Feb. 21, 1967 S. H. SALLIE ET AL 3,304,676

SIDING CONSTRUCTION

Filed Jan. 29, 1964 2 Sheets-Sheet 1

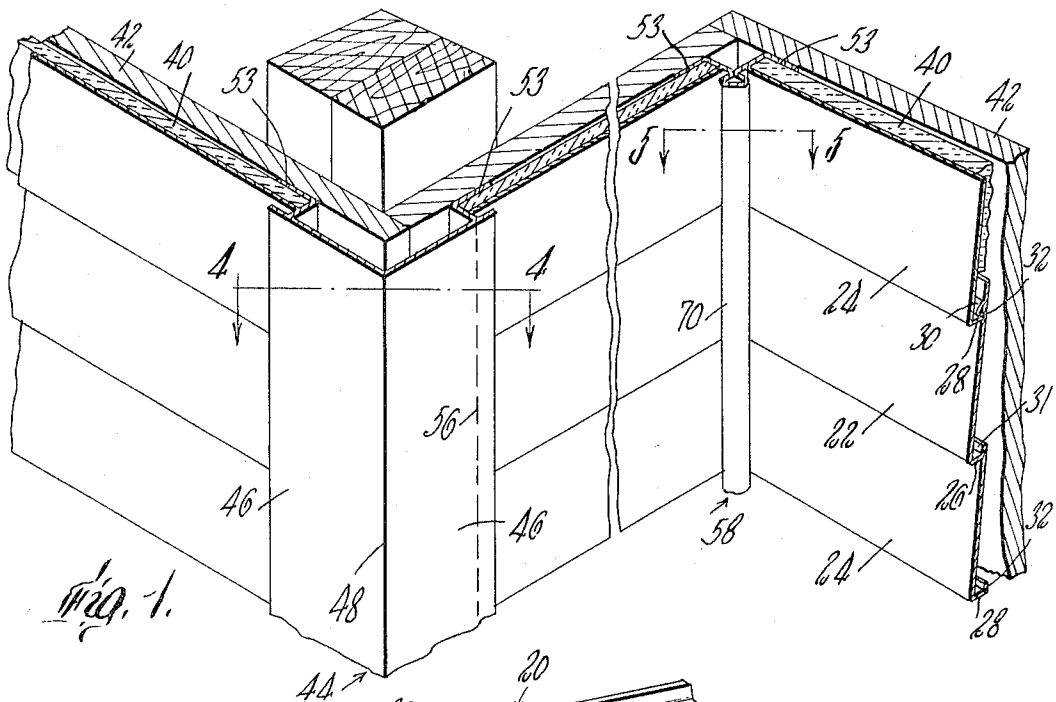


Fig. 1.

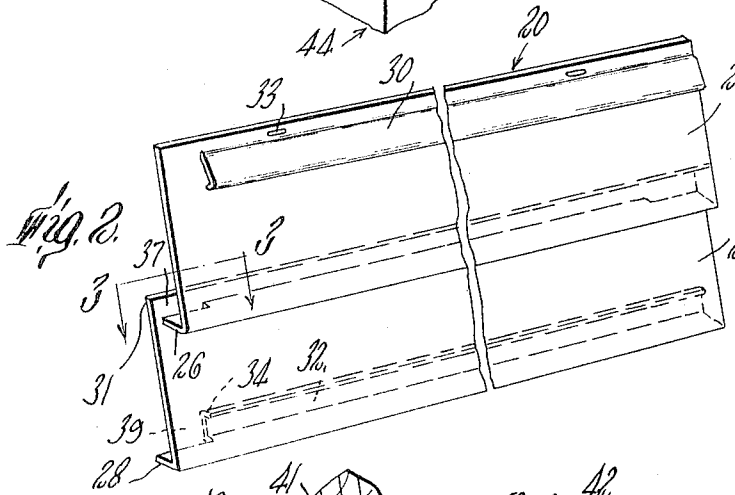


Fig. 2.

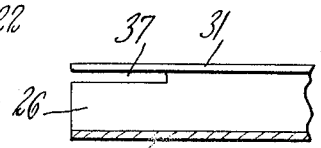


Fig. 3.

