

[54] AN ARRANGING SHELF

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312/108; 108/114, 153, 151; 211/177

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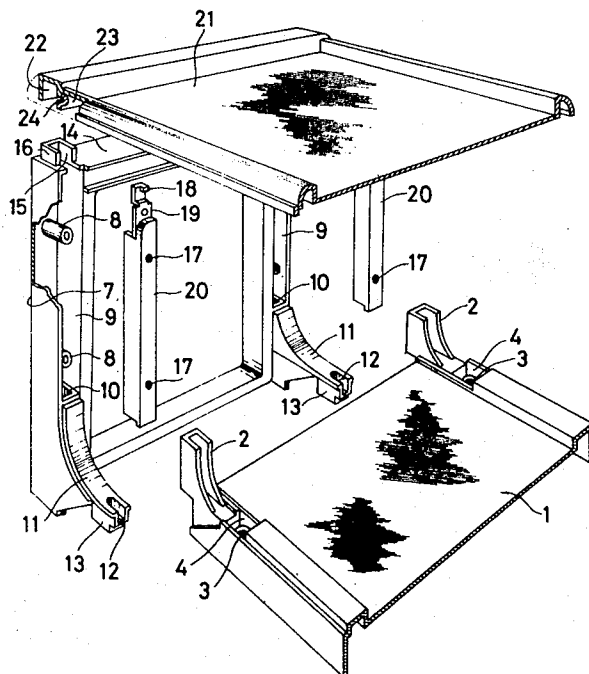
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[57] ABSTRACT

An improved shelf which may be easily assembled and disassembled and wherein a plurality of units may be vertically and horizontally arranged is disclosed. The improved shelf includes at least one bottom board having a plurality of upwardly extending pillars extending from corners of the bottom board and formed integrally therewith. Each pillar has an inner down-

wardly curved side extending toward a downwardly curved side of another pillar. The bottom board has a hollow region adjacent the curved side of each pillar. The hollow region has an aperture therein through which a fastener may extend. The bottom board also has indented regions in the bottom thereof and integrally formed therewith which are used for vertical stacking of shelf units. A plurality of side boards are provided. Each has a set of vertically extending grooves integrally formed along the sides thereof. A set of internally threaded sleeves are positioned within the grooves and integrally formed with the side board and a set of downwardly extending curved members are integrally formed with said side board, one downwardly curved member extending from each groove. The curved members correspond in shape to the downwardly curved side of the pillars and each member has a leg portion adapted to fit within the hollow region adjacent each pillar. The leg portion has an aperture which is adapted to overlay the aperture in the hollow region of the bottom board when the leg is positioned within the hollow region. A set of support members extend upwardly from the top of the side board coaxially of each groove and are open on the same side as the grooves. A cover member fits over each groove. The cover members have apertures corresponding to the internally threaded sleeves and fasteners may be inserted therethrough. Each cover member has a hook member extending from an end thereof. The hook members are positioned within the upwardly extending support member and extend outwardly through the open side thereof. A top board is provided. The top board has a region in the bottom thereof adapted to receive the upwardly extending members of the side board. The region also has an indented section which receives the hook member for firmly connecting the top and side boards.

