April 28, 1970 W. TISCHUK ET AL 3,508,368

BUILDING PANEL HAVING TAPERED COUNTERSUNK END PORTION AND METHOD OF ERECTING THE SAME

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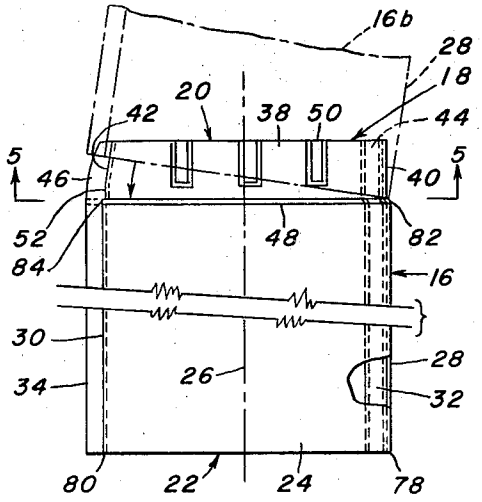


Fig. 4

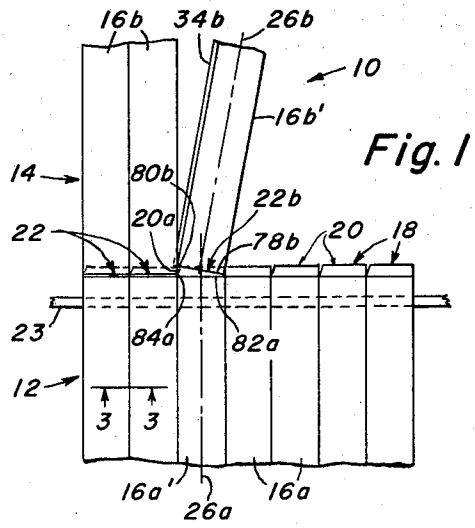


Fig. 1

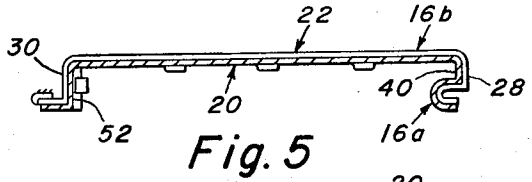


Fig. 5

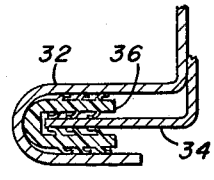


Fig. 3

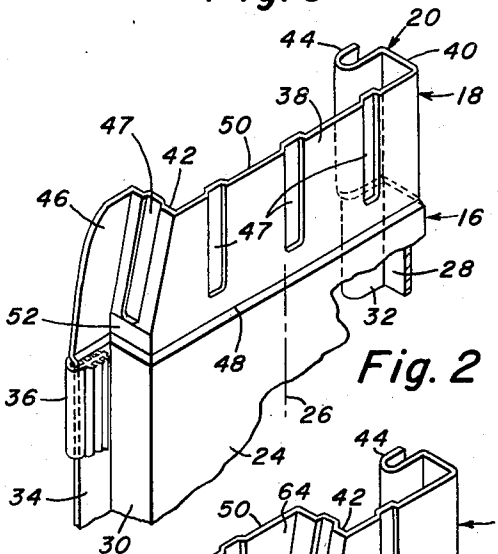


Fig. 2

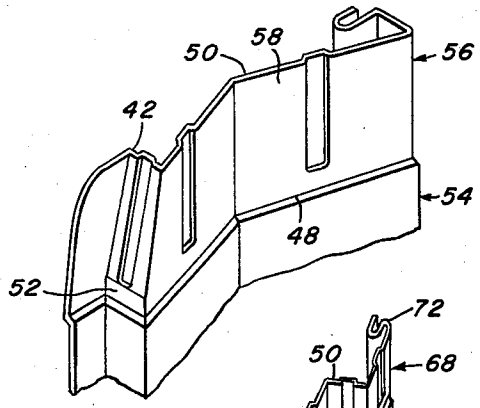


Fig. 6

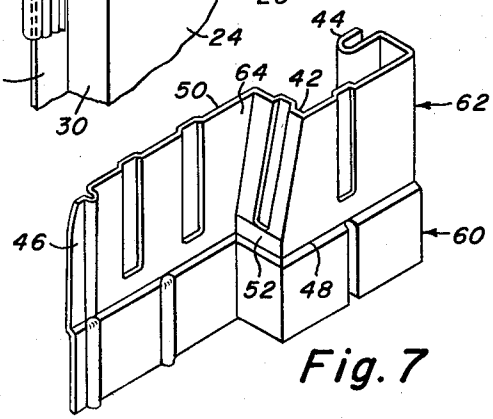


Fig. 7

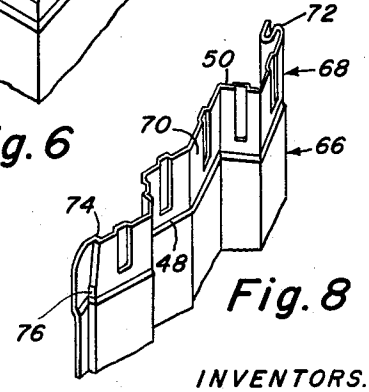


Fig. 8

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BUILDING PANEL HAVING TAPERED COUNTERSUNK END PORTION AND METHOD OF ERECTING THE SAME

