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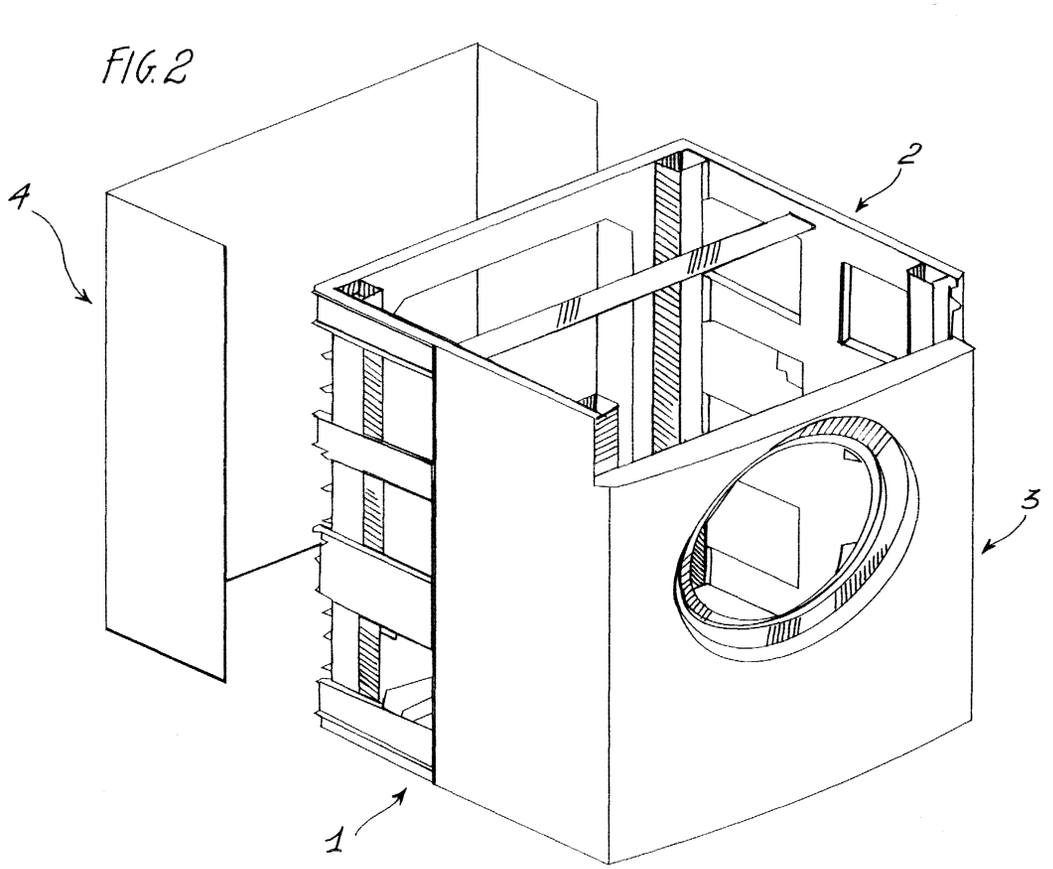
(54) A case for appliances, in particular washing machines

(57) A case for appliances, in particular laundry washers, comprising a frame, whereto is destined to be anchored a dynamic appliance apparatus, and an exterior body constituted by a plurality of panels connected to said frame by coupling means, said frame and said body being made of plastic material.



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Description

[0001] The present invention relates to a case for electrical appliances, in particular laundry washers. Although hereafter a case for this type of appliance shall be described in detail, it will also be understood that the invention can also be applied to other appliances, for instance to a dishwasher.

[0002] As is well known, current laundry washers have a metal plate case. For instance, in a model currently available on the market, the watertight cylindrical container is anchored by means of shock absorbers to a base plate, folded orthogonally upwards both anteriorly and posteriorly, where it is amply slotted to obtain a front bay and a rear bay. The two bays are mutually connected superiorly by means of opposite lateral cross members whereto is suspended the cylindrical container with springs. On the fours sides and on the summit thereby created, closure metal panels are applied with screws.

[0003] The metal panel are usually made with painted metal plate, and the related process leads to environmental pollution hazards.

[0004] Moreover, forming the plates requires heavy processing equipment and suitable plants.

[0005] Furthermore, the current dishwasher design provides for connecting means, such as screws and bolts, between the load bearing structures and the covering panels, which prolong the times required for mounting and increase overall cost due to the multiplicity of component parts to be supplied.

[0006] Also, as is readily understandable, although the load bearing structure of the case described above is reduced to its essential parts, its weight, due to the very nature of the materials employed, makes the case heavy and difficult to transport.

[0007] As is well known, in use, metal plate is susceptible to undergo oxidation processes which, in addition to causing unpleasant aesthetic effects, also lead to a reduction of the working life of the appliance.

[0008] The metal structure causes a needless absorption of power, because a great deal of the heat used in the washing process is transmitted outwards due to the high heat conductivity of the metallic material.

