Feb. 5, 1957 R. R. SUNDELIN ET AL 2,779,978

WALL UNIT FASTENING

Filed March 16, 1953

Fig. 1.

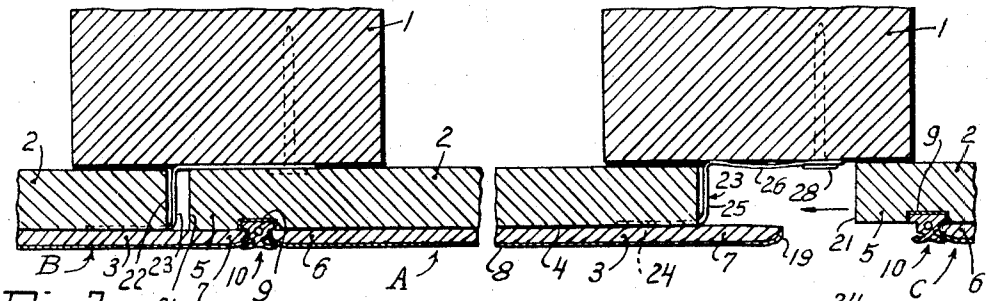


Fig. 2.

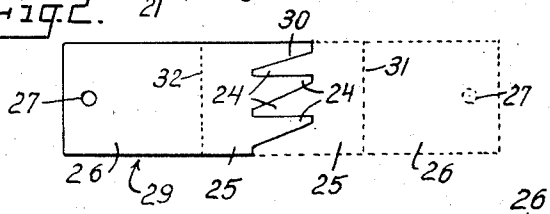


Fig. 3.

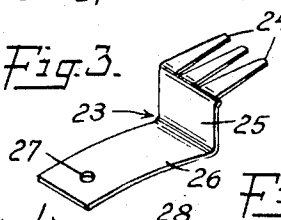


Fig. 4.

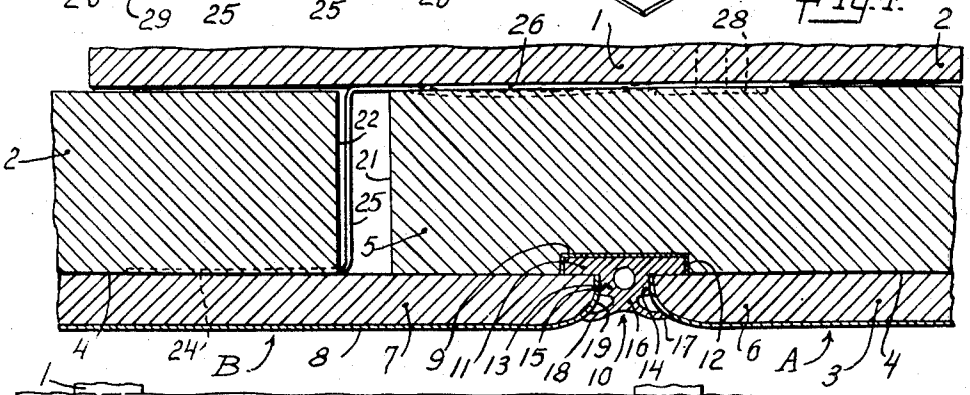
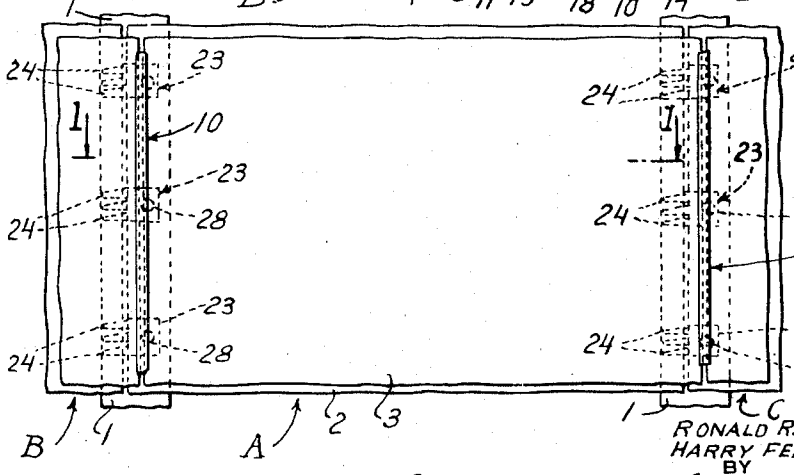


Fig. 5.