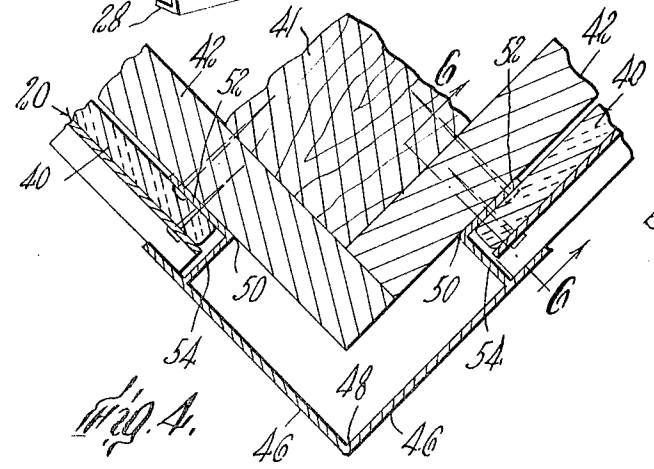


Fig. 4.

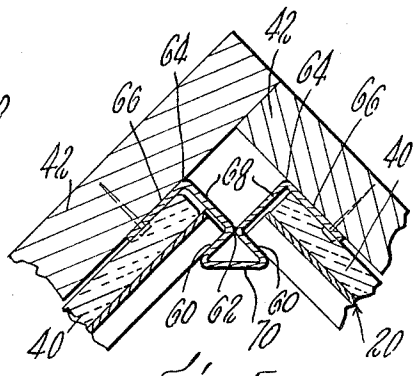


Fig. 5.

Feb. 21, 1967 S. H. SALLIE ET AL 3,304,676

SIDING CONSTRUCTION

Filed Jan. 29, 1964 2 Sheets-Sheet 2

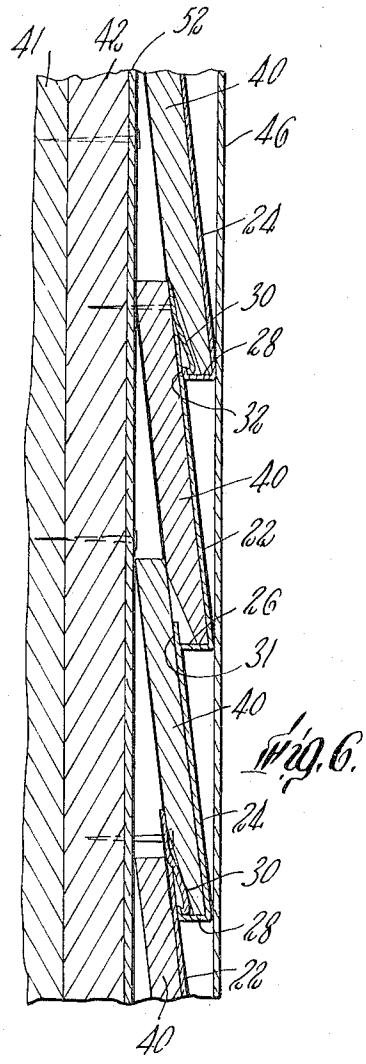


Fig. 6.

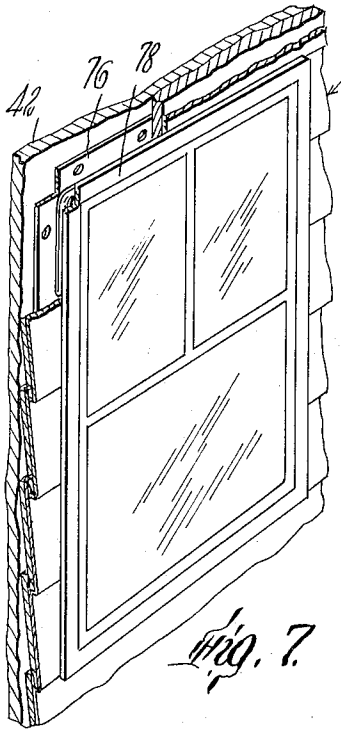


Fig. 7.

