A prefabricated furniture or container unit which comprises a main wall and side walls which are pivotally secured to the main wall by hinges consisting of a flexible sheet material which is secured by an adhesive to the main wall and the side walls so that from an erected boxlike position of the unit in which the side walls may be locked, the side walls may all be pivoted toward the main wall so as to extend substantially parallel thereto so that the entire unit will then take up very little storage or shipping space.

1 Claim, 4 Drawing Figures
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FURNITURE OR CONTAINER UNIT

The present invention relates to the manufacture of furniture such as wardrobes, shelves, bookcases or the like as well as of containers of various kinds at least parts of which are in the course of manufacture assembled to form structural units each of which comprises a rear or main wall and side walls which are connected by hinges to this rear wall and may be pivoted so as to extend substantially parallel to the rear wall and to each other to permit this unit to be stored and shipped within the smallest possible space, while when this unit is to be erected for practical use, these walls may be locked at certain angles to each other.

Prior to this invention, normal hinges were employed for connecting the walls of such a unit to each other. For securing such hinges to these walls in a furniture factory by means of screws, it was first necessary to drill smaller holes for these screws into these walls in accordance with the positions of the holes in the hinges and then to insert the screws into the corresponding holes of the hinges and the walls and to tighten the screws. Aside from these time-wasting operations of securing such hinges these hinges had the disadvantage of being relatively expensive and of not forming dustproof seals of the joints between the pivotally connected walls.

It is an object of the present invention to provide very simple and inexpensive hinges for connecting the walls of prefabricated furniture or container units to each other, which have the advantage of being very easily secured to the respective walls without being screwed thereon, of pivotally connecting these walls securely to each other, and of forming tight dustproof seals of the joints between the walls which are connected by these hinges to each other.

This object may be fully attained according to the invention by making the hinges of a flexible sheet material which is coated on one side with a suitable adhesive and may be glued by pressure preferably upon the inner surface of the rear or main wall of the unit which is intended to form a piece of furniture or container or to be assembled with other parts into a piece of furniture or a container. Since the new hinges may be secured to the respective walls merely by an adhesive, the time-wasting operations of screwing normal hinges to these walls are no longer required, and each of the new hinges or even a plurality of them may regardless of their length be firmly secured in a single operation by merely pressing the adhesive-coated sheet or strip of a flexible material forming the hinge or hinges upon the adjacent walls. After being thus applied, each of these new hinges forms a dustproof seal of the entire joint between the adjacent walls. For this reason it is advisable to make each adhesive sheet or strip of a length equal to the height or width of the rear wall of the furniture or container unit.

In order to reduce even the short length of time which is required for applying a plurality of adhesive strips in the proper positions to the adjacent walls to serve as individual hinges, the invention further provides to combine all of the strips by applying a sheet of adhesive-coated material upon the entire inner surface of the rear wall of the piece of furniture or to make this rear wall itself of a flexible sheet material. In this manner it is possible to glue all of the required hinges in one operation upon the rear wall or even to omit this opera-

tion by making the rear wall itself of the flexible sheet material.

The present invention consisting of providing the hinges in the form of adhesive sheets or strips of a flexible material is especially of advantage in a mass production of containers or furniture pieces which are prefabricated to the greatest possible extent so that their final assembly at the place of use may be carried out as quickly as possible and at the lowest possible expense.

According to another feature of the invention, each side wall of the furniture or container unit is preferably connected to the rear or main wall so as to be pivotable about a hinge axis which is located within a plane coinciding with the inner surface of the rear wall and within a plane extending parallel to the respective side wall. If the sum of the depth of two opposite side walls is smaller than the width of the rear wall, these two side walls may be pivotable flat against the inner surface of the rear wall. If, however, fittings are secured to and project from the inner surfaces of these side walls, for example, for mounting shelf boards thereon which when these side walls are pivoted to right angles to the rear wall and parallel to each other also secure these side walls rigidly to each other, the hinge axes of these side walls must be spaced from the inner surfaces of the side walls at a distance at least equal to the length or height of these fittings. This means that the rear wall must be divided into a wide central part and two outer narrow parts, the two outer narrow parts must be pivotably connected by the hinges according to the invention to the central part, and the outer ends of these narrow parts must be rigidly secured to the two side walls.