INVENTORS
RONALD R. SUNDELIN
HARRY FEDER
BY
Pennie, Edmonds, Morton, Barrows and Taylor
THEIR ATTORNEYS

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WALL UNIT FASTENING

Ronald R. Sundelin, Roslyn Harbor, and Harry Feder, New York, N. Y., assignors to Barclay Manufacturing Co., Inc., Bronx, N. Y., a corporation of New York

Application March 16, 1953, Serial No. 342,385

2 Claims. (Cl. 20—15)

This invention relates to improvements in the construction of building walls, particularly interior walls, to an improved wall unit and an improved fixture for attaching the unit to the supporting structure.

The general object of the invention is to provide a wall construction which can be conveniently set up using prefabricated units that can be quickly assembled and attached to the studding, or other wall supporting structure.

Another object of the invention is to provide a prefabricated wall construction which, to a remarkable extent will check or prevent the transmission of sound.

A further object of the invention is to provide a wall construction having moistureproof joints between the units, without the use of calking compound, or the like.

A still further object of the invention is to provide a wall construction wherein the joints between the units thereof provide for expansion and contraction of the individual units.

It will be understood that the term "wall" as used throughout this application includes also the ceiling of a room, since the construction can be used for ceilings as well as side walls.

The invention will be understood from a consideration of the accompanying drawings and the following detailed description. In these drawings:

Fig. 1 is an enlarged horizontal section of the improved wall construction taken on 1—1 of Fig. 5;

Fig. 2 is a view showing a step in the manufacture of an improved clip or fixture used in mounting the wall units;

Fig. 3 is a perspective view of the improved fixture or clip;

Fig. 4 is a greatly enlarged section of the joint shown at the left of Fig. 1 between two adjacent wall units;

Fig. 5 is a fragmentary front elevation showing the improved wall construction and drawn to a much smaller scale than the other figures.

Referring now to these drawings, a wall unit, indicated generally by reference character A and made in accordance with the invention, is shown in front view in Fig. 5 with portions of the adjacent units B and C, respectively, at the left and right, but with the upper and lower portions of all units broken away. Fig. 1 shows these units in section, unit C, however, not yet being in position. The units are supported along their opposite vertical side edges upon a pair of upright studs 1. These are usually of wood, two by four inches (2" x 4") and are usually spaced sixteen inches (16") apart. Accordingly, the wall unit or panel is customarily made to have a width to span two studs. It, of cource, can be made to span three or more studs, if desired.

The wall units (of which unit A is typical, shown broken away at the center of Fig. 1) are each composed of a rigid body member 2 and a facing sheet member 3. These two members are of equal width but are secured together, by means of a layer of adhesive 4, in such a way as to leave a portion 5 of body member 2 projecting beyond one edge 6, for example the left edge, of facing

sheet 3, and also leaving a portion 7 of facing sheet member 3 projecting beyond body member 2 along the opposite or right-hand edge of the unit.

The body member 2 is preferably about three eighths of an inch (⅜") thick and the facing sheet member 3 about one eighth of an inch (⅛") thick making the overall thickness of the unit approximately one half of an inch (½"). These dimensions, however, can be varied to suit conditions. The body member 2 is preferably made of asphalt impregnated wood fiber insulating board, although it can be made of plasterboard, asbestos cement board, plywood, or the so-called sawdust boards, and other materials of this general character. The facing sheet member 3 is preferably made of tampered compressed wood fiberboard, but it can also be made of glass or metal, if desired. Advantageously the adhesive material 4, used to bond together the two members 2 and 3, is synthetic rubber latex. Other adhesives, however, may be used, such for example as a mixture of asphalt and reclaimed rubber, asphalt alone, or neoprene rubber latex.

The facing sheet member 3 is preferably provided with a suitable finish coating 8. Preferably coating 8 is a synthetic baked enamel, such, for example, as an enamel made of alkyd and melamine resins, or modified alkyd melamine resins. Such coating, however, may consist of and air-dried paint or it may consist of a sheet of suitable plastic material laminated to the surface of facing sheet member 3, or the coating 8 may consist of a suitable lacquer. It will be understood, however, that the surface of facing sheet 3 may be left unfinished, and the wall painted in the usual manner, after installation.

Extending vertically in the surface of body member 2 adjacent the left-hand edge 6 of facing sheet member 3 there is a recess 9 within which is mounted a molding, indicated generally by numeral 10. Molding 10 comprises a flat base 11 (Fig. 3) which is secured in recess 9 by means of suitable adhesive 12 (Fig. 4). Extending along the front of base 11 (and centrally thereof in the form of molding shown in Figs. 1–4) there is an outwardly projecting and generally rectangular rib or bead section 13 of yielding and resilient material and having substantially flat and parallel opposite side portions 14 and 15, the purpose of which will presently appear. Outwardly of the rib or bead section 13 there is a cap section 16 having two laterally projecting wing portions 17 and 18 facing in opposite direction. These wing portions are also flexible and resilient.

