

[54] **MODULAR STORAGE AND DISPLAY ASSEMBLY**

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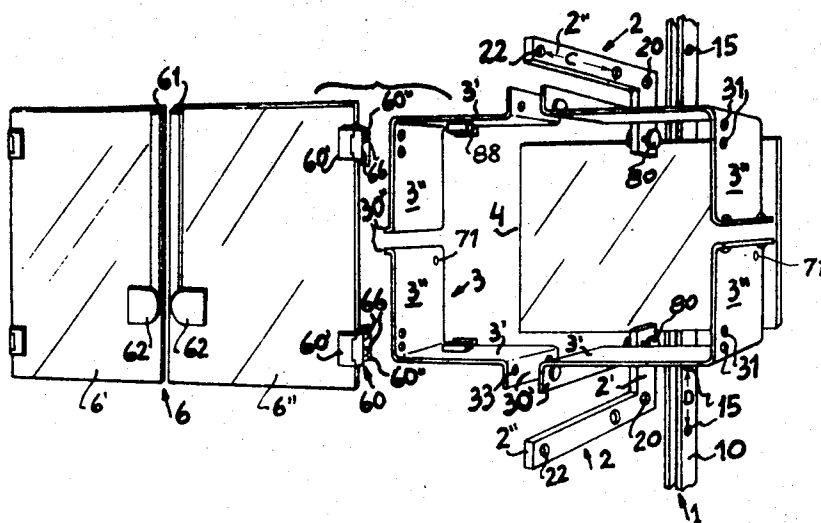
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[57] **ABSTRACT**

A modular storage and display assembly comprises an upright support channel defining a gap and formed with a succession of equispaced transversely throughgoing bores. A right-angle bracket is receivable in the gap and clampable in place by hand screws. One or two W-shaped shelf elements can be secured to the bracket, with another bracket and shelf element or elements forming an upwardly closed storage cell. A thin brace extending from the support channel, which is formed by a pair of bars, can be attached by a hand screw to the support above the bracket and to the end of the shelf remote from the support if an upwardly open shelf is wanted.

**9 Claims, 5 Drawing Figures**





## MODULAR STORAGE AND DISPLAY ASSEMBLY

### FIELD OF THE INVENTION

The present invention relates to a modular storage and display assembly usable as a shelf, or cupboard or closet with or without doors.

### BACKGROUND OF THE INVENTION

Modular shelf arrangements are known which consist of a pair of upright side portions between which can be hung shelves at different levels. Doors can be connected to these side portions if desired.

Such arrangements are generally bulky, since the entire space between the uprights, which extend out from the wall, must be occupied, or, if it is not, this space is useless anyhow. Furthermore, attractive appearance is often sacrificed for functionality.

### OBJECTS OF THE INVENTION

It is an object of the present invention to provide an improved modular storage or display assembly.

Another object is to provide such an assembly which can be made into as shelves or open or closed cupboards.

Yet another object is to provide a storage assembly which can be simply and rapidly assembled virtually without the use of tools.

### SUMMARY OF THE INVENTION

The above objects are attained according to the present invention with a storage and display assembly adapted to be hung on a wall and comprising an elongated upright support channel adapted to be attached to a wall and defining a gap. This channel is formed with a succession of equispaced transversely throughgoing bores which register with a pair of holes formed through one arm of a right-angle bracket, this arm being received in the channel gap. Connecting means in the form of hand screwable nuts and bolts can be engaged through the holes and bores to fix the bracket on the support channel and to hold a substantially horizontal shelf element on the other of the bracket arms.

According to another feature of this invention the shelf element is attached at its portion remote from the bracket to a tie element or brace which is itself anchored to the support channel. This tie element can be a substantially Z-shaped brace having one end portion connected to the end of the shelf element and the other end portion anchored in the gap. It can also be simply another shelf element connected to another bracket.

The shelf element is an advantageously metallic sheet which is substantially W-shaped, having all right angles with its two ends substantially shorter than the central flat regions. These ends constitute lips which can be bolted to the bracket or to the lips of another shelf element, or merely serve to stiffen the shelf when a brace is used.