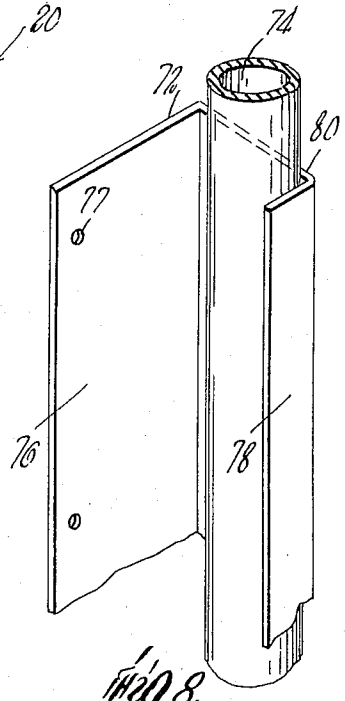


Fig. 8.

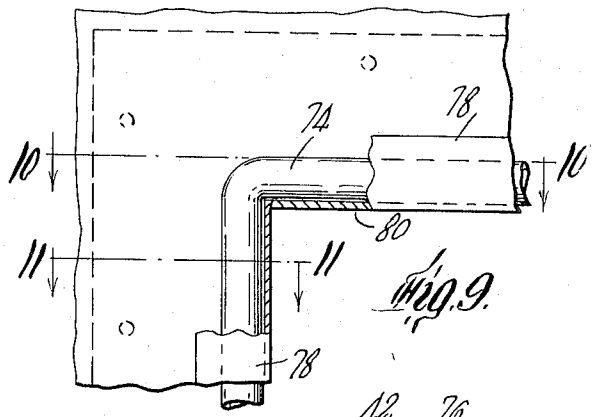


Fig. 9.

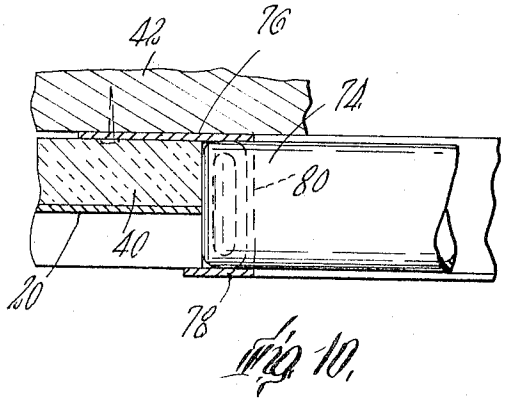


Fig. 10.

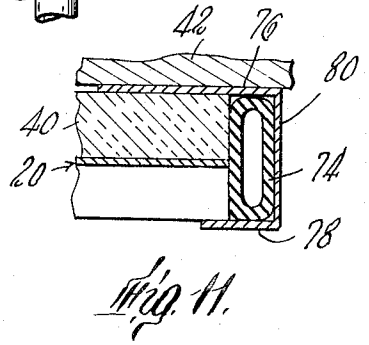


Fig. 11.

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3,304,676

SIDING CONSTRUCTION

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2 Claims. (Cl. 52—276)

This invention relates to construction materials, more particularly to clapboard siding for use in residences. It provides improved siding, corner and sealing units of organic plastic material adapted to cooperate into a uniquely locked assembly for covering the complete outside wall structure of a residence to provide a highly attractive siding having the appearance of painted wooden clapboards.

Many attempts have been made through the years to produce siding for frame buildings having the classic appearance of wooden clapboards but without their disadvantages. Such artificial clapboards have not, however, been wholly satisfactory prior to the present invention, due to difficulties in integrating the siding with the house frame elements at such points as window and door frames, to inadequate corner structures and to failure properly to integrate corner structures with the siding, as well as to structural defects in the siding itself.

One of these defects has to do with the practical necessity of painting or otherwise finishing the clapboards prior to installation, yet in such a manner that it will not be damaged during construction or thereafter, even if the unit be cut for fitting during installation.

