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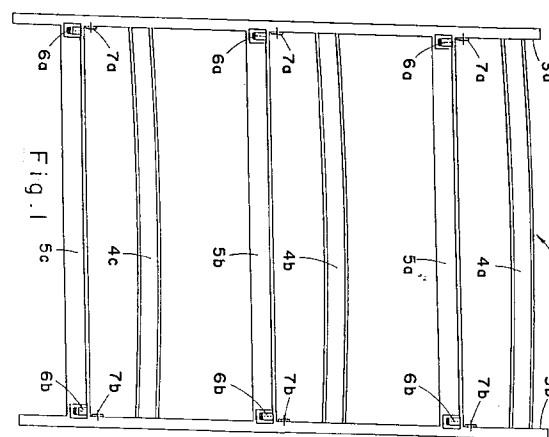
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(54) **A knockdown cabinet structure and a mould for use in manufacturing.**

(57) A knockdown cabinet structure formed of a plastics material comprising rear and side support frames; each side frame being formed at one longitudinal edge with longitudinally spaced apart tubular coupling lugs and longitudinally spaced apart, transversely directed shelf support ledges; the rear frame being formed at two opposite longitudinal edges thereof with two respective sets of coupling bosses, each set comprising longitudinally spaced apart coupling bosses and with two respective sets of shelf engaging bosses, each set comprising longitudinally spaced apart engaging bosses; and a plurality of shelves, each shelf comprising a planar base, a pair of transversely directed, elongated tubular edges, and a pair of side walls; the arrangement being such that upon assembly the sets of coupling bosses respectively fit into the sets of coupling lugs of the respective side frames, the sets of engaging bosses fit into respective end portions of the tubular edges, and said side walls rest on said support ledges. There is also disclosed a two-piece mould for use in the injection moulding of an elongated, substantially planar object such as, for example, a shelf forming part of the cabinet structure.



FIELD OF THE INVENTION

This invention relates to a knockdown cabinet structure consisting of moulded plastic components. The invention also relates to a two-piece mould for use in the injection moulding of an elongated, substantially planar object such as one of the components of the cabinet structure.

BACKGROUND OF THE INVENTION

Knockdown furniture structures such as, for example, cabinet structures, have long been known. They have generally been formed of wood or metal, though in recent times it has been known to form such knockdown items also of moulded plastics material. In general, such known knockdown items consist of a relatively large number of individual components and this leads to a corresponding difficulty in their ready assembly which, in many cases, involves the use of additional coupling elements such as screws.

It is an object of the present invention to provide a new and improved knockdown cabinet structure formed of moulded plastics material, having a minimal number of constituent components and wherein the above-referred-to difficulties are substantially reduced or overcome.

It is also an object of the present invention to provide a mould for use in manufacturing an elongated, substantially planar object such as, for example, a shelf for use in the cabinet structure.

BRIEF SUMMARY OF THE INVENTION

According to the present invention, there is provided a knockdown cabinet structure formed of a plastics material comprising rear and side support frames; each side frame being formed at one longitudinal edge with longitudinally spaced apart tubular coupling lugs and longitudinally spaced apart, transversely directed shelf support ledges; the rear frame being formed at two opposite longitudinal edges thereof with two respective sets of coupling bosses, each set comprising longitudinally spaced apart coupling bosses and with two respective sets of shelf engaging bosses, each set comprising longitudinally spaced apart engaging bosses; and a plurality of shelves, each shelf comprising a planar base, a pair of transversely directed, elongated tubular edges, and a pair of side walls; the arrangement being such that upon assembly the sets of coupling bosses respectively fit into the sets of coupling lugs of the respective side frames, the sets of engaging bosses fit into respective end portions of the tubular edges, and said side walls rest on said support ledges.

