SIDING SPACER AND VENTILATION MEANS FOR OUTER WALLS

Inventors: Jay A. Johnson, Lake Elmo, MN (US); Michael D. Conroy, Afton, MN (US); Kurt D. Daniels, St. Paul, MN (US)

Correspondence Address:
BROOKS & CAMERON, PLLC
1221 NICOLLET MALL #500
MINNEAPOLIS, MN 55403 (US)

Publication Classification

Int. Cl.
E04D 1/34 (2006.01)

U.S. Cl. ................................................. 52/547; 52/551

ABSTRACT

A spacer and a method for its use in an outer wall of a building between the outer vertical surface of its underlying structure and the inner surfaces of each of the portions of overlapped lengths of siding through which the lengths of siding are nailed to the underlying structure to provide a ventilation space between the rear surfaces of the lengths of siding and the outer surface of the underlying structure. The spacers each have a planer rear surface adapted to be positioned against the outer surface of the underlying structure, and a planer front surface portion that can be disposed at a small acute angle (e.g., in the range of about 2 to 3 degrees) with respect to the rear surface at which angle it is desired to have the rear surfaces of the lengths of siding disposed with respect to the outer surface of the underlying structure. A ventilation channel can be provided between a lower horizontal surface on the building and an uppermost edge of its siding to facilitate movement of air to the atmosphere from such a ventilation space transversely through the ventilation channel and openings in a perforated wall portion of the ventilation channel.
SIDING SPACER AND VENTILATION MEANS FOR OUTER WALLS

FIELD OF THE INVENTION

[0001] The present invention relates to structures and methods adapted to provide ventilation between house siding and underlying house structure such as wind and water barrier covered sheathing attached to the outside of framing on the outside wall of the house.

BACKGROUND

[0002] It has been found that when certain types of house lap siding, particularly including fiber cement lap siding (e.g., “HARDIPLANK”™ lap siding available from James Hardie Building Products, Mission Viejo, Calif.; or “WeatherBoard Lap Siding” available from CertainTeed Corporation, Valley Forge, Pa.), is nailed directly to or over underlying structure such as polymeric house wrap (e.g., “Tyvek”™ Home Wrap™ available from DuPont) covered sheathing (e.g., sheets of pressboard or plywood) attached to the outside of wood house framing, water can get between the siding and the underlying structure and cause mold to grow therebetween. In some such instances, it has been necessary to remove and replace the siding and parts of the underlying structure to correct that problem.

[0003] It is recognized that to alleviate this problem a ventilation space (e.g., a 1/4 inch ventilation space) should be provided between the rear surface of the siding and the underlying structure through which ventilation space air can circulate to dry moisture and restrict the growth of mold. Two known methods have been used to provide that ventilation space.

[0004] (1) Vertical baton strips (e.g., strips about 2 inches wide and 1/4 inch thick) extending vertically from the bottom to the top of the underlying structure, spaced at about 16 inches and aligned with the studs behind the sheathing have been used between the siding and underlying structure to provide such a ventilation space. That ventilation space is only provided between the vertical strips so that horizontal cross ventilation is restricted. Also, nailing the lap siding to those strips can cause visible bows about horizontal axes in the lengths of siding between their upper portions that are nailed to the strips and their lower portions that extend over the upper portions of the lengths of siding below them.

[0005] (2) A stiff resiliently flexible corrugated sheet random woven of Nylon polymeric fibers to provide a high percentage of openings through the corrugated sheet (e.g., the corrugated sheet sold under the trademark “HOME SLICKER” by Benjamin Obdyke Incorporated, Horsham, Pa., see U.S. Pat. No. 6,594,965) is positioned between the lengths of siding and the underlying structure with its corrugations extending vertically to provide such a ventilation space. The ventilation space provided by that porous corrugated sheet is somewhat occluded by the presence of the corrugated sheet. Also, nailing the lengths of siding to the underlying structure through the corrugated sheet can collapse the corrugations in the sheet under the nailed portions of the siding, whereas the portions of the siding between the nailed portions are held away from the underlayment by the corrugated sheet, thereby causing visible bows in the siding about vertical axes between those nailed portions.

DISCLOSURE OF THE INVENTION

[0006] The present invention provides specially shaped spacers and a method for using such spacers to provide ventilation between an underlying structure on the outside wall of a building and each of the portions of lengths of lap siding through which the lengths of siding are nailed to the underlying structure to provide a ventilation space between the rear surfaces of the lengths of siding and the underlying structure while restricting visible bowing of the lengths of siding; and also provides a building comprising an outside wall that can be made by that method and which can include novel means for opening the ventilation space to the atmosphere at its upper and lower ends.

[0007] The spacers according to the present invention each have a planer rear surface adapted to be positioned against the planer outer surface of an underlying structure (e.g., an outer surface formed by polymeric house wrap covered sheathing), and a planer front surface portion that can be disposed at a small acute angle (e.g., in the range of about 1.5 to 4 degrees or about 2 to 3 degrees for use with lengths of siding in the range of about 6½ inches or 15.8 cm to 12 inches or 30.5 cm wide) with respect to its rear surface at which small acute angle it is desired to have the rear surfaces of the lengths of siding disposed with respect to the outer surface of the underlying structure. The front surface portion can diverge away from the rear surface at that angle from a first or upper edge of the front surface portion toward a second or lower edge of the front surface portion, and the spacer has a predetermined thickness (e.g., about 1/8 inch) between its front surface portion and its rear surface at the upper edge of the front surface portion that defines the minimum dimension of the ventilation space the spacer will provide between the outer surface of the underlying structure and the inner surfaces of the lengths of siding.

[0008] The spacers each include a projecting portion having a stop surface at and projecting above the first edge of the front surface portion. The projecting portion can facilitate manual engagement with the spacer while the spacer is positioned behind a length of siding or inserted between a length of siding and the underlying structure, and helps locate the spacer or stops such insertion when the stop surface contacts the upper edge of the length of siding. The projecting portion extends from the stop surface to a top end of the spacer and projects above the first edge of the front surface a distance (e.g., 3/8 inch or 0.79 cm) about equal to or less than the thickness of the lengths of siding along their upper edges.

[0009] The spacers can also each include a tapered portion extending from the second edge of the front surface portion to a bottom end of the spacer, which tapered portion has a generally planer front surface that diverges away from the second edge toward the rear surface at an acute angle (e.g., about 20 degrees) between the front and rear surfaces. The front and rear surfaces along the tapered portion provide a wedge which can facilitate inserting the spacer between the rear surface of a length of siding and the outer surface of the underlying structure.

[0010] A method for using the spacers to provide a ventilation space between lengths of siding and the underlying...
structure of a house can include positioning the spacers between the rear surfaces of the lengths of siding and the underlying structure with their stop surfaces contacting the upper edges of the lengths of siding behind which the spacers are positioned and with the spacers for each of the lengths of siding spaced (e.g., at about 16 inches) along its length in alignment over the side surfaces of building structure (e.g., wood 2x4s) included in the underlying structure over which they are positioned. Each length of siding is attached by fasteners (e.g., nails or screws) driven through the upper portion of the length of siding, the spacers generally centrally of their front surface portions, and into the underlying structure. This can position each of the lengths of siding so that the rear surfaces of the lengths of siding diverge away from the adjacent outer surface of the underlying structure at a slight angle so that at the rear surfaces of the lengths of siding at their top edges are spaced at a predetermined distance (e.g., about ¼ inch) from the underlying structure, and portions of the lengths of siding adjacent their lower edges lay against and are pressed slightly against the outer surface of an upper portion of the length of siding below them. This can be done without visual bending the siding by appropriate selection of the angle between the rear surfaces and front surface portions of the spacers for the width and thickness of the siding being attached.

