

[54] **BUILDING UNIT FOR FURNITURE** 3,389,666 6/1968 Bonatz..... 312/257 R X  
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[57] **ABSTRACT**

A building unit for furniture comprising sidewall pieces and intermediate pieces such as shelves, floors, tops, rear walls, forward door panels, etc., wherein the various pieces are joined by means of angularly formed connectors having mounting surfaces lying in three mutually perpendicular directions and provided with apertures adapted to register with predetermined holes through the furniture pieces for receiving screw and nut assemblies. The units are designed so that additional furniture units may readily be added to the top, sides, front or back.

[56] **References Cited**  
**UNITED STATES PATENTS**  
 603,814 5/1898 Dipman et al. .... 5/200 C X  
 2,721,632 10/1955 Surpierre ..... 403/217

**6 Claims, 8 Drawing Figures**

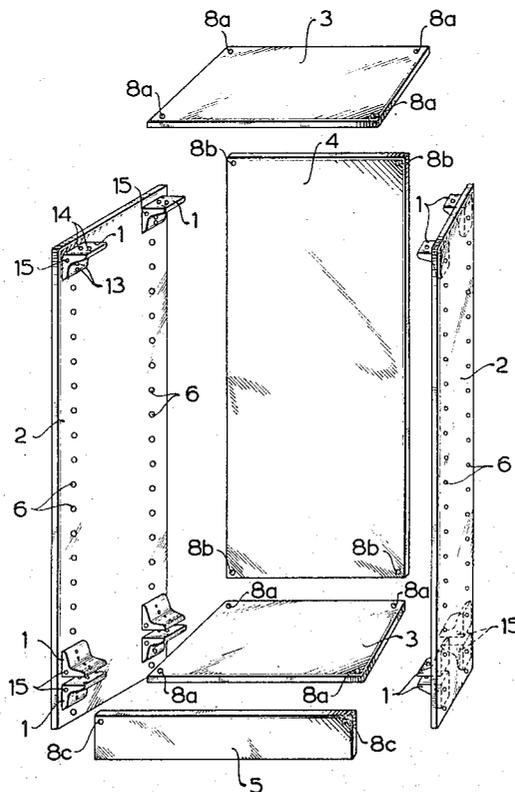
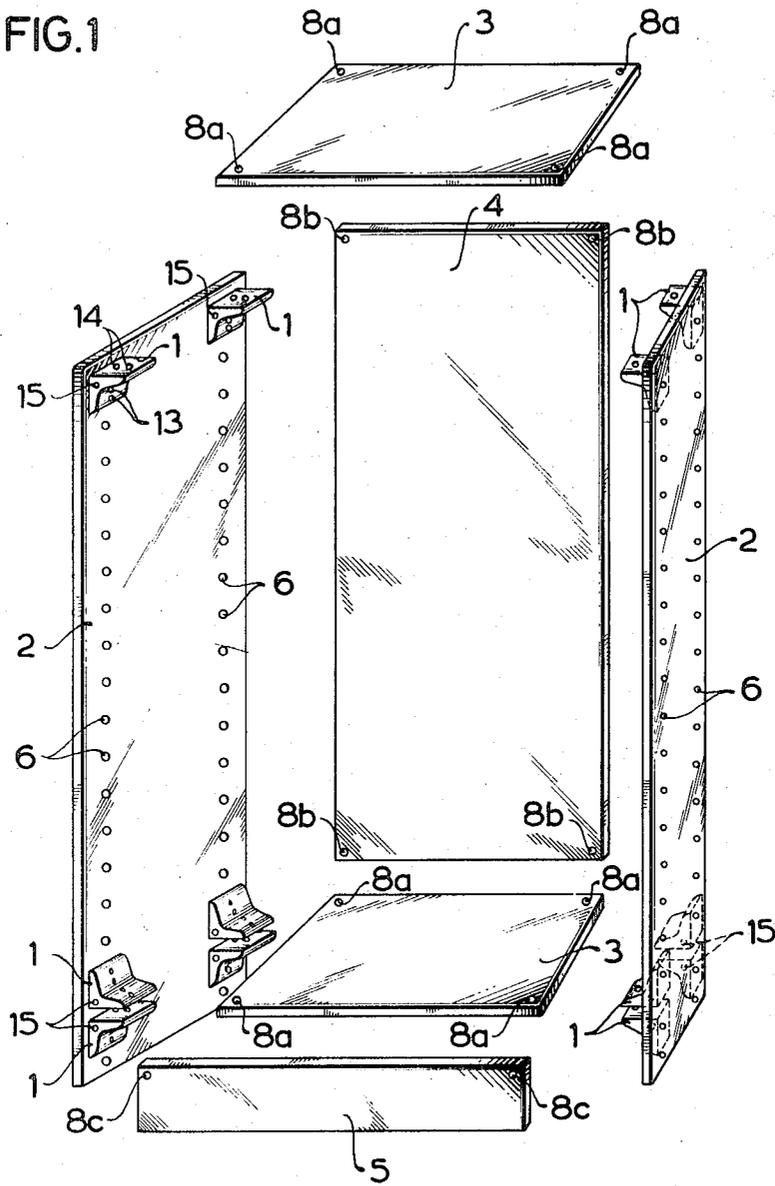
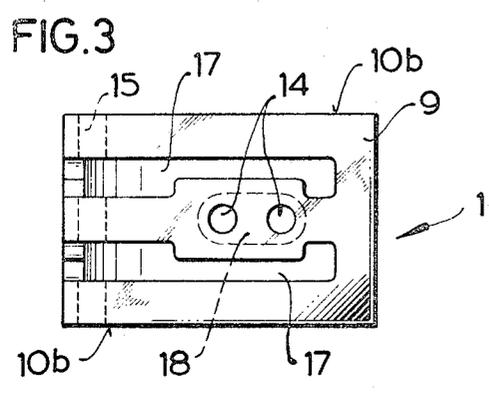
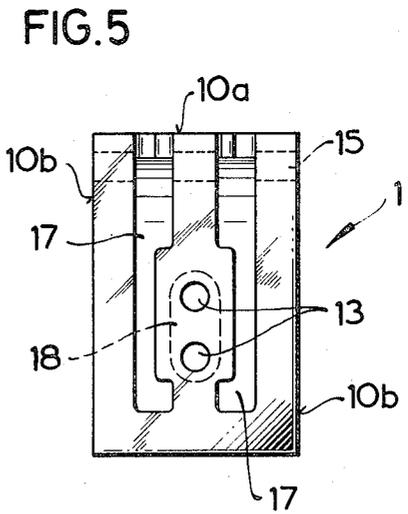
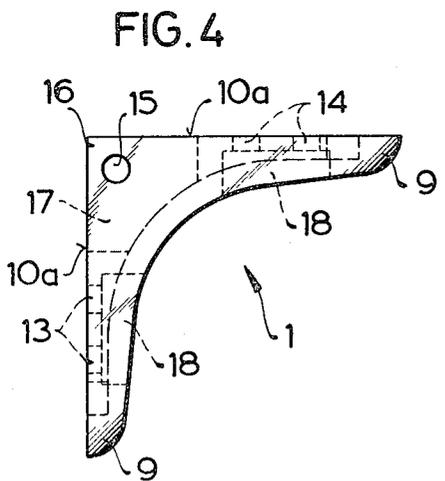
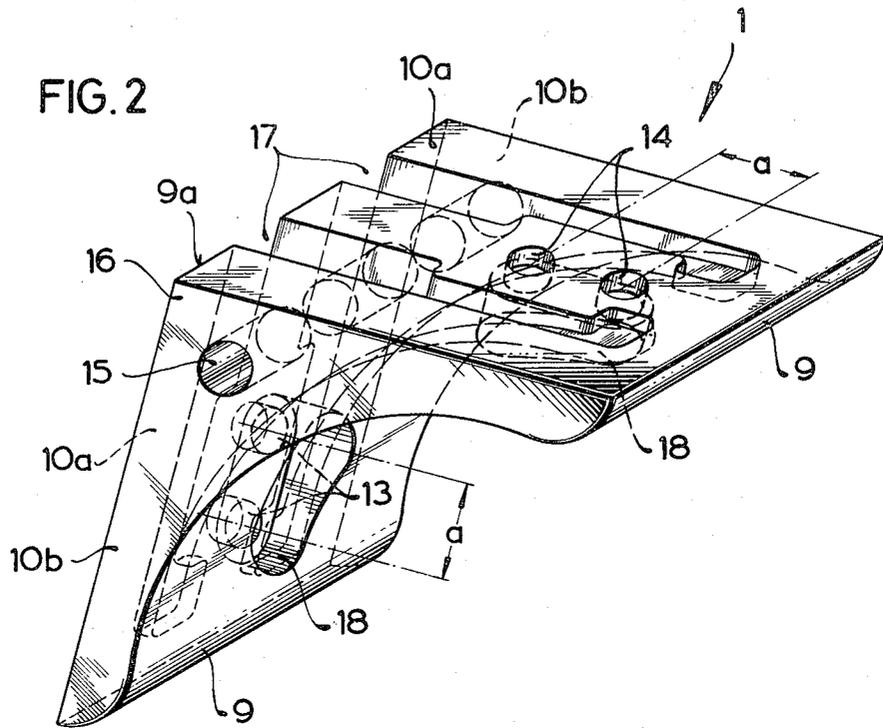
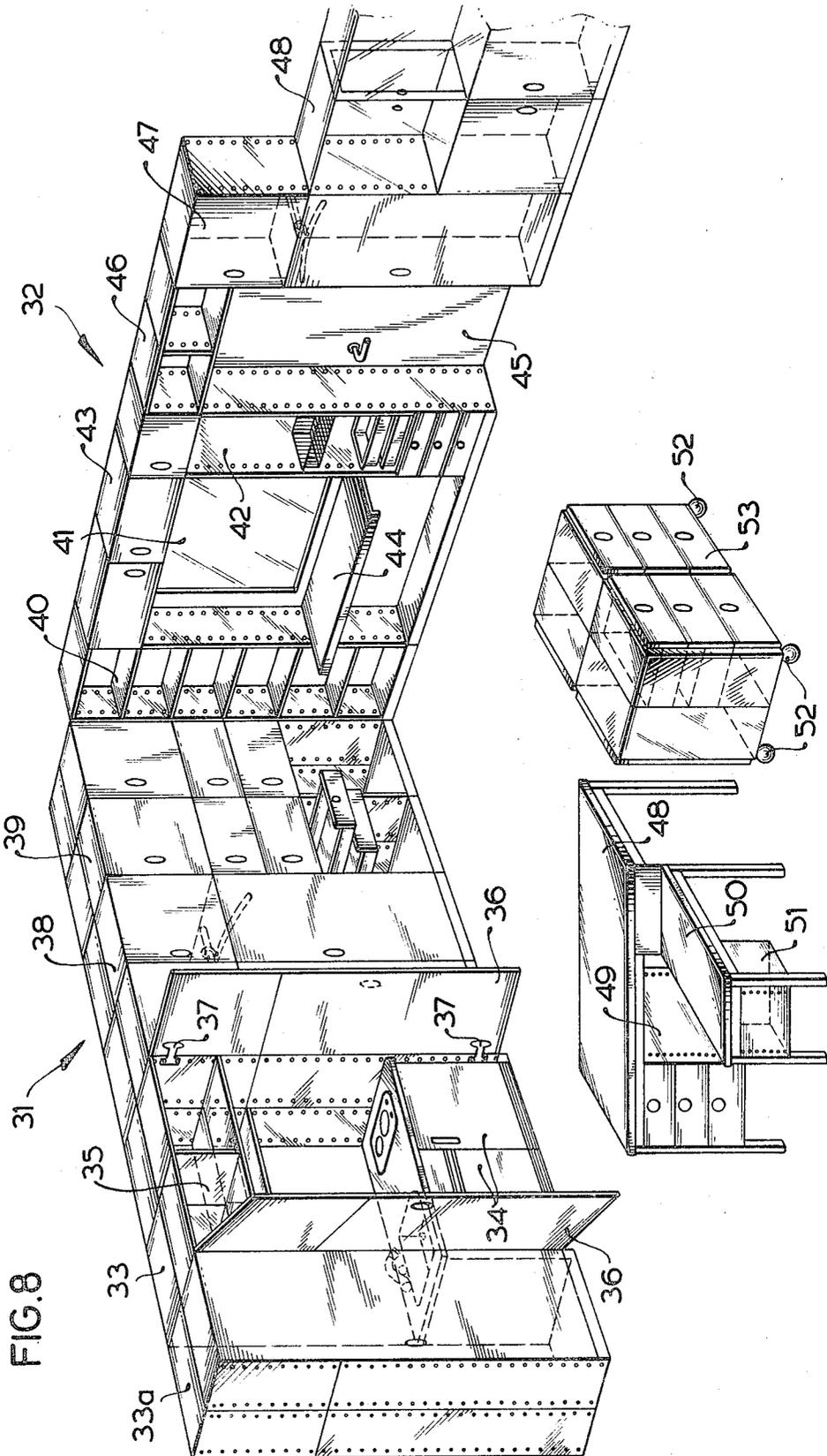