2 Claims, 4 Drawing Figures



SHEET 1 OF 3

Fig. 4

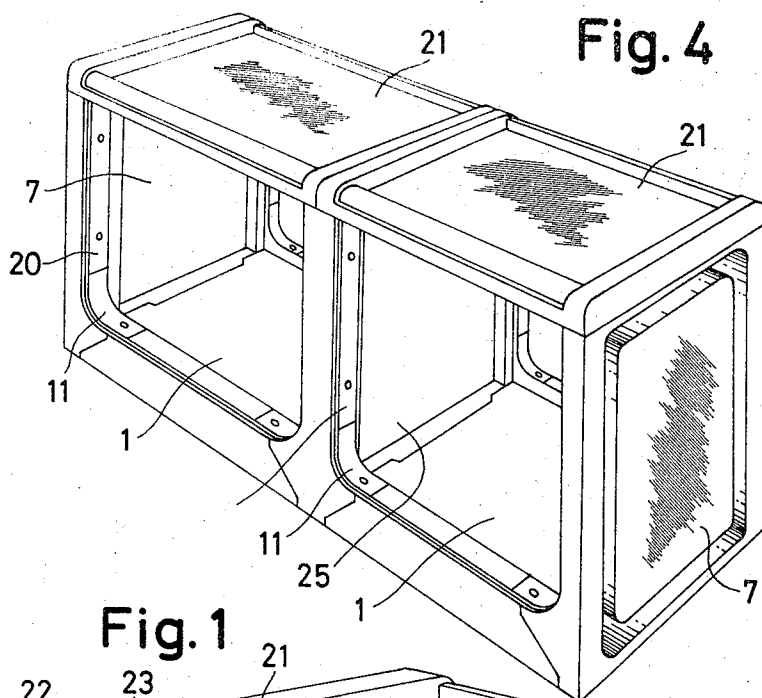


Fig. 1

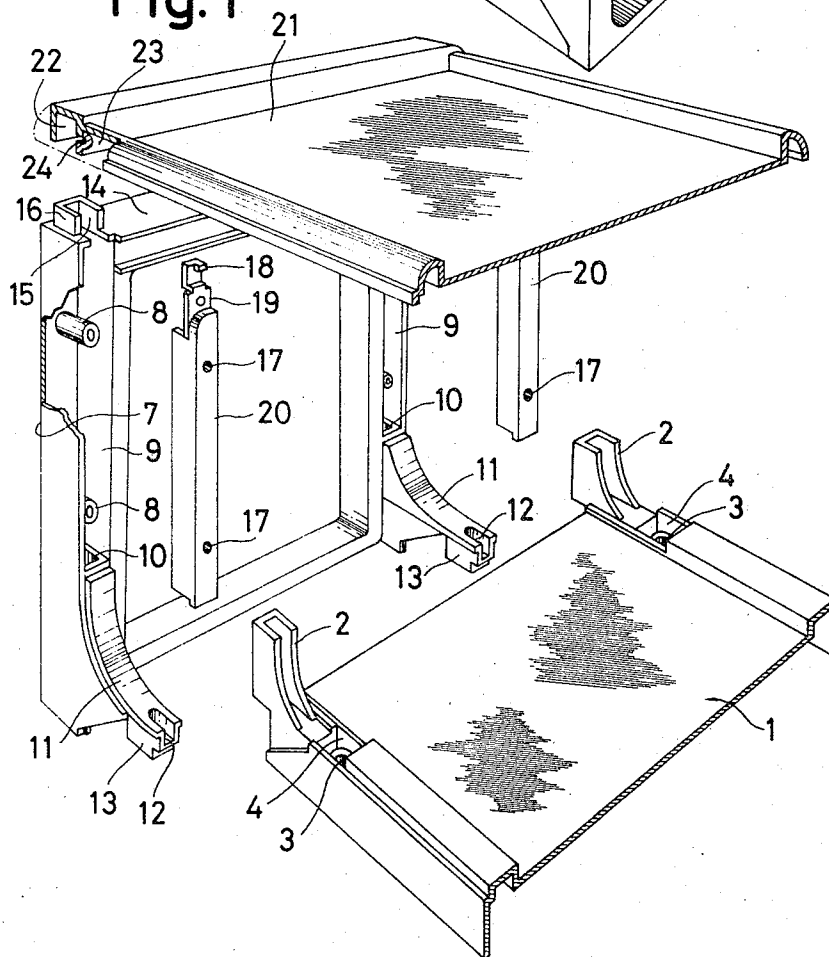


Fig. 2

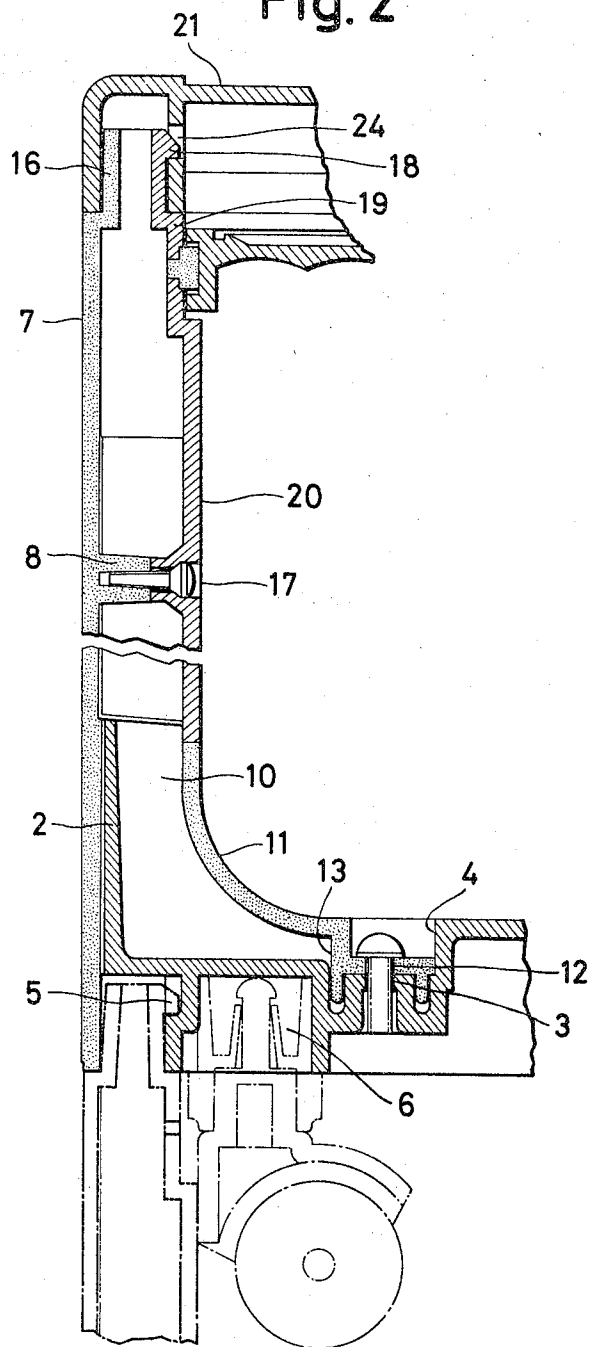