[0011] The spacers can have lengths between their top and bottom ends that are significantly less (e.g., preferably no more than about ½) the widths of the lengths of siding with which they are used so that there is a space between vertically aligned spacers used to attach the lengths of siding. Thus the ventilation space provided by the spacers between the underlying structure and the lengths of siding can afford movement of air and moisture in both horizontal and vertical directions in the ventilation space.

[0012] The spacer should be made of a material that can firmly support and retain the positions of the lengths of siding for the life of the building, can be nailed through with relative ease either with a power nailing device or manually with a hammer, and will not split when it is nailed through over the range of temperatures in which house construction occurs (e.g., 30 to 120 degrees F. or 34 to 49 degrees C.). Suitable materials may include, are not limited to, fibrous or polymeric materials or composites thereof, such as wood (preferably coated to restrict absorbing moisture), PVC, polypropylene, or glass reinforced high or low melt resins. One material that may be acceptable is the polypropylene copolymer, material grade P885256 commercial available from Bassel Polyoleds, web address www.Montel.com. When appropriate for the material used, the spacer can be cut or machined from a larger block of such material, can be made by a combination of extrusion and transverse cutting, or can be injection or vacuum molded.

[0013] The front surface portion of the spacer can be continuous or have support across its central portion so that it provides support for the rear surface of a length of siding around a fastener (e.g., a nail) as that fastener is driven through that length of siding, the spacer, and into the underlying structure. Such support for the rear surface of the length of siding restricts portions of the siding around that fastener along the rear surface of the siding from being broken out by movement of the fastener through the length of siding. Alternatively, if the material from which the lengths of siding is made does not need such support, the spacer can have a passageway that extends through the center of the front surface portion through which passageway that fastener can pass to so that the spacer causes little or no increase in the force needed to insert that fastener through the length of siding and spacer and into the underlying structure.

[0014] Use of the spacers can provide an outer wall for a building in which a multiplicity of the spacers between a planer outer surface of an underlying structure of the wall and the rear surfaces of the lengths of siding through which spacer the lengths of siding are fastened to the underlying structure provide a ventilation space between the lengths of siding and the underlying structure. The outer wall can further include a ventilation strip of material made of random woven polymeric fibers to have small through air passageways positioned between the rear surface of the lowermost portion of the lowermost length of siding and the planer outer surface of the underlying wall structure across the lower open end of the ventilation space, together with a novel ventilation channel between the uppermost edge of the uppermost length of siding and a lower horizontal surface on the building, which channel has an opening communicating with the upper end of the ventilation space and has openings to the atmosphere. Air can freely move through the ventilations strip, the ventilation space between the rear surfaces of the lengths of overlap siding and the underlying structure of the building, and through the ventilation channel.

[0015] The ventilation strip and the ventilation channel can also be useful in an outer wall for a building that has siding other than lap siding, such as siding of stucco or sheets of wood or another suitable material, where that outer wall includes an underlying structure having a vertical outer surface; the siding means are provided for supporting the siding on the underlying structure with a rear surface on the siding spaced from the outer surface of the underlying structure to provide a ventilation space between the siding and the underlying structure having openings both at the lower end and at the upper end of the siding. The ventilation strip can then be used between the inner surface of the siding and the outer surface of the underlying structure across the lower opening to the ventilation space at the lower end of the siding; and the ventilation channel can then be used between the uppermost edge of the siding and a lower horizontal surface on the building (e.g., a lower surface on a freeze board, soffit, eave or overhang) across the upper end of the ventilation space.

BRIEF DESCRIPTION OF DRAWING

[0016] The present invention will be further described with reference to the accompanying drawings wherein like reference numerals refer to like parts in the several views, and wherein:

[0017] FIG. 1 is a front view of a first embodiment of a spacer according to the present invention;

[0018] FIG. 2 is a right side view of the spacer of FIG. 1;

[0019] FIG. 3 is a fragmentary perspective view having parts broken away to show details that illustrates the use of spacers of the type illustrated in FIG. 1 to attach lengths of siding to an underlying structure of an outer wall of a building to form a ventilation space between an outer surface of the underlying structure and the rear surface of the
lengths of siding and illustrates the use of a ventilation strip across the lower end of the ventilation space;

\[0020\] FIG. 4 is a fragmentary perspective view having parts broken away to show details that illustrate the use of spacers of the type illustrated in FIG. 1 to attach lengths of siding to an underlying structure of an outer wall of a building, including the use of an inverted spacer to support the lowermost portion of the lowermost length of siding away from the underlying structure;

\[0021\] FIG. 5 is a fragmentary perspective view having parts broken away to show details that illustrate the use of spacers of the type illustrated in FIG. 1 to attach lengths of siding to an underlying structure of an outer wall of a building together with a ventilation channel between the uppermost edge of the uppermost length of siding and a lower horizontal surface on the building;

\[0022\] FIG. 6 is a perspective view of the ventilation channel used in FIG. 5;

\[0023\] FIG. 7 is a top, front, right side perspective view of a second embodiment of a spacer according to the present invention;

\[0024\] FIG. 8 is a rear, top, left side view of the spacer of FIG. 7;

\[0025\] FIG. 9 is a top, front, right side perspective view of a third embodiment of a spacer according to the present invention;

\[0026\] FIG. 10 is a rear, top, left side view of the spacer of FIG. 9;

\[0027\] FIG. 11 is a front view of a fourth embodiment of a spacer according to the present invention; and

\[0028\] FIG. 12 is a sectional view taken approximately along line 12-12 of FIG. 11.

DETAILED DESCRIPTION

\[0029\] With reference to FIGS. 1 through 5 of the drawing, the present invention comprises specially shaped spacers 10 adapted to be used between a generally planer vertical outer surface on an underlying structure 11 of an outer sideward of a building 13 and each of the portions of lengths of siding 16 through which the lengths of siding 16 are fastened to the underlying structure 11 to provide a ventilation space 9 between the inner or rear surfaces of the lengths of siding 16 and the vertical outer surface of the underlying structure 11. Use of the spacers 10 to provide that ventilation space 9 can afford movement of air in any direction in that ventilation space 9 and will restrict visible bowing of the lengths of siding 16.

\[0030\] FIGS. 1 and 2 illustrate one of the spacers 10. FIG. 3 illustrates use of three of the spacers 10 to attach lengths of siding 16 (e.g., fiber cement lap siding such as “HARDIPLANK™” lap siding available from James Hardie Building Products, Mission Viejo, Calif., or “Weather-Board™” lap siding available from CertainTeed Corporation, Valley Forge, Pa.) to an underlying structure 11 that as illustrated comprises polymeric air and water barrier vapor permeable house wrap 12 (e.g., “Tyvec™” covering plywood or press-board sheathing 14 over 2x4 wood building framing 15. The spacers 10 each have a width (e.g., about 1.5 inches or 3.8 cm) between parallel side surfaces 20 that can be about the same as the width of the side surface of the 2x4 wood framing 15 in the underlying structure 11 with which they will be aligned, and a planer rear surface 22 intended to be positioned against the generally planer vertical outer surface of the underlying structure 11 (e.g., against the outer surface of the polymeric house wrap 12 covering the sheathing 14). The spacers 10 each also have a continuous planer front surface portion 24 disposed at a small acute angle (i.e., in the range of about 1.5 to 4 degrees and preferably in the range of about 2 to 3 degrees for lengths of siding in the range of about 6 1/2 inches or 15.8 cm to 12 inches or 30.5 cm wide) with respect to the rear surface 22, at which small acute angle it is desired to have the rear surfaces of the lengths of siding 16 disposed with respect to the vertical outer surface of the underlying structure 11. The front surface portion 24 diverges away from the rear surface 22 at that small acute angle from a first or upper edge 26 of the front surface portion 24 toward a second or lower edge 28 of the front surface portion 24, and the spacer 10 has a predetermined thickness (e.g., about ¼ inch) between its front surface portion 24 and its rear surface 22 at the first edge 26, which predetermined thickness defines the minimum dimension of the ventilation space 9 that the spacer 10 will provide between the underlying structure 11 and the lengths of siding 16.

