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(54) **VENTILATION BAFFLE**

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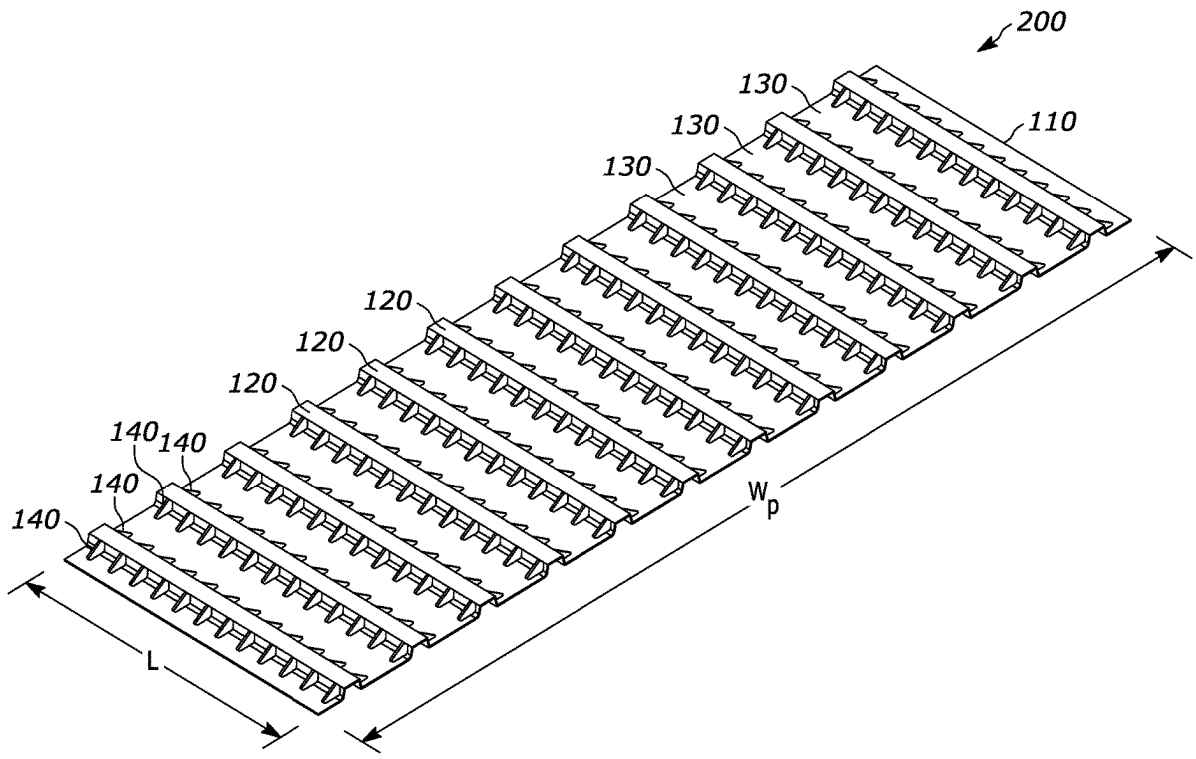
CPC ***E04D 13/178*** (2013.01)

(57) **ABSTRACT**

A ventilation baffle for construction of a manufactured home has two or more parallel truss channels funning along a length of a sheet of material separated by a regularly spaced interval. The parallel truss channels are constructed to be placed over trusses and to be affixed to the trusses using the same fasteners used to secure the roof decking to the trusses. The regularly spaced interval may be one half or one third of an interval between trusses measured center to center. At least four gussets reinforce the two opposing sides of each truss channel, with at least two gussets along each of the opposing sides. The ventilation baffle creates an enclosed space when affixed to trusses with roof decking secured above. The enclosed area is inaccessible by a person when the manufactured home is complete.