The molding 10 is preferably made of vinyl plastic, extruded. It also can be made of natural rubber, or synthetic rubber such as neoprene, or of combinations of these materials, or of any convenient material which will provide the characteristics of flexibility and resiliency in rib section 13 and in wing portions 17 and 18.

When the molding 10 is mounted and adhesively secured in recess 9 as above described, the extreme edge 6 of facing sheet member 3 projects over a part of base 11 of the molding and into contact with the right-hand vertical surface 14 of the rib or bead section 13. Also, one of the wing portions, for example the right-hand wing portion 17, is engaged by the edge 6 of facing sheet 3, which edge is preferably curved, as shown in the drawings. The engagement of edge 6 with surface 14 compresses rib section 13 somewhat, and its engagement with wing portion 17 forces the wing portion outwardly somewhat, as may be seen by comparing Figs. 3 and 4. In this way, a moistureproof and vaportight seal is formed throughout the height of the panel or unit.

The wall unit, therefore, comprises the body member 2, the facing sheet member 3 and the molding 10, these parts being assembled and adhesively secured to one another as described. That is to say, the molding is part of the prefabricated unit and is not something that is put

in place at the site during the construction of the wall. This saves time in installation as it eliminates the calking of the joints between the wall units on the job.

When a series of units are mounted on the studs 1, or other wall supporting means, to form a wall, the projecting portion 5 of body member 2 of each unit is placed beneath the projecting portion 7 of facing sheet member 3 of adjacent wall unit B, and its edge 19 (Fig. 4) engages the exposed vertical edge 15 of molding 10 attached to wall unit A. The two units are mounted sufficiently close to one another to cause the rib or bead portion 13 of the molding to be compressed or squeezed somewhat, thereby causing the outer surface of this rib section to bulge slightly. Also, the edge of the second wing portion 18, opposite wing portion 17, is forced outwardly to some extent. This squeezing of the resilient molding 10 between the edges of the facing sheets of the adjacent units produces effective moistureproof and vaporproof joints between them.

Inasmuch as the two main elements of the units, namely, body member 2 and facing sheet 3, are of the same width, and since the facing sheets of adjacent panels are separated from one another by the width of the rib portion 13 of molding 10, the ends 21 and 22 of the respective adjacent body portions 2 are separated from one another by a like distance (Fig. 4). This leaves a space between these edges which accommodates the fastening means by which the panels are attached to the studs 1.

The wall units are not nailed directly to the studs but are attached by means of the improved fixture previously referred to. This is a particular form of Z-shaped metal clip shown at 23 in Fig. 3. This clip has a mid-section 25, with a shank portion 26 and a toothed portion having teeth 24. These two portions project in opposite directions from the respective ends of mid-section 25, being at right angles to the mid-section 25 and therefore parallel to each other. Teeth 24 are tapered in form leaving ample spaces between them to facilitate the application of the clip to the wall unit, as will be presently described. The mid-section 25 corresponds in length to the thickness of body portion 2, and shank 26 has near its end a nail hole 27. Clips 23, or at least the shank portions 26 thereof, are made of flexible resilient material and these shanks are arched or bowed slightly in order to provide spring action for a purpose which will appear later.

The fixtures or clips 23 are stamped from suitable thin gage metal and may be punched or cut, without waste, from a flat rectangular blank such as indicated at 29 in Fig. 2. Such blanks can be severed along the zigzag line 30 to form two clips which are alike in all respects. Such severing simultaneously forms the teeth 24 of the two clips, and these teeth will be identical and having identical spaces fromed between them. The blanks are bent along the dotted lines 31 and along the base of the teeth 24 to place the teeth and shank portions at right angles to the mid-sections 25. These operations and also the punching of two nail holes 27 may, if desired, be performed simultaneously.

In mounting the panels on the studs 1, a series of these spring clips 23 are applied along the right-hand edge of a wall unit, for example wall unit A of Fig. 1, these clips being arranged on approximately a twelve inch spacing from the bottom to the top of the unit. In applying the clips to the unit the teeth 24 are worked into the joint between the outer surface of body portion 2 and the inner surface of the facing sheet 3. The teeth can be worked in by hand or driven in with a hammer applied to the end of the clip.

