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L. K. LOCKWOOD
SIDING CONSTRUCTION

3,060,641

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2 Sheets-Sheet 1

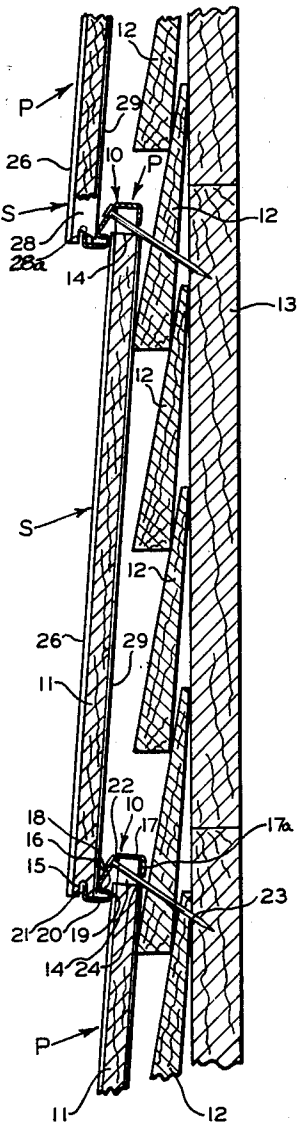


FIG. 1

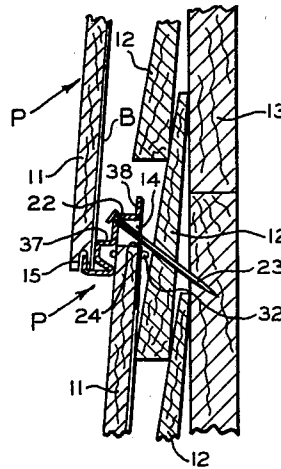


FIG. 10

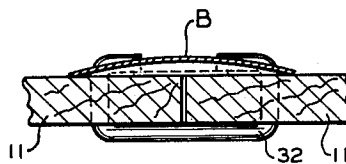


FIG. 8

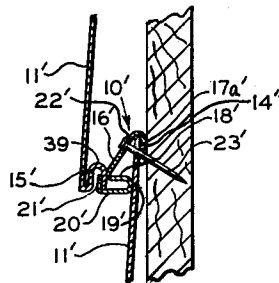


FIG. 11

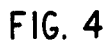
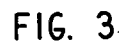
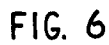
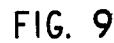
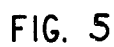
INVENTOR.
LLOYD K. LOCKWOOD

BY
Harman & Harman

ATTORNEYS

L. K. LOCKWOOD
SIDING CONSTRUCTION

2 Sheets-Sheet 2

[illegible]

BY
Kearman & Fierman

ATTORNEYS

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3,060,641

SIDING CONSTRUCTION

Lloyd K. Lockwood, 1503 Court St., Saginaw, Mich.

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10 Claims. (Cl. 50-215)

This invention relates to siding or wall covering construction, and more particularly to sheet metal panels, hardboard panels, and other weatherboards which when assembled in horizontally disposed, partially overlapping relation constitute the outermost wall or surface of residential or commercial buildings of all types. The application is a continuation in part of application Serial No. 334,443 filed February 2, 1953 by me and entitled "Siding Construction," now Patent No. 2,853,163.

One of the prime objects of the invention is to provide an all purpose siding construction which can be easily applied over the old siding or clapboard walls of older buildings as well as over suitably sheathed studding or the like to provide a wall construction for new buildings. It is a particular object of the instant invention to provide an all purpose siding construction of this type in which each panel includes a board section and a channel section, and the latter section is adapted to support and align the board section of the superjacent panel. While various siding constructions of this type have been proposed I know of none which are suitable for application to a clap board wall or the like having, of course, a repeatedly indented surface which also may be out of vertical alignment. When known siding panels are attempted to be applied over old siding or clapboard and the channel sections must be nailed between the butt edges of the prior siding panels the channel sections tend to tip or tilt rearwardly into the hollows between the butt edges. When the channels tip in this manner the superjacent panels which they support are thrown out of alignment and a "loose" assembly results. Further, in many cases the channel sections are so designed that, when the channel sections are being nailed in place, the nailing distorts or misaligns the portion thereof which supports the superjacent panel even when the panels are being applied to the smooth, vertically aligned wall of a new building.