Another particularly troublesome structural defect has been the tendency of prior artificial clapboard siding panels to undergo the deformation commonly known as "oil canning," in which a section of the planar surface of a panel becomes distorted out of that plane, in much the same way as the thin flat bottom of a metal can may be distorted by pressing on it so that it can be snapped between two positions out of a flat plane.

It is thus a major object of the present invention to provide an improved siding unit having the clapboard form of organic plastic material in which the color of the panel surface extends throughout its thickness so that its finish cannot be cut or damaged during installation, or thereafter, in such a manner as to provide unwanted color contrasts.

It is another object of the invention to provide such a siding unit free from "oil canning."

It is a further object of the invention to provide an integrated, easily installable locked assembly of siding units, inside and outside corner structures, and sealing units for use around window and door frames, that is capable of covering the entire outside wall structure of a building in an attractive and economical manner to provide a high degree of weather protection, and without the necessity for having a surface finish such as paint applied thereto at any time.

It is a particular object of the invention to provide a novel means for locking the vertical terminal ends of overlapping adjoining siding units, which has not heretofore been possible in commercial clapboard-simulating siding units. Thus, known units tended to have large gaps midway along their terminal ends, which were most unattractive from an appearance standpoint. The present invention solves this problem in a unique manner by providing end locking means which lock the overlapping end edges of adjacent panels firmly to one another. Such locking means may be used regardless of whether the adjoining panels are overlapped from right to left or from left to right, without limitation.

To accomplish some of its objects the invention provides a multiple paneled plastic siding unit of organic plastic material of a uniform color throughout its cross

section and its surfaces. Each siding unit is adapted to interlock with adjacent units above and below it as well as at its sides, thereby to form a continuous siding wall. Corner structures are provided with both the inside and outside corners employing a common structural principle to receive in vertical channels the free vertical edges of the interlocking siding units. In addition, J-shaped members are disposed around door and window frames, these members also providing channels to receive the interlocking siding units, the J-shaped members containing resilient members against which the siding units abut.

Further objects, advantages and features of the invention will appear upon its detailed description, in connection with which a preferred embodiment of the invention is shown in the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view of a segment of a wall structure showing the interlocking siding panels in conjunction with the corner structures;

FIG. 2 is a perspective view of an individual siding unit;

FIG. 3 is a sectional view taken along the line **3—3** in FIG. 2;

FIG. 4 is a sectional view taken along the line **4—4** in FIG. 1;

FIG. 5 is a sectional view taken along the line **5—5** in FIG. 1;

FIG. 6 is a sectional view taken along line **6—6** in FIG. 4;

FIG. 7 is a perspective view of a window frame with the siding broken away to show the J-shaped sealing member;

FIG. 8 is a perspective view of a segment of a J-shaped sealing member containing the resilient member;

FIG. 9 is a front view of an installed sealing member, broken away to show the resilient member;

FIG. 10 is a sectional view taken along the line **10—10** in FIG. 9 and

FIG. 11 is a sectional view taken along the line **11—11** in FIG. 9.

Referring to the drawings, an individual clapboard simulating unit **20** (FIG. 2), in one embodiment an integral linear extrusion of white vinyl plastic of uniform color throughout its entire cross section, has upper and lower panels **22** and **24** joined by upper transverse strip **26**. Lower panel **24** is spaced rearwardly of upper panel **22** and includes a novel integral flange portion **31** extending upwardly beyond the bottom edge of upper panel **22**. Transverse strip **26** runs along the entire length of the siding unit and extends from the bottom edge of panel **22** to a line spaced below the top edge of flange portion **31**. The arrangement just described is advantageous in several respects, the rearward spacing of the lower panel giving the clapboard effect, and the upward protrusion of flange portion **31** above the strip **26** and the bottom edge of panel **22** giving important and multiple advantages. Flange **31** cooperates with the upper panel and strip to secure insulating board against the back of the siding unit. Simultaneously, flange **31** cooperates with a slot **37** in an endwise adjacent siding unit to provide the unique end locking of the invention. Both of these features are explained in more detail below. Additionally, and importantly, transverse strip **26**, having most of its surface area in a substantially horizontal plane, is strongly resistant to deformation about a vertical axis. Being an integral part of the siding unit, strip **26** transmits this resistance to the panels **22** and **24** and thereby greatly aids in the prevention of "oil canning."