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U.S. Cl. 52—394 8 Claims

ABSTRACT OF THE DISCLOSURE

A building panel having a leading end and a trailing end and provided with male and female lips on opposite longitudinal sides thereof permitting adjacent building panels to be erected in side-by-side interengaged relation. An improved countersunk end portion is formed at the leading end of the building panel. The countersunk end portion is tapered so as to present a diminishing width. The tapered countersunk end portion facilitates erection of two courses of the building panels in end-to-end overlapped relation.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to building panels of the type which may be erected in side-by-side interengaged relation to form a wall structure, and more particularly to an improved countersunk end portion for such building panels and a method of erecting the same.

Description of the prior art

Building panels having laterally extended male and female lips are known in the art. In brief, such prior art building panels include a main body of any desired profile, a longitudinal male lip on one side of the main body extending laterally outwardly thereof, and a female lip on the opposite side of the main body extending laterally therebeneath toward the male lip. A single course of such building panels may be erected in side-by-side interengaged relation. See U.S. Patent 3,300,934. In this instance, a U-shaped gasket may be fitted over and secured to the male lip. The gasket preferably extends the entire length of the male lip. During the assembly, the gasketed male lip of one panel is inserted into the female lip of an adjacent panel. The gasket fits snugly within the female lip and provides an effective seal at the joint between adjacent panels.

Such prior art panels also have been provided with countersunk ends whereby two or more courses of the panels may be erected as a wall structure. In this arrangement, each panel of one course is in end-to-end overlapped relation with the corresponding panel of a subjacent course. A first course of panels is erected in side-by-side interengaged relation. The first panel of the second course is erected in the normal manner. Thereafter, each successive panel of the second course must be moved laterally toward the previously erected second course panel to engage the male lip thereof in the female lip of the previously erected panel. That panel then must be lowered so that its lower end overlaps the countersunk end portion of the subjacent first course panel.

Where panels with the aforementioned gasketed male lips are used, great difficulty is encountered when erecting the second course panels. The snug fit of the gasketed male lip in the adjacent female lip inhibits lowering of that panel into overlapped relation with the subjacent panel. Forced lowering of that panel may result in damage to the panel.

Second course panels without gaskets on the male lips may be erected in the manner described above. Thereafter, suitable caulking material may be forced into the female lip to provide a seal. The subsequent caulking operation normally may not provide a completely effective seal. Moreover this technique constitutes an additional operation. Avoidance of the caulking operation is desirable.

SUMMARY OF THE INVENTION

The principal object of this invention is to provide a building panel having an improved countersunk end portion.

Another object of this invention is to provide an improved countersunk end portion for a building panel having a gasketed male lip, wherein the countersunk end portion facilitates erection of two or more courses of the building panels in side-to-side interengaged relation and in end-to-end overlapped relation.

A further object of this invention is to provide a method for erecting building panels having gasketed male lips.

The countersunk end portion of a building panel includes a main body portion, a female lip portion and a male lip portion corresponding with and adjoining respectively the main body, the female lip and the male lip of the remainder of the building panel. The countersunk end portion has surfaces which are offset from the corresponding surfaces of the remainder of the building panel by at least one sheet thickness.

In accordance with the present invention, the main body portion has a trailing edge adjoining the main body of the building panel and a leading edge. The main body portion is tapered and has a diminishing width from the trailing edge to the leading edge. The overall arrangement is such that a female side of the trailing end of a second course panel may be engaged with the corresponding female side of the countersunk end portion of a subjacent panel and such that the second course panel is positioned in diverging relation with the previously erected second course panel. Thereafter, that panel is pivoted about the point of engagement toward the previously erected second course panel to engage the gasketed male lip with the female lip. As a result, a side-to-side interengagement between that panel and the adjacent second course panel, and the desired end-to-end overlapped engagement between that second course panel and the subjacent panel are simultaneously achieved.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a front elevation view illustrating a method of assembling a plurality of building panels of this invention into a wall structure;

FIGURE 2 is a fragmentary isometric view of a typical building panel provided with an improved tapered countersunk end portion of this invention;

FIGURE 3 is a fragmentary enlarged cross-sectional view, taken along the line 3—3 of FIGURE 1, illustrating a gasketed male lip of one building panel fitted within the female lip of an adjacent building panel;