The invention also relates to means for manufacturing an elongated, substantially planar object such as, for example, the shelf for use in the knockdown

cabinet structure in accordance with the invention, these means including a two-piece mould having co-operating portions adapted to define between them a mould cavity; said mould cavity comprising a substantially planar main cavity portion; a pair of substantially planar side cavity portions communicating with the longitudinal edges of said main cavity portion; and a pair of longitudinal, cylindrical cavity portions communicating with longitudinal edges of said main cavity portion; said mould being furthermore provided with two pairs of elongated, cylindrical core members respectively insertable into said cylindrical cavity portions; the constituent core members of each pair being formed with inter-engaging ends so that when inserted and aligned within their respective cylindrical cavity portions, they are effectively and uniformly spaced from the walls of the cylindrical cavity portion.

Elongated, substantially planar objects such as, for example, shelves manufactured with such a mould and having the construction as indicated above, are characterized by increased strength and resistance to deformation.

BRIEF SUMMARY OF THE DRAWINGS

For a better understanding of the present invention, and to show how the same may be carried out in practice, reference will now be made to the accompanying drawings, in which:

Figs. 1, 2 and 3 are respective front elevations of one rear and two side frames of the cabinet structure;

Fig. 4 is a plan view of a shelf forming part of the cabinet structure;

Fig. 5 is a side elevation of the shelf shown in Fig. 4;

Fig. 6 is a perspective view of an assembled cabinet structure;

Fig. 7 is an exploded view of a two-piece mould for use in manufacturing a shelf for the cabinet structure;

Fig. 8 is a view of the same mould as shown in Fig. 7, with one of the mould pieces displaced so as to show its operative structure; and

Fig. 9 is a longitudinally sectioned view through the assembled mould.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to Figs. 1 through 6 of the drawings, the cabinet structure in accordance with the present invention comprises a rear frame 1 and a pair of side frames 2a and 2b. The rear frame 1 consists of a pair of uprights 3a and 3b and a plurality (three) of slightly curved stile members 4a, 4b and 4c. The rear frame 1 is furthermore formed with a plurality (three) of straight cross members 5a, 5b and 5c.

The cross members 5a, 5b and 5c are respectively formed at their extremities with downwardly depending bosses 6a and 6b. Formed on the uprights 3a and 3b and directed inwardly and respectively above the cross members 5a, 5b and 5c are engaging bosses 7a and 7b.

The side frames 2a and 2b are of inverted U-shape comprising uprights 8a and 8b and three stile members 9a, 9b and 9c.

Formed integrally with the uprights 8b of the side frames 2a and 2b are outwardly extending coupling lugs 11a and 11b.

The cabinet structure is completed by a plurality (three) of shelves 12, each shelf 12 comprising a substantially planar, elongated base portion 13, a pair of side walls 14 and a pair of longitudinally directed tubular end walls 15.

Each side wall 14 is formed with a downwardly directed, central projection 16.

The components of the cabinet structure just described are assembled so as to form a structure shown in Fig. 6 of the drawings by inserting the bosses 6a and 6b respectively into the tubular lugs 11a and 11b of the side frames 2a and 2b. The shelves 12 are then fitted in position so that the engaging bosses 7a and 7b respectively fit into the tubular end portions of the tubular end wall 15 of each shelf and so that the projections 16 are located within corresponding apertures 16a formed in the stiles 9a, 9b and 9c of the side frames, the stiles 9a, 9b, 9c forming effective ledges on which the side walls 14 rest.

By thus assembling the cabinet structure components, a firm, rigid structure as shown in Fig. 6 of the drawings can be obtained.

Reference will now be made to Figs. 7, 8 and 9 of the drawings for a description of a two-piece mould used in manufacturing the shelf forming part of the cabinet structure. It will be realized that this mould and the mode of use thereof can be employed for the manufacture of any suitable elongated, substantially planar object produced by injection moulding.