[0009] Therefore, the present invention aims at overcoming the aforementioned drawbacks and others that will become readily apparent in the following description.

[0010] An aim of the present invention is to avoid, when fabricating an appliance case, the use of painted metal plate.

[0011] Another aim of the invention is that of not requiring, for an appliance case, connecting means, such as screws and bolts, between the load-bearing structures and the covering panels.

[0012] A further aim of the invention is to obtain an appliance case that is much lighter than current ones.

[0013] Therefore, the present invention provides a case for appliances, in particular laundry washers, which, from a general standpoint, is characterised in that it comprises a frame, whereto is destined to be anchored a dynamic appliance apparatus, and an exterior body constituted by a plurality of panels connected to said frame by coupling means, said frame and said body being made of plastic material. The advantages of the case according to the invention derive from the elimination of the damaging and costly effects of the treatment of painted steel on the environment.

[0014] The greater stability of the plastic used both for the frame and for the body, not subject to corrosion phenomena, makes the case less subject to wear. The result is a longer working life of the appliance and a reduced need for servicing, thanks to the reduced number of component parts.

[0015] Additional advantages derive from the greater workability of the plastic materials employed, which enables easily to fabricate coloured products with less squared off, more rounded and, ultimately, more aesthetically acceptable shapes.

[0016] The use of plastic structures eliminate the need for screws and bolts in the assembly of the final product. Dependence on the supply of such hardware components and on the management of their warehousing is thereby reduced. The lower specific weight of plastic relative to metallic materials makes the case lighter. This is useful when handling parts of the case during the production phases, and subsequently when moving the finished product, when the case is assembled with the dynamic appliance apparatus.

[0017] Further features and advantages of the invention shall become more readily apparent from the detailed description that follows of a preferred embodiment illustrated purely by way of non limiting indication in the accompanying drawings in which:

- Figure 1 is an exploded perspective view of the frame of the case according to the present invention;
- Figure 2 is an exploded perspective view of the body on the frame of the case according to the present invention;
- Figure 3 is a front view of the frame of Figure 1;
- Figure 4 is a lateral view of the frame of Figure 1;
- Figure 5 is a rear view of the frame of Figure 1;
- Figure 6 is a lateral view of a front body panel of the case according to the invention;
- Figure 7 is a vertical section of the front body panel of Figure 6; and
- Figure 8 is a partially sectioned top view of a case according to the present invention.

[0018] With reference, initially, to Figures 1 and 2, which show the case during assembly phases, the laundry washer comprises a frame and a body indicated respectively as 1-2 and 3-4. Both the frame and the body are made of plastic material, preferably the frame of

polypropylene, the body of ABS (Acrylonitryl-Butadiene-Styrene resin).

[0019] The frame 1-2 has quadrilateral plan form. It is formed by a base skeleton 1 and by an overlying containment framework 2, both made individually in a single piece. The base skeleton 1 comprises a rim 10 with sides concurring towards vertices generically indicated as 11. On the vertices 11 are uprights, generically indicated as 12. The uprights 12 are further connected to each other by beam-like elements, formed by horizontal bars 13 and by vertical bars 14, together forming nodes 15. Naturally, the beam-like elements can be constituted by bars meeting in nodes at inclinations other than orthogonal.

[0020] The uprights 12 superiorly have coupling means in the form of squat sections 16 destined to be inserted, as male organs, into similar vertex uprights 22 of the containment framework 2 having corresponding hollow seats 26, as female organs in male-female couplings.

[0021] The vertex uprights 22 of the containment framework 2 are further connected to each other by beam-like elements formed by horizontal bars 23 and by vertical bars 24, together forming nodes 25. As for the frame, the beam-like elements can also be constituted by bars meeting in nodes at inclinations other than orthogonal.

[0022] As shown in greater detail in Figures 3 through 5, they are lateral views of the base skeleton 1 and of the containment framework 2 assembled together by means of stacking in the respective male-female coupling means 16-26. The male-female couplings have fixed joint means, generically indicated as 5, in the form of wedge and slot couplings, which secure the male-female coupling.

[0023] As shown in the figures, the beam-like elements are preferably bars externally provided with stiffening reticular ribs.

[0024] Figure 3 shows a front view of the frame 1-2 illustrating how the horizontal bars 23 of the containment framework 2 centrally converge into an annular band 6 delimiting a porthole (not shown) of the laundry washer. Figure 4 shows a lateral view of the frame 1-2, illustrating the horizontal bars 13 and vertical bars 14 of the base skeleton 1 and the horizontal bars 23 and vertical bars 24 of the containment framework 2, in a single piece with the respective uprights 12, 22 on the rim 10 of the base skeleton 1. Superiorly, a recess 7 serving as a lifting grip is supported.