A further object of my invention is accordingly to provide a construction specifically designed so that it must be nailed in a particular manner which does not tilt or misalign the channel or clip section regardless of whether the panels are being applied to new or old construction. In the previously mentioned application the advantages of a particular method of nailing in conjunction with the provision of spacer means for controlling the pressure or tension imparted by the nails were pointed out, and in the instant construction, if nails disposed at a downwardly inclined angle are employed to secure an upper section of the channel section to the wall surface and controlling spacers are provided, a predetermined pressure or tension is applied which securely and tightly positions the various panels in properly aligned relationship. Clip or channel sections which are designed to be secured in this manner cannot tilt and the controlled pressure applied tends to return misaligned portions into alignment and eliminate inward and outward buckling of the panels.

Another object of the invention is to provide a siding construction of the type described which may be employed with panels wherein expansion and contraction is a factor as well as with panels which are to be positively secured in position.

A further object of the invention is to provide a siding construction wherein the abutting board portions of the panels in a particular course can be readily secured together in a novel and efficient manner for movement

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as a unit relative to the clip section of the panel and wall surface to which they are applied in accordance with the lengthwise contraction and expansion of the board section or sections.

Another object of the invention is to provide a siding construction of the character described in which backing plates to prevent the entrance of moisture can be provided behind the joints formed by the abutting board sections of the panels which are integrated with these sections of the panels to "move" longitudinally therewith when they contract and expand.

A further object of the invention is to provide a siding construction as described in which integrated butt straps to hide and seal the joint which permit movement of the individual board sections of the panels may be easily applied in some applications where desirable.

A still further object of the invention is to provide an all purpose siding construction of neat and pleasing appearance which can be more easily and efficiently applied than any siding panels heretofore known.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing, and more particularly pointed out in the appended claims, it being understood that equivalent changes may be made in the various elements which comprise the invention without departing from the spirit thereof or the scope of the appended claims.

In the drawings:

FIG. 1 is a sectional side elevational view taken on the line 1-1 of FIG. 2 showing my novel panels applied over an "old" wall construction, the "old" construction being in this case a clapboard wall.

FIG. 2 is a front elevational view with portions of the clip or channel section of the panel broken away to illustrate the construction thereof.

FIG. 3 is a transverse sectional view through the novel butt strap I have designed taken on the line 3-3 of FIG. 2.

FIG. 4 is a side elevational view taken on the line 4-4 of FIG. 2.

FIG. 5 is an enlarged, fragmentary, front elevational view illustrating the manner in which I secure the abutting board sections of panels in the same course together.

FIG. 6 is a top plan view thereof.

FIG. 7 is a rear elevational view showing a backer plate which I employ with the joint fastening member illustrated in FIGS. 5 and 6.

FIG. 8 is an enlarged transverse sectional view taken on the line 8-8 of FIG. 7.

FIG. 9 is an enlarged front elevational view showing a modified board section.

FIG. 10 is a view similar to FIG. 1 illustrating a modified embodiment of the invention.

FIG. 11 is also a view similar to FIG. 1 illustrating a still further modification of the invention.

Referring now more particularly to the accompanying drawings wherein I have shown preferred embodiments of the invention and particularly to FIGS. 1-4, a letter P generally indicates siding panels which are arranged in superjacent courses as shown. Each panel P includes a channel or clip section 10 and a board section 11. The latter section 11 will be assumed to be a hardboard or pressed board strip but may be, of course, any suitable weatherboard such as asbestos composition, plywood, or the like or any metallic siding such as aluminum. The hardboard I have reference to may be the plastic bound synthetic board called Masonite or some other pressed board of similar characteristics which expands and contracts to a relatively great degree with extreme changes in temperature and humidity.