As seen in Figs. 7 and 8, the mould comprises a lower rectangular half mould 21 and an upper rectangular half mould 22, the lower half mould 21 being formed with a rectangular recess 23, with the upper half mould 22 being formed with a rectangular projection 24. Extending longitudinally along the longitudinal edges of the recess 23 are elongated, semi-cylindrical recesses 25, corresponding recesses 26 being formed in the upper portion 22 adjoining the longitudinal edges of the rectangular projection 24. The elongated recesses 25 and 26 communicate with corresponding circular apertures formed in mould end walls 27 (only one such end wall being shown). Formed in a central portion of the longitudinal recesses 26 are localized projections 28.

Two pairs of elongated, cylindrical core members 31a, 31b (only one constituent member 31a of each

pair being shown in full in Fig. 8, the other constituent member 31b being shown in dotted lines, both constituent members 31a, 31b of one of the pairs being shown in Fig. 9) are coupled at their outermost ends to a displaceable member 32 (only one such displaceable member being shown). Each pair of core members 31a, 31b are formed at their adjacent ends with mating projections and recesses 31c.

The core members 31a, 31b are capable of displacement in the direction of the arrow 33, thereby introducing or retracting the core members 31a, 31b into and out of the moulds.

The mould halves 21, 22 can be bolted together by suitable means (not shown) extending through aligned bores 34 formed in the moulds. The upper mould half 22 is formed with an injection nozzle 35 through which the plastics material can be injected into the mould.

When the mould halves 21, 22 are bolted together and the core members 31a, 31b are introduced into the core, their adjacent mating ends 31c meet and inter-engage. At the same time, the localized projections 28 fit into corresponding adjoining localized recesses formed in the adjacent edges of the core members 31a, 31b.

Thus, when the two mould halves 21, 22 are bolted in position with the core members 31a, 31b located in position, there is defined within the mould a substantially planar main cavity portion, a pair of substantially planar side wall cavity portions (formed with a localized central recess so as to allow for the formation of the central projection 16 of each side wall 14) and a pair of longitudinal, cylindrical cavity portions communicating with the longitudinal edges of the main cavity portion which, together with the core members, define effective tubular cavity portions communicating with the longitudinal edges of the main cavity portion.

It will be appreciated that by the construction of the core members as two separate halves 31a, 31b which are introduced into the mould from opposite ends and are effectively supported at their innermost engaging ends 31c, it is ensured that the cores 31a, 31b are effectively and uniformly spaced from the walls of the cylindrical cavity portions, and thereby it is ensured that the shelf 12 which is formed, and which is shown in Figs. 8 and 9, is provided with uniformly dimensioned tubular end walls 15.

As indicated above, a two-piece mould as just described can be readily employed for the production of other forms of substantially planar, elongated objects provided with tubular side walls for reinforcement.

Claims

1. A knockdown cabinet structure formed of a plastics material comprising rear (1) and side support

frames (2a, 2b) characterized in that each side frame (2a, 2b) is formed at one longitudinal edge with longitudinally spaced apart tubular coupling lugs (11a, 11b) and longitudinally spaced apart, transversely directed shelf support ledges (9a, 9b, 9c); the rear frame (1) being formed at two opposite longitudinal edges thereof with two respective sets of coupling bosses (6a, 6b; 7a, 7b), each set comprising longitudinally spaced apart coupling bosses (6a, 6b) and with two respective sets of shelf engaging bosses (7a, 7b), each set comprising longitudinally spaced apart engaging bosses (7a, 7b); and a plurality of shelves, each shelf (12) comprising a planar base (13), a pair of transversely directed, elongated tubular edges (15), and a pair of side walls (14); the arrangement being such that upon assembly the sets of coupling bosses (6a, 6b) respectively fit into the sets of coupling lugs (11a, 11b) of the respective side frames (2a, 2b), the sets of engaging bosses (7a, 7b) fit into respective end portions of the tubular edges (15), and said side walls (14) rest on said support ledges (9a, 9b, 9c).