FIGURE 4 is a fragmentary plan view of the building panel of FIGURE 2;

FIGURE 5 is a cross-sectional view taken along the line 5—5 of FIGURE 4, illustrating the tapered countersunk end portion of the building panel of FIGURE 4 fitted within the trailing end of a second building panel; and

FIGURES 6, 7 and 8 are fragmentary isometric views, similar to FIGURE 4, illustrating typical building panels of other configurations each provided with the improved tapered countersunk end portion of this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

FIGURE 1 illustrates a wall structure **10** being assembled from first and second courses **12**, **14** of building panels **16***a*, **16***b*. Each of the courses **12**, **14** includes a plurality of the building panels **16** erected in side-by-side interengaged relation. Each building panel **16** includes a leading end **18** provided with a tapered, countersunk end portion **20** of this invention, and a normal trailing end **22**. The building panels **16***a*, **16***b* may be secured directly to the building structural framework of which only a girt **23** is illustrated. Alternatively, the building panel **16***a*, **16***b* may be assembled in wall structures of the double metal sheath-type.

FIGURES 2 and 4 illustrate a typical panel **16** formed from sheet material, such as steel, aluminum, plastics and the like. The panel **16** includes a main body **24** having a longitudinal centerline **26** and opposed side walls **28**, **30**. A female lip **32** provided on the side wall **28** extends laterally beneath the main body **24** toward the longitudinal centerline **26**. A male lip **34** provided on the side wall **30** extends laterally away from the main body **24** and the female lip **32**. A generally U-shaped gasket **36** (FIGURE 2) is fitted over and secured to the male lip **34** by any suitable means such as stapling. As shown in FIGURE 3, the gasket **36** fits snugly within female lip **32** and provides an effective weather tight seal.

The countersunk end portion **20** provided at the leading end **18** of the panel **16**, includes a main body portion **38** having first and second side wall portions **40**, **42**, a female lip portion **44** and a male lip portion **46** corresponding with and adjoining respectively the main body **24**, the side walls **28**, **30**, the female lip **32** and the male lip **34**. As is conventional, the surfaces of the countersunk end portion **20** are offset from the corresponding surfaces of the remainder of the building panel by at least one sheet thickness. As a result of the countersinking operating, the width of the countersunk end portion **20** is reduced. The excess metal is taken up by a plurality of relief pads **47**. Therefore, as shown in FIGURE 5, the countersunk end portion **20** of a first course building sheet **16***a* fits within the trailing end **22** of a second course building panel **16***b*, whereby the building panels **16***a*, **16***b* are assembled in end-to-end overlapping relation.

In accordance with the present invention, the main body portion **38** has a trailing edge **48** adjoining the main body **24** and a leading edge **50**. The main body portion **38** is tapered and has a diminishing width from the trailing edge **48** to the leading edge **50**, as best shown in FIGURE 4. In particular, the first side wall portion **40** is parallel with the longitudinal center line **26**, while the second side wall portion **42** is inclined relative to the longitudinal centerline **26** and converges toward the first side wall portion **40**. Preferably, a side wall segment **52** connects the second side wall portion **42** to the remainder of the building panel. The side wall segment **52** is parallel with the first side wall portion **40**. As shown in FIGURE 5, the side wall portion **40** and the side wall segment **52** are engaged, respectively, by the side walls **28**, **30** of the second course panel **16***b*. The side wall portion **40** and the side wall segment **52** serve to align the second course building panel **16***b* with the first course building panel **16***a*.

Building panels of alternative configurations provided with a tapered countersunk end portion of this invention, are illustrated in FIGURES 6, 7 and 8. Corresponding numerals will be employed to identify corresponding parts heretofore described.

FIGURE 6 illustrates a building panel **54** having a countersunk end portion **56** including a trough-shaped main body portion **58**. The main body portion **58** is provided with the inclined second side wall portion **42** which is connected to the remainder of the building panel by the side wall segment **52**.

FIGURE 7 illustrates a building panel **60** having a countersunk end portion **62** including a generally Z-shaped main body portion **64**. In this embodiment, the inclined second side wall portion **42** is positioned intermediate of the female lip portion **44** and the male lip portion **46**. The side wall segment **52** connects the inclined second side wall portion **42** to the remainder of the building panel.

FIGURE 8 illustrates a building panel **66** having a countersunk end portion **68** including a main body portion **70** of ribbed profile. The main body portion **70** includes a first side wall portion **72** on one side thereof and an inclined second side wall portion **74** on the opposite side thereof. The second side wall portion **74** is connected to the remainder of the building panel by a side wall segment **76**.

It will be appreciated that the countersunk end portions of the building panels **16**, **56**, **60** and **66** of FIGURES 2, 6, 7 and 8 are tapered and have a diminishing width from the trailing edge **48** to the leading edge **50**.