[0025] Figure 5 shows a rear view of the frame 1-2. The horizontal bars 13, 23 and the vertical bars 14, 24, appropriately shaped, delimit an ample central opening 8, of octagonal shape. This opening is customary in the rear part of traditional washing machines to allow access to the parts of the actual appliance.

[0026] As shown in Figures 6 and 7, the front panel of the body comprises the front face 30 which delimits the porthole and lateral half-sides 31-32, provided with tabs, generically indicated as 33, for centring with the vertical bars 14, 24 of the frame 1-2, and fastening tabs 34. In each side of the panel is also provided the aforesaid grip 7.

[0027] With reference to Figure 8, a top view of the assembled case is shown, but without the dynamic apparatus. The figure clearly shows the rim 10 of the base skeleton 1 with the related uprights, the holed tabs for fastening the shock absorbers (not shown), the male-female coupling 91 of the front panel 3 and of the rear panel 4 of the body, with tab 92 contrasting with the frame 1-2 and holding projections 93, and the fastening by screw 94 of the front panel with the rear one. In the outer rear face of the rear panel, the water intake pipes 95 and the water discharge pipes 96 are housed in corresponding recesses and retain therein with tabs.

[0028] The invention thus conceived can be subject to numerous modifications and variations, without thereby departing from the scope of the inventive concept. For instance, the parts constituting the frame and the body can differ in form and number from the representation provided herein. Moreover, all components can be replaced by technically equivalent elements.

Claims

1. A case for appliances, in particular laundry washers, comprising a frame, whereto is destined to be anchored a dynamic appliance apparatus, and an exterior body constituted by a plurality of panels connected to said frame by coupling means, said frame and said body being made of plastic material.

2. A case as claimed in claim 1, **characterised in that** said frame, with quadrilateral plan form, is constituted by a base skeleton (1) and by an overlying containment framework (2).

3. A case as claimed in claim 2, **characterised in that** said base skeleton (1) comprises a rim (10) with sides concurring towards vertices (11) whereon they are mounted (12), further connected to each other by beam-like elements (13, 14) and superiorly having means (16) for coupling with said containment framework (2).

4. A case as claimed in claim 2, **characterised in that** said containment framework (2) comprises vertex uprights (22) further connected to each other by beam-like elements (23, 24) and inferiorly having means (26) for coupling with said base skeleton (1).

5. A case as claimed in claim 4, **characterised in that** said beam-like elements have reticular stiffening ribs.

6. A case as claimed in claims 4 and 5, **characterised**

in that said coupling

7. A case as claimed in claim 6, **characterised in that** said male-female coupling means are further provided with fixed joint means (5).

8. A case as claimed in claim 1, **characterised in that** said body panels are mutually connected by means of mutual coupling elements (91, 94).

9. A case as claimed in claim 1, **characterised in that** said plastic material for said frame is polypropylene.

10. A case as claimed in claim 1, **characterised in that** said plastic material for said body is ABS.

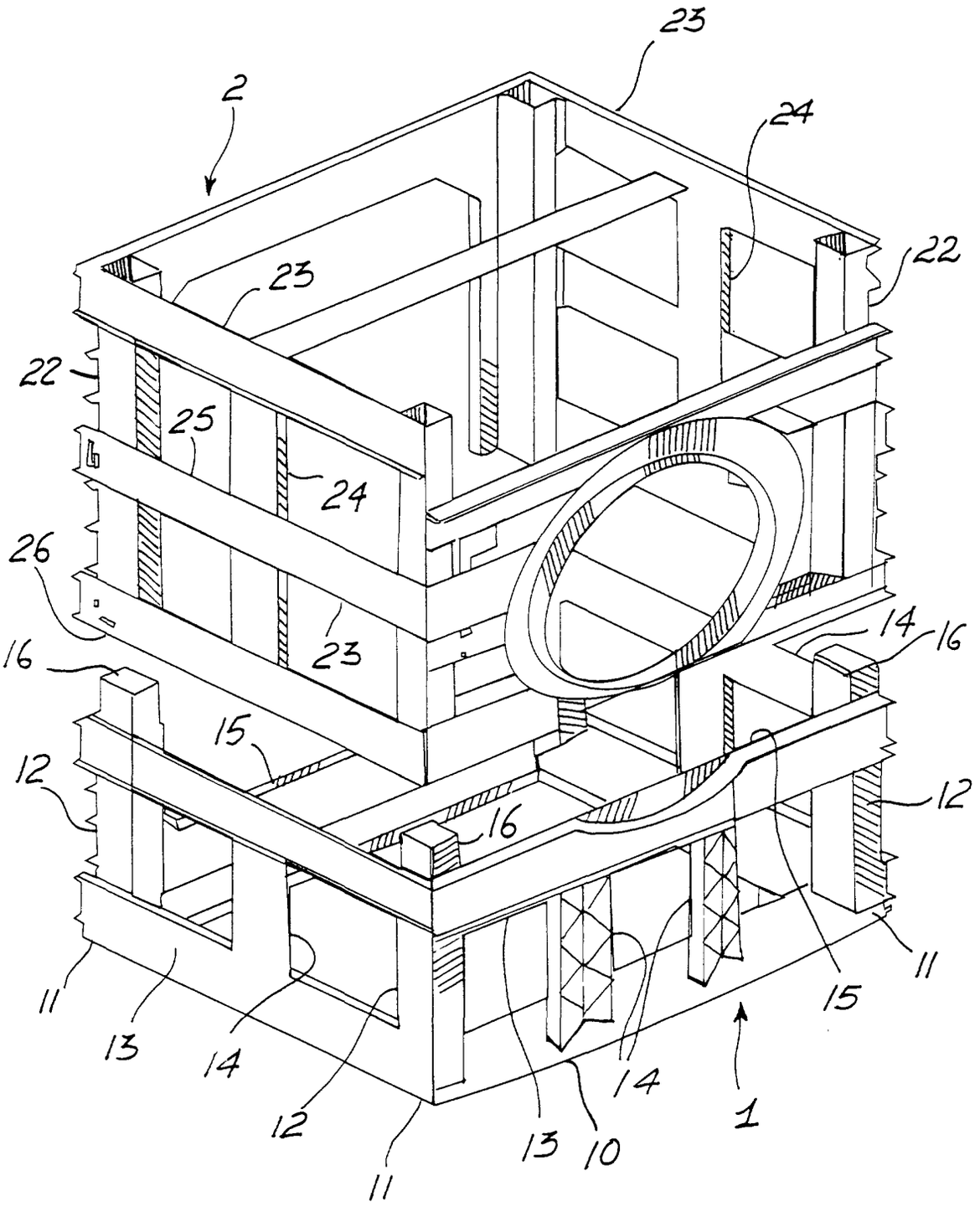
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FIG. 1