2. For use in the injection moulding of an elongated, substantially planar object, a two-piece mould (21, 22) having cooperating portions adapted to define between them a mould cavity (23) characterized in that said mould cavity (23) comprises a substantially planar main cavity portion (24); a pair of substantially planar side cavity portions communicating with the longitudinal edges of said main cavity portion (24); and a pair of longitudinal, cylindrical cavity portions (25, 26) communicating with longitudinal edges of said main cavity portion (24); said mould being furthermore provided with two pairs of elongated, cylindrical core members (31a, 31b) respectively insertable into said cylindrical cavity portions (25, 26); the constituent core members (31a, 31b) of each pair being formed with inter-engaging ends (31c) so that when inserted and aligned within their respective cylindrical cavity portions (25, 26), they are effectively and uniformly spaced from the walls of the cylindrical cavity portion.

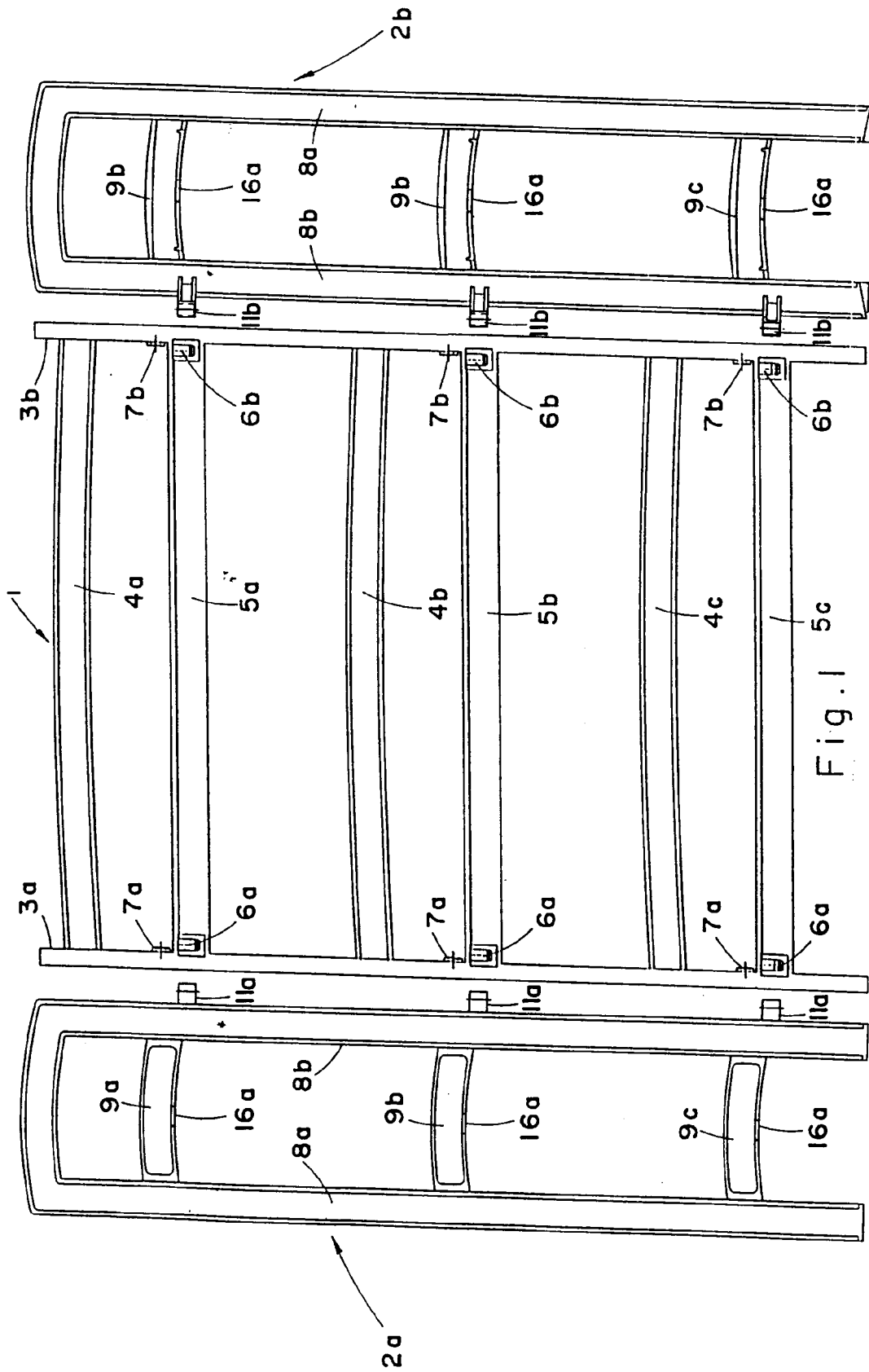
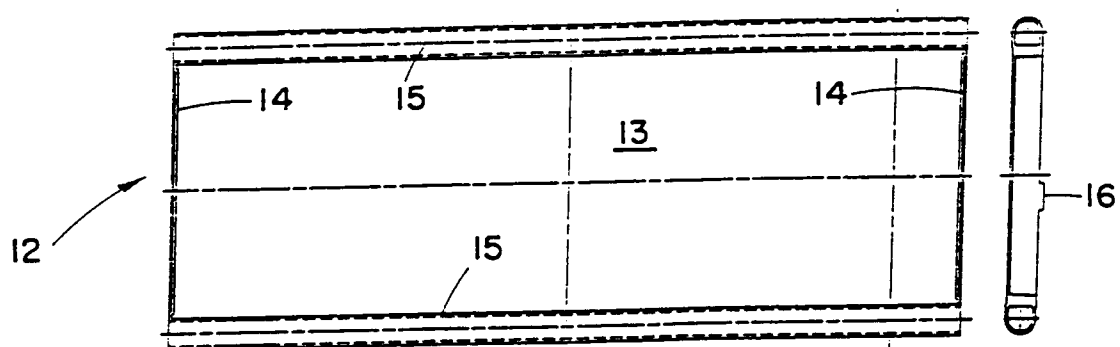