\[0031\] The spacers 10 optionally can each include a tapered portion 30 extending from the second edge 28 of the front surface portion 24 to a bottom end 32 of the spacer 10. That tapered portion 30 has a generally planer front surface 34 that converges away from the second edge 28 toward the bottom end 32 and rear surface 22 at an acute angle (e.g., about 20 degrees) between the front and rear surfaces 34 and 22. The front and rear surfaces 34 and 22 along the tapered portion 30 form a wedge that can facilitate inserting the spacer 10 between the siding 16 and the underlying structure 11.

\[0032\] The spacers 10 each include a projecting portion 36 having a stop surface 38 at the first edge 26 projecting above the front surface portion 24. That stop surface 38, as illustrated, is disposed at about a right angle with respect to the front surface portion 24, but could alternatively be disposed at a different angle. The stop surface 38 facilitates alignment of the first edge 26 with a top edge surface 39 of one of the lengths of siding 16. The projecting portion 36 facilitates manual engagement with a spacer 10 when the spacer 10 is positioned along the rear surface of one of the lengths of siding 16 before the length of siding 16 is attached to the underlying structure 11 and when a spacer 10 is inserted between the rear surface of a length of siding 16 and the underlying structure 11 after the ends of the that length of siding 16 are already attached to the underlying structure 11 through two spacers 10 each adjacent a different one of its ends, wherein such insertion will be stopped when the stop surface 38 contacts the top edge surface 39 of the length of siding 16. The projecting portion 36 extends from the stop surface 38 to a top end 40 of the spacer 10 and projects above the first edge 26 of the front surface a distance no greater than the thickness of the lengths of siding 16 along their top edge surfaces 39 (e.g., a distance of about 1/8 inch or 0.79 cm or less).

\[0033\] The spacer can, as illustrated, have a transverse groove 41 recessed from its rear surface 22 and aligned with the first edge 26 of the front surface portion 24, or could
Alternatively have a transverse groove recessed from its front surface portion 24 along the first edge 26 (not shown). Either of such grooves affords breaking the spacer 10 along the groove 41 to separate the projecting portion 36 from a portion of the spacer 10 between the first edge 26 and the bottom end 32 of the spacer 10. Such breaking away of the projecting portion 36 can facilitate using that portion of the spacer 10 between the uppermost length of siding 16 along an underlying structure 11 and the freeze board or soffit, eave, or overhang of a house so that the top edge surface 39 of that uppermost length of siding 16 can be positioned against the bottom surface of that freeze board or soffit, eave, or overhang.

The spacer 10 can also have a plurality of parallel spaced transverse recesses (not shown) from its planer rear surface 22 and extending either from the bottom end 32 to the top end 40 of the spacer 10 or between the side surfaces 20 of the spacer 10 to afford movement of air and water between the spacer 10 and the planer outer surface of the underlying structure 11 against which the rear surface 22 of the spacer 10 is positioned.

The width of the spacer 10 between its side surfaces 20 should be at least 1 inch or 2.54 cm which corresponds to the width of the shoes on many power nailing devices to thereby facilitate aligning that shoe with the spacer 10. That width preferably is about 1.5 inch or 3.8 cm which corresponds to the side surface dimension of 2x4 wood framing over which the spacer 10 is often aligned, and should not need to be much wider (e.g., less than about 2 inch or 5 cm) so that it does not occupy too much the ventilation space 9 it forms between the lengths of siding 16 and the underlying structure 11. The thickness of the spacer 10 at the first edge 26 of the front surface portion 24 should be at least about 1/8 inch or 0.32 cm so that it will form a minimum ventilation space 9 through which air and water can pass of about 1/8 inch or 0.32 cm between the inner surfaces of the lengths of siding 16 and the outer surface of the underlying structure 11. That thickness preferably is about 1/8 inch or 0.64 cm to provide a minimum ventilation through which air and water can more freely pass of about 1/8 inch or 0.64 cm thick between the lengths of siding 16 and the underlying structure 11. That thickness could be, but should not need to be, more than about 1/8 inch or 1.3 cm.

The height of the front surface portion 24 between the first edge 26 and the second edge 28 of the front surface portion 24 should be in the range of 1 to 2 inches or 2.54 to 5 cm and preferably about 1.5 inch or 3.8 cm to provide firm support for the length of siding 16 the spacer 10 spaces form the underlying structure 11.

As can be seen in FIGS. 3, 4, and 5, the spacers 10 can be positioned between the inner surfaces of the lengths of siding 16 and the outer surface of the polymeric air and water barrier housewrap 12 included in the underlying structure 11 with the stop surfaces 38 of the spacers 10 contacting the top edge surfaces 39 of the lengths of siding 16 along the rear surfaces of which the spacers 10 are positioned. Spacers 10 for each of the lengths of siding 16 can be spaced (e.g., at about 16 inches) along its length in alignment over the side surfaces of framing 15 (e.g., wood 2x4s) included in the underlying structure 11. Each length of siding 16 is attached by fasteners 44 (e.g., nails or screws) extending through the upper portion of the length of siding 16, the spacers 10 generally centrally on their front surface portions 24, and into the underlying structure 11. This will position each of the lengths of siding 16 so that the rear surfaces of the lengths of siding 16 diverge away from the adjacent planer vertical outer surface of the underlying structure 11 at a slight angle so that at the top edges 39 of the lengths of siding 16 the rear surfaces of the lengths of siding 16 are spaced at a predetermined distance (e.g., 1/8 inch) from the outer surface of the underlying structure 11, and so that a portion of each length of siding 16 adjacent its lower edge lays and is pressed against the outer surface of an upper portion of the length of siding 16 directly below it.

This is done without significantly bending the siding 16 when it is fastened to the underlying structure 11 by appropriate selection of the angle between the rear surfaces 22 and front surface portions 24 of the spacers 10 for the width and thickness of the siding 16 being attached. Too large an angle will cause that portion of each length of siding 16 adjacent its lower edge to be spaced from the outer surface of an upper portion of the length of siding 16 directly below it, which is undesirable. Too small an angle can cause that portion of each length of siding 16 adjacent its lower edge to be pressed with sufficient force against the outer surface of an upper portion of the length of siding 16 directly below it that a visible bow about a horizontal axes can be caused in the length of siding 16 between its upper portion that is nailed to the underlying structure 11 through the spacer 10 and its lower portion that is pressed against and supported on the upper portion of the length of siding below it. Such visible bowing is also undesirable. An angle between the rear surfaces 22 and front surface portions 24 of the spacers 10 in the range of about 1.5 to 4 degrees and preferably in the range of about 2 to 3 degrees for lengths of siding in the range of about 6¾ inches or 15.8 cm to 12 inches or 30.5 cm wide and ⅜ inch or 0.8 cm thick have been found to restrict both such spacing between and significant visual bowing of overlapped lengths of siding 16. The use of significantly narrower, wider, and/or thicker lengths of siding could possibly change the preferred angle between the rear surfaces 22 and front surface portions 24 of the spacers 10.