Along the bottom edge of panel **24**, extending rearwardly in a manner similar to strip **26**, is lower transverse strip **28**. Lower strip **28** serves the same anti "oil canning" purpose as upper strip **26**, and terminates in an

upwardly extending side locking web 32. Web 32 is an extremely advantageous dual purpose component of the siding unit. In the first place, web 32 cooperates with panel 24 and strip 28 to receive insulating board in the manner mentioned above with respect to flange portion 31. At the same time, however, web 32 cooperates with lipped hooking means, described just below, on the immediately sidewise adjacent siding unit to secure the units in interlocked position.

The hooking means just referred to comprise a hooking lip 30 running horizontally along the length of the siding unit along the top of upper panel 22, but preferably spaced downwardly from the top edge of panel 22 in order to leave room for nail holes 33 along said top edge by means of which the siding unit is secured to the wall surface. The interlocking of lip 30 and web 32 of adjacent panels is shown in FIG. 6, web 32 simply being inserted up between hooking lip 30 and upper panel 22. In order to increase the security of the side interlock, lip 30 and web 32 preferably have thickened locking ridges 34 running along the inner surfaces of their respectively bottommost and uppermost edges.

Endwise adjacent siding units are adapted to interlock by means of the aforementioned flange portions 31 and slots 37. As shown in FIG. 2, slot 37 is cut in strip 26 against the surface of lower panel 24, extending in from the end of the unit a distance equal to the amount of overlap desired, usually ¾"–1". In a similar manner cutouts 35 and 39 are made in lip 30 and web 32 respectively. Normally the cutouts 35 and 39 will be made at the point of installation as needed, with the slots 37 made during the manufacturing process. In this manner the applicator can install adjacent panels in the same course from right to left or in the reverse as the case may be. However, it is entirely feasible to make the cutouts at the plant, as well as the slots, and the installation process is thereby further facilitated. Also, slots 37 will normally appear at both sides of a siding unit, to enable interlock at both ends.

To accomplish endwise interlock, the flange 31 of one unit is inserted into the slot 37 of the adjacent unit, said one unit thereby overlapping the front of said adjacent unit. As the flange proceeds into the slot, it will abut the end of the slot, this abutment serving to stop further overlap and completing the endwise lock of the invention.

Due to the simplicity and uniformity of the end and side interlocks, assembly of the individual siding units into a continuous siding wall is an easy matter, and, from the outside, the interlocked joints between units appear identical to the built-in joint between the panels of the units themselves.

When desired, insulating board 40 may be attached to the back of the siding units before they are installed. To accomplish this it is necessary only to slip standard insulating board into the receiving channels provided by flange 31 in cooperation with panel 22 and strip 26, and web 32 in cooperation with panel 24 and strip 28. To that end, lip 30 is built as close to panel 22 as is practical, in order not to interfere with the inserted board 40. The board being substantially flexible and compressible, there is no difficulty in squeezing it between the interlocked lip 30 and lower panel 24 without the need for cutting away the board. Optionally, the board 40 can extend upward to overlap the adjacent panel, or can terminate short of overlap. Depending upon the choice made in this regard, the nails used to install the siding may or may not pass through the board 40.

Panel 22 will normally be somewhat taller than panel 24, since panel 22 must carry the hooking lip 30 as well as the nail holes 33. In this manner, when the units are interlocked all panels will present to the exterior equally tall exposed surfaces. The relative heights of the panels is not critical, however, and it is possible to size them to ultimately present unequally tall exposed panel surfaces. A maximum panel height of 4"–6" is preferable and a thickness of approximately 30 mils to as high as approximately 50 mils.