Since the panels I will describe are particularly suited to application over so-called "old" construction, I have shown them applied to such walls; however it is to be understood that the panels will also be widely used to form the outer wall surface of new buildings. In FIG. 1 clapboard siding panels 12 are shown nailed to a wood sheathing wall surface 13. This is the old wall which it is desired to re-side to enhance the appearance of the building and improve the insulating value and weather resisting character of its walls. Each panel P bridges several courses of the old clapboard panels as shown.

The board sections 11 are prepared with spaced nailing notches 14 in their upper edges except immediately adjacent their ends and a groove 15 extending from end to end of each board section is provided in the lower edge of each section 11. The clip sections 10 fit over the upper edges of the boards 11 and preferably extend the full length of the abutting sections 11 rather than just the length of a board section. In other cases where the panels may be applied between a window opening and the edge of the wall or the like the board section 11 may be coextensive with the channel or clip section 10.

As illustrated in FIG. 1 each clip section includes an outwardly sloped nailing portion 16 leading from a horizontal portion 17 which is adapted to rest on the upper edge of a board section 11 and has a depending flange 17a hooked over the rear face of the board section. From the lower edge of the section 16 the clip is turned inwardly as at 18 and thence looped (as at 19) reversely to provide an outwardly extending butt portion 20, the portion 20 terminating in an upwardly directed flange 21 which is accommodated in the grooves 15 in the board sections 11 of the superjacent panels P and aligns and supports these sections 11.

Spaced apart nail openings 22 are punched in the portion 16 of each clip section adjacent the upper edge thereof and nails 23 extend through these openings 22 and bear on the marginal edges 24 of the notches 14. The nails 23 will thus be disposed at a downwardly inclined angle of substantially 45° to impart the desired tension to the clip sections of the panels. The flanges 17a may be of such depth as to substantially engage the nails 23 when the latter are nailed into the clapboard siding strips 12 and preferably through into the underlying wall surface.

Because the surface 16 is disposed at substantially a 45° angle and the nails guide on the edges 24 the nails will always be nailed at the desired angle. The nail openings 22 are, of course, spaced vertically with relation to the edges 24 to achieve this result. The flanges 17a may be of sufficient depth so that openings are formed therein to pass the nails at a 45° angle. These openings will be arranged with respect to the openings 22 to dispose the nails at substantially this angle.

By applying a pressure to the clip section 10 at a downwardly inclined angle as shown, the looped portion 19 is held tightly in against the board section 11 in a manner which tends to counterbalance the weight of the superjacent board section supported by the flange 21. The nailing pressure will not however tend to misalign or "spring" the portions 20 and 21 if the workman drives the nails too deeply and places too great a tension on the clip section because the portions 18, 19, and 20 tend to act as a spacer to control the amount of force acting to draw portions 20 and 21 of the clip section inwardly in that the portion 16 will dent before the portion 19 will deform and misalign the flange 21. Obviously, with the looped portion 19 exerting a constant controlled pressure on the upper edge of the board section or sections 11, the sections 10 and 11 will be tightly secured together and there will be no looseness leading to rattling in wind storms. The flange 21 will be held in properly aligned position to support the superjacent panel in horizontal and angular alignment. If the portions 20 and 21 have been sprung or bent out during handling of the panel sections,

the pressure imparted by the nail tends to draw the flange 21 inwardly and downwardly to the desired position. However as noted the portions 18, 19, and 20 act as a spacer to control the amount of force which can be imparted to draw the flange 21 inwardly and downwardly, and to limit the distance the flange 21 is drawn inwardly so that it will always be in position, properly spaced from its companion board section 11 to support the board section of the superjacent panel at the desired angle. The various courses of panels will accordingly project the same distance outwardly at their butt edges and the panels in the courses will be in perfect horizontal alignment.