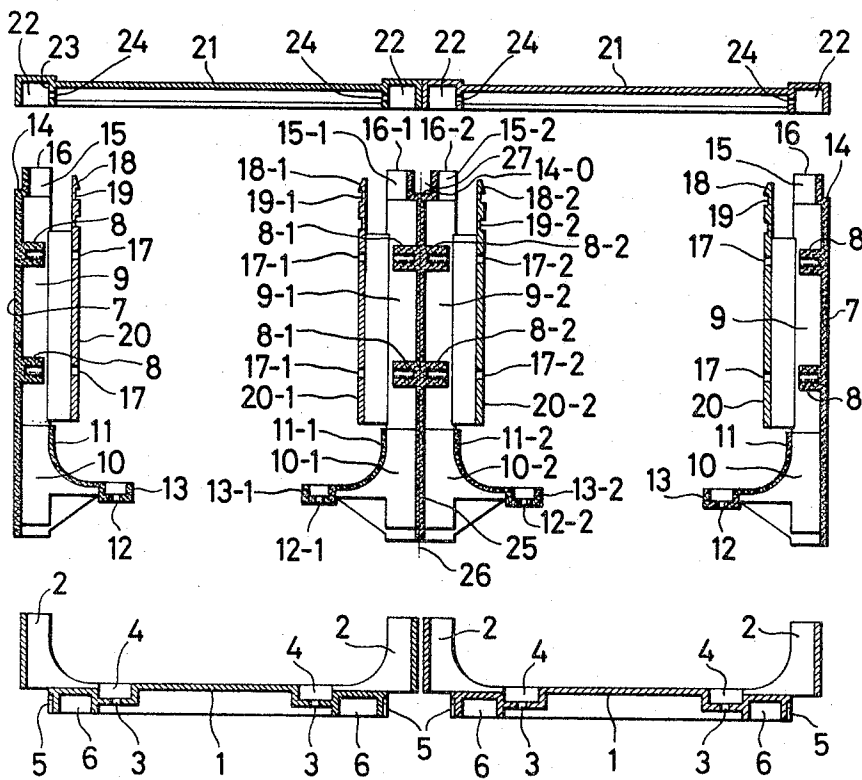


Fig. 3



AN ARRANGING SHELF

The present invention is related to an improved arranging shelf to be used for keeping various things tidy in a kitchen, a living room, a drawing room and so on.