FIG. 1









**BUILDING UNIT FOR FURNITURE****BACKGROUND OF THE INVENTION:**

The invention pertains to a building unit for furniture which comprises floor, back and/or sidewalls and apertured connecting pieces,

Cupboards, closets and shelves are already known in which the floor or shelves and sidewalls are connected to each other by means of connecting pieces which are usually applied with one side on the floor or shelf and with another side on the sidewall by means of fastening elements such as screws. There are also known closets and bookshelves whose sidewalls are provided near their edges with vertically extending rows of perforations. These perforations serve to hang supports to receive shelves or cupboard insert units. Closets and shelf walls of this type are only in limited measure adjustable or expandable. Principally, there is no way of adding on to the top or to the rear of the unit without making difficult modifications which must be necessarily carried out by a professional worker.

It is therefore the object of this invention to provide a building unit for furniture especially for closets, cupboards and shelves, which is simple and robust in construction and which also will later readily allow numerous possibilities for variation or for building on additions.

**SUMMARY OF THE INVENTION**

This object is achieved, according to the invention, by providing building units for furniture in which the sidewalls and intermediate pieces which extend between the sidewalls such as shelves, floors, tops, rear walls, forward door panels, etc., are provided with preformed holes and are connected by means of connecting pieces which are formed with contact surfaces for the furniture parts in three mutually perpendicular directions and which have apertures for receiving fastening elements therein.

The heart of this building unit is a connecting piece which has mounting surfaces for the furniture pieces in at least three mutually perpendicular planes and which has apertures for the fastening elements. Thus, backs, tops, shelves, floors, and/or sidewalls, etc., with preformed holes can be connected to each other in a simple manner. The fastening elements are extended through the apertures of the connecting pieces and the preformed holes of the sidewall and intermediate pieces and are tightened to hold the sidewall and intermediate pieces firmly to the mounting surfaces of the connecting piece so that a stable corner construction arises.

Significantly, the inventive furniture building unit makes it possible that already existing furniture units can be extended or expanded without difficulty by adding on further furniture units to either side as well as to the top or especially to the rear. To extend the depth of furniture, two or more furniture units are placed one behind the other and the connecting pieces which are located adjacent the abutting edges of the furniture units are aligned and firmly secured to each other by means of appropriate fastening elements, such as screws, utilizing registering cross apertures in the connecting pieces.

The inventive building units can be easily prefabricated without sacrificing the possibility of infinite vari-

ations and additions. Furthermore, thusly produced furniture is easily moved.

The fastening elements preferably comprise headed screws and nuts, so that the floors and walls in the connecting regions can be firmly secured together between two connecting pieces or one connecting piece and a nut or screw head. Thereby the edges of the preformed holes are not placed under great stress so that chip-board or other composition board materials may be utilized for the sidewalls and intermediate pieces.