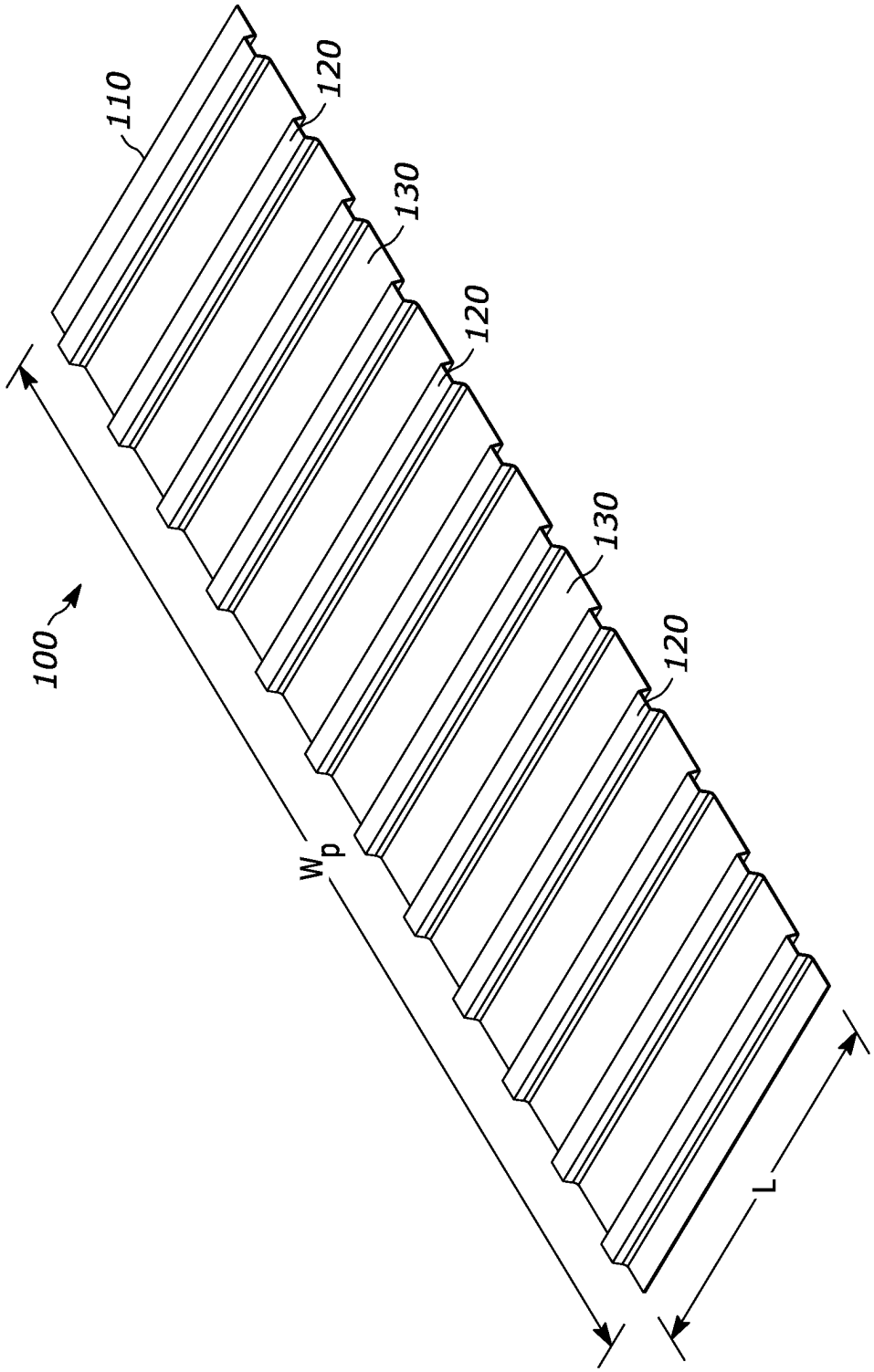


FIG. 1

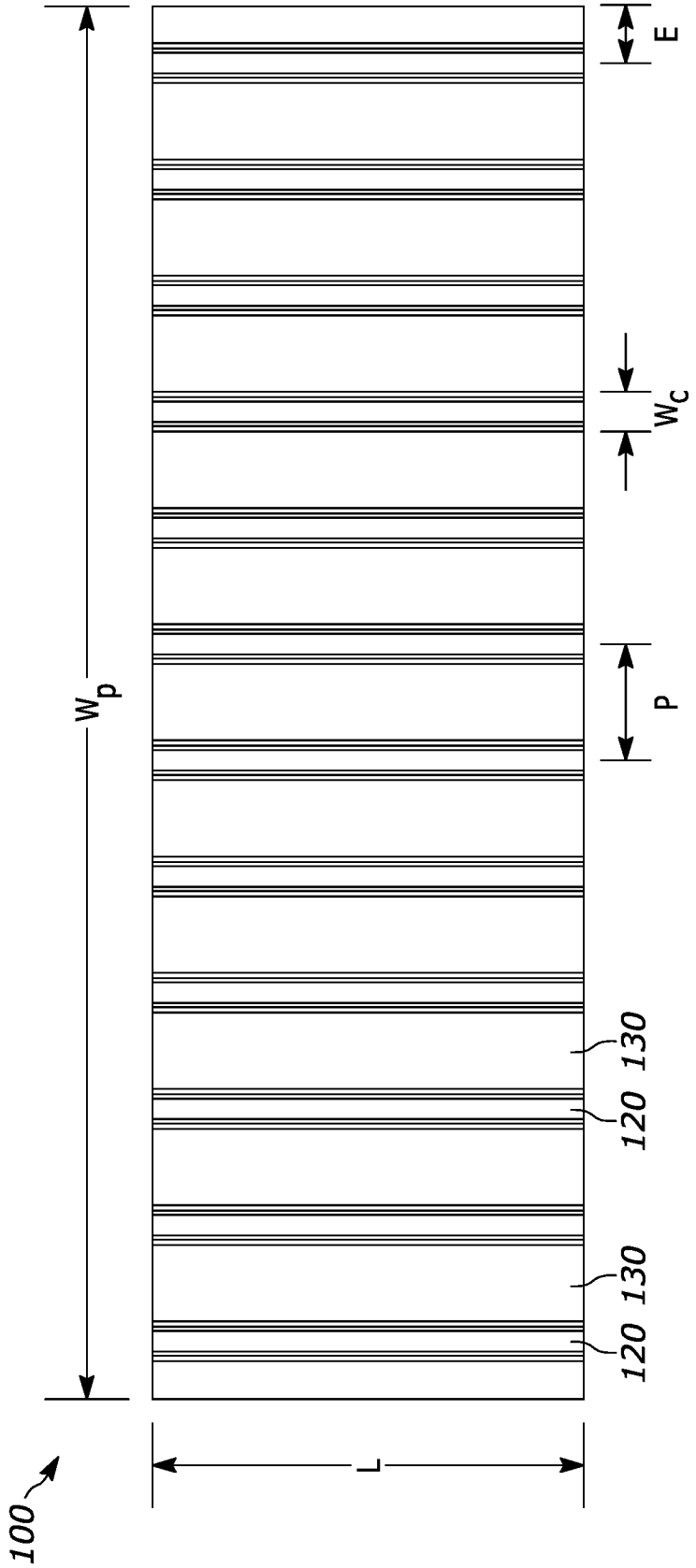