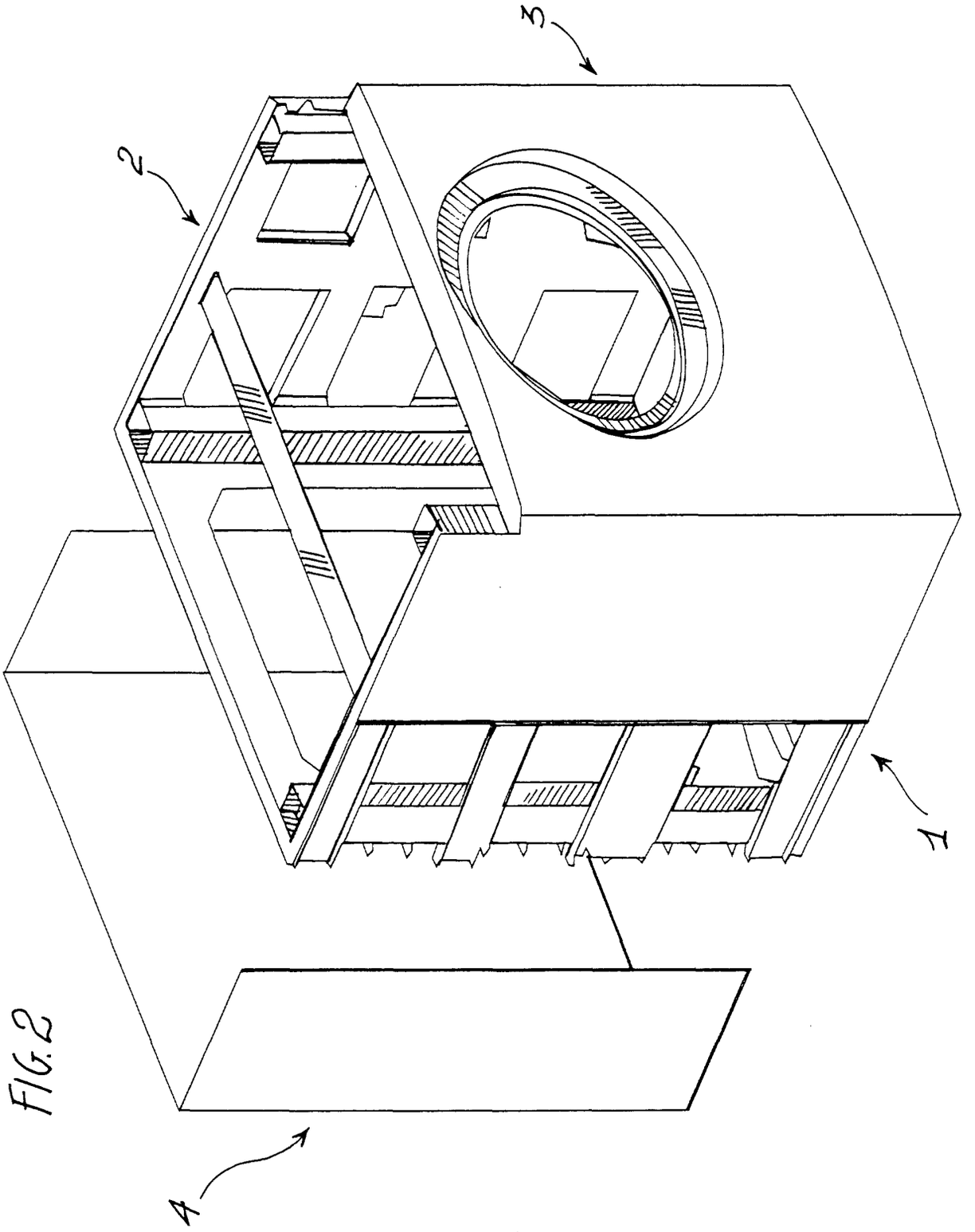

FIG.2

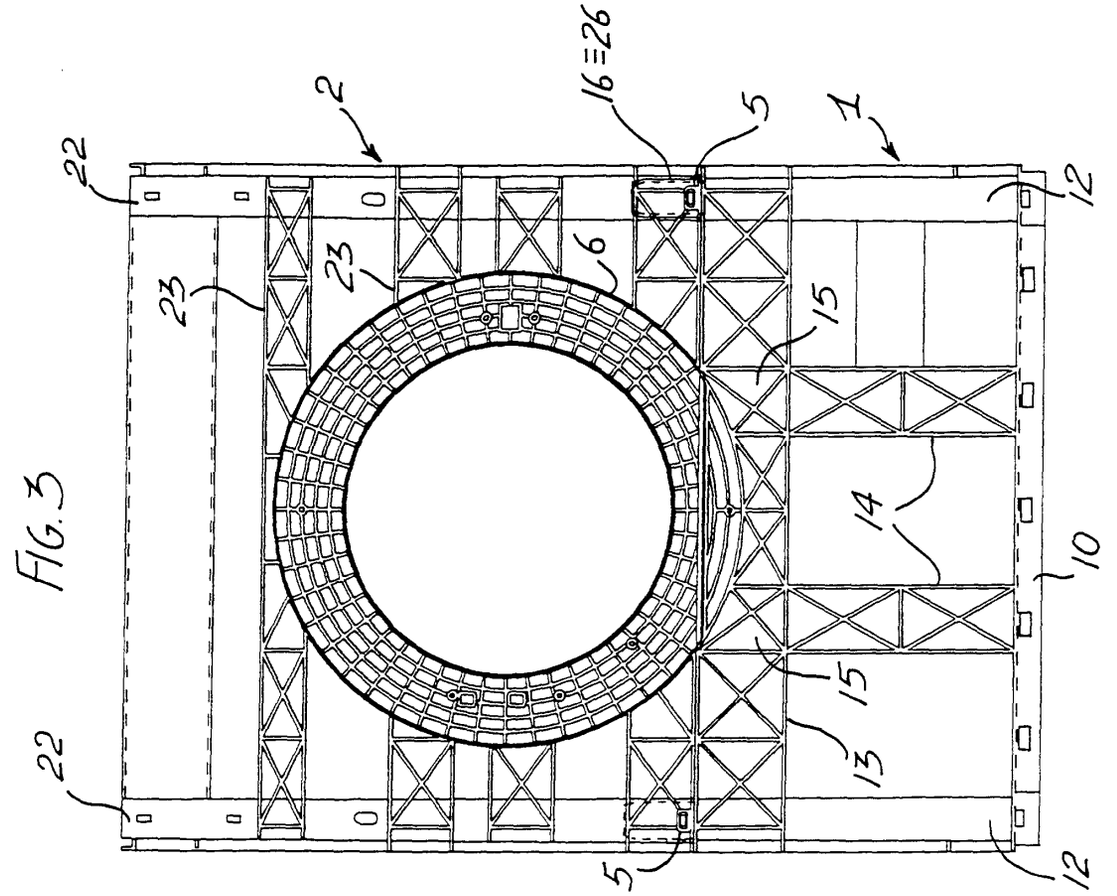
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FIG. 3