The purpose of the present invention is to offer, at a reasonable cost, an arranging shelf which can be assembled and disassembled quite simply and which is strong and has a pleasing external appearance.

Another purpose is to make it possible to combine any number of such arranging shelves vertically or horizontally in accordance with a space where they are to be placed.

Generally, articles to be used for this purpose include two types of products: one is marketed in a form of a preassembled article and the other is marked as a set of pieces which can be assembled by individual users.

However, the former has the disadvantage that it has to be manufactured in many different sizes so as to fit any space where it may be placed. The latter, too, has disadvantages since it is not easy to assemble and its skeleton is not as strong. Moreover, it has a tendency to become shaky and unstable and its external appearance is spoiled by exposed screws.

The arranging shelf of the present invention consists of a top board, side boards and a bottom board, but it may have a back board and a lid as occasion demands. It is characterized by erecting four short pillars having an inwardly and downwardly curved region and located at four corners of the upper surface of the bottom board in such way as the curved region of two short pillars are opposite to those of the other two short pillars on the same line and yet they all are integrated with the bottom board. Covering parts of similar shape to said short pillars are provided for accepting the latter on both lower ends of the internal surface of the side boards. On the upper surfaces of the side boards, projecting pillars are provided which respectively have an internally open side and also have a lever piece with a hook for engaging said internally open side. Hollows are provided opposite to said projecting pillars at four corners of the lower surfaces of the top and bottom boards, and hook catching dents are provided on the side walls of said hollows to catch hooks. Thus, the structure may be firmly assembled.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which;

FIG. 1 is an oblique view showing the arranging shelf of the present invention in such state as it has been cut into halves and has been disassembled;

FIG. 2 is a vertical section showing the structure of the arranging shelf of the present invention;

FIG. 3 is a vertical section showing a disassembled state of two arranging shelves to be combined horizontally; and

FIG. 4 is an oblique view of the arranging shelf of the present invention.

Referring first to FIG. 1, reference numeral 1 indicates a bottom board, on the upper surface of which four short pillars 2, 2, 2, 2 are erected at four corners in such way as they are integrated with the bottom board 1 and yet the curved sides of the two short pillars 2, 2, are opposite to those of the other two short pillars

2, 2. A hollow region 4 with a hole 3 extending in the base of the hollow region is formed on a horizontal part adjacent to the curved end of each short pillar 2. In each corner of the back surface of the bottom board 1, a dent 5 is provided to catch the lower end of projecting pillars which project from both edges of the upper surface of each side board as described in the following paragraphs. Adjacent each dent 5, a hollow region 6 is formed so that a caster can be fixed thereto. Numeral 7 shows a side board, which has grooves 9, 9 with internally threaded sleeves 8, 8 on both edges of its internal surface. A covering part 11 having a similar shape to the short pillar 2 is provided. The covering part 11 has a hollow region 10 wherein the short pillar 2 is positioned, and a leg 13 with a screw bar hole 12 which is located at the curved end of said covering part 11 and which is positioned within the hollow region 4 of the bottom board 1. The covering part 11 is formed in such way as to be integral with the side board at the lower end of said groove 9. At the upper end of the groove 9, a projecting pillar 16 having a side 15 open to the interior of the structure is formed at each end of the upper surface of the side board 7. The groove 9 is covered with a groove cover 20 which has loose holes 17, 17 located opposite to said blind female screws 8, 8 and which also has a lever piece 19 with a hook 18 projecting horizontally therefrom. The lever piece 19 faces the internally open side 15 of the projecting pillar 16. Reference numeral 21 indicates a top board, which has a hollow region 22 at each corner of its back surface and also has a hook catching dent 24 on a wall 23 of said hollow 22 to catch the hook 18.