Also, as can be seen in FIGS. 3, 4, and 5, the spacers 10 have lengths between their top and bottom ends 40 and 32 that are significantly less (e.g., no more than about 1/2 the widths of the lengths of siding 16 with which they are intended to be used (e.g., a length of less than about 3.5 inches or 9 cm for lengths of siding 16 having a width of 8¾ inch or 20.3 cm, or a length of less than about 2.5 inches or 6.4 cm for lengths of siding 16 having a width of 6¾ inch or 15.2 cm) so that there is a significant space between vertically aligned spacers 10 used to attach the lengths of siding 16. Thus the ventilation space 9 provided by the spacers 10 between the underlying structure 11 and the lengths of siding 16 affords movement of air in both horizontal and vertical directions in the ventilation space 9 between the lengths of siding 16 and the underlying structure 11. Providing spacers 10 that have lengths between their top and bottom ends 40 and 32 that are no more than about 1/2 the widths of the lengths of siding 16 with which they are intended to be used also allows horizontally spaced spacers 10a to be inverted as illustrated in FIG. 4 so that their projecting portions 36 space the lower portion of the lowermost length of siding 16 on the underlying structure 11 from the outer surface of the underlying structure 11.

As is seen in FIG. 3, insects and the like can be restricted from entering the bottom open end of the venti-
lation space 9 formed by the spacers 10 by using a ventilation strip 42 could have a front major surface disposed at a small angle (e.g., 2 to 3 degrees) with respect to its rear major surface so that those surfaces are respectively in full width engagement with the inner surface of the lowermost length of siding 16 and the outer surface of the underlying structure 11.

[0039] A method for using the spacers 10 to sequentially attach each length of siding 16 over the underlying structure 11 of the outer sidewall of the building 13 from the lowermost length of siding 16 to the uppermost length of siding 16 to provide the ventilation space 9 between the lengths of siding 16 and the underlying structure 11 can include positioning the front surface portions 24 of the spacers 10 in spaced relationship along the rear surface of the lowermost length of siding 16 with the top edge surface 39 of the length of siding 16 along the stop surface 38 at the first edge 26 of the front surface portion 24 of each spacer 10; and at each spacer 10 driving a fastener 44 (e.g., a nail or screw) through the length of siding 16, generally centrally through the front surface portion 24 of the spacer 10 and into the underlying structure 11. Such positioning can be done by first positioning the front surface portions 24 of two of the spacers 10 along the rear surface of the length of siding 16 and the adjacent different one of its opposite ends typically in alignment with vertical members of the framing in the underlying structure 11; and then at each spacer 10 driving a fastener 44 through the length of siding 16, through the spacer 10 generally centrally along its front surface portion 24 and into the underlying structure 11. Subsequently additional spacers are inserted at spaced relationships (i.e., typically in alignment with vertical members of the framing in the underlying structure 11) between the rear surface of the length of siding 16 and the underlying structure 11 by pressing each spacer 10 between the length of siding 16 and the underlying structure 11 with the bottom end 32 of the tapered portion 30 leading until the first edge 26 of the front surface portion 24 of each spacer 10 is along and contacts the top edge surface 39 of the length of siding 16, after which fasteners 44 are driven through the length of siding 16, the front surface portion 24 of each of those spacers 10 and into the underlying structure 11. After the lowermost length of siding 16 is attached, lengths of siding 16 above it can be sequentially attached in the same way after being located with respect to the length of siding 16 below them.

[0040] That method can be used to make the outer wall of the building 13 having the underlying structure 11 with the generally planar vertical outer surface; a plurality of the lengths of elongate siding 16 each having generally planer opposite front and rear surfaces extending between longitudinally extending opposite top and lower edge surfaces 39 and 46, the lengths of siding 16 being disposed with their rear surfaces adjacent the outer surface of the underlying structure 11 in parallel overlapping relationship with upper portions of the front surfaces of the lengths of siding 16 disposed along lower portions of the rear surfaces of adjacent lengths of siding 16; and a multiplicity of the spacers 10 spaced along each of the lengths of siding 16 between the planer vertical outer surface of the underlying structure 11 and the rear surfaces of the lengths of siding 16 through which spacers 10 the lengths of siding 16 are fastened to the underlying structure 11 to provide the ventilation space 9 between the lengths of siding 16 and the underlying structure 11.

[0041] The outer sidewall of the building 13 can, as illustrated in FIG. 5, further include a novel ventilation channel 80 between the uppermost edge 39 of the uppermost length of siding 16 and a lower horizontal surface 82 on the building. The ventilation channel 80, shown removed from the building 13 in FIG. 6, can be formed of metal (e.g., aluminum) by sheet metal stamping and bending equipment, or can be formed of polymeric material using extrusion and stamping equipment. The ventilation channel 80 has wall portions including an elongate planer inner wall portion 84 having inner and outer major surfaces 85 and 86 extending between opposite first and second longitudinally extending edges 87 and 88 (e.g., about 2.5 inch or 6.4 centimeters wide) and, as illustrated in FIG. 5, can have its outer major surface 86 positioned against the vertical outer surface of the underlying structure 11 of the outer wall of the building 13. The wall portions of the ventilation channel 80 also include an elongate planer upper wall portion 90 having inner and outer major surfaces 91 and 92 extending between opposite first and second longitudinally extending edges 93 and 94 (e.g., about 1 inch or 2.5 centimeters wide), the first edge 93 of the upper wall portion 90 being joined to the second edge 88 of the inner wall portion 84, and the upper wall portion 90 being disposed at a right angle with respect to the inner wall portion 84 with the inner surfaces 85 and 91 of the wall portions 84 and 90 adjacent. The outer surface 92 of the upper wall portion 90 can, as illustrated in FIG. 5, be positioned against the lower horizontal surface 82 on the building (e.g., the lower horizontal surface 82 can be the lower horizontal surface on a freeze board or on a soffit, eave, or overhang on the building 13 along and above the uppermost edge 39 of the uppermost length of siding 16). The wall portions of the ventilation channel 80 further include an elongate perforated wall portion 96 having inner and outer major surfaces 97 and 98 extending between opposite first and second longitudinally extending edges 99 and 100 (e.g., about 0.5 inch or 1.3 centimeters wide), the first edge 99 of the perforated wall portion 96 being joined to the second edge 94 of the upper wall portion 90, the perforated wall portion 96 being disposed at about a right angle with respect to the upper wall portion 90 with the inner surfaces 91 and 97 of the wall portions 90 and 96 adjacent, and the ventilation channel 80 having through openings such as a row of small through openings 101 as illustrated between the inner and outer surfaces 97 and 98 of the perforated wall portion 96 along the length of the perforated wall portion 96. The ventilation channel 80 should include means for restrict movement of insects through the openings in the wall portion 96 which means, as illustrated comprises making the openings 101 through the perforated wall portion 96 of a small size that affords the passage of air, but is sufficiently small to restrict movement of insects through the openings 101 (e.g., openings 101 about 0.45 inch or 1.1 cm
long and 0.1 inch or 0.3 cm wide spaced by about 0.2 inch or 0.5 cm along its length). Other means could be provided for restricting entrance of insects through openings through the perforated wall portion 96 such as window screen or a layer of the material from which the ventilation strip 42 is formed extending across those openings. The perforated wall portion 96 is illustrated as being generally planar, however, it could have other contours between its first and second edges 99 and 100 such as being arcuate. The wall portions of the ventilation channel 80 also include an elongate lower wall portion 102 having inner and outer major surfaces 103 and 104 extending between opposite first and second longitudinally extending edges 105 and 106 (e.g., about 0.7 inch or 1.7 centimeters wide). The first edge 105 of the lower wall portion 102 is joined to the second edge 100 of the perforated wall portion 96, the lower wall portion 102 is disposed about parallel to the upper wall portion 90 and at about a right angle with respect to the perforated wall portion 96 with the inner surfaces 97 and 103 of the wall portions 96 and 102 adjacent, and the second edge 106 of the lower wall portion 102 is spaced from the inner wall portion 84 by about the minimum dimension of the ventilation space 9 between the outer surface of the underlying structure 11 and the inner surfaces of the lengths of siding 16 (e.g., in the range of about ½ or 0.3 cm to ½ inch or 1.3 cm). The outer surface 104 of the lower wall portion 90 can be, as illustrated in FIG. 6, positioned against the upper edge 39 of the uppermost length of the lapped siding 16. The lower wall portion 90 is illustrated as being generally planer, however, it could have other contours between its first and second edges 105 and 106 such as a contour that corresponds to the upper edge of the uppermost length of siding 16. With the ventilation channel 80 positioned in the outer wall of the building 13 as illustrated in FIG. 5, the space between the second edge 106 of the lower wall portion 102 and the inner wall portion 84 affords communication between the open upper end of the ventilation space 9 and a chamber 108 defined by the inner surfaces 85, 91, 97, and 103 of the ventilation channel 80; and that chamber 108 communicates with the atmosphere through the openings 101 in the perforated wall portion 96. Thus air can flow into the ventilation space 9 through the ventilation strip 42 positioned between the rear surface of the lowermost portion of the lowermost length of siding 16 and the vertical planer surface of the building 13 and out of the ventilation space 9 through the ventilation channel 80 to the atmosphere, or can flow into the ventilation space 9 through the ventilation channel 80 and out through the ventilation strip 42.