FIG. 2

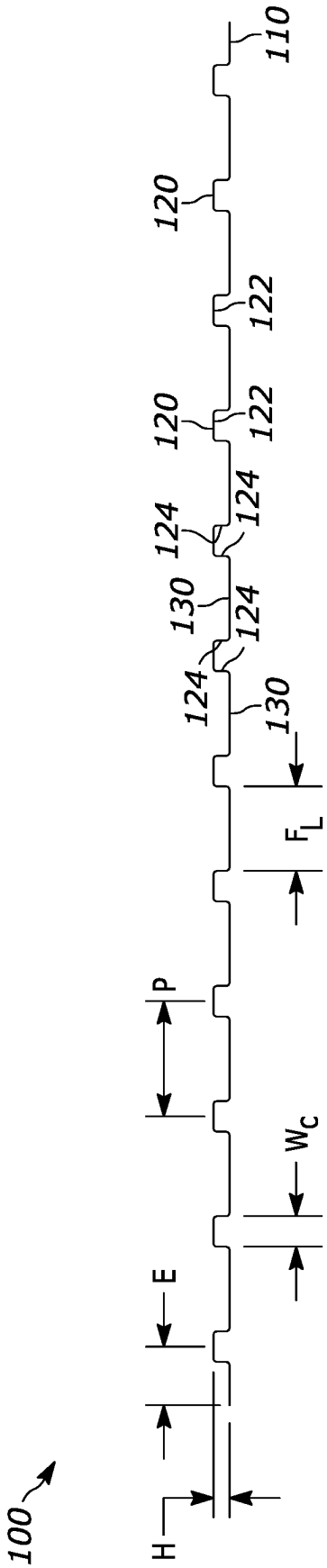


FIG. 3

