

June 22, 1965

O. PIRA

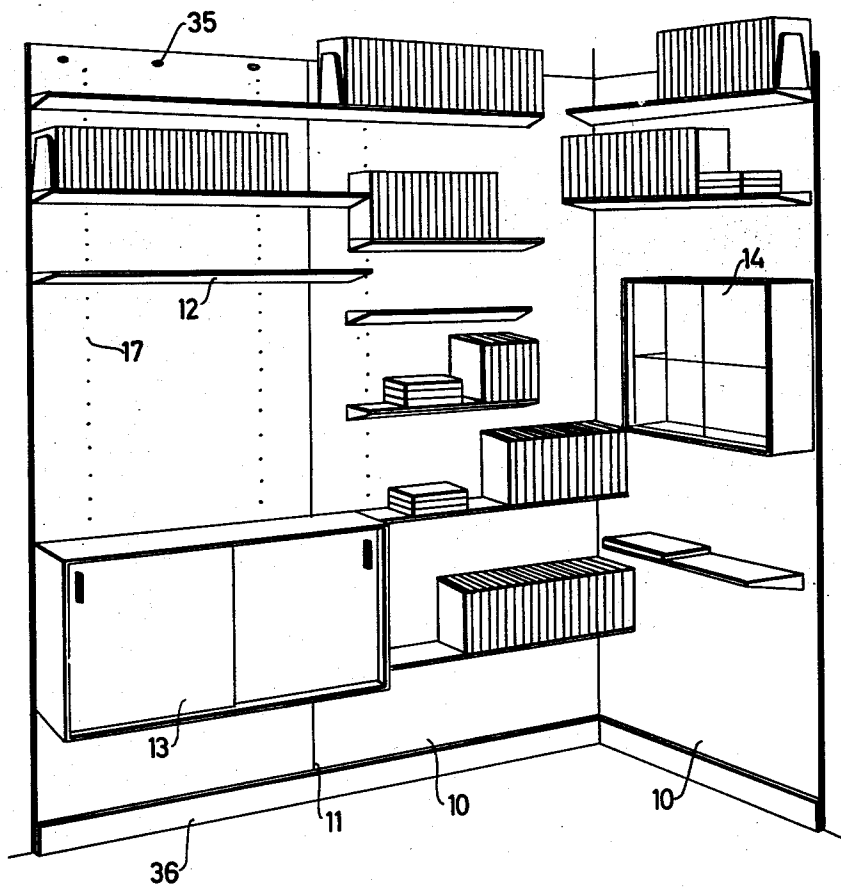
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SHELF STRUCTURE

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Fig. 1



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Fig. 2

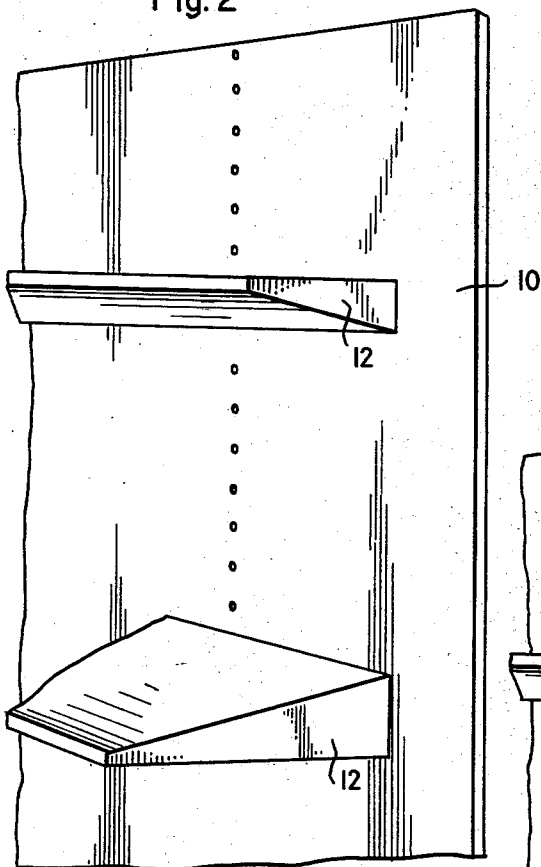
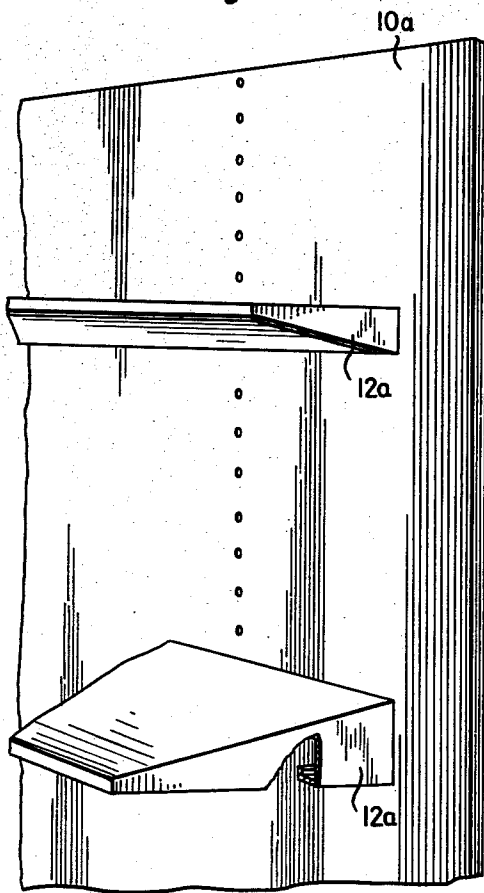