The arranging shelf is constructed in a form of a single unit as shown in FIG. 2, which requires one top board, two side boards and one bottom board. Those boards are assembled in the following way. First, the covering part 11 and the leg 13 of the side board 7 are respectively placed over short pillar 2 and within the hollow region 4 of the bottom board 1, as the result of which two side boards 7, 7 are erected on both edges of the bottom board 1. Second, the top board 21 is placed onto the upper surfaces of the side boards 7, 7 such that the projecting pillars 16, 16 provided on the upper surfaces of the side boards are inserted within the hollow regions 22, 22 of the top board 21 and the hooks 18, 18 are caught by the hook catching dents 24, 24. Lastly, thus assembled boards are fixed by means of inserting a screw bar into a part of the leg 13 positioned within hollow region 4.

In the case of combining one shelf with another in the vertical direction, it is necessary to use one top board, four side boards and two bottom boards, which are assembled in the following way. First, a first unit is assembled in the manner described above. Second, the remaining two side boards are erected on the remaining bottom board in the same way as described above. However, instead of placing a top board thereon the first unit is placed thereon such that the projecting pillars on the upper surfaces of the side boards enter the hollows formed at four corners of the back surface of the bottom board of the single unit and the hooks are caught by the hook catching dents inside the hollows.

In the case of piling up three or four shelves, the same steps may be taken. However, it is desirable that assembling work is done always in such direction as from a top shelf down to the bottom shelf.

Now, arranging shelves can also be combined horizontally as shown in FIG. 3 by means of using two top boards, two side boards, two bottom boards and one intermediary board, which are assembled in the following way. Here, all the boards except the intermediary board have the same structure as described in the foregoing paragraphs, so that explanation about them is omitted. The intermediary board, however, is a variation of the side board, so that it is explained below; similar reference numerals indicating similar elements.

In FIG. 3, numeral 25 indicates an intermediary board, having the form of two side boards joined back to back. It has grooves 9-1, 9-2 with sleeves 8-1, 8-2 and at the lower ends of the grooves it also has covering parts 11-1, 11-2 with hollow region 10-1, 10-2 to accept the short pillars 2, 2 of the bottom boards 1, 1 and legs 13-1, 13-2 which have screw bar holes 12-1, 12-2. Projecting pillars 16-1 and 16-2 are also provided. The grooves 9-1, 9-2, the covering parts 11-1, 11-2, the legs 13-1, 13-2, the projecting pillars 16-1, 16-2 which are situated at the upper ends of the grooves 9-1, 9-2 and also on both edges of the upper surfaces of the side boards and which have internally open sides 15-1, 15-2 are, respectively, formed symmetrically with respect to a shaft line 26 and yet are integrated into a single body. The grooves 9-1, 9-2 are covered with the groove covers 20-1, 20-2 which have holes 17-1, 17-2 positioned opposite the internally threaded sleeves 8-1, 8-2 and the tops of which are shaped into lever pieces 19-1, 19-2 with horizontally projecting hooks 18-1, 18-2.

The process of combining two arranging shelves by using the abovementioned intermediary board 25 is as follows. The covering parts 11-1, 11-2 of the intermediary board 25 are put on the neighbouring short pillars 2, 2 of two bottom boards placed in a line. The covering parts 11, 11 of the side boards 7, 7 are put on the short pillars 2, 2 standing at external corners of these bottom boards 1, 1. Then, two top boards 20, 20 are placed onto the projecting pillars 16, 16-1, 16-2, situated on the upper surfaces of the side boards 7, 7 and of the intermediary board 25. FIG. 4 shows the appearance of the arranging shelves thus assembled.

The abovementioned process is for combining two arranging shelves horizontally. Three, four or more shelves can be combined by using the number of top boards and bottom boards as the shelves to be combined, two side boards and the intermediary board are required in such number as one less than number of the shelves to be combined.

When placing horizontally combined shelves upon other horizontally combined shelves, it can be carried out by using bottom boards only instead of top boards for the shelves which are first combined horizontally and then placing the necessary number of side boards and top boards onto thus prepared shelves.