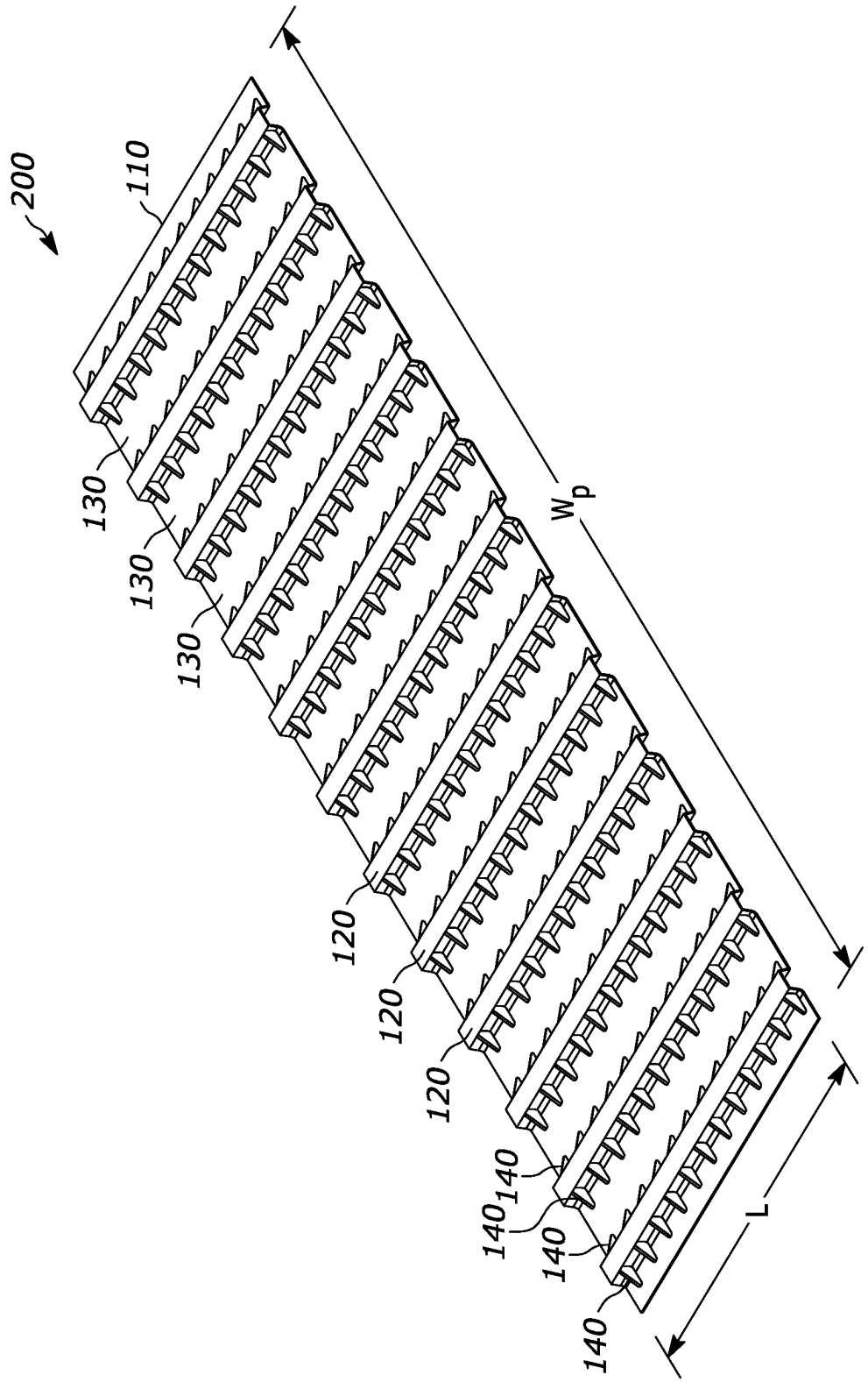
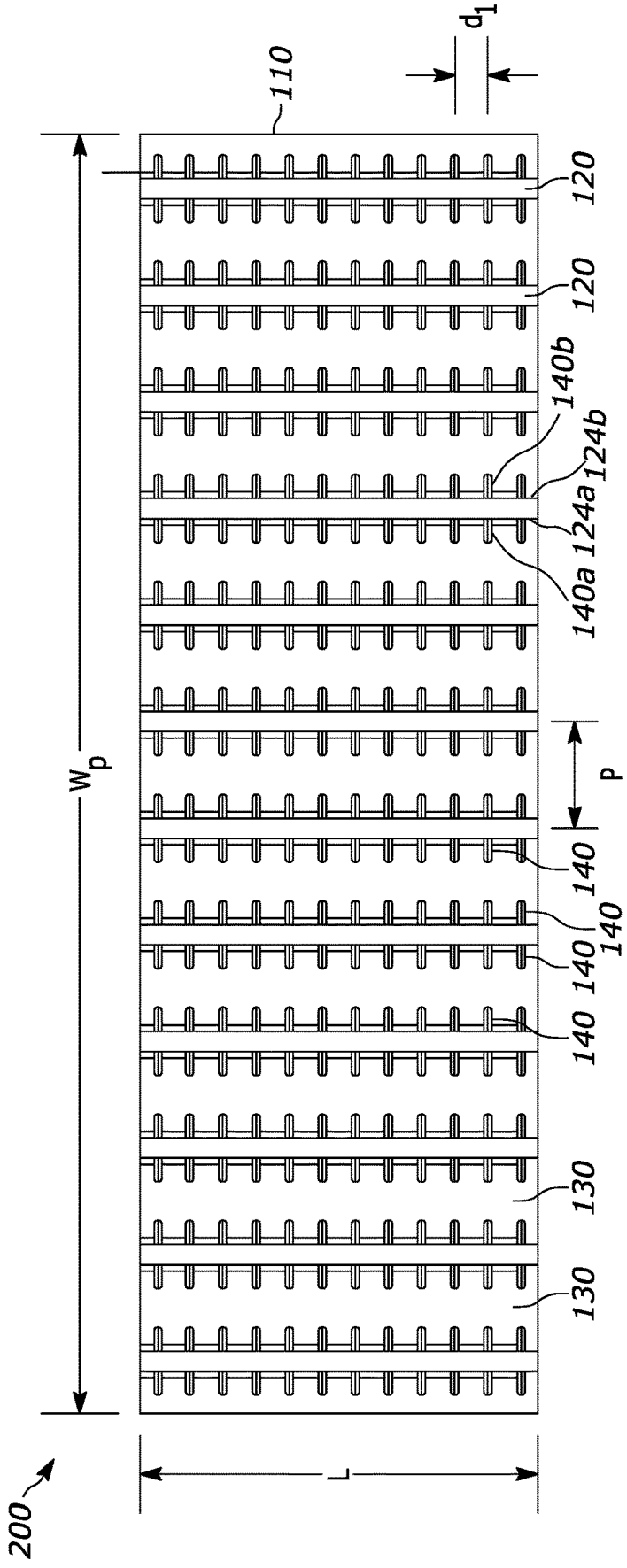