Fig. 3



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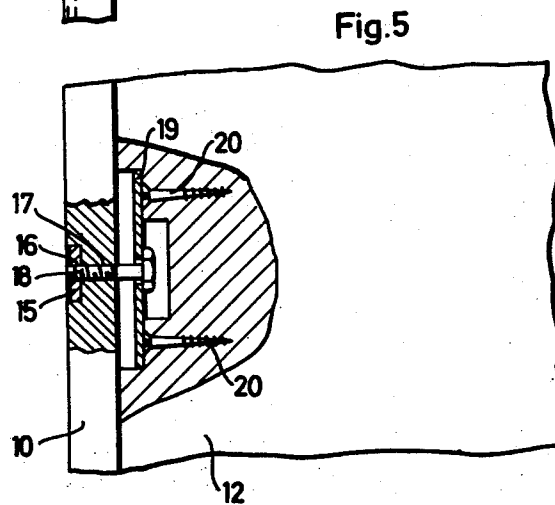
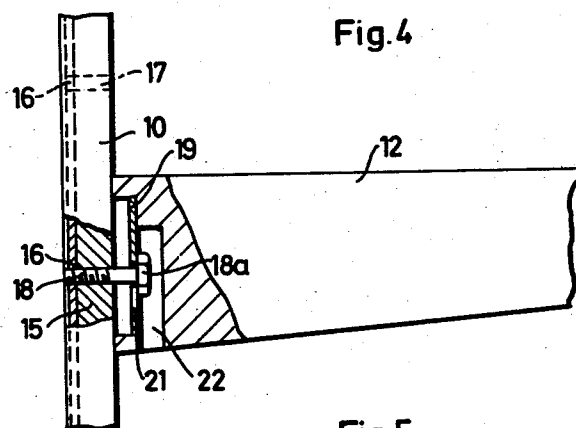
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Fig. 6

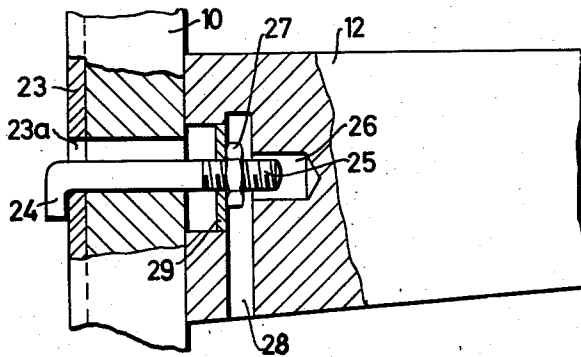
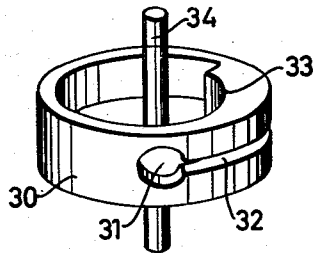


Fig. 7



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SHELF STRUCTURE

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1 Claim. (Cl. 108—152)

The present invention relates to a shelf structure. For the sake of simplicity the invention will be described below with reference to a book shelf, but the invention is not limited thereto. Irrespective of the intended use and irrespective of minor deviations with regard to the structural details for adaptation to the requirements on each occasion, any structure having the general features stated below will thus be considered to be within the scope of the invention. Consequently, the expression book shelf should be considered to include also a shelf structure provided with e.g. cupboards, so-called vitrines, inclined shelves for periodicals, local illuminations, etc.