The ventilation channel 80 can be attached to the underlying structure 11 of the building 13 with its inner wall portion 84 against the vertical outer surface of the underlying structure 11 of the building 13 and its upper wall portion 90 against the lower horizontal surface 82 on the building by positioning the projecting portions 36 of spacers 10 in the chamber 108, which can be done by inserting the projecting portions 36 of the spacers 10, distal ends first, into the chamber 108 through the opening between the second edge 106 of the lower wall portion 102 and the inner wall portion 84 and then rotating the spacers 10 about 90 degrees to position their rear surfaces 22 against the inner surface 85 of the inner wall portion 84. The spacers 10 can then be nailed to the underlying structure 11 through their front surface portions 24 with the ventilation channel 80 in the desired location, after which the uppermost length of siding 16 can be attached to the underlying structure 11 through those spacers 10 with its uppermost edge 39 against the outer surface 104 of the lower wall portion 102.

The ventilation strip 42 and the ventilation channel 80 can also be used to good advantage in an outer wall for a building that has siding of other than lap siding, such as siding of stucco or sheets of wood or another suitable material, where that outer wall includes an underlying structure having a vertical outer surface, the siding is generally coextensive with the vertical outer surface of the underlying structure extending from a lower end to an upper end; and means are provided for supporting the siding on the underlying structure with the rear surface on the siding spaced from the vertical outer surface of the underlying structure to provide a ventilation space between the siding and the underlying structure, which ventilation space has open upper and lower ends respectively at the upper and lower ends of the siding. That means for supporting the siding on the underlying structure with the rear surface on the siding spaced from the vertical outer surface of the underlying structure could, for example, comprise vertical baton strips of the type described above in the Background portion of this application extending vertically from the bottom to the top of the underlying structure that are aligned with and attached to studs in the underlying structure to which the siding could be attached; or, to support stucco siding, could include the stiff resiliently flexible corrugated sheet random woven of Nylon polymeric fibers to provide a high percentage of openings through the corrugated sheet (e.g., the corrugated sheet sold under the trademark “HOME SLICKER”) described in the Background portion of this application positioned between the underlying structure and the stucco siding, through which sheet the stucco mesh included in the stucco siding is attached to the underlying structure. The ventilation strip 42 can then be used between the inner surface of the siding and the outer surface of the underlying structure across the lower opening to the ventilation space at the lower end of the siding; and the ventilation channel 80 can then be used between the uppermost edge of the siding and a lower horizontal surface on the building (e.g., a freeze board, soffit, eave or overhang) with its inner wall portion 84 against the vertical outer surface of the underlying structure of the wall, its upper wall portion 90 against the lower horizontal surface on the building, and its lower wall portion 102 positioned against the upper edge of the siding, with the space between the second edge 106 of its lower wall portion 102 and its inner wall portion 84 aligned with the open upper end of the ventilation space positioned to afford movement of air through the ventilation strip 42, the ventilation space between the rear surface of the siding and the outer surface of the underlying structure of the building, through the space between the second edge 106 of its lower wall portion 102 and its inner wall portion 84, transversely through the chamber 108 in the ventilation channel 80, and through the openings 101 in the perforated wall portion 96.

FIGS. 7 and 8 illustrate a second alternate embodiment of a spacer 50 according to the present invention that can be used in the same manner as the spacer 10, but is better adapted to be molded in that the spacer 50 has less thick portions. The spacer 50 has many structural features similar to those of the spacer 10 which have been identified with the same reference numerals to which have been added the suffix “a”. Like the spacer 10, the spacer 50 has a width
between parallel side surfaces 20a that is about the same as the width of the side surface of the framing 15 (e.g., 2x4 wood framing) in the underlying structure 11 with which they will be aligned. The spacer 50 has spaced elongate co-planar surface portions defining a planar rear surface 22a intended to be positioned against the planer outer surface of the underlying structure 11, and a planar continuous front surface portion 24a disposed at a small acute angle (e.g., in the range of about 1.5 to 4 degrees and preferably in the range of about 2 to 3 degrees) with respect to the rear surface 22a, at which small acute angle it is desired to have the rear surfaces of the lengths of siding 16 disposed with respect to the outer surface of the underlying structure 11. The front surface portion 24a diverges away from the rear surface 22a at that small acute angle from a first or upper edge 26a of the front surface portion 24a toward a second or lower edge 28a of the front surface portion 24a, and the spacer 50 has a predetermined thickness between its front surface portion 24a and its rear surface 22a (e.g., about 1/4 inch or 0.64 cm) at the first edge 26a, which predetermined thickness defines the minimum dimension of the ventilation space 9 the spacer 50 will provide between the outer surface of the underlying structure 11 and the inner surfaces of the lengths of siding 16. The spacer 50 includes a tapered portion 30a extending from the second edge 28a of the front surface portion 24a to a bottom end 32a of the spacer 50. That tapered portion 30a has a generally planer front surface 34a that converges away from the second edge 28a toward the rear surface 22a at an acute angle (e.g., about 20 degrees) between the front and rear surfaces 34a and 22a. The front and rear surfaces 34a and 22a form a wedge that can facilitate inserting the spacer between the siding 16 and the underlying structure 11. The spacer 50 also includes two spaced projecting portions 36a having spaced co-planar surface portions defining a stop surface 38a at the first edge 26a projecting above the front surface portion 24a and disposed at about a right angle with respect to the front surface portion 24a. The stop surface 38a facilitates alignment of the first edge 26a with a top edge surface 39 of one of the lengths of siding 16. The projecting portions 36a facilitate manual engagement with a spacer 50 for the purposes described above with respect to the spacer 10. The projecting portions 36a extend from the stop surface 38a to a top end 40a of the spacer 10 and project above the first edge 26a of the front surface a distance no greater than the thickness of the lengths of siding with which it is intended to be used.

The spacer 50 has a groove 41a recessed from its rear surface 22a and aligned with the first edge 26a of the front surface portion 24a. The groove 41a affords breaking the spacer 50 along the groove 41a to separate the projecting portions 36a from a portion of the spacer 50 between the first edge 26a and the bottom end 32a of the spacer 50 for the purpose described above with respect to the spacer 10. The spacer 50 has a plurality of parallel spaced recesses 52 from its planer rear surface 22a extending from the bottom edge 32a to the top end 40a of the spacer 50 to afford movement of air between the spacer 50 and the planer outer surface of the underlying structure 11 against which the rear surface 22a of the spacer 50 is positioned.