In the prefabrication process the sidewalls are preferably provided with two rows of holes extending completely through the wall, while the floor, top, shelves, front and/or rear walls each receive a hole through each corner region thereof. These measures are easily carried out serially on the prefabrication production line.

According to the preferred embodiment of the invention, the connecting pieces comprise two shoulders positioned at right angles to each other with two mutually perpendicular main mounting surfaces thereon and with two auxiliary mounting surfaces formed on the sidewalls of the shoulders perpendicular to the main mounting surfaces, whereby first and second apertures are extended through the main mounting surfaces and a third aperture is extended through the region of juncture of the two shoulders and through the two auxiliary mounting surfaces. The connecting pieces may be produced of any material which is sufficiently resistant to bending and pressure such as many known synthetic plastic materials. The main mounting surfaces are primarily intended for the floor and sidewalls; while the third aperture serves to attach the rear wall, or, if provided, the front panel, hinges, etc., as well as for connecting two furniture units together depthwise when two connecting pieces are secured together by means of the third aperture with appropriate fastening elements.

A further embodiment of the invention is envisioned for the case that additional furniture pieces are to be affixed to existing furniture units. For this purpose each shoulder of the connecting pieces has two apertures arranged a specific distance from each other as will be explained in detail hereinafter. This measure makes possible a very stable construction, particularly when add on to the top of furniture units.

**BRIEF DESCRIPTION OF THE DRAWINGS:**

The invention will be explained in greater detail hereinafter in conjunction with a preferred embodiment shown in the accompanying drawings wherein:

FIG. 1 shows a perspective view of the building unit pieces for the production of a closet.

FIG. 2 shows a perspective view of a preferred embodiment of a connecting piece.

FIG. 3 shows a top view of the connecting piece of FIG. 2.

FIG. 4 shows a side view of the connecting piece of FIG. 2.

FIG. 5 shows a face view of the connecting piece of FIG. 2.

FIG. 6 shows a sectional view of a top corner of a closet or bookshelf prior to the attachment of an additional furniture unit.

FIG. 7 shows a sectional view of a top corner of a closet or bookshelf after the attachment of an additional furniture unit.

FIG. 8 is a perspective view of an example of the application of the inventive building unit in constructing a closet and shelf wall assembly together with a desk and a chest.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. 1 the furniture building unit pieces necessary for constructing a closet are shown in exploded representation. This closet comprises 12 connecting pieces 1, two sidewalls 2, two shelf pieces 3 for the floor and top, a rear wall 4 and a base forward wall 5. The sequence of construction is optional. One can, for example, initially attach the connecting pieces 1 at the appropriate heights or levels on the sidewalls 2. For this purpose the sidewalls 2 are each provided with two vertical rows of regularly spaced holes 6 extending therethrough. The connecting elements are attached to the sidewalls 2 by means of headed screws and nuts, whereby the screws are extended through the first apertures 13 in the vertically oriented shoulders of the connecting pieces and through the corresponding holes in the rows of holes 6. Then rear wall 4 which has been provided at its corners with holes 8b is screwed to the rear connecting pieces 1, which for this purpose are provided with third apertures 15 for receiving the screws. The spacing of the row of holes 6 from the rear edge of sidewall 2 is measured so that the rear wall 4 preferably is flush with the rearward edges of sidewalls 2 and thus lies within the sidewalls 2 as can be seen from FIG. 1. It is also possible to arrange the rows of holes 6 nearer to the edges of sidewalls 2 so that the sides of the connecting pieces 1 lie flush with the forward and rear edges of sidewalls 2.

Then the top shelf 3 is placed on the upper four connecting pieces 1 and attached by means of the fastening elements, which are fastened through the second apertures 14 in the horizontally oriented shoulders of the connecting pieces and through the holes 8a in the corners of the top shelf 3. The attachment of the lower shelf 3 takes place in a like manner between the lower eight connecting pieces 1 which are arranged in pairs spaced a short distance from each other. In order to attach the front of the base 5 to the two forwardmost of the lower four connecting pieces 1, holes 8c are provided which are brought into alignment with the corresponding third apertures 15 extending through the juncture region of the two shoulders of each of the connecting pieces in order to facilitate the insertion of fastening elements such as screws therethrough.