The features of the invention—symmetry and interchangeability of parts—make it possible to build a multiplicity of different combinations. At the same time the whole modular assembly is held on a single upright which can be easily attached to a wall, so that no bulky and often disadvantageous side uprights need be used. A very neat finished assembly is obtained.

## DESCRIPTION OF THE DRAWING

The above and other objects, features, and advantages of the present invention will become apparent from the following description, reference being made to the accompanying drawing, in which:

FIG. 1 is an exploded perspective view of a closable cupboard assembly made according to the present invention;

FIG. 2 is a horizontal section through the cupboard shown in FIG. 1;

FIG. 3 is a front view of a shelf arrangement according to the present invention;

FIG. 4 is another front elevational view of another shelf assembly; and

FIG. 5 is a top partly sectional view of yet another shelf assembly.

### SPECIFIC DESCRIPTION

The modular assemblies shown in the Figures all can be made of the following pieces: support 1, brackets 2, shelf elements 3, backs 4, shelf plates 5, doors 6, and braces 7. These are all held together by various screws, numbered between 80 and 86.

More specifically the support 1 comprises a pair of channel-forming metal bars 10 which are formed with a plurality of throughgoing bores 15 spaced from each other by a distance D of several centimeters. This succession of bores 15 extends the whole length and in line up the center of the bars 10. At the upper and lower ends the bars 10 are fitted with mounting feet 11 which are substantially Z-shaped strips of metal that have end portions 12 formed with bores 12' and adapted to be bolted to a wall 14 by screws 13. The other ends of the feet 11 are attached to the ends of the respective bars 10. The feet 11 can be attached anywhere along the bars 10 deemed advantageous, and are arranged so that the bars 10 form a channel with a gap of width A between its sides.

Each bracket 2 is a right-angle piece of metal having a thickness equal to the gap width A. They each have one short leg 2' formed with a pair of holes 20 which are spaced apart by the distance D so that bolts 80 can pass through both the holes 15 and the bores 20 to fix the bracket 2 on the support 1. Each bracket also has a long leg 2'' which extends at a right angle to the leg 2' so that it is substantially horizontal when the support 1 is upright. This leg 2'' is formed with bores 22 spaced apart by a distance C.

Each shelf 3 is substantially W-shaped, with two large flat portions 3' and 3'' bearing respective lips 30' and 30''. The portion 3' is longer than the portion 3'', although the whole shelf 3 is of constant width. The lip 30' is formed with a pair of bores 33 spaced apart by the distance C so that bolts or hand screws 83 can clamp this lip against the bracket leg 2''. This shelf 3 is made of sheet metal. Each shelf 3 is formed with bores 31 and 71 whose use will be explained below. Furthermore, each shelf is provided on its portion 3' with a pair of stops 88 which can retain a large square back sheet 4, Advantageously of glass, if desired.

As also shown in FIGS. 1 and 2 the door assembly 6 includes a pair of rectangular door plates 6' and 6'' each having an edge strip 61 and a handle 62. A pair of hinges 60 on the outer edge of each door section 6' and 6'' has its movable flap 60' attached to one plate and its

fixed flap 60'' formed with bores 66 registrable with the bores 31 to allow fastening of the door assembly 6 to the shelves 3 by means of bolts 80. This embodiment shown in FIGS. 1 and 2 can be used for the storage or display of anything which should be protected; for instance, it would be highly advantageous as a bar.

FIG. 3 shows a pair of shelves 3 each mounted on respective brackets 2 as described above. Furthermore, a brace 7 is provided which consists of a metallic strip with at each end a right angle tab 70 or 77 bent in opposite directions and formed with respective bores. The strip has a thickness B equal to half of the distance A. The tab 70 is fastened by a bolt 84 to the shelf 3 through the bore 71, and the tab 77 is held between the bars 10 by a bolt 85. Thus, the shelf shown in FIG. 3 is open upwardly and to one side and only closed partially at the back by the brace 7. Such a shelf would be advantageously used for the decorative display of a vase or the like.

