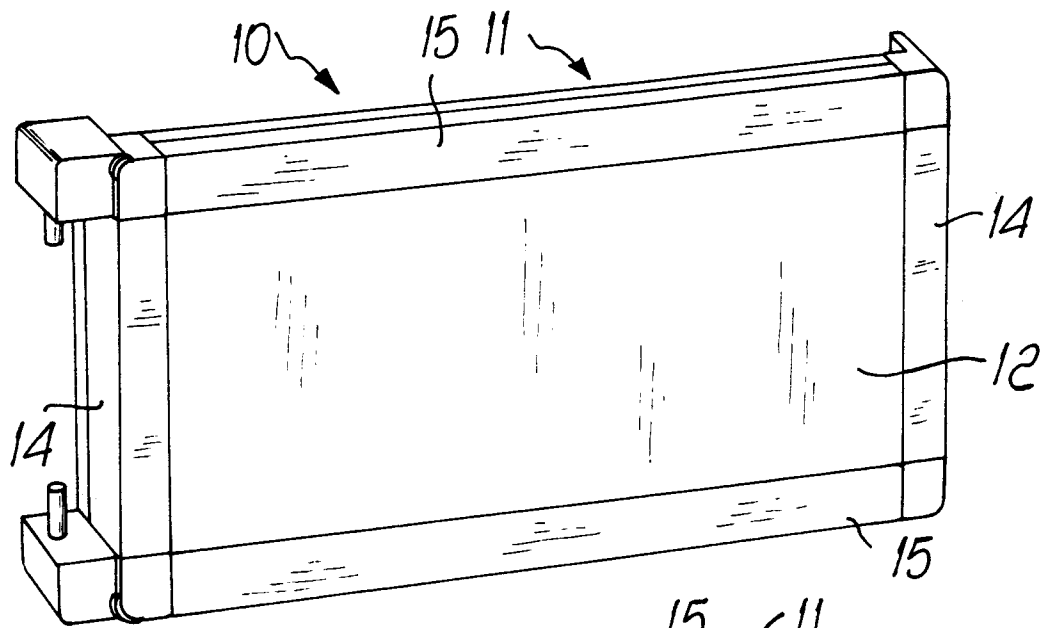


Fig. 1

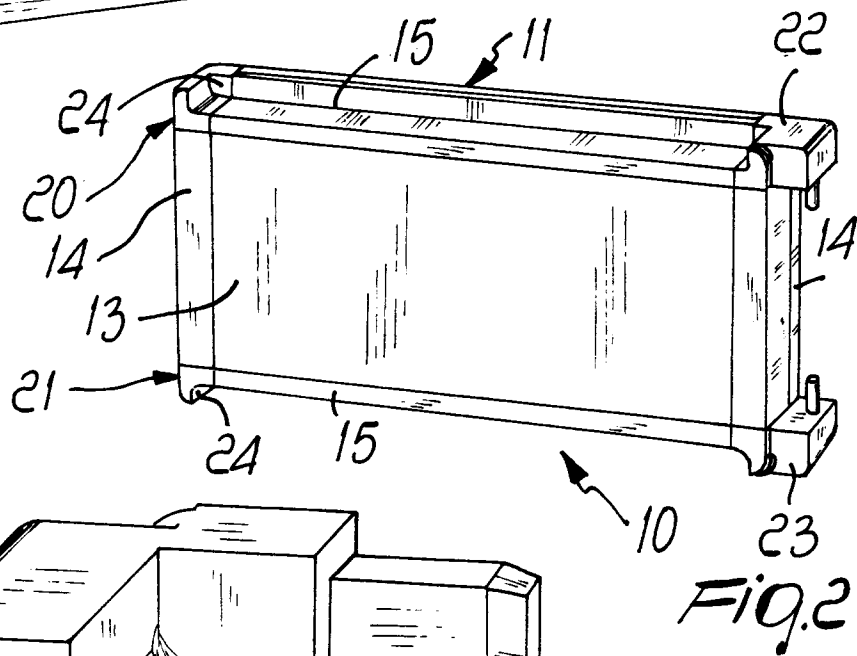


Fig. 2

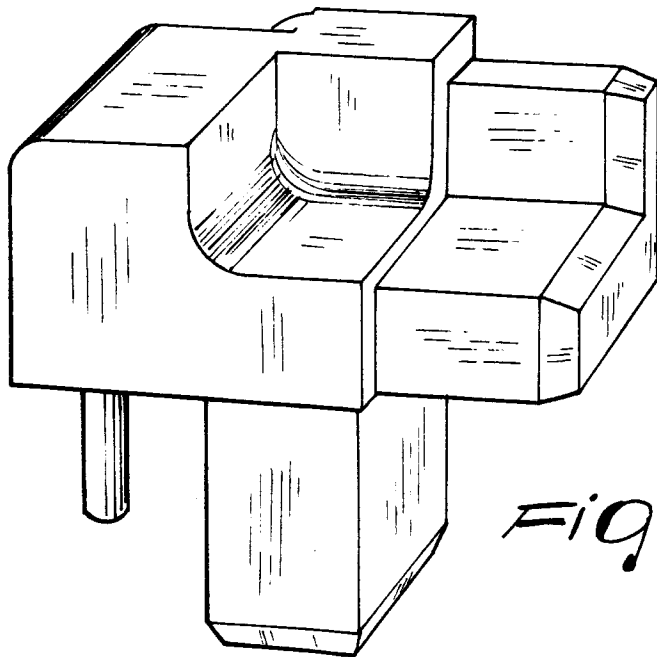


Fig. 3