FIGS. 9 and 10 illustrate a third alternate embodiment of a spacer 60 according to the present invention that can be used in the same manner as the spacers 10 and 50, and like the spacer 50 is better adapted to being molded than the spacer 10 in that the spacer 60 has less thick portions. The spacer 60 has many structural features similar to those of the spacer 10 which have been identified with the same reference numerals to which have been added the suffix "b".

The spacer 60 differs from the spacer 50 in that a generally U-shaped central portion of the spacer 60 has been removed to form a passageway 61 that extends through the spacer 60 between the center of the front surface portion 24b and the rear surface 22b. Thus, the spacer 60 will provide little or no resistance to a fastener inserted through a length of siding 16, the spacer 60, and into the underlying structure 11, which fastener will pass through that U-shaped passageway 61. Compared to the continuous front surface portions 24 and 24a of the spacers 10 and 50, however, the front surface portion 24b of the spacer 60 will not provide as much support for the rear surface of the length of siding 16 around the fastener as it passes through the length of siding 16 which could allow portions of the siding 16 around that fastener to be broken out as the fastener passes through the length of siding 16.

Like the spacer 10, the spacer 60 has a width between parallel side surfaces 20b that is about the same as the width of the side surface of the framing 15 (e.g., 2x4 wood framing) in the underlying structure 11 with which they will be aligned. The spacer 60 has spaced elongate co-planar surface portions defining a planer rear surface 22b intended to be positioned against the planer outer surface of the underlying structure 11, and spaced elongate co-planar surface portions defining a planer front surface portion 24b disposed at a small acute angle (e.g., about 1.5 to 4 degrees and preferably about 2 to 3 degrees) with respect to the rear surface 22b, at which small acute angle it is desired to have the rear surfaces of the lengths of siding 16 disposed with respect to the outer surface of the underlying structure 11 and the inner surfaces of the lengths of siding 16. The spacer 60 has a tapered portion 30b extending from the second edge 28b of the front surface portion 24b to a bottom end 32b of the spacer 60. That tapered portion 30b has a generally planer front surface 34b that converges away from the second edge 28b toward the rear surface 22b at an acute angle (e.g., about 20 degrees) between the front and rear surfaces 34b and 22b. The front and rear surfaces 34b and 22b form a wedge that can facilitate inserting the spacer between the siding 16 and the underlying structure 11. The front surface portion 24b diverges away from the rear surface 22b at that small acute angle from a first or upper edge 26b of the front surface portion 24b toward a second or lower edge 28b of the front surface portion 24b, and the spacer 60 has a predetermined thickness between its front surface portion 24b and its rear surface 22b (e.g., about 1/4 inch) at the first edge 26b, which predetermined thickness defines the minimum dimension of the ventilation space 9 the spacer 60 will provide between the outer surface of the underlying structure 11 and the inner surfaces of the lengths of siding 16. The spacer 60 includes a tapered portion 30b extending from the second edge 28b of the front surface portion 24b to a bottom end 32b of the spacer 60, which tapered portion 30b has a generally planer front surface 34b that converges away from the second edge 28b toward the rear surface 22b at an acute angle (e.g., about 20 degrees) between the front and rear surfaces 34b and 22b. The front and rear surfaces 34b and 22b form a wedge that can facilitate inserting the spacer between the siding 16 and the underlying structure 11. The spacer 60 also includes two spaced projecting portions 36b having spaced co-planar surface portions defining a stop surface 38b at the first edge 26b projecting above the front surface portion 24b, which stop surface 38b is disposed at about a right angle with respect to the front surface portion 24b. The stop surface 38b facilitates alignment of the first edge 26b with a top edge surface 39 of one of the lengths of siding 16. The projecting portions 36b facilitate manual engagement with a spacer 60 for the purposes described above with respect to the spacer 10. The projecting portions 36b extend from the stop surface 38b to a top end 40b of the spacer 60 and project above the
first edge 26b of the front surface a distance no greater than the thickness of the lengths of siding 16 along their top edge surfaces.

[0049] The spacer has a groove 41b recessed from its rear surface 22a and aligned with the first edge 26b of the front surface portion 24b. The groove 41b affords breaking the spacer 50 along the groove 41a for the purpose described above with respect to the spacer 10. The spacer 60 has a plurality of parallel spaced recesses 62 from its planer rear surface 22a and extending from the bottom end 32b of the spacer 60 to the top end 40b of the spacer 60 to afford movement of air between the spacer 60 and the planer outer surface of the underlying structure 11 against which the rear surface 22 of the spacer 60 is positioned.

[0050] FIGS. 11 and 12 illustrate a fourth alternate embodiment of a spacer 70 according to the present invention that can be used in the same manner as the spacer 10, but is better adapted to be molded by injection molding in that the spacer 70 has less thick portions. The spacer 70 has many structural features similar to those of the spacer 10 which have been identified with the same reference numerals to which have been added the suffix “c”. Like the spacer 10, the spacer 70 has a width (e.g., 1.5 inches or 3.8 cm) between parallel side surfaces 20c that is about the same as the width of the side surface of the framing 15 (e.g., 2x4 wood framing) in the underlying structure 11 with which they will be aligned. The spacer 70 has spaced elongate co-planer surface portions defining a planer rear surface 22c intended to be positioned against the planer outer surface of the underlying structure 11, and elongate intersecting ribs having distal co-planer surfaces defining a planer front surface portion 24c disposed at a small acute angle (e.g., in the range of about 1.5 to 4 degrees and preferably in the range of about 2 to 3 degrees) with respect to the rear surface 22c, at which small acute angle it is desired to have the rear surfaces of the lengths of siding 16 disposed with respect to the outer surface of the underlying structure 11. The front surface portion 24c diverges away from the rear surface 22c at that small acute angle from a first or upper edge 26c of the front surface portion 24c toward a second or lower edge 28c of the front surface portion 24c, and the spacer 70 has a predetermined thickness between its front surface portion 24c and its rear surface 22c (e.g., about 0.5 inch or 0.64 cm) at the first edge 26c, which predetermined thickness defines the minimum dimension of the ventilation space 9 the spacer 70 will provide between the outer surface of the underlying structure 11 and the inner surfaces of the lengths of siding 16. The elongate intersecting ribs having co-planer distal surfaces defining the planer front surface portion 24c include a rib 71 extending transversely between ribs along the opposite sides of the spacer 70 about midway between the upper edge 26c and the lower edge 28c of the front surface portion 24c. That transverse rib 71 provides some support for the rear surface of the length of siding 16 around the fastener as the fastener passes through the length of siding 16 and thereby restricts portions of the siding 16 around that fastener from being broken out as the fastener passes through the length of siding 16. The spacer 70 includes a tapered portion 30c extending from the second edge 28c of the front surface portion 24c to a bottom end 32c of the spacer 70. That tapered portion 30c includes elongate ribs having co-planer distal surfaces along the sides 20c that define a front surface 34c that converges away from the second edge 28c toward the rear surface 22a at an acute angle (e.g., about 20 degrees) between the front surface 34a and the rear surface 22a. The front and rear surfaces 34a and 22a form a wedge that can facilitate inserting the spacer between the siding 16 and the underlying structure 11. The spacer 70 also includes a projecting portion 36c having a stop surface 38c at the first edge 26c projecting above the front surface portion 24c, which stop surface 38c as illustrated is disposed at about 93 degrees or slightly greater than a right angle with respect to the front surface portion 24c, because of draft needed for molding the rectangular set of ribs or walls forming the projecting portion 36c.