FIG. 4


d_1
110
120
120
140b
124b
124a
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W_p
P
140
140
140
140
130
130
L
200

FIG. 5

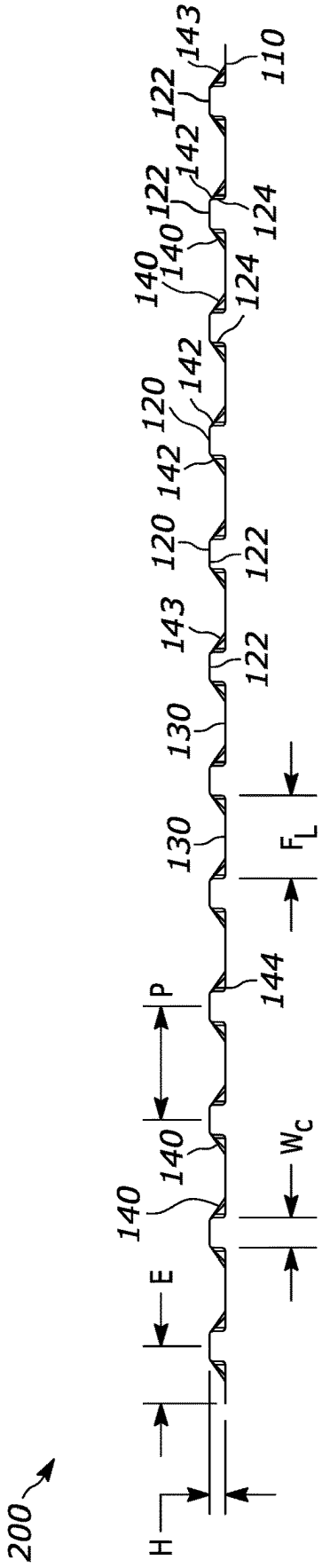

FIG. 6

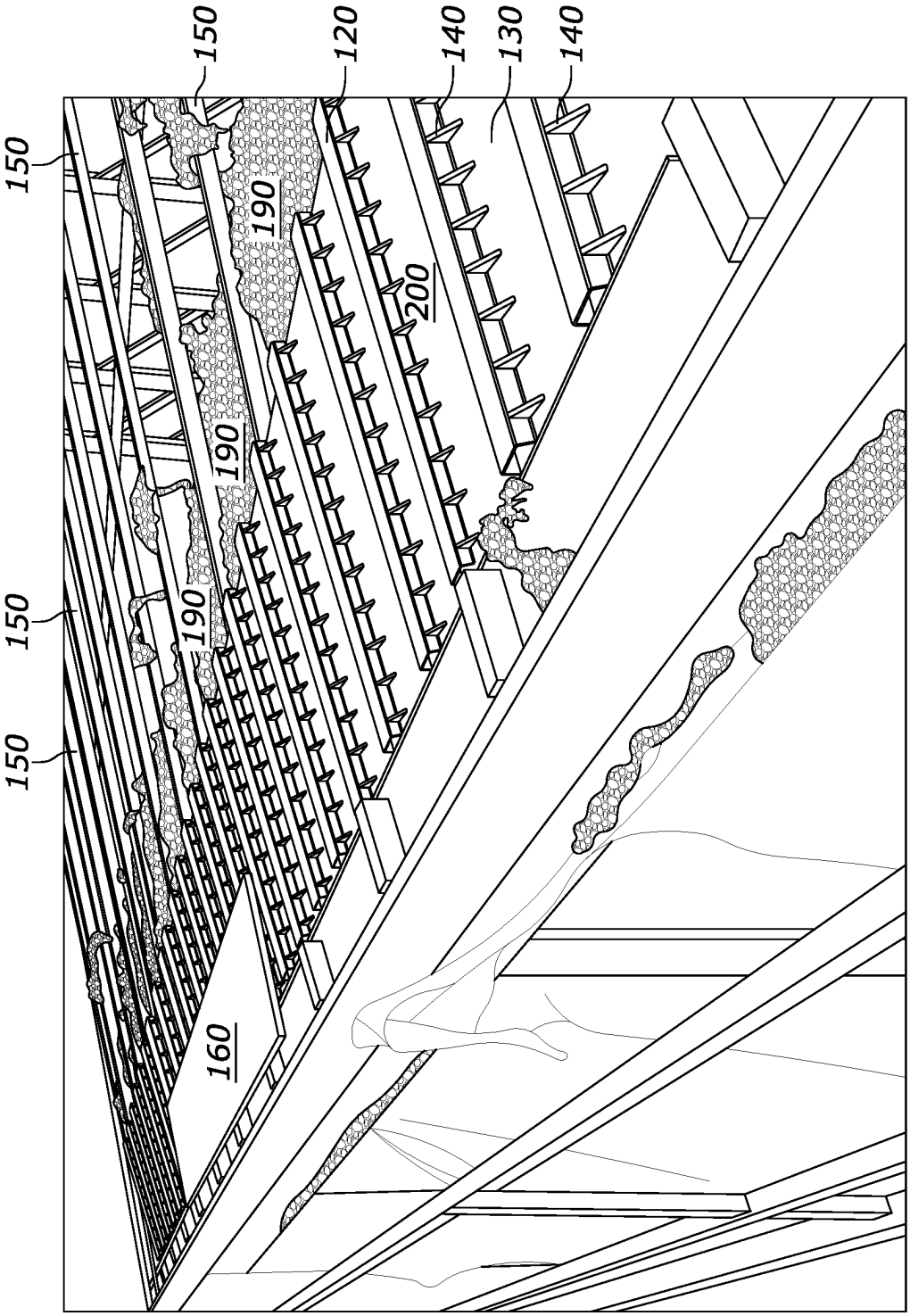

FIG. 7

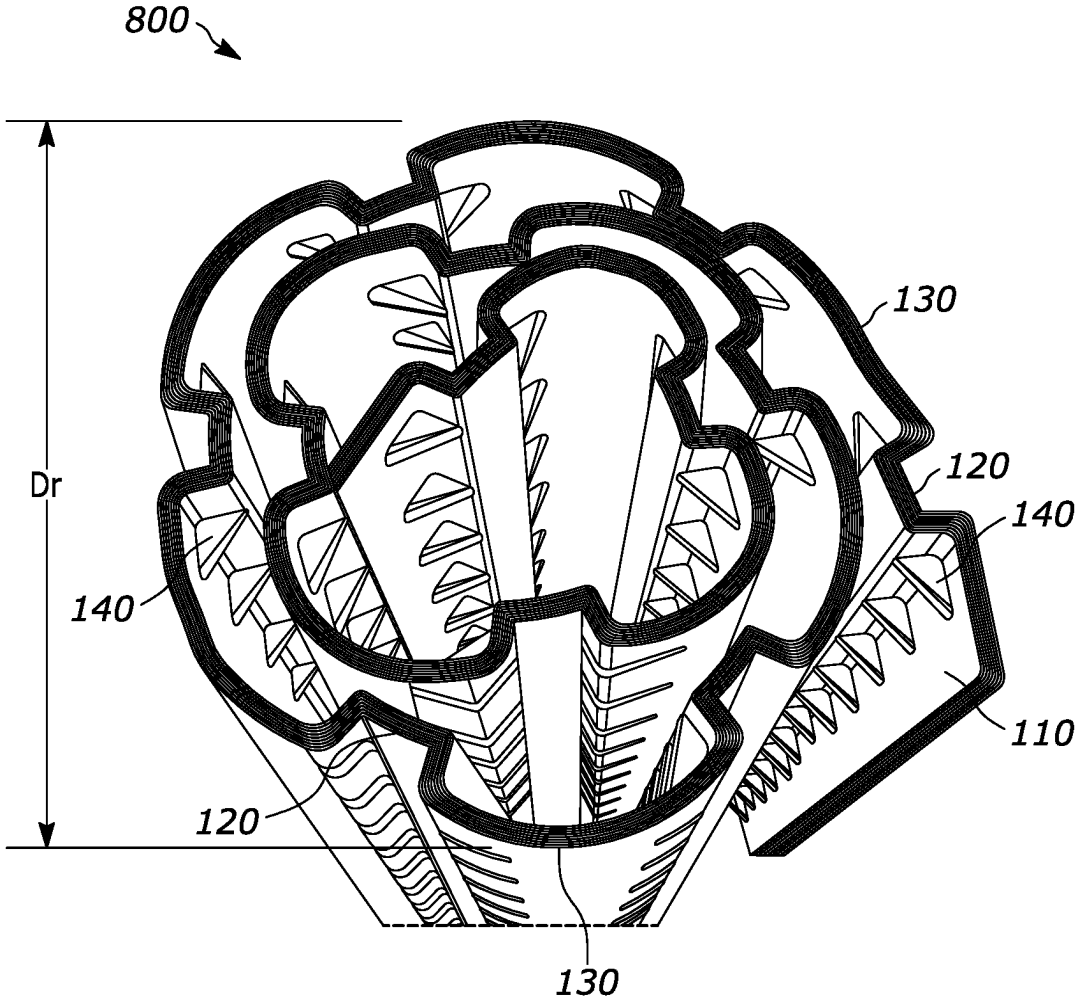

FIG. 8A

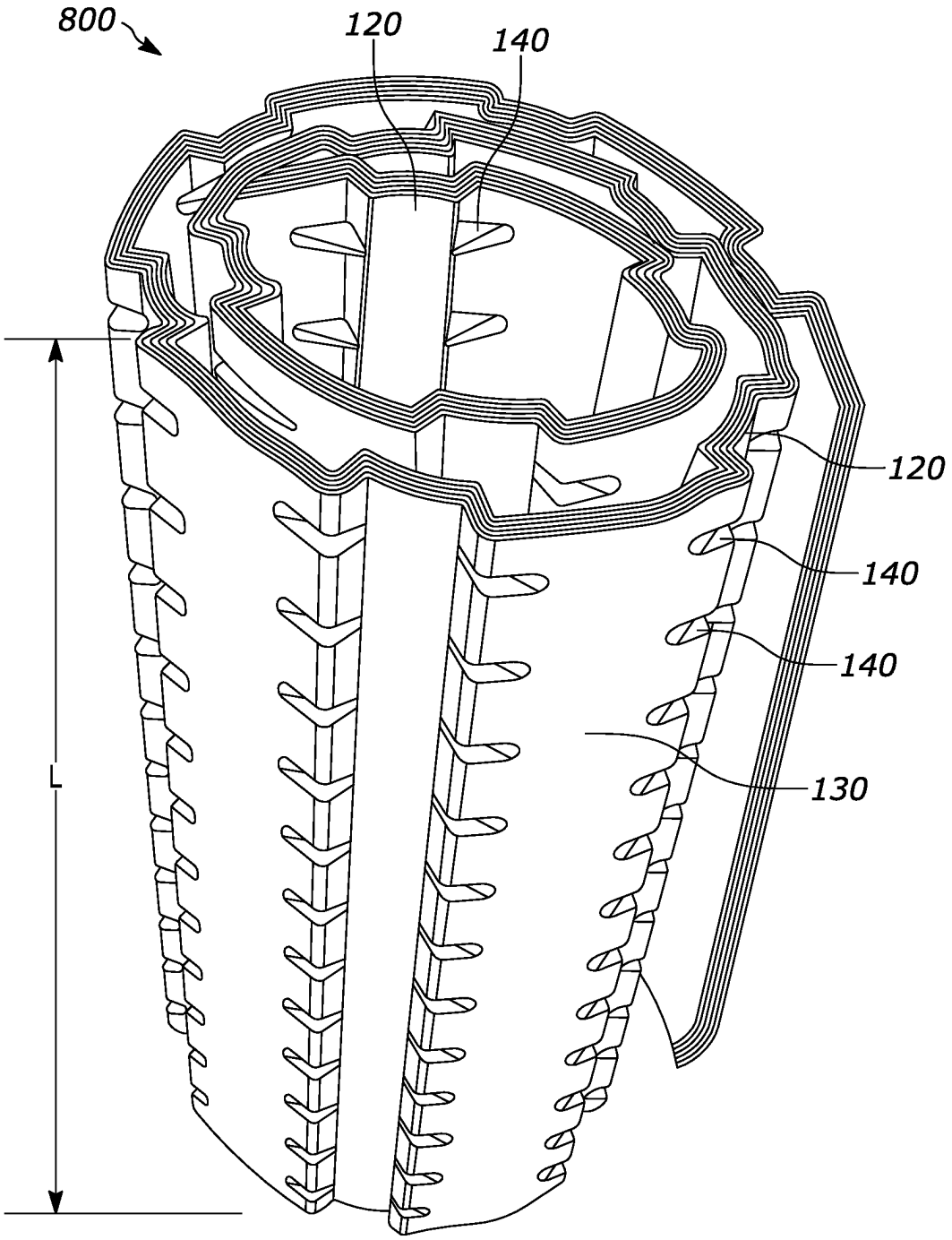

FIG. 8B

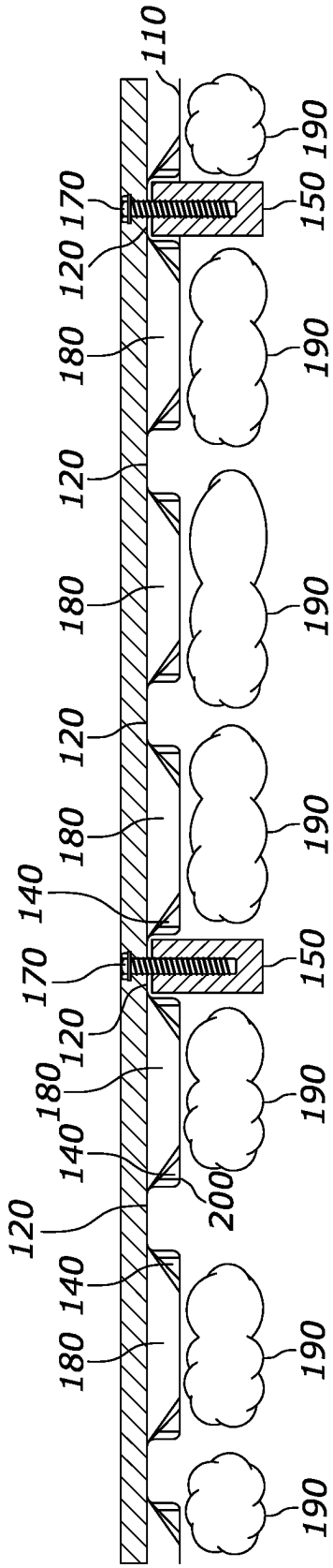
110
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FIG. 9

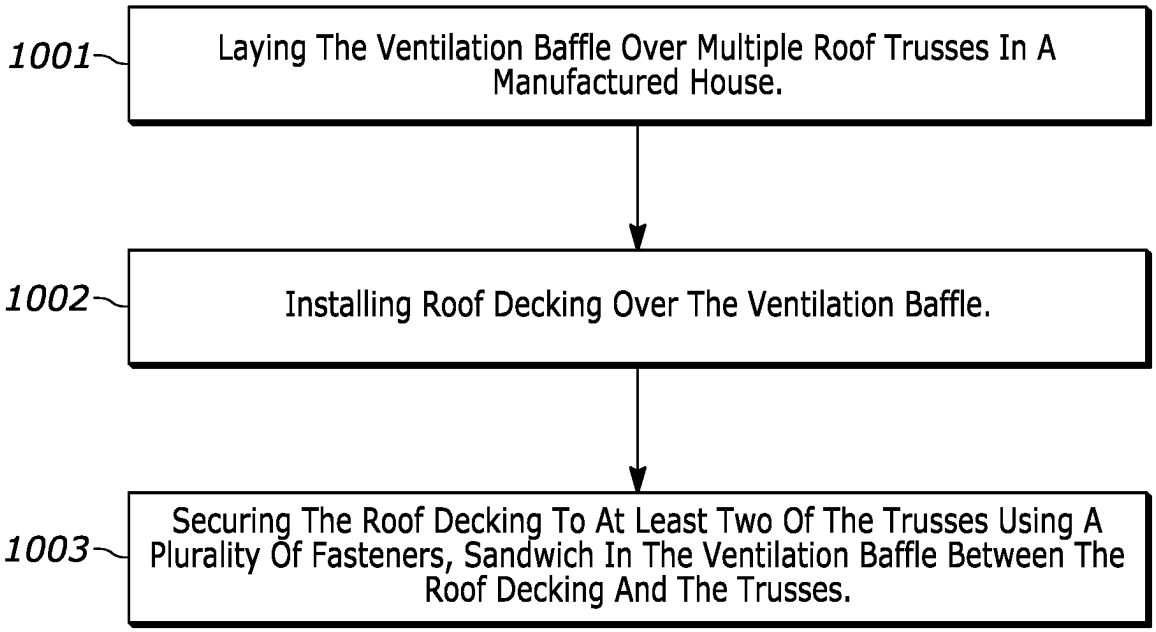
1001
Laying The Ventilation Baffle Over Multiple Roof Trusses In A Manufactured House.
1002
Installing Roof Decking Over The Ventilation Baffle.
1003
Securing The Roof Decking To At Least Two Of The Trusses Using A Plurality Of Fasteners, Sandwich In The Ventilation Baffle Between The Roof Decking And The Trusses.

FIG. 10

VENTILATION BAFFLE

FIELD OF THE DISCLOSURE

[0001] This disclosure relates to a ventilation baffle for use with manufactured structure construction, including the construction of manufactured homes.

BACKGROUND OF THE DISCLOSURE

[0002] Manufactured home construction requires production of homes which meet increasingly stringent energy efficiency standards. These efficiency standards include guidelines for materials and dimensions for components of the manufactured home. Materials used for components, insulation values for components, reduction in carbon footprint when in use, the ability to create a livable environment utilizing a reduced amount of energy and the like are among the goals of these standards. Adapting current building materials to fulfill these standards is time consuming and inefficient. For example, currently available ventilation baffles (sometimes referred to in building construction vernacular as attic baffles, but not limited to applications in which there is accessible space below a roof and above a ceiling) need adjustment to achieve the required air gap, or plenum, between the roof decking and baffle material which serves as a barrier layer above insulating material. Conventionally used ventilation baffles also require separate securing mechanisms to affix the baffles to roof trusses, and possibly neighboring baffles.