The inside and outside corners of the invention preferably employ a common structural principle in cooperating with the siding units 20 at the corners of the wall surface 42. In particular, the corners each have a front panel structure comprising two front panels, 46 in the case of outside corner 44 and 60 in the case of inside corner 58. These front panels will normally lie in mutually perpendicular planes and will meet at a vertical corner line, 48 and 62. Attached to the front panel structures 46 and 60 are pairs of channel forming members 50 and 64, one such channel forming member running vertically along each front panel and cooperating with that front panel to provide an outwardly opening vertically extending channel 53 adapted to receive the free vertical edges of the siding units 20. The basic structural difference between the outside and inside corners is that channel forming members 50 are attached to the concave side of outside corner 44, whereas channel forming members 64 are attached to the convex side of inside corner 58, in order that the respective front panel structures end up with the appropriate orientation relative to the wall surfaces 42.

Turning more particularly to the illustrated embodiments of the respective corners, outside corner 44 comprises substantially perpendicular front panels 46, intersecting in vertical corner line 48, which corner line ultimately forms the outside corner line of the building exterior. Channel forming members 50 run vertically along the front panels, close to but spaced from the free vertical edges of panels 46. Each channel forming member 50 consists of a rear face 52 and a transverse face 54, said rear transverse faces being substantially perpendicular to each other, with the rear face 52 parallel to its respective front panel 46 and the transverse face 54 running from the vertical edge of the rear face to a line 56 of intersection with front panel 46 spaced from the vertical edge of said panels. The rear faces 52 are thus adapted, with appropriate nail holes, to be attached to the wall surfaces 42, thereby securing the front panels 46 in a spaced relation to the wall surfaces, and cooperating with the transverse faces 54 and said front panels to provide the outwardly opening channels 53. Rear face 52 is spaced from front panel 46 an amount approximately equal to the overall thickness of the complete siding unit (meaning the siding unit wth insulation board attached), so that when the siding units 20 are inserted into the channels 53 the bottom edges of the panels 22 and 24 will contact the front panels 46, with the insulation board 40 contacting the rear face 52, as shown in FIG. 6. A solid external appearance is thus presented.

Inside corner 58 comprises substantially perpendicular front panels 60, joined in front by a covering strip 70. Optionally, the panels 60 may intersect or merely approach each other at vertical corner line 62, the exact structure in this respect being unimportant due to the covering strip 70 that provides the exterior surface of the corner. In the embodiment shown channel forming members 64 provide rear faces 66 parallel to and spaced rearwardly from the front panels, with transverse faces 68 running from the edges of the rear faces to the corner line 62. In the manner described above with regard to the outside corners, the rear faces attach to the wall surfaces, space the front panel structure outwardly from the wall, and receive the edges of the siding units in the outwardly opening channels 53 of the above described width.

Further and important advantages of the assembly of the invention are realized by the incorporation of J-shaped sealing means around door and window frames. As shown in FIGS. 7–11, the sealing means consist of a J-shaped channel member 72 that houses a resilient member 74.

J-shaped channel member **72** comprises substantially parallel rear and front walls **76** and **78**, joined by channel floor member **80**. Rear wall **76** is preferably wider than front wall **78** and contains nail holes **77** by means of which the rear wall **76** is attached to the wall surfaces **42**. When installed, floor member **80** goes against the edge of the window or door frame, and an outwardly opening channel is provided to receive the vertical edges of the siding units **20**, in much the same manner as done by the channels of the corner structures.

According to the invention, resilient member **74**, being a closed plastic tube or the equivalent, rests on the floor **80** of the channel, and receives the siding edges in abutment against it. The resilient member is thus compressed, tightly filling the channel, and along with the extension of the walls **76** and **78** over the siding, providing a highly effective water seal around door and window frames. In order to use a single elongated strip of channeling around a complete frame, parallel cuts are made in the walls **76** and **78**, and the floor **80** is bent around the corner of the frame. The resilient member then follows the bend in the floor **80**.

To install the assembly of the invention, the corners and sealing means are first nailed to the wall surfaces in their appropriate positions. Then, insulating board is inserted into the individual siding units and one by one they are nailed to the wall surfaces, each interlocking with the preceding unit.

Although the invention has been described in detail herein, the specific construction set out above should in no way be taken as limiting the true scope and spirit of the invention, but is intended by way of example only.