The connecting pieces 1 preferably are angular in form (compare FIGS. 2 and 4) and comprise two mutually perpendicular shoulders 9. These shoulders have two main mounting surfaces 10a separate from and extending perpendicular to each other as well as having on the sides of the shoulders 9 two auxiliary mounting surfaces 10b perpendicular to the main mounting surfaces 10a and parallel to each other. The main mounting surfaces 10a generally serve to receive and mount floors, tops, shelves and sidewalls. The auxiliary mounting surfaces 10b are designed in general for receiving rear and forward walls, hinges or hinged joints, or for connecting together two connecting pieces 1 lying one behind the other when adding on to the front or rear of a piece of furniture to increase the depth thereof.

Perpendicular to each of the main mounting surfaces 10a there extend through the shoulders 9 first and sec-

ond apertures 13 and 14, whereby 13 designates the apertures through the vertically disposed shoulders and 14 those extending through the horizontally disposed shoulders. Perpendicular to the auxiliary mounting surfaces 10b there extends a third aperture 15 through the juncture region 16 of the two shoulders 9 near the common shoulder edge 9a. The apertures 13, 14 and 15 serve to receive the fastening elements, which are preferably screws secured and tightened by means of cap nuts. Recesses 18 are provided to receive the screw heads. Further recesses 17, which extend inwardly from the main mounting surfaces 10a, serve to reduce the amount of material necessary to form the connecting pieces when pieces 1 are manufactured for example from synthetic plastic, metal, injection moulding or the like.

In FIG. 6 a normal upper corner connection between a top 3 and a sidewall 2 is shown as would be found, for example, in a closet such as shown in FIG. 1. As shown in FIG. 6 (see also FIGS. 2 through 5), the vertically disposed shoulder 9 of connecting piece 1 is provided with two apertures 13 extending therethrough. Apertures 13 are disposed one behind the other in a direction perpendicular to the common edge of the two shoulders 9. The centers of the two apertures 13 are spaced apart a distance *a* which is equal to one-half the thickness of shelf 3 (see also FIG. 7). The horizontally disposed shoulder 9 of connecting piece 1 is provided in a like manner with two apertures 14. A screw 19 is passed through the aperture 13 of connecting piece 1 which lies nearer to cross aperture 15 as well as through the topmost hole of the row of holes 6 of sidewall 2. In this arrangement the upper shelf 3 lies flush with the upper edge 7 of sidewall 2.

When it is desired to add an addition to the top of the closet, the connecting piece 1 is displaced upwardly one space by passing screw 19 through the aperture 13 which is remote from the cross-aperture 15. The spacing between apertures 13 corresponds to one-half of the thickness of the shelf piece 3, so that the top shelf 3 now projects beyond the upper edge 7 of sidewall 2 by this amount. When an add-on unit is attached, the lower margins of the add-on unit sidewalls 2 receive shelf 3 between them (compare FIG. 7) so that after forming the connection through aperture 14, the add-on unit is stably connected to the lower closet unit.

The auxiliary mounting surfaces 10b in conjunction with the third apertures 15 serve principally for adding on units to increase the depth of furniture such as for example when movable cupboards or shelves are produced for use as separating walls which are accessible from both sides. In such a case the connecting pieces of the furniture units which are to be joined to each other are placed adjacent to each other and joined firmly together with screws and nuts extended through the cross apertures 15.

FIG. 8 is an example of the many sided versatility of the building units of the invention showing a wall arrangement of cupboards, closets and shelves, etc., constructed around a corner. The left wing 31 has double the depth of the right wing 32 of the wall arrangement since furniture such as kitchen furniture, which has greater depth, is arranged therein. next to an outer closet section 33a, a range and sink combination 34 is located in the lower portion of a second closet section 33 while a shelf portion 35 is disposed thereabove. as can be seen from FIG. 8, closet portions 33 and 33a are

formed by placing one sidewall piece behind another as well as by additionally attaching a top add-on unit which contains the shelf portion 35 of closet section 33. Doors 36 are attached by means of conventional hinges 37. All of the furniture units are firmly, but detachably, connected to each other by means of the previously described connecting pieces and connecting elements.