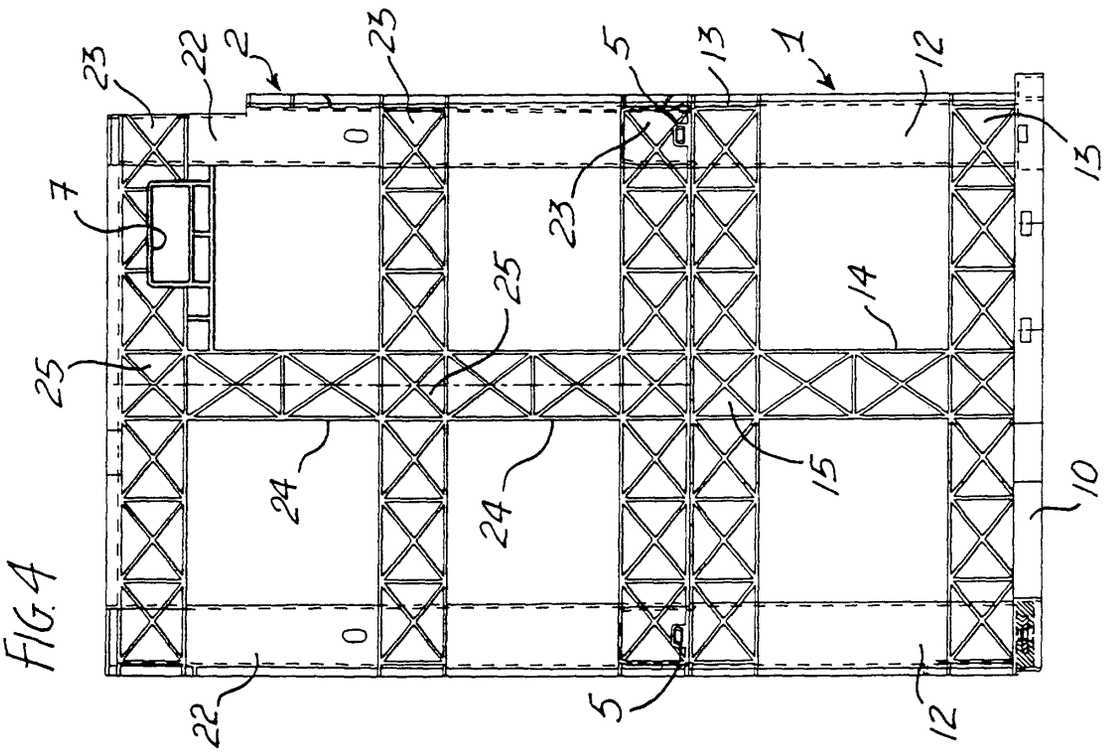
23
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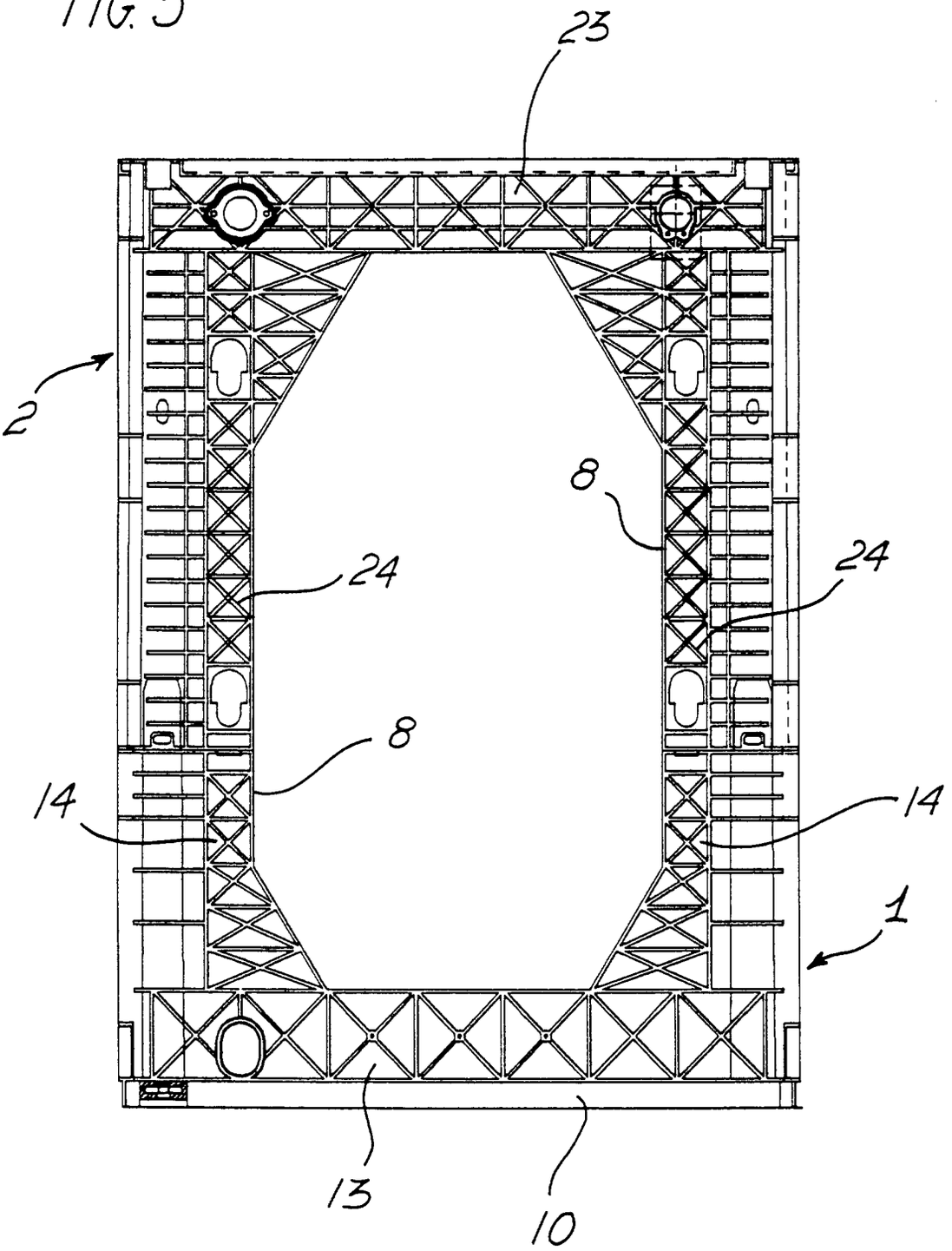
FIG. 4