If the sum of the depth of the opposite two side walls is larger than the width of the rear wall, the two side walls cannot be pivoted into alignment with each other but one must be pivotable over the other. Therefore, the outer narrower parts of the rear wall which are pivotally connected to the central part of the rear wall by the hinges according to the invention must be made of different lengths so that the hinge axis for a first of the two side walls will be spaced for a distance at least equal to the height of the fittings thereon from the inner surface of this wall, while the hinge axis for the second side wall is spaced from the inner surface thereof at a distance at least equal to or larger than the thickness of the first side wall and the height of two fittings, that is, of the fittings on both side walls.

Aside from the above-mentioned advantages, the hinges according to the invention have the further advantages that they are practically invisible, also because if applied in the form of flexible adhesive strips, these strips may be made of a color so as to blend with the color of the walls which they connect, and that even though very tough they may be made so thin that, when applied to the inner side of a piece of furniture, they practically do not project toward this inner side and therefore also do not, like normal hinges, require recesses to be cut into the walls to be connected into which the two hinge plates of each hinge are fitted so as not to project from the surfaces of these walls.

These and additional features and advantages of the present invention will become further apparent from the following description which is to be read with reference to the accompanying diagrammatic drawings, in which:
FIG. 1 shows a rear wall and two side walls of a furniture unit which are connected to each other by hinges according to the invention, while

FIGS. 2 to 4 are perspective views of a rear wall and three side walls of a furniture unit, the fourth side wall of which is omitted for a better illustration, and which are shown in three different positions relative to each other.

In these drawings, FIG. 1 illustrates a part of a wardrobe, bookcase or the like which consists of a rear wall 1 and two side walls 2a and 2b which together form a structural unit in which the side walls 2a and 2b are pivotally connected to the rear wall 1 by means of hinges in the form of flexible strips 4a and 4b of plastic which are coated on one side with an adhesive. When this piece of furniture is being assembled, the side walls 2a and 2b are pivoted to the positions as shown in solid lines in which they extend at right angles to the rear wall 1, while for taking up as little space as possible when this unit is being stored or shipped, the side walls 2a and 2b are pivoted toward the rear wall 1 to the positions as shown in dotted lines in which all walls extend substantially parallel to each other. The hinge axes 3a and 3b of these adhesive strips 4a and 4b are disposed within a plane which coincides with the plane of the inner surface of the rear wall 1 and also within a plane which extends parallel to the side walls 2a and 2b. For securing shelf boards or the like to the side walls 2a and 2b and for thereby also securing these side walls rigidly in a parallel condition to each other at right angles to the back wall 1, suitable fittings 5a and 5b are secured to the inner sides of these side walls. In order to permit the side walls 2a and 2b to be pivoted so as to extend parallel to the back wall 1 despite the projecting fittings 5a and 5b, the invention provides that the axis 3a or 3b of the hinge for each side wall is spaced from the inner surface of the latter at a distance which is at least as large as the height of the fittings. The rear wall is for this purpose divided into a wide central part and two narrow outer end parts which are pivotally connected to the central part by the hinge-like adhesive strips 4a and 4b which are glued upon the inner surface of the rear wall 1. The end part 1a of the rear wall 1 is rigidly secured to the side wall 2a and the other end part 1b to the side wall 2b.