Fig. 3

Fig. 2



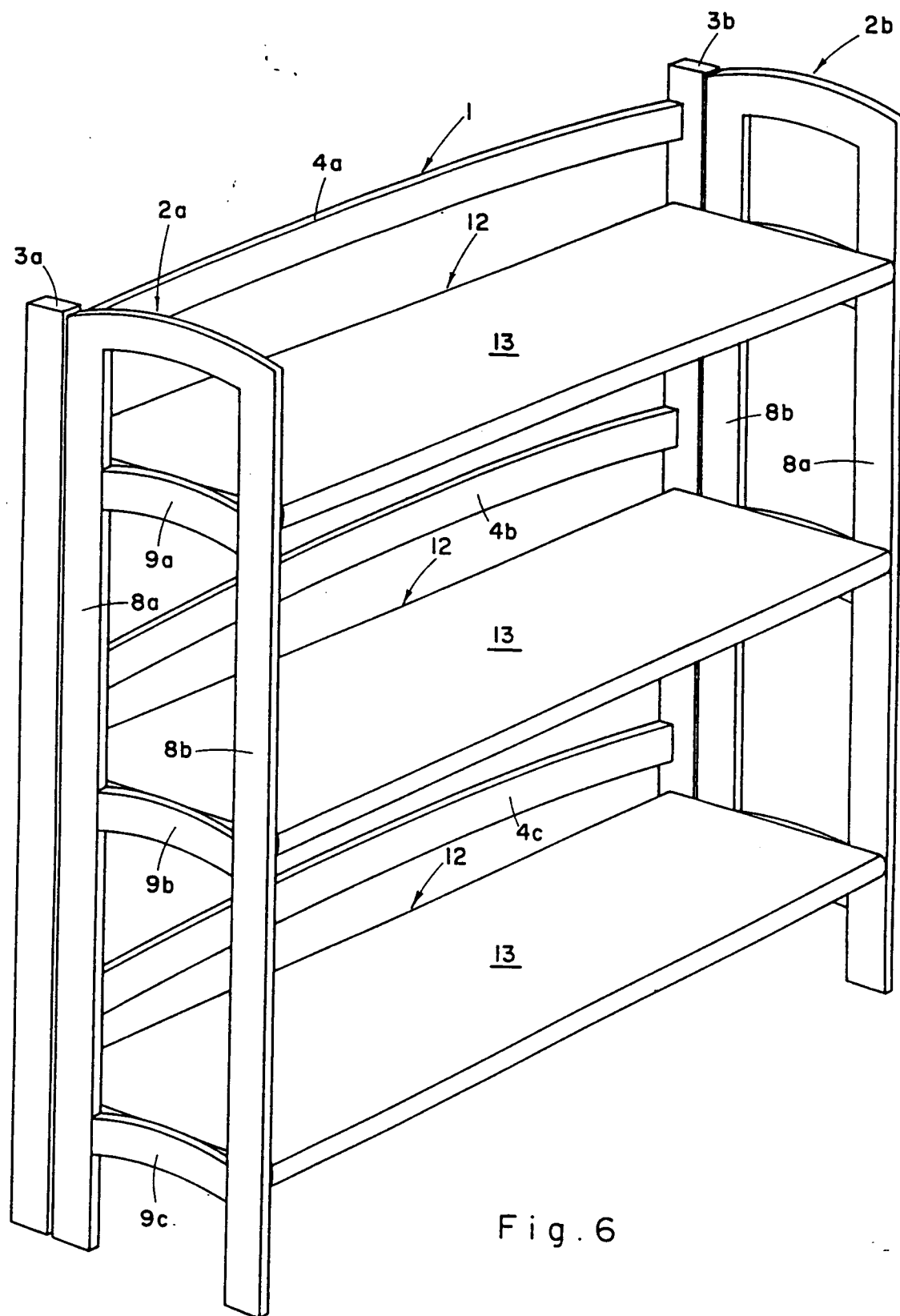


Fig. 6