The arranging shelf of the structure described in the foregoing paragraphs has the following.

The side board or the intermediary board is assembled with the bottom board by the engagement between the short pillars and the covering part having a similar shape to the short pillar. It is thus possible to firmly secure the short pillar perpendicularly but also to position the side board or the intermediary board to the bottom board at right angles. Thus, it is possible to produce an arranging shelf with a very strong structure as a whole.

During the assembling process, the side boards are held firmly to the bottom board and are also held at an exact position. Thus, the top board can be put on the side boards very easily without any trouble to make a device for fixing it temporarily.

The side board and the bottom board engage with each other in the abovementioned way. Moreover, the top board and the side board are made to engage with each other by inserting the projecting pillars provided on the upper surface of the side boards into the hollows provided at four corners of the lower surface of the top board and making the hook which faces the internally open side engage with the hook catching dent elastically. Thus, no screw extends on the external surface of the side board and the assembled shelf has a good external appearance.

The bottom board has a special structure at four corners of its back surface for engaging the projecting pillars of the upper surface of each side board and also for engaging the hook provided on both edges of each side board.

The vertical stacking of any desired number of shelves can be carried out simply and economically by using some structural elements supplementally.

The horizontal combination of any necessary number of the shelves, too, can be carried out by means of using the intermediary board. Thus, it is possible to carry out various different combinations of the shelves in accordance with a room space.

What I claim is:

1. An improved shelf which may be easily assembled and disassembled and wherein a plurality of units may be vertically and horizontally arranged as shelf space is required and which presents a pleasing appearance, comprising:

at least one bottom board, a plurality of pillars upwardly extending from each corner of said bottom board and formed integrally therewith, each said pillar having a downwardly curved side extending toward a downwardly curved side of another of said pillars, said bottom board having a hollow region therein adjacent the curved side of each pillar, the portion of the bottom board forming the hollow region having an aperture therein, said bottom board further having an indented region in the bottom thereof and integrally formed therewith, said indented region adapted for vertical stacking of shelf units;

a plurality of side boards having a first set of vertically extending grooves integrally formed therein along the vertical sides thereof, a first set of internally threaded sleeves positioned within said first set of grooves and integrally formed with each side board, a first set of downwardly extending curved members integrally formed with said side boards, one of said members extending from each groove of said first set of grooves, said curved members corresponding in shape to said downwardly curved side of said pillars and having a leg portion at the free ends thereof, said leg portion adapted to fit within the hollow region adjacent each said pillar and having an aperture therein adapted to overlay the aperture in the hollow region of said bottom board through which a fastening member may be inserted, a first set of integrally formed support members extending upwardly from the top of each side board coaxially of each groove, and having an

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aperture therein on the same side as each groove, and a first plurality of cover members adapted to fit over each of said grooves and having apertures therein corresponding to said internally threaded sleeves, each said cover member having a hook member extending from an end thereof and adapted to be positioned within one of said support members, said hook member extending from the said first set of support members through the apertures; and

at least one top board having regions in the bottom portion thereof adapted to receive said first set of upwardly extending members, said region further having an indented section adapted to receive said hook member therein.

2. The device of claim 1 wherein at least one of said side boards is further comprised of a second set of vertically extending grooves integrally formed and positioned on the opposite side of said side board from said first set of grooves, a second set of integrally formed, internally threaded sleeves positioned within said sec-

ond set of grooves, a second set of downwardly extending curved members integrally formed with said side board and extending from each of said second set of grooves, each said curved member having a leg portion adapted to fit within the hollow region adjacent each pillar of a bottom board positioned adjacent the side of said side board from which said second set of curved members extend, each leg portion having an aperture therein corresponding to the aperture in said hollow region of said bottom board, a second set of support members extending upwardly from the top of said side board coaxially of each groove of said second set of grooves and integrally formed with said side board and having an aperture therein on the same side as each of said second grooves, and a second plurality of cover members adapted to fit thereover and having a hook member extending from an end thereof and adapted to be positioned within one of said second set of support members, whereby shelf units may be horizontally connected.

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