Also there are, of course, numerous horizontal cracks in old wall constructions. Nails if driven horizontally into such cracks have no holding force, however if driven at 45° the nails are driven through the crack at an angle into both bordering sections of the crack.

It will be observed that the notches 14 are of considerably greater length than is required to accommodate the shanks of the nails 23 (FIG. 2). When the clip section 10 is mounted over its companion board section 11 the nail openings 22 are so aligned that the nails will be located substantially centrally in the notches 14 and the board sections 11 will be free to "move" with respect to the nails 23 and sections 10.

Since contraction of the boards 11 would tend to open an unsightly joint between the abutting ends of the sections 11 and would permit rain and moisture to enter at the joint, a novel butt strap S is employed with the greatly improved siding construction I have described. Butt strap S shown comprises (FIG. 3) a crowned or concavo-convex flexible metal strip 26 bent reversely as at 27 and thence laterally as at 28, the laterally extending section 28 which is adapted to be disposed between the edges of the abutting board sections 11 terminating in a flange 29 which is hooked around the rear face of one of the board sections 11 as shown. The upper end of the crowned strip 26 has a groove 30 (FIG. 4) to accommodate the portion 19 of the clip section 10. The pressure exerted by the portion 19 of the clip section tends to flatten the crown strip and seal its side edges against the board sections (see FIG. 3). As will be noted from a glance at FIG. 3 sufficient clearance is provided, as at 31, so that the boards can "work" under the strap. The lower end of the sections 28 and 29 is cut away as at 28a (FIG. 1) and it will be seen that the butt strap is held tightly at its lower end because the section 29 extends downwardly far enough so that it is held tightly between the board section 11 and the lower edge of the portion 16 of the channel section 10.

The straps S need not be employed if the adjacent board sections of the longitudinally abutting panels P are secured together so that they "move" as a unit. In this case it is desirable, however, to employ a backer plate B (FIG. 8) which will be later described. In FIGS. 5 and 6 I have shown a C-shaped member 32 for securing the abutting panels together, the member being accommodated in a pair of notches 33 and 34 formed in the board sections of the panels adjacent the end edges thereof at the factory or being formed by the workmen on the job. It will be observed that the marginal side wall 33a of the notch 33 is inclined downwardly toward the end of the board section 11 of the panel and the marginal side wall 34a of the recess or notch 34 is initially inclined downwardly at a slightly less oblique angle and thence undercuts as at 34b. If the left end of the joint fastener 32 (in FIG. 5) is placed in the notch 33 and the right end of the member is then placed in notch 34 and pressed down sharply a wedging effect is achieved and the right end of the member 32 snaps into locked position adjacent the portion 34b of the notch. The distance between the edges 33a and 34b is preferably slightly greater than the inside length of the fastener 32 so that the fastener is forced to expand longitudinally and exerts a force to hold the abutting board sections together.

The expansion is sufficient to exert a force even though some shrinkage of the board sections occurs.

The notches 33 and 34 may be easily formed on the job if the workman has a small coping saw. He could simply cut the two side edges of the notches with a simple template and thence punch out the material.

The backer plate B which I prefer to use in conjunction with this construction is shown in FIGS. 7 and 10. It comprises a strip 35 of flexible, resilient metal which is normally concavo-convex in cross section and is formed at its upper end with recesses 36. This reduced upper end of the backer plate B fits under the free ends of the retaining member 32 which flattens the strip 35 and maintains the side edges thereof in tight sealing relation with the rear faces of the abutting board sections 11. The lower end of the backing plate B is held between the board section and the lower edge of the portion 16 of the clip section 10 (see FIG. 10). Because the side edges of the strip tend to be pressed into the board sections where the strip is flattened obviously water cannot seep out to the rear of the panels and will proceed downwardly to weep holes provided in the portions 18 and 20 of the sections 10. Obviously the backer plates B will "move" with the board sections of longitudinally adjacent panels which will "move" as a unit. In effect this construction forms a panel which extends the full length of the wall being covered, the panel being made up of the continuous clip or channel section 10 and the board sections 11 which are joined together. The end edges of the end board sections in a course will be covered by conventional angular corner members and sufficient clearance will be provided to permit "movement" of the sections 11.