What is claimed is:

1. In a generally rectangular multiple panel clapboard-simulating siding unit adapted to interlock with other units of the same type along opposite terminal edges,

said unit comprising an integral piece of material providing

a plurality of flat, parallel, clapboard-side-simulating panel portions and

a plurality of flat, parallel, clapboard-edge-simulating strip portions,

said panel portions being located in spaced parallel planes providing parallel edges with adjacent edges of said panel portions spaced from one another in a plane perpendicular to the plane of said panel portions and

said strip portions being located in spaced parallel planes generally perpendicular to the planes of said panel portions and extending between adjacent edges of said panel portions and along one terminal edge of said unit with strip portions located along opposite edges of a panel portion extending in opposite directions therefrom,

that improvement comprising

an integral flange portion on one side of the strip portion located between adjacent edges of adjacent panel portions of said unit, said flange portion being spaced from the one of said adjacent panel portions extending from said strip portion in the same direction as said flange portion,

said flange portion, strip portion and said last mentioned panel portion thereby forming an integral tri-planar channel,

said strip portion being slotted inwardly from its end for a predetermined distance, said slot being located parallel to and beside said flange on the side thereof toward said panel portion which extends from said strip portion in the same direction as said flange portion,

said slot receiving the flange portion of an adjacent overlapping siding unit positively to lock together adjacent siding units at the strip portions thereof located between their panel portions.

2. In a generally rectangular multiple panel clapboard-simulating siding unit adapted to interlock with other units of the same type along opposite terminal edges at each of the four sides thereof,

said unit comprising an integral piece of material providing

a plurality of flat, parallel, clapboard-side-simulating panel portions and

a plurality of flat, parallel, clapboard-edge-simulating strip portions,

said panel portions being located in spaced parallel planes providing parallel edges with adjacent edges of said panel portions spaced from one another in a plane perpendicular to the plane of said panel portions and

said strip portions being located in spaced parallel planes perpendicular to the planes of said panel portions and extending between adjacent edges of said panel portions and along one terminal edge of said unit with strip portions located along opposite edges of a panel portion extending in opposite directions therefrom,

that improvement which consists of siding unit end locking means and side locking means, said end locking means including

an integral flange portion on one side of a strip portion located between adjacent edges of adjacent panel portions of said unit, said flange portion extending in a plane parallel to said panel portions and being spaced from the one of said adjacent panel portions extending from said strip portion in the same direction as said flange portion,

said strip portion being adapted to be slotted to provide a slot therein extending inwardly from its end for a predetermined distance, said slot being located parallel to and beside said flange on the side thereof toward said panel portion which extends from said strip portion in the same direction as said flange portion,

said slot receiving the flange portion of an adjacent overlapping siding unit positively to lock together adjacent siding units at the strip portions thereof located between their panel portions, and said side locking means including

an integral locking web portion on the edge of said strip portion along said one terminal edge of said unit, spaced from the panel portion integrally connected thereto and extending in the same direction and

an inwardly directed lip portion spaced inwardly from the opposite terminal edge of said unit and extending generally parallel thereto along one face of one of said panel portions and on the opposite face of said unit from said locking web portion for receiving the locking web portion of an adjacent over-lapping siding unit between said lip and said one panel portion to lock together adjacent siding units along opposite terminal edges thereof, in combination with inside and outside corner structures,

said corner structures each comprising a front panel structure and two channel forming portions, each such portion having a rear face adapted to be attached to a wall structure and cooperating with said front panel structure to provide an outwardly opening channel, said channels having a width substantially equal to the overall thickness of the complete siding unit,

said corner structures thereby adapted to be attached to the corners of a wall structure and to receive in said channels the free vertical edges of said interlocking siding units and in combination with sealing means comprising integral elongated J-shaped channel members having substantially parallel channel walls joined by transverse channel floor members,

said channel members adapted to be installed against a wall structure along door and window frames with the channel openings in the direction away from said frames, the width of said channels being substantially equal to the overall width of said siding units, said channel members thereby adapted to receive said interlocking siding units, said channel walls overlapping said siding units to provide sealing.

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