Erection of the present building panel will now be described with reference to FIGURES 1 and 4. It is a convenient concept when describing the erection of the present building panels, to state that the trailing end **22** of the building panel **16** has a female side **78** (adjacent to the female lip **32**) and a male side **80** (adjacent to the male lip **34**), and corresponding female and male sides **82**, **84** at the opposite end of the building panel **16** which adjoin the trailing edge **48** of the countersunk end portion **20**.

In FIGURE 1, the initial position of a second course panel **16***b'* is illustrated. The female side **78***b* of the panel **16***b'* is engaged with the corresponding female side **82***a* of the subjacent course panel **16***a'*. The panel **16***b'* is laterally inclined and diverges from the previously erected panel **16***b*. The longitudinal centerline **26***b* of the panel **16***b'* extends transversely of the longitudinal centerline **26***a* of the subjacent course panel **16***a'*. The lower edge of the gasketed male lip **34***b* is engaged in the female lip (not visible) of the previously erected second course panel **16***b*. The engaged edges of the female sides **78***b*, **82***a* serve as a pivot point about which the second course panel **16***b'* is pivoted in a counterclockwise direction. Such pivoting motion of the second course panel **16***b'* is facilitated by the tapered countersunk end portion **20***a* of the subjacent course panel **16***a'*. During counterclockwise pivoting of the second course panel **16***b'*, the gasketed male lip **34***b* is readily received within the female lip of the previously erected second course panel **16***b*. It will also be appreciated that the pivoting motion of the second course panel **16***b'* requires a minimal amount of movement of the gasketed male lip **34***b* longitudinally of the female lip of the previously erected second course panel **16***b*. This minimal longitudinal relative motion is easily accomplished without damage to either of the adjacent second course panels and without damage to the gasket.

It will be appreciated that pivoting the second course panel **16***b'* about its line of engagement with the subjacent course panel **16***a'* toward the previously erected second course panel **16***b* effects simultaneous engagement of the gasketed male lip **34** of the second coarse panel **16***b'* with the female lip (not visible) of the previously erected second course panel **16***b* and overlapping of the trailing end **22***b* of the second course panel **16***b'* with the countersunk end portion **20***a* of the subjacent course panel **16***a'*.

We claim:

1. In a building panel formed from sheet material and including a main body having a longitudinal centerline; a female lip on one side of the said main body extending laterally therebeneath toward the said longitudinal centerline; a male lip on the opposite side of the said main body extending laterally away from the said female lip; and a countersunk end portion including a main body portion, a female lip portion and a male lip

portion corresponding with and adjoining respectively the said main body, the said female lip and the said male lip; the surfaces of the said countersunk end portion being offset from the corresponding surfaces of the remainder of the said building panel by at least one sheet thickness, the improvement comprising:

the said main body portion having a trailing edge adjoining the said main body and a leading edge and having a diminishing width from the said trailing edge to the said leading edge.

2. The improvement of claim **1** including a gasket secured to the said male lip.

3. The improvement of claim **1** wherein the said main body portion includes

a first side wall portion parallel with the said longitudinal centerline; and a second side wall portion opposite to the said first side wall portion, the said second side wall portion being inclined relative to the said longitudinal centerline toward the said first side wall portion.

4. The improvement of claim **3** wherein the said first side wall portion adjoins the said female lip portion.

5. The improvement of claim **3** wherein the said second side wall portion is positioned intermediate of the said male lip portion and the said female lip portion.

6. The improvement of claim **3** wherein the said second side wall portion adjoins the said male lip portion.

7. The improvement of claim **3** including

a side wall segment extending parallel with the said first side wall portion and connecting the said second side wall portion with the remainder of the said building panel.

8. A method of erecting second course panels in side-by-side interengaged relation and in end-to-end overlapped relation with subjacent course panels, wherein each panel of each course includes a leading end and a trailing end, a main body, a male lip extending laterally away from one side of said main body, and a female lip extending laterally from the opposite side of said main body toward said male lip, and wherein at least the panels of said subjacent course are provided with a countersunk end portion formed at the leading end and including a trailing edge adjoining the remainder of the panel and a leading edge and having a diminishing width from said trailing edge to said leading edge, the steps comprising:

engaging a lower female side of a said second course panel with a corresponding upper female side of a subjacent course panel in the region of said trailing edge of said countersunk end portion, said second course panel being laterally inclined and diverging away from a previously erected second course panel; and

pivoting said second course panel about its line of engagement with the subjacent course panel toward the said previously erected panel to affect simultaneous engagement of the male lip of said second course panel with the female lip of the previously erected second course panel, and overlapping of the trailing end of said second course panel with the countersunk end portion of the subjacent course panel.

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U.S. Cl. X.R.

25—403, 529, 588, 726, 747; 287—189.36