Adjacent closet section 33 is constructed a closet section 38, which in the lower portion is formed as a clothes closet and the upper add-on portion of which is adapted to serve as storage for various objects. A further cupboard section 39, subdivided in several compartments, is joined thereto with a plurality of doors in the upper portion and drawers and forwardly open compartments in the lower portion. The entire closet wing 31 has double depth formed by placing sidewall pieces or furniture units one behind another. One can also attach rear walls in the manner described hereinabove according to the invention along the length of the perpendicular central plane of closet wing 31 and form the remainder of the closet sections in such a manner that they comprise separate cupboard and shelf sections which are accessible from both sides of the wall arrangement.

In the right hand wing 32 adjacent a shelf portion 40 having open compartments, a window 41 has been surrounded on the sides with sidewalls of the connecting shelf section 40 and 42, on top with a cupboard portion 43 and underneath with a table surface 44. Next to shelf section 42 is a door 45 which has likewise been surrounded with an open compartment 46 constructed above it and with the right side being bordered by a closet 47. The shorter showcase or display cupboard 48 which adjoins closet 47 illustrates the possibility of also producing shorter furniture units with the inventive building units, placing such units on top of each other and firmly connecting them to each other in such position.

A desk 48 shown in FIG. 8 is provided with a drawer section 49 and an auxiliary table 50 with a cupboard 51 constructed of building unit components according to the invention.

Next to the desk 48 there is as a further example of the invention a rollaway chest of drawers 53 mounted on wheels which is put together from several drawer units disposed sidewardly and rearwardly adjacent each other.

The foregoing embodiments have been described merely by way of exemplification and are not to be construed as limiting the scope of my invention which is to be defined solely by the scope of the following claims.

I claim:

1. In a building unit for furniture comprising sidewall pieces, intermediate pieces and apertured connecting pieces; said sidewall and intermediate pieces being provided with preformed holes, the improvement comprising said sidewall and intermediate pieces being connected by means of connecting pieces having mounting surfaces for said sidewall and intermediate pieces and apertures extending through said pieces for receiving fastening elements, said connecting pieces comprising two integral portions having two mutually perpendicular main mounting surfaces through which extend first and second apertures, said connecting pieces further comprising auxiliary mounting surfaces formed on both sides of said connecting piece portions perpendicular to said main mounting surfaces with a third aperture perpendicular to said first and second apertures extending through the juncture region of said portions and through said auxiliary mounting surfaces.

2. A building unit as recited in claim 1 wherein said fastening elements comprise headed screws and nuts.

3. A building unit as recited in claim 1 wherein the sidewalls are provided with two vertically extending rows of preformed holes extending through the sidewalls; each hole in one of said vertically extending rows of preformed holes being aligned along a line perpendicular to the vertical edge of said sidewall with a corresponding hole in the other of said vertically extending rows; said vertically extending rows of holes being spaced a constant distance from each other and from the vertical edge of said sidewall whereby when a connecting piece is mounted through one of the holes in the outer row, an auxiliary mounting surface will lie flush with the vertical edge of the sidewall to facilitate adding on a second building unit in front or in back; and when a connecting piece is mounted through a hole in the inner row, a front or back piece may be mounted against the auxiliary connecting surface of said piece with the outer surface of said front or back piece flush with the vertical edge of said sidewall.

4. A building unit as recited in claim 1 wherein said intermediate pieces are provided with at least one preformed hole in each corner region thereof.

5. A building unit as recited in claim 1 wherein the connecting pieces comprise two mutually perpendicular shoulders forming an L shaped angle.

6. A building unit as recited in claim 1 wherein two apertures are formed in each shoulder of said connecting pieces, said two apertures being disposed one behind the other in a direction perpendicular to the common edge of the shoulders and spaced from each other a distance corresponding to one-half the thickness of the intermediate pieces.

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