[0051] The stop surface 38c facilitates alignment of the first edge 26c with a top edge surface 39 of one of the lengths of siding 16. The projecting portion 36c facilitates manual engagement with a spacer 70 when the spacer 70 is positioned along the rear surface of one of the lengths of siding 16 before the length of siding 16 is attached to the underlying structure 11 and when a spacer 70 is inserted between the rear surface of a length of siding 16 and the underlying structure 11 after the ends of the length of siding 16 are already attached to the underlying structure 11 whereupon such insertion will be stopped when the stop surface 38c contacts the top edge surface 39 of the length of siding 16. The projecting portion 36c extends from the stop surface 38c to a top end 40c of the spacer 70 and projects above the first edge 26c of the front surface a distance no greater than the thickness of the lengths of siding 16 with which it is intended to be used.

[0052] The spacer 70 has a plurality of parallel spaced recesses 72 from its planer rear surface 22c and extending from the bottom end 32c of the spacer 70 to the top end 40c of the spacer 70 to afford movement of air between the spacer 70 and the planer outer surface of the underlying structure 11 against which the rear surface 22c of the spacer 70 is positioned.

[0053] Several aspects of the present invention have now been described, including, but not limited to, four embodiments of a spacer and several possible modifications thereof, methods for using the spacer, an outer sidewall of a building made using a plurality of the spacers, a ventilation strip and a ventilation channel, and an outer wall of a building with a ventilation space between its siding and its underlying structure including the ventilation strip and ventilation channel. It will be apparent to those skilled in the art that many changes can be made in the embodiments, structures, and methods described without departing from the scope of the present invention. For example, the front surface portion of the spacer could be oval or circular so that its side surfaces have arcuate or semi-circular portions, and/or the side surfaces along the tapered portion could converge toward the bottom edge of the spacer. Also, even if the planer front surface portion opposite was disposed at a first angle of 0 degrees with respect to its rear surface (i.e., the planer front surface portion is parallel to its rear surface), use of the spacer 10 would be an improvement over the use of vertical baton strips as described above between a planer outer surface of an underlying structure of the side of a building and portions of lengths of overlapped siding through which the lengths of siding are nailed to the underlying structure to provide a ventilation space because that ventilation space would allow better horizontal cross ventilation between the lengths of siding and the underlying structure. Thus, the useful range of the angle between the planer front
surface portion and its rear surface is 0 to about 4 degrees. The spacers described can be used to attach lengths of siding of materials other than fiber cement, which could include, but are not limited to, materials such as wood, masonry, or vinyl. Thus, the scope of the present invention should not be limited to the structures and methods described in this application, but only by the structures and methods described by the language of the claims and the equivalents thereof.

What is claimed is:

1. A spacer adapted for use between a generally planer vertical outer surface of an underlying structure of an exterior wall of a building and portions of lengths of siding through which spacer the lengths of siding are nailed to the underlying structure to provide a ventilation space between rear surfaces of the lengths of siding and the outer surface of the underlying structure, said spacer having a generally planer rear surface adapted to be positioned against the planer outer surface of the underlying structure, a planer front surface portion having opposite first and second edges, said planer front surface portion being opposite and disposed at a first angle in the range of 0 to 4 degrees with respect to the rear surface, said front surface portion diverging away from the rear surface of the spacer at said first angle from said first edge of the front surface portion toward said second edge of the front surface portion when said first angle is greater than 0 degrees, said spacer having a thickness between said front surface portion and said rear surface of said spacer at said first edge to define the minimum dimension of the ventilation space the spacer can provide between the outer surface of the underlying structure and inner surfaces of the lengths of siding; and

said spacer further including a projecting portion at the first edge of the front surface portion, said projecting portion having a stop surface projecting above the front surface portion at the first edge, said projecting portion facilitating manual engagement of the spacer while the spacer is positioned between the siding and the underlying structure, and said stop surface facilitating locating the spacer with respect to an upper edge of the siding behind which the spacer is positioned.

2. A spacer according to claim 1 including a tapered portion extending from the second edge of the front surface portion to a bottom end of the spacer opposite said second edge, said tapered portion having a generally planer front surface that converges away from said second edge of said front surface portion toward said rear surface at a second acute angle larger than said first acute angle between said front surface and said rear surface, said front and rear surfaces forming a wedge that can facilitate inserting the spacer between the siding and the underlying structure.

3. A spacer according to claim 1 wherein said first angle is in the range of about 1.5 to 4 degrees, and said thickness between said front surface portion and said rear surface of said spacer at said first edge is at least about 1/8 inch (0.3 cm).

4. A spacer according to claim 1 wherein said stop surface projects above the front surface a maximum distance of about 3/8 inch (0.79 cm).

5. A spacer according to claim 1 having a groove aligned with said first edge of the front surface portion to afford breaking said spacer along said groove to separate said projecting portion from a portion of said spacer including said front surface portion.

6. A spacer according to claim 1 having a plurality of spaced transverse recesses from said planer rear surface to afford movement of air between said spacer and the outer surface of the underlying structure against which the rear surface of the spacer is positioned.

7. A spacer according to claim 1 including spaced opposite side surfaces extending between said planer rear surface and said planer front surface portion and between said first and second edges of the front surface portion, said opposite side surface portions being spaced in the range of about 1 to 2 inches (2.5 to 5.1 cm).

8. A spacer according to claim 1 wherein said first acute angle is in the range of about 2 to 3 degrees.

9. A spacer according to claim 1 wherein said spacer has spaced opposite side surface portions extending between said planer rear surface and said planer front surface portion and between said first and second edges of the front surface portion, and said front surface portion is continuous between said first and second edges and said opposite side surface portions.

10. A spacer according to claim 1 wherein said spacer has a through passageway extending generally centrally through said front surface and extending through said rear surface.

11. A method for attaching a length of siding having opposite ends, a rear surface, and longitudinally extending top edge surface, said method attaching the length of siding over a generally planer vertical surface of an underlying structure of an outer wall of a building while providing a ventilation space between the length of siding and the underlying structure, said method including the steps of

providing spacers each having a generally planer rear surface, a planer front surface portion opposite and disposed at a first acute angle with respect to the rear surface at which first acute angle it is desired to have a rear surface of the length of siding disposed with respect to the outer surface of the underlying structure, said front surface portion diverging away from the rear surface at said acute angle from a first edge of the front surface portion toward a second edge of the front surface portion, said spacers each having a thickness between said front surface portion and said rear surface at said first edge defining the minimum dimension of the ventilation space the spacer will provide between the outer surface of the underlying structure and an inner surface of the length of siding.

positioning the front surface portions of the spacers in spaced relationship along the rear surface of the length of siding with the top edge surface of the length of siding along the first edge of the front surface portion of each spacer; and

at each spacer driving a fastener through the length of siding, generally centrally through the front surface portion of the spacer and into the underlying structure.

12. A method according to claim 11 wherein said spacers each include a tapered portion extending from the second edge of the front surface portion to a bottom end of the spacer opposite said second edge, said tapered portion having a generally planer front surface diverging away from said bottom end with respect to said rear surface at a second acute angle larger than said first acute angle, and said spacers each further include a projecting portion at the first edge of
the front surface portion, said projecting portion having a stop surface projecting above the front surface portion at the first edge;

said step of positioning includes the steps of first positioning the front surface portions of two of the spacers along the rear surface of the length of siding each adjacent a different one of said opposite ends with the stop surfaces of the two spacers contacting the upper edge of the length of siding;

driving a fastener through the length of siding, generally centrally through the front surface portion of each of the two spacers and into the underlying structure; and

subsequently manually engaging the projecting portions of additional spacers and inserting said additional spacers at spaced relationships between the rear surface of the siding and the outer surface of the underlying structure by pressing each spacer between the rear surface of the siding and the underlying structure with a force applied to the tapered portion of each spacer at the first edge of the front surface portion of each spacer along and contacting the top edge surface of the length of siding.