The arrangement of FIG. 4 is virtually identical to that of FIG. 3, except that two such shelves are provided, with two braces 7. Furthermore, a plate 5 covering the top of this shelf and connected to the flaps 30'' by bolts 86 is provided. Such a shelf is usable, for instance, for books. FIG. 5 shows a top view of such a shelf, without the plate 5.

The modular assemblies described above can be combined in virtually any imaginable fashion, to produce whole stacks of shelves, cupboards, and the like, exactly as need dictates. The bolts are all advantageously formed as hand screws with large knurled heads so that, once the supports 1 are mounted, no tools are needed to assemble and disassemble the units while all of the bores and holes are of like diameter. The reduced size of these supports 1 makes them inobtrusive in the extreme, so the overall esthetic effect is very pleasing, while function is perfectly served.

I claim:

1. A modular storage assembly comprising: an elongated upright support channel adapted to be attached to a wall, said channel defining a gap and being formed with a succession of equispaced transversely throughgoing bores;

a bracket having a pair of right-angle arms lying in a plane, one of said arms being receivable in said gap and formed with a pair of holes registrable with said bores of said channel;

connecting means engageable through said bores and said holes for fixing said bracket on said channel; and

a substantially horizontal shelf element mounted on the other of said arms, said other arm of said bracket being formed with throughgoing bores, said shelf element comprising a pair of plates having horizontal portions lying in a common plane perpendicular to the plane of said arms and respective end lips on extremities of said plates flanking said other arm, said end lips being formed with bores registrable with said bores in said other arm, further connecting means securing said end lips to said bracket.

2. A modular storage assembly comprising: an elongated upright support channel adapted to be attached to a wall, said channel defining a gap and

being formed with a succession of equispaced transversely throughgoing bores; a bracket having a pair of right-angle arms, one of said arms being receivable in said gap and formed with a pair of holes registrable with said bores of said channel;

connecting means engageable through said bores and said holes for fixing said bracket on said channel;

a substantially horizontal shelf element mounted on the other of said arms, said shelf element having one end portion attached to the other arm of said bracket, and another end portion remote from said other arm; and

a brace having one end anchored to said support channel above said bracket and another end attached to the remote end portion of said shelf, said connecting means also securing said brace to said support channel, said shelf element being a substantially W-shaped plate having a pair of end lips and a pair of flat central webs substantially orthogonal to each other, said other arm of said bracket being formed with throughgoing bores, one of said end lips being formed with bores registrable with said bores in said other arm, further connecting means securing said one of said end lips to said bracket.

3. The assembly defined in claim 2 wherein said brace is a rigid elongated element having a pair of right-angle end tabs bent away in opposite directions from the longitudinal axis of said brace, each of said tabs being formed with a throughgoing hole, said shelf element being formed on one of said flat webs with a throughgoing bore, said connecting means passing through the bore in one of said tabs and said bore in said support channel for securing same together and through the bore in the other of said tabs and said bore in said flat web for securing same together.

4. The assembly defined in claim 2 wherein said brace is constituted by another such shelf element and bracket, said shelf elements each being formed with throughgoing holes on the other of said end lips, said further connecting means passing through said holes on said other end lips for securing same together.

5. The assembly defined in claim 4, further comprising closure means including at least one door having one hinge anchored on one of said shelf elements and another hinge anchored on the other of said shelf elements.

6. The assembly defined in claim 2 wherein said channel is formed by a pair of elongated rigid bars extending parallel to each other, said assembly further comprising mounting means connected to said bars and adaptable to secure same to a wall.

7. The assembly defined in claim 2 wherein said connecting means each comprises a plurality of hand screws.

8. The assembly defined in claim 2 wherein said channel, said bracket, said connecting means, and said element are all metallic.

9. The assembly defined in claim 2 wherein said gap has a width equal to the thickness of said bracket, all of said bores and holes being of substantially like diameter.

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