It is desirable that certain materials such as Weldtex plywood be fixed to the wall surface and it will be noted that the notches 14 (FIG. 2) have recesses 14a therein of about the size of a nail hole to accommodate the nails 23 when this type of material is being employed as the board sections 11.

In FIG. 9 a further embodiment of a board section 11 is illustrated wherein the openings 14' corresponding to the notches 14 in the previously described embodiment are disposed inwardly of the top edge of the board section.

FIG. 10 illustrates a modified embodiment of a clip section 10 in which the outwardly inclined nailing portion of the previous clip section is replaced by a Z-shaped section 37 which has portions in bearing engagement with both its own board section 11 and the superjacent board section. Instead of having a down-turned flange 17a the flange 38 is turned upwardly. Otherwise the panel is exactly like the panels shown in FIGS. 1 and 2 and it will be noted that the nail openings 22 and edges 24 of the notches 14 are so disposed that the nails will be at substantially a 45° angle.

In FIG. 11 I have shown still a further embodiment of the invention in which the channel or clip section 10' and board sections 11' of the panel are formed of a suitable metallic material such as aluminum. The sections 11' in FIG. 11 have the looped portion 39 forming the groove for receiving the flange 21' on the clip section 10' and elongated nail openings 22' and 14'' are formed in the sections 10' and 11' respectively which permit movement of the panel as a unit.

The siding construction I have illustrated and described has, of course, myriad advantages, other than those I have mentioned, over presently known designs. For example, a double butt construction is provided which increases the strength and rigidity of the assembled panel wall and permits it to effectively bridge hollows in "old" side walls. The nailing portion 16 is sufficiently removed from the flange 21 so that the latter will never be inadvertently damaged when the channels are being nailed. Both the upper and lower edges of each panel are tightly secured as previously noted and there is no looseness or rattling in heavy winds and storms. Further the sealed

off air spaces formed behind the panels have considerable insulating value.

The nail openings 22 are spaced apart relative to the notches 14 in the board sections 11 so that once the channel section 10 is positioned all of the openings 22 and notches 14 are transversely aligned. The nail heads 23 are, of course, hidden from view and are protected from the weather. The openings 22 form a bearing for the nails 23 and the tips of the nails can be moved around nails or knots in the old siding wall to which the paneling is being applied.

The channel or clip sections 10 tend to reinforce both the upper and lower edges of the board sections and prevent their crumbling or buckling inwardly or outwardly due to weathering and temperature and humidity changes. The flange 17a specifically opposes inward buckling of the upper edge of the board sections which might result from weathering or inadvertent blows or pressures. The channel sections cover the clamp members 32 (FIG. 10) but, of course, do not interfere with their movement in unison with the board sections.

If it is desired to replace a board section 11 it can be rapidly accomplished by simply displacing the portion 20 of the channel section 10 downwardly until the flange 21 is removed from the groove 15 in the lower edge of the section 11, which can then be pulled from the channel section 10 holding its upper edge. A new section 11 can be fitted into place with the notches 14 being centered relative to the nails 23 and the lip 21 can then be pushed back into the groove or slit 15.

It is to be understood that the drawings and descriptive matter are in all cases to be interpreted as merely illustrative of the principles of the invention rather than as limiting the same in any way since it is contemplated that various changes may be made in the various elements to achieve like results without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A siding construction adapted to be secured on a substantially vertical wall, said construction comprising an elongate, substantially planar panel member having front and rear faces bounded by top, bottom, and end edges; a mounting member separate from said panel member, said mounting member comprising an upper section supported on the top edge of said panel member, an intermediate section extending downwardly from said upper section and overlying an upper part of said front face of said panel member, a spacer portion joined to the bottom of said intermediate section and extending substantially normal to and outwardly from the front face of said panel member, a supporting portion joined to said spacer portion for supporting the bottom edge of another superjacent panel member; and fastening means extending through one of said sections at an angle to said wall such that said fastening means passes through a portion of said panel member and enters said wall at a level below the level of the top edge of the front face of said panel member to fix said mounting member to said wall, said panel member being cut away in the region where said fastening means passes to prevent engagement between said fastening means and said panel member, whereby said panel member is capable of movement relative to said mounting member.