As technics have progressed generally, also the demands put on a modern book shelf have increased and widened. Thus, it is no longer sufficient to make a book shelf easy to mount and to build out and easily adaptable to the demands of the occasion. To win popularity with the public, it is no longer sufficient to increase, by constructive improvements, the stability of the previously known buildable book shelves so that they can stand a heavy load, or to increase the possibility of adapting the book shelves to widely different requirements. More or less by right, such improvements are taken for granted. Modifications of constructions already known, for the purpose of obtaining aesthetically more attractive shapes are likewise considered quite natural. Thus, to gain real appreciation for a modern shelf structure it is necessary to tread entirely new paths. This is the case with the shelf structure according to the present invention.

The shelf structure according to the invention, which has a plurality of shelves, cupboards, vitrines and the like mountable in desired positions as known per se, is characterized substantially in that it consists of a back panel, preferably made of several parts, inner fastening members provided in the back panel, outer fastening members provided in the shelves and connection members located between the inner and outer fastening members, said connection members being arranged such that the connections obtained with said members can be tightened after the shelves or the like have been put in their intended places.

In an embodiment of the shelf structure according to the invention, the inner fastening members consist of vertical metal rails provided on that side of the back panel which is turned towards an adjacent wall and provided with a plurality of spaced threaded holes located opposite to corresponding through holes in the back panel, the connection members consisting of threaded bolts adapted to be screwed into the threaded holes of the metal rails and the heads of which are adapted to engage keyhole-shaped fittings in the shelves which are provided with downwardly opening slots through which a spanner can be inserted for tightening the bolts. Of course, it is also possible to provide the shelves with eccentric, pivotal members adapted to cooperate with the heads of the bolts for bracing the shelves against the back panel. It is also possible to design the metal rails with oblong slots for engagement with hook-shaped connection members which are preferably threaded at their outer ends and provided with a nut which can be tightened for bracing the shelves against the back panel. Also, it is possible to design

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the outer fastening members provided in the shelves with wedge-shaped abutments engaging the bolts behind their heads, the bracing of the shelves against the back panel being achieved by displacing the shelves in a suitable direction, e.g. to one side or downwardly.

The invention will be described in more detail below with reference to the accompanying drawings.

FIGURE 1 is a perspective view of a shelf structure according to the invention;

FIGURE 2 is a perspective view of part of the shelf structure;

FIGURE 3 is a perspective view corresponding to FIG. 2 and showing a portion of a shelf structure of sheet metal;

FIGURE 4 shows, partly in section, a connection between a shelf and the back panel;

FIGURE 5 shows a top view corresponding to FIG. 4;

FIGURE 6 shows another embodiment of the device according to FIG. 4;

FIGURE 7 shows an outer connection member intended to be mounted on the shelves.

The shelf structure shown consists of two back panels 10, each preferably made of two or more parts, as indicated by the line 11. A plurality of shelves 12, a cupboard 13 and a so-called vitrine 14 are secured to the back panels.

FIGURE 2 shows that the rear edges of the shelves 12 are considerably thicker than the fore edges, and thereby the shelves are securely supported against a forward inclination. In FIGURE 2, the back panel 10 as well as the shelves 12 are supposed to be made of wood, but of course also other materials are possible. For instance, the back panel may consist of sheet metal or plastics and the shelves may consist of plastics, glass or the like. In the embodiment according to FIG. 3, the back panel 10a as well as the shelves 12a are supposed to be of sheet metal. Of course, also any desired combination of said materials or other materials may be used.