13. An outer wall for a building comprising:

an underlying structure having a generally planer vertical outer surface,

a plurality of lengths of elongate siding each having generally planer opposite front and rear surfaces extending between longitudinally extending opposite top and lower edge surfaces, said lengths of siding being disposed with said rear surfaces adjacent said outer surface of said underlying structure in parallel overlapping relationship; and

a multiplicity of spacers spaced along each of said lengths of siding between said planer outer surface of said underlying structure and said rear surfaces of said lengths of siding through which said spacers the lengths of siding are fastened to the underlying structure to provide a ventilation space between the lengths of siding and the underlying structure, said spacers each having a generally planer rear surface positioned against the generally planer vertical outer surface of the underlying structure, a planer front surface portion opposite and disposed at a first acute angle with respect to the rear surface of the spacer to dispose the rear surface of the length of siding at said first acute angle with respect to the outer surface of the underlying structure, said front surface portion of said spacer diverging away from the rear surface of the spacer at said acute angle from a first edge of the front surface portion disposed along the top edge of the length of siding toward a second edge of the front surface portion, said spacer having a thickness between said front surface portion and said rear surface of said spacer at said first edge that defines the minimum dimension of the ventilation space the spacer provides between the outer surface of the underlying structure and inner surfaces of the lengths of siding.

14. An outer wall according to claim 13 wherein said first acute angle is in the range of about 1.5 to 4 degrees, and said thickness between said front surface portion and said rear surface of each of said spacers at said first edge is at least about $\frac{1}{8}$ inch (0.3 cm).

15. An outer wall according to claim 13 further including a ventilation channel between the uppermost edge of the uppermost length of siding and a lower horizontal surface on the building, said ventilation channel having wall portions including:

an elongate planer inner wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges and having said outer major surface positioned against the vertical outer surface of the underlying structure of the building,

an elongate planer upper wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the upper wall portion being joined to the second edge of the inner wall portion, said upper wall portion being disposed at a right angle with respect to said inner wall portion with said inner surfaces of said wall portions adjacent and the outer surface of said upper wall portion being positioned against the lower horizontal surface on the building,

an elongate perforated wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the perforated wall portion being joined to the second edge of the upper wall portion, said perforated wall portion being disposed at about a right angle with respect to said upper wall portion with said inner surfaces of said wall portions adjacent, and said channel having through openings between the inner and outer surfaces of said perforated wall portion along the length of said perforated wall portion, and

an elongate lower wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the lower wall portion being joined to the second edge of the perforated wall portion, said lower wall portion being disposed at parallel to said upper wall portion with said inner surfaces of said perforated and lower wall portions adjacent, the second edge of the lower wall portion being spaced from the inner wall portion by about said minimum dimension of the ventilation space between the outer surface of the underlying structure and the inner surfaces of the lengths of siding, and the outer surface of said lower wall portion being positioned against the upper edge of the uppermost length of siding,

the space between said second edge of said lower wall portion and said inner wall portion affording movement of air through said ventilation space between the rear surfaces of the lengths of siding and the outer surface of the underlying structure of the wall, transversely through said ventilation channel, and through said openings in said perforated wall portion.

16. An outer wall according to claim 13 further including a ventilation strip of material made from random woven polymeric fibers and having small through air passageways, said ventilation strip being positioned between the rear
surface of the lowermost portion of the lowermost length of siding and the vertical outer surface of underlying structure.

17. An outer wall according to claim 15 further including a ventilation strip of material made from random woven polymeric fibers and having small through air passageways, said ventilation strip being positioned between the rear surface of the lowermost portion of the lowermost length of siding and the vertical outer surface of the underlying structure.

18. A ventilation channel adapted to be positioned between a lower horizontal surface on a building and an uppermost edge of siding attached to a vertical planar outer surface of an underlying structure of an outer wall of the building and spaced from an outer surface of the underlying structure by means that provide a ventilation space between the rear surface of the siding and the outer surface of the underlying structure,

said ventilation channel having wall portions including

an elongate generally planer inner wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges and adopted to have said outer major surface positioned against the vertical surface of the underlying structure of the building,

an elongate generally planer upper wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the upper wall portion being joined to the second edge of the inner wall portion, said upper wall portion being disposed at about a right angle with respect to said inner wall portion with said inner surfaces of said inner and upper wall portions adjacent and the outer surface of said upper wall portion being adapted to be positioned against the lower horizontal surface on the building,

an elongate perforated wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the perforated wall portion being joined to the second edge of the upper wall portion, said perforated wall portion being disposed at about a right angle with respect to said upper wall portion with said inner surfaces of said upper and perforated wall portions adjacent, and said channel having through openings between the inner and outer surfaces of said perforated wall portion along the length of said perforated wall portion, and

an elongate lower wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the lower wall portion being joined to the second edge of the perforated wall portion, said lower wall portion being disposed about parallel to said upper wall portion with said inner surfaces of said perforated and lower wall portions adjacent, the second edge of the lower wall portion being spaced from the inner wall portion, and the outer surface of said upper wall portion being adapted to be positioned against the upper edge of the siding, the space between said second edge of said lower wall portion and said inner wall portion affording movement of air from said ventilation space between the rear surface of the siding and the vertical outer surface of the underlying structure of the building, transversely through said ventilation channel, and through said openings in said perforated wall portion.

19. An outer wall for a building comprising:

an underlying structure having a vertical outer surface,

siding having opposite front and rear surfaces generally coextensive with said vertical outer surface extending from a lower end to an upper end;

means for supporting said siding on said underlying structure with said rear surface spaced from said vertical outer surface to provide a ventilation space between the rear surface of the siding and the outer surface of the underlying structure, said ventilation space having an opening at said lower end of said siding and at said upper end of said siding,

a ventilation channel between the upper end of the siding and a lower horizontal surface on the building, said ventilation channel having wall portions including:

an elongate planer inner wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges and having said outer major surface positioned against the vertical outer surface of the underlying structure of the wall,

an elongate planer upper wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the upper wall portion being joined to the second edge of the inner wall portion, said upper wall portion being disposed at about a right angle with respect to said inner wall portion with said inner surfaces of said inner and upper wall portions adjacent and the outer surface of said upper wall portion being adapted to be positioned against the lower horizontal surface on the wall,

an elongate perforated wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the perforated wall portion being joined to the second edge of the upper wall portion, said perforated wall portion being disposed at about a right angle with respect to said upper wall portion with said inner surfaces of said upper and perforated wall portions adjacent, and said channel having through openings between the inner and outer surfaces of said perforated wall portion along the length of said perforated wall portion, and

an elongate lower wall portion having inner and outer major surfaces extending between opposite first and second longitudinally extending edges, the first edge of the lower wall portion being joined to the second edge of the perforated wall portion, said lower wall portion being disposed about parallel to said upper wall portion with said inner surfaces of said perforated and lower wall portions adjacent, the second edge of the lower wall portion being spaced from the inner wall portion, and the outer surface of said upper wall portion being adapted to be positioned against the upper edge of the siding, the space between said second edge of said lower wall portion and said inner wall portion affording movement of air from said ventilation space between the rear
inner wall portion by a dimension about equal to the width of the ventilation space between the outer surface of the underlying structure and the inner surface of the siding, and the outer surface of said lower wall portion being positioned against the upper end of the siding,

the space between said second edge of said lower wall portion and said inner wall portion affording movement of air through said ventilation space between the rear surface of the siding and the underlying structure of the building, transversely through said ventilation channel, and through said openings in said perforated wall portion.

20. An outer wall according to claim 19 further including a ventilation strip of material made from random woven polymeric fibers and having small through air passageways, said ventilation strip being positioned between the rear surface of the siding and the vertical outer surface of the underlying structure across the ventilation space at the lower end of said siding.

* * * * *