FIG. 5



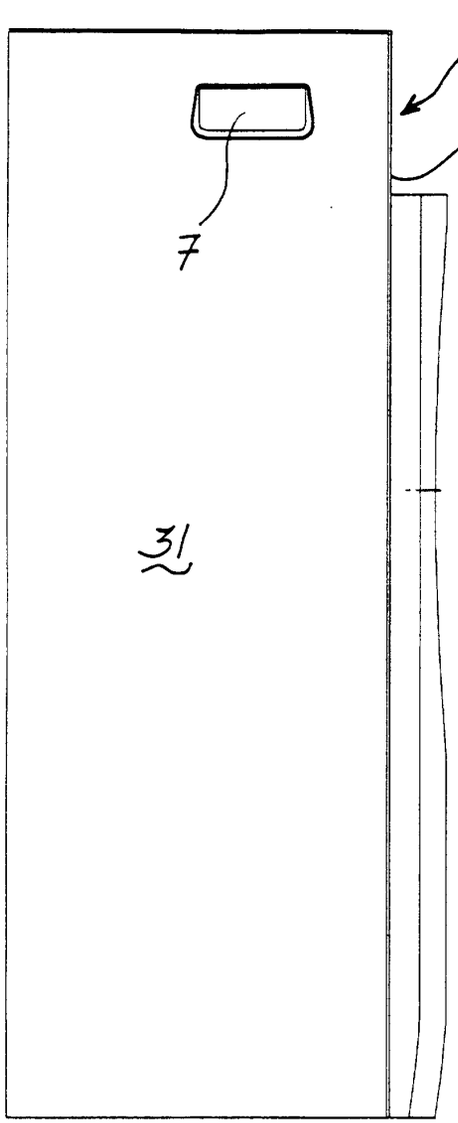


FIG.6