FIGURE 4 shows, in side elevation and partly in section, a manner of securing the shelves to the back panel, and FIGURE 5 is a corresponding top view. It will be seen that the back panel 10 is provided with a vertical metal rail 15 having a plurality of spaced threaded holes 16 located opposite to corresponding throughgoing holes 17 in the back panel, of which not all are shown. Bolts 18 are screwed into the holes 16, 17. The shelves 12 are provided with fittings 19 secured in some suitable manner, for instance by means of two screws 20. The fittings 19 are provided with keyhole-shaped holes 21 having a lower portion of such size that the head 18a of the bolt 18 can be inserted through it and an upper, slightly narrower portion holding the shaft of the bolt. Thus, the edges around the upper portion of the hole 21 engage the bolt behind the bolt head 18a. When the shelf 12 has been placed on two or more bolts 18 located at the same level, the bolts are tightened by means of a suitable spanner which is inserted from below through a slot 22.

In the embodiment according to FIGURE 6, the metal rail 23 at the rear side of the back panel is provided with a plurality of spaced holes 23a located opposite to corresponding throughgoing holes in the back panel. The holes 23a are oblong and render possible the insertion of a hook, the end 24 of which engages behind the metal rail 23. The other end 25 of the hook is threaded and provided with a nut 27 which can be tightened by means of a spanner introduced from below through the slot 28. The nut 27 rests against a suitable fitting 29 in the shelf 12. The shelf 12 is provided with a bore 26 for receiving the end 25 of the hook.

Instead of using a nut or the bolt head for drawing the shelf towards the back panel 10, it is of course possible

to use the locking member 30 shown in FIGURE 7. This locking member has a hole 31 for inserting a bolt head or the like and a surrounding slot 32 for the bolt shaft. A cam surface 33 is provided at the inside of the locking member 30 to cooperate with the bolt head for drawing the shelf towards the back panel when the locking member is turned around its axis 34.

In practice, the back panels 10 and the shelves 12 are made with e.g. two different dimensions in horizontal direction, the distance between the vertical rows of locking members, e.g. the metal rails 16, and the distance of the latter from the edges of the back panel portions being calculated such that the greatest possible number of mounting combinations is obtained. In the case of veneered back panels it might be possible not to let the holes 17 extend through the outermost ply of veneer and to indicate by cemented-on marking strips where the holes 16 and the corresponding hole portions in the underlying material are situated and then to make the necessary punctures in connection with the mounting. If, later on, the shelves are to be moved, it is easy to ascertain, by measuring, where the holes 16 are located. By this it would be gained that the back panel remains quite smooth in front.

When mounting the shelf structure, a number of back panel parts are secured to a wall by means of screws 35, preferably placing foam rubber ribbons or the like between the wall and the back panel to compensate for irregularities in the wall surface. At their lower edges the back panel parts rest on lists 36 placed in front of the ordinary floor lists. On completion of the back panel, bolts 18 or the like are screwed into it at desired points and the shelves 12 and the like are then placed thereon. Then the bolts are drawn tight by means of suitable spanners.

It is appreciated that the shelf structure according to the invention involves a considerable new creation. Thus, the shelf is extremely simple and cheap in manufacture. Further, it is easy to transport, as it can be folded into flat packages of little bulk. Moreover, the shelf has little weight, which is of importance from the point of view of transportation as well as of mounting. Of course, the shelf fulfills all reasonable requirements with regard to strength and stability, and its aesthetic value will be obvious. In this context, it should be mentioned as an example only that no supporting members or marring braces whatever are part of the construction. A particular advantage is the absolute independence of the ap-

pearance of the wall behind the shelf, and it is particularly advantageous to use the shelf in newly furnished shops and the like where it can be mounted directly on brick walls, cast or plastered walls without any surface treatment being necessary.

Modifications and alterations of details are possible within the scope of the inventive idea.

I claim:

A shelf mounting comprising, a wall panel having an aperture, a threaded fastening bolt extending through the aperture, a shelf having a rear face, a back plate on said shelf disposed substantially parallel to the rear face and located forwardly of the same, said back plate being provided with a key-hole shaped aperture through which the fastening bolt extends, adjustment means on the fastening bolt located forwardly of the back plate and adapted by rotative movement to draw the shelf toward the panel to bring its rear face in contact with the panel while locating the rear plate forwardly of and free of contact with the panel, and the shelf having a recess having one of its walls formed by the back plate, said recess being located forwardly of the back plate and exposing the adjustment means from below the shelf only and permitting the entry of a tool to engage and rotate the adjusting means to thereby cause the bolt to draw the rear face of the shelf against the face of the panel.

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