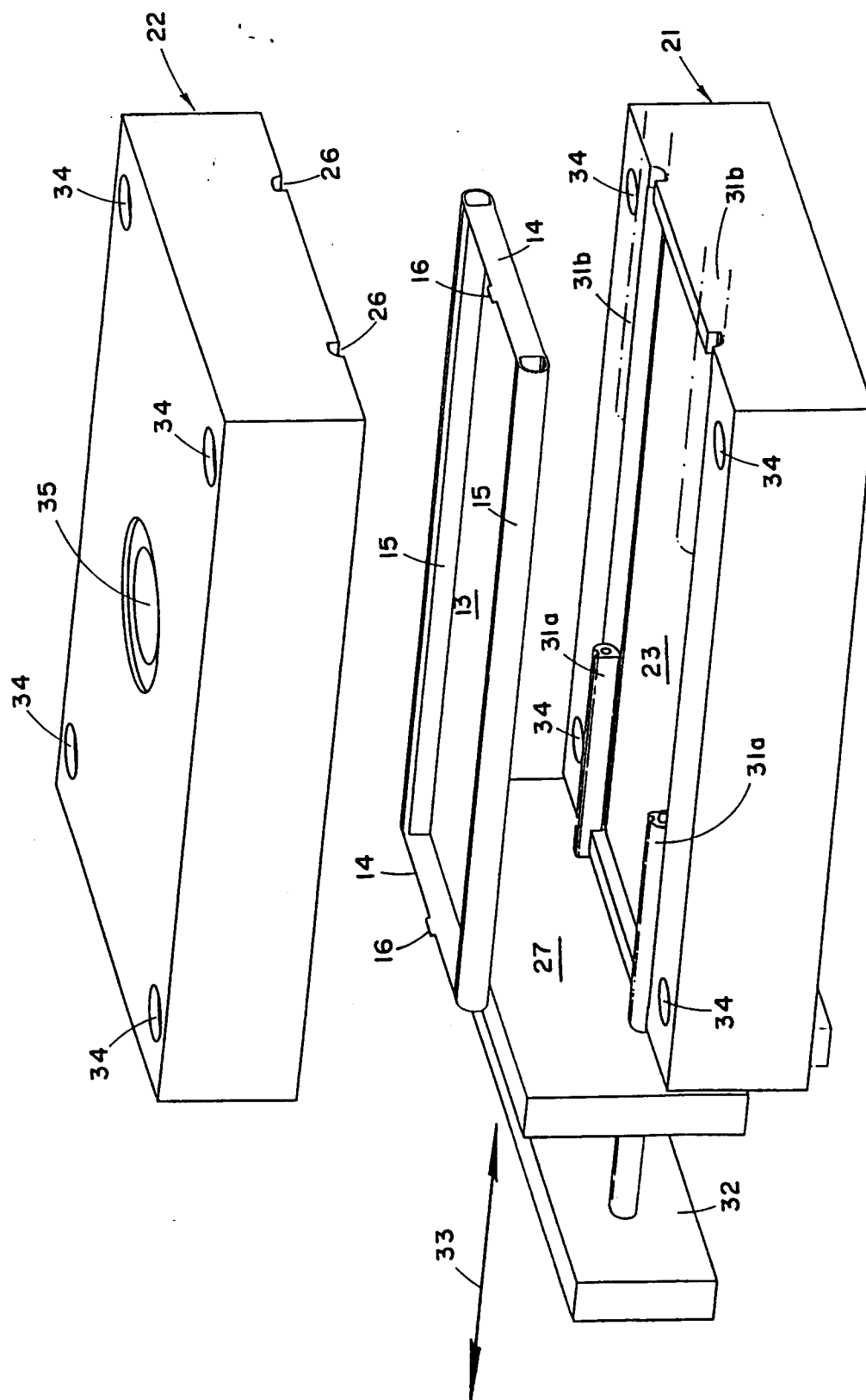


Fig. 7

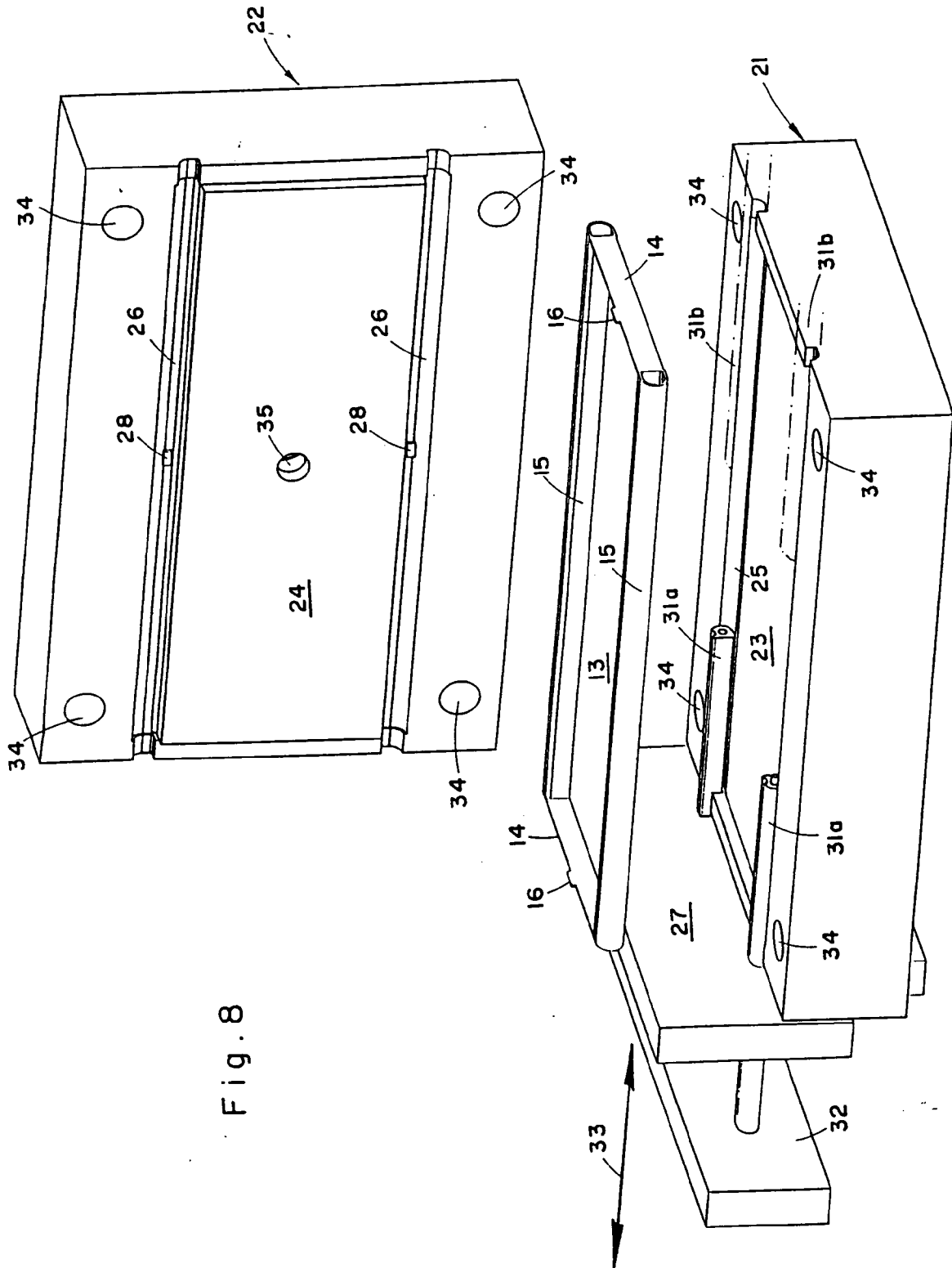