After these clips have been applied, the wall unit is placed in position. In doing this, projecting portion 5 of the body of panel A is worked in beneath the projecting portion 7 of the facing sheet 3 of the previously mounted panel B, in a manner to be described in detail presently. The wall unit is held in place against the right-hand stud

1, and a nail 28 is driven through the shank of each clip. The clip shanks 26 are long enough to place the nail holes 27 beyond the edge of projecting portion 7 of the facing sheet so that this projecting portion does not interfere with the driving of the nails.

This completes the mounting of the right-hand edge of the wall unit on the stud, and leaves the exposed plate spring shank portions 26 of the spring clips 23 bowed or arched outwardly as shown in full lines in Fig. 1 and in dotted lines in Fig. 4.

The working of the left edges of each panel into place will be described in connection with the unit, or panel C. The arrow at the right of Fig. 1 indicates this operation. In carrying it out, the ends of the spring clips 23 and heads of the nails 28 may cut shallow channels or depressions in the inner surface of body member 2 allowing this surface to touch, or almost touch, the outer surface of the studding 1, avoiding the outward springing of the projecting portion 7 of the facing sheet of the previously mounted panel B. The spring action of the clip shanks 26 forces the outer surface of projecting portion 5 into close engagement with the inner surface of the facing sheet projection 7, thereby providing substantially tight joints between these two surfaces and reenforcing the joint formed between the molding 10 and the edges of the facing sheets of the two wall units.

As described, the panels are placed progressively in position from left to right. Obviously, if desired, the facing sheet projecting portion 7 can be arranged to project from the left of the panels instead of the right, in which case the assembly of the units would proceed in the opposite direction.

With this wall unit construction and mounting, expansion and contraction can take place both horizontally and vertically. Horizontal expansion and contraction can take place because of the presence of the spaces between the edges of the body member 2 in which the mid-sections 25 of the spring clips are positioned, and also because of the yielding and resilient molding 10 between the edges of the facing sheets 3 of the respective panels. The rib sections 13 and opposing wing portions 17 and 18 of such molding can be squeezed to a greater extent, or to a lesser extent, without affecting the tightness of the joints or seal between the panels.

Expansion and contraction can take place in the vertical direction because of the fact that the wall units are not directly nailed to the studding but are indirectly secured through the medium of the spring clips 23, which can shift slightly with respect to the wall units and pivot with respect to the studding without affecting their abiliy to hold the wall units in place.

It will be understood that changes can be made in the form and arrangement of the wall units and attaching fixtures, it being the intention that the scope of the invention shall be set forth in the appended claims.

We claim:

1. A wall construction comprising a wall supporting means, a series of wall units each having a rigid body member and a facing sheet member adhesively secured to one another, said members having substantially the same width and said body member having a projection beyond the facing sheet along one edge of the unit and the facing sheet having a projection beyond the body member along the opposite edge of the unit, the inner surface of said facing sheet extension being parallel to the rear surface of said body member, the body member projection of a succeeding unit being disposed beneath the facing sheet projection of a previous unit, and means for attaching the body member of said previous unit to said wall supporting means comprising a series of metal clip members each having a mid-section with toothed and shank portions projecting in opposite directions from the respective ends of said mid-section and at right angles thereto, said clip members being disposed in spaced relation with their mid-sections between the edges of the body

members of said units, the toothed portions of said clip members penetrating the edge of said previous unit and their shank portions extending beneath the body member of said succeeding unit in contact therewith and with the surface of said wall supporting means, said shank portions being attached to said wall supporting means, and said shank portions being of flexible resilient material biased to curved form so as to produce a continuing pressure of the body member of said succeeding unit against the facing sheet projection of said previous unit.

2. A wall construction comprising a wall supporting means, a series of wall units each having a rigid body member and a facing sheet member adhesively secured to one another, said members having substantially the same width and said body member having a projection beyond the facing sheet along one edge of the unit and the facing sheet having a projection beyond the body member along the opposite edge of the unit, the inner surface of said facing sheet extension being parallel to the rear surface of said body member, the body member projection of a succeeding unit being disposed beneath the facing sheet projection of a previous unit, and means for attaching the body member of said previous unit to said wall supporting means comprising a series of metal clip members each having a mid-section with toothed and shank portions projecting in opposite directions from the respective ends of said mid-section and at right angles

thereto, said clip members being disposed in spaced relation with their mid-sections between the edges of the body members of said units, the toothed portions of said clip members penetrating the edge of said previous unit and their shank portions extending beneath the body member of said succeeding unit in contact therewith and with the surface of said wall supporting means, said shank portions being of flexible resilient material biased to curved form to produce outward pressure of the body member of said succeeding unit against the facing sheet projection of said previous unit, and a nail in each of said shank portions driven into said wall supporting means, said nail piercing said shank portion at one side of said curve so as not to interfere with said outward spring pressure.

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