If the width of each end wall 2a and 2b is considerably smaller than one half of the width of the end wall 1, the two end parts 1a and 1b of the rear wall 1 which are severed from its wide central part and connected thereto by the adhesive strips 4a and 4b may be made of the same width, namely, the width of the end part 1a, and the two side walls may then be pivotable into alignment with each other. If, however, the side walls 2a and 2b have a greater width, for example, as illustrated in FIG. 1, the two side walls must be pivotable over each other toward the central part of the rear wall 1 and the end part 1a of the rear wall 1 which is rigidly secured to the side wall 2a and pivotally connected by the adhesive strip 4a to the central part of the rear wall must be at least twice as wide as the other end part 1b. In other words, when both side walls are pivoted so as to extend substantially parallel to the central part of the rear wall 1, the pivot axis 3a of side wall 2a must be spaced from the inner surface of this side wall at a distance which is at least equal to the thickness of side wall 2b plus twice the height of one of the fittings 4a or 4b.

FIG. 2 illustrates a similar piece of furniture in its position ready for use. The main central part of the rear wall carries the upper and lower side walls 12 and 13 and the left side wall 14 which are pivotable about the hinge axes 15, 16 and 17 which are formed by strips of adhesive tape as previously described. For a better illustration, the fittings 5a and 5b as shown in FIG. 1 and the right side wall of the boxlike piece of furniture are omitted in FIGS. 2 to 4. FIG. 3 illustrates the piece of furniture as shown in FIG. 2 after the side walls 12 and 13 have been pivoted so as to extend parallel to the rear wall 10, while the side wall 14 still extends at a right angle to the rear wall 10. Contrary to FIG. 1, it is assumed in FIGS. 2 to 4 that the depth of each side wall 12, 13 and 14 is smaller than the height of one half of the central part of the rear wall 10 so that all side walls may be pivoted toward the central part of the rear wall as not only to extend substantially parallel to this central part and to each other, but so that the opposite side walls, that is, the walls 12 and 13 and also the wall 14 and the opposite wall, not shown, will be substantially in alignment with each other. From the erected position of the piece of furniture as shown in FIG. 2, the side walls 12 and 13 are therefore the first to be pivoted toward the rear wall 10 and thereafter the other side wall 14 and, if provided, the opposite side wall, not shown, are pivoted over the side walls 12 and 13. The projecting edge portions 11 of side wall 14 which are in alignment with the side walls 12 and 13 when the piece of furniture is in its erected position as shown in FIG. 2 project over the upper and lower edges of the side walls 12 and 13 and also of the rear wall 10 when all of the side walls are pivoted toward the rear wall to the position as shown in FIG. 4.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. A foldable unit, comprising: a main wall, two pair of side walls pivotally connected to said main wall, said walls being provided with inner and outer surfaces, said main wall consisting of a central part and at least one pair of end parts pivotally secured thereto, said side walls being pivotable to an erected position to form a boxlike structure in which a first pair of side walls, disposed on opposite edges of said main wall, extend substantially parallel to each other and at a certain angle to the side walls of said other pair of side walls and also at a certain angle to said main wall, said other pair of said side walls being rigidly attached to said at least one pair of end parts, said other pair of said side walls being adapted first to be pivoted from said erected position towards said main wall so as to extend substantially parallel thereto and said first pair of side walls being adapted thereafter to be pivoted therewithover said other pair of side walls so as to extend substantially parallel to the latter, each side wall of said first pair of side walls being provided with a ledge rigidly secured to and projecting at substantially a right angle from each of the two opposite edges thereof, said ledges abutting against and being in alignment with the lateral edges of the side walls of said other pair of side walls when said unit is in its erected position and engaging over the pivotally
connected edges of said other pair of side walls and said main wall when both pairs of said side walls have been pivoted toward said main wall, and flexible hinge means for pivotally securing said at least one pair of end parts and said first pair of side walls to said central part at respective edges thereof, said flexible hinge means including a flexible sheet material covering the entire inner surface of said main wall, said flexible sheet material being provided with marginal projecting portions adhesively secured to said first pair of side walls and said at least one pair of end parts.

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