2. The construction set forth in claim 1 wherein said upper section of said mounting member includes a flange extending downwardly and in engagement with the rear face of said panel member.

3. The construction set forth in claim 1 wherein said supporting portion of said mounting member includes an upwardly extending flange for reception in a slot at the bottom edge of said superjacent panel member.

4. The construction set forth in claim 1 including openings formed at each end of said panel member for the reception of fastening means, said fastening means being

adapted to secure said panel member to other panel members at the end edges thereof.

5. The construction set forth in claim 1 wherein said cut away portion of said panel member comprises a notch having a groove for reception of nails or the like that are adapted to be driven into said wall to prevent relative movement between said panel member and said wall.

6. A siding construction adapted to be secured on a substantially vertical wall, said construction comprising an elongate, substantially planar panel member having front and rear faces bounded by top, bottom, and end edges; and a mounting member separate from said panel member, said mounting member comprising an upper section supported on the top edge of said panel member, an intermediate section joined to said upper section and inclined downwardly and away from said front face of said panel member and overlying an upper part of the front face of said panel member, a spacer portion at the bottom of said intermediate section in engagement with the front face of said panel member and extending substantially normal thereto and outwardly therefrom, a support portion at the outer end of said spacer portion for supporting the bottom edge of another superjacent panel member, one of said sections being adapted to receive a nail therethrough at an angle to said wall corresponding substantially to the angle of inclination of said intermediate section, said panel member being cut away in the region where said nail is adapted to be received to prevent engagement of said panel member and said nail.

7. The construction set forth in claim 6 wherein said upper section of said mounting member includes a flange extending downwardly and in engagement with the rear face of said panel member.

8. The construction set forth in claim 6 wherein said supporting portion of said mounting member includes an upwardly extending flange for reception in a slot at the bottom edge of said superjacent panel member.

9. In a siding construction adapted to be nailed or otherwise secured to a substantially vertical wall, a linearly extending first panel comprising a body having front and rear faces bounded by top, bottom and end edges; a mounting member separate from said panel; and a second panel similar to said first panel supported by said mounting member with its bottom edge overlapping the top edge of the first panel, said mounting member comprising an upper portion seated on the top edge of the first panel and extending rearwardly and downwardly from said front face to a position below the top edge thereof, an intermediate section extending downwardly from said upper section below the upper edge of said first panel and in-

clined away from the front face thereof, a spacer section joined to the lower end of said intermediate section and in engagement with the front face of said first panel, a support section joined to said spacer section and extending away from and substantially normal to said front face of said first panel and engaging and supporting the lower edge of said second panel.

10. A siding construction adapted to be secured to a substantially vertical wall, said construction comprising a substantially planar, elongate panel member having front and rear faces bounded by top, bottom, and side edges; and a mounting member separate from said panel member, said mounting member having an upper section supported on the top edge of said panel member, an intermediate section joined to said upper section and inclined downwardly and away from said front face of said panel member and overlying an upper part of the latter, a spacer portion at the bottom of said intermediate section in engagement with said front face of said panel member and extending substantially horizontally outwardly therefrom, a flange at the outer end of said spacer portion for engaging and supporting the bottom edge of another superjacent panel member, said flange being so located by said spacer portion that the rear face of the superjacent panel may bear against the bottom of said intermediate section, said intermediate section being adapted to receive a nail therethrough at an angle to said wall corresponding substantially to the angle of inclination of said intermediate section.

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