Fig. 8

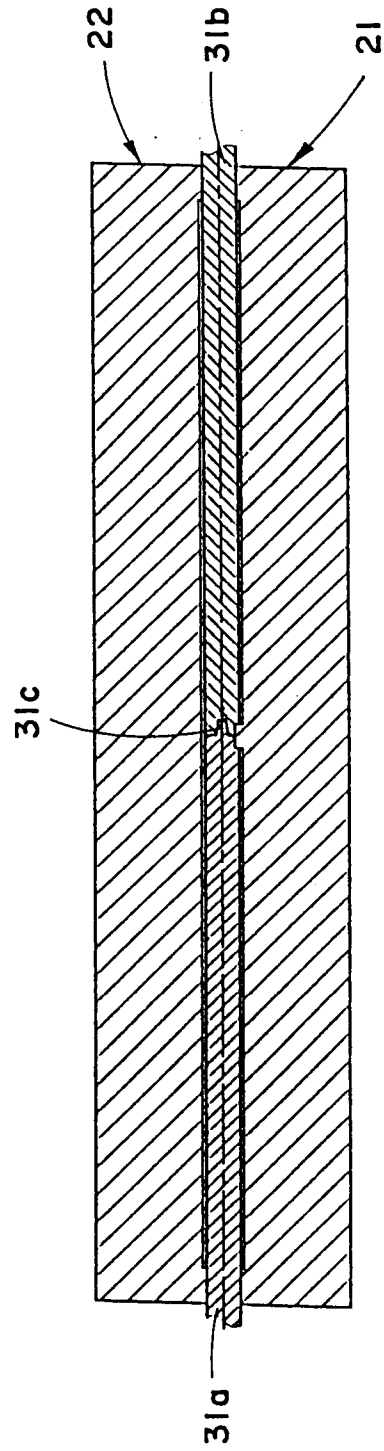


Fig. 9