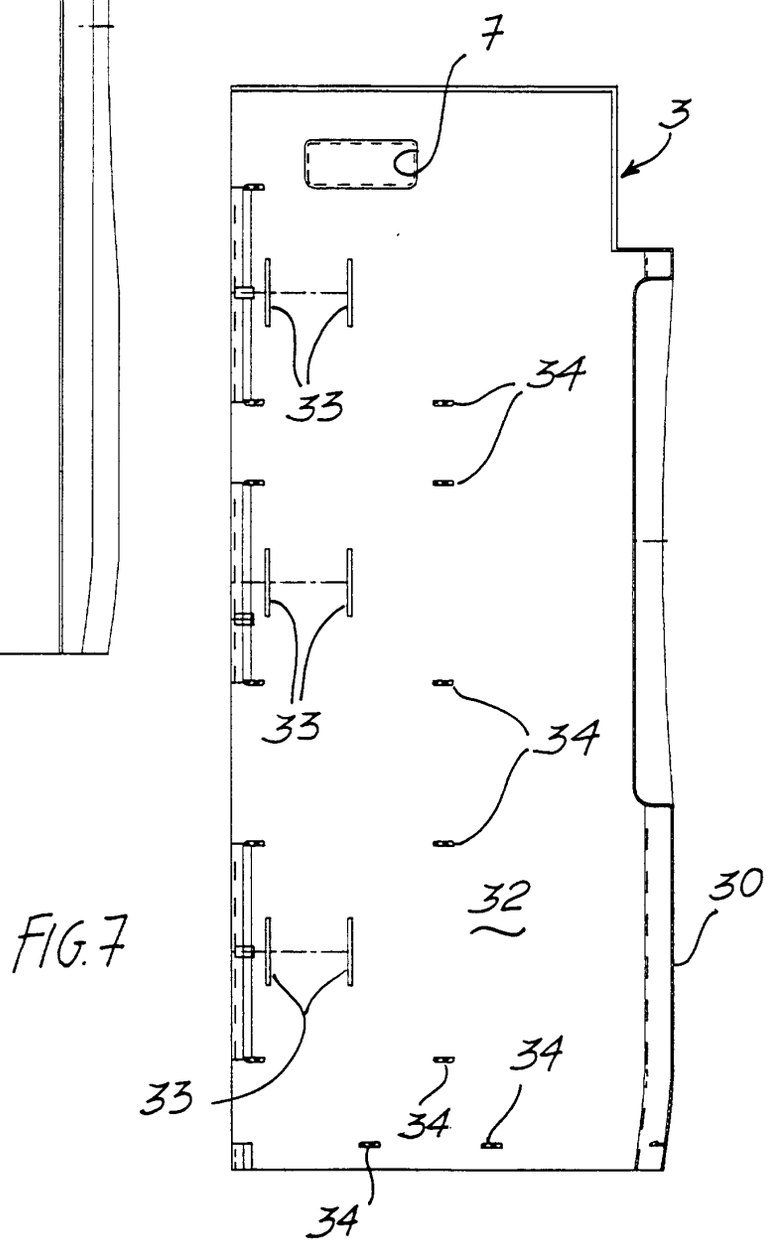


FIG.7

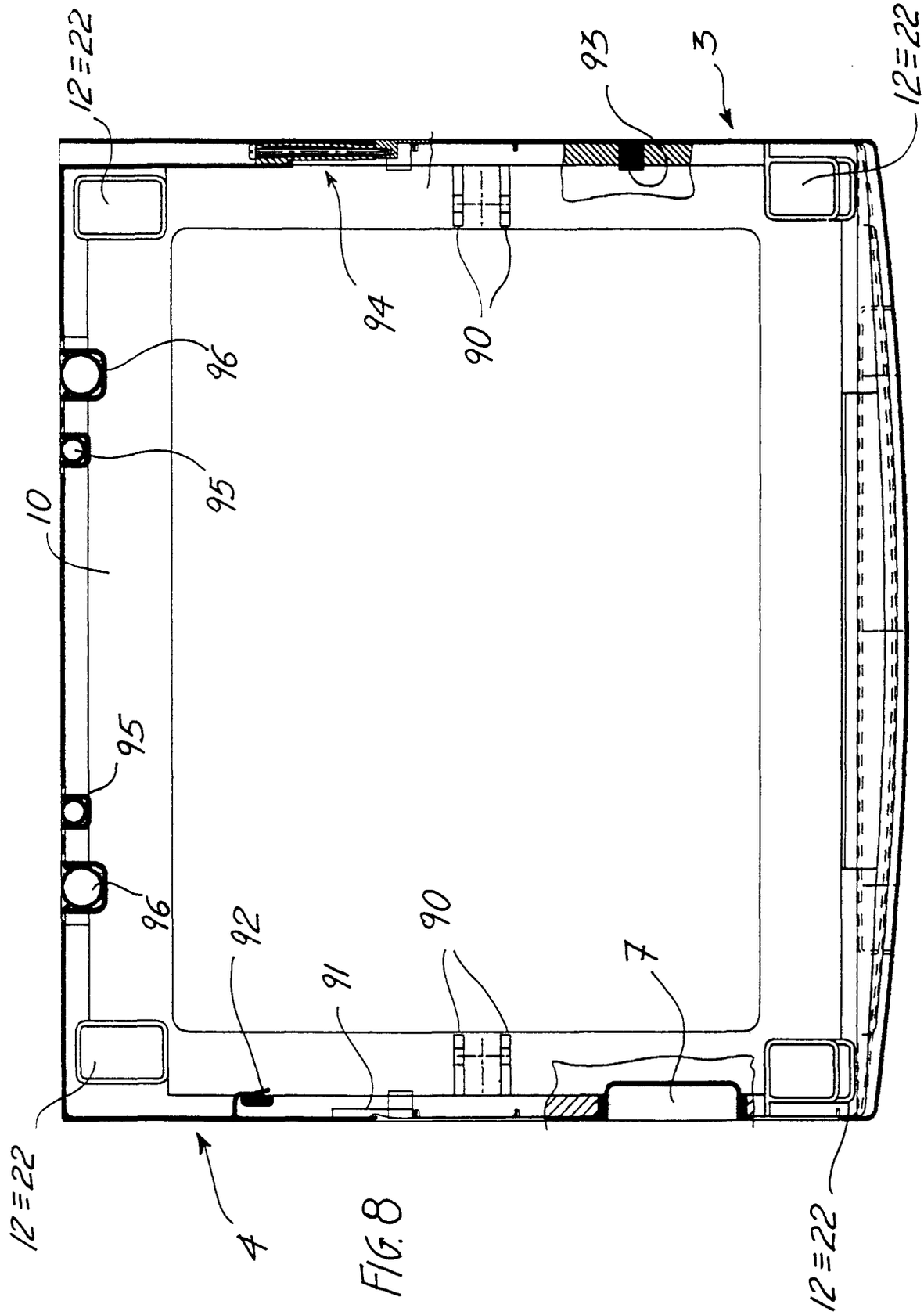


FIG. 8