[0003] Therefore, there is a need to provide a ventilation baffle that may improve the energy efficiency needs of manufactured homes.

SUMMARY OF THE DISCLOSURE

[0004] As demonstrated in the following sections, a ventilation baffle is disclosed that can be utilized with multiple configurations of roofing trusses to meet the needs of improved energy efficient manufactured structures, such as homes. The solution is also useful to increase efficiency in constructing manufactured homes, both saving time and reducing the parts needed. For example, the need for fewer fasteners not only reduces part count, but also reduces the amount of installation time needed for fastening parts together in the construction of a manufactured structure.

[0005] A ventilation baffle made of a sheet of material with two or more parallel truss channels running a length of the sheet and separated by a regular distance is disclosed. Each truss channel of the ventilation baffle has a plurality of gussets positioned on opposing sides. The number of gussets for each truss channel may be at least four, with at least two gussets for each of the opposing sides. For each of the truss channels, the gussets may be regularly spaced along a length of the sheet of material of the ventilation baffle, and each gusset may be located directly across from a second gusset. In some ventilation baffles, for each truss channel, the plurality of gussets may include a first set of gussets that reinforce a first one of the opposing sides, and the first set of gussets may be regularly spaced along a length of the sheet of material of the ventilation baffle, and the first set of gussets may be offset from a second set of gussets which reinforce a second of the opposing sides. Each two or more truss channels of a ventilation baffle may have a plurality of gussets positioned symmetrically about each truss channel, and each gusset may have a corresponding gusset across from it. In a ventilation baffle as described herein, each sheet of material may be rectangular, with a width in a first direction and with the width corresponding to a multiple (such as twice or three times) of the distance between each of the truss channels. For such a ventilation baffle, the second direction may be along a length of the two or more truss channels. Each of the two or more truss channels of the ventilation baffle may have a depth corresponding to a predetermined depth, such as a predetermined plenum depth. Each of the two or more truss channels may have a width that is greater than that of a standard roof truss. In such a ventilation baffle, the width of each of the two or more truss channels may accommodate deviations in a pitch of trusses (the distance between the center of each truss) in a structure in which the ventilation baffle will be used. Alternatively, or additionally, the width of each of the two or more truss channels of a ventilation baffle may accommodate deviations in the width of a standard roof truss. The material used for a ventilation baffle as described above may be lightweight, temperature resistant, moisture resistant, and sufficiently robust to resist fraying during installation and securing, and the material may include any of a fibrous material, a cardboard material, fiberglass, a plastic, a recycled material, a composite material, and a metal material. The material used for a ventilation baffle may be a recycled plastic. A first ventilation baffle, as described above, may be configured to nest above a second ventilation baffle of similar dimensions such that when the first ventilation baffle is laid above the second ventilation baffle, the two or more truss channels of the first ventilation baffle are overlaid onto the two or more truss channels of the second ventilation baffle and edges of the first ventilation baffle align with edges of the second ventilation baffle. In such ventilation baffles, a first truss channel of the two or more truss channels may be located a first edge distance from a first end of the sheet and a last truss channel of the two or more truss channels may be located a second edge distance from a second end of the sheet, the first edge distance being equal to the second edge distance. In some such ventilation baffles, when consecutive ventilation baffles are laid on trusses of a roof frame, no fasteners are used to connect the consecutive baffles together. Consecutive ventilation baffles may have a nestable configuration that allows gravity of friction to keep them in place when the consecutive ventilation baffles are laid on trusses during construction of a structure. The ventilation baffle described above may be configured to nest with itself, such that when the ventilation baffle is rolled, at least a first one of the two or more truss channels of the ventilation baffle is overlaid onto a second one of the two or more truss channels of the ventilation baffle. The material for the ventilation baffle may be a flexible polymer which allows a ventilation baffle to nest with itself. The regular distance between the two or more parallel truss channels may preferably be approximately 8 inches (20.32 cm) on center of the truss channels in the ventilation baffles described herein.

[0006] A method of installing a ventilation baffle includes laying the ventilation baffle over multiple roof trusses in a manufactured structure, slotting each of the multiple roof trusses into one of the multiple truss channels of the ventilation baffle, installing roof decking over the ventilation baffle, and securing both the roof decking and the ventilation baffle to the multiple roof trusses at multiple locations along each of the multiple trusses. In such a method, at each location along each of the multiple roof trusses, a single

securing mechanism penetrates the roof decking, the ventilation baffle, and the roof truss simultaneously, with the roof truss being one of the multiple roof trusses. The single securing mechanism includes any of a staple, a nail, a screw, a strap, or a combination of a strap and a staple, a nail, or screw. The method may include sandwiching the ventilation baffle between the roof decking and the roof trusses. The ventilation baffle may include multiple truss channels, and the multiple truss channels may be regularly spaced apart at an interval of either one half or one third that of the interval between the roof trusses. The multiple locations may include centered locations on each truss. A visual inspection to ensure integrity of the ventilation baffle may be included in the method, with the visual inspection taking place after securing both the roof decking and the ventilation baffle to the multiple roof trusses. In some such methods each of the multiple truss channels has a depth corresponding to a predetermined depth. Some such methods may include securing both the roof decking and the ventilation baffle to the multiple trusses to create an enclosed area bound by the ventilation baffle on a first side and the roof decking on a second side. In the method, in laying the ventilation baffle over multiple roof trusses, the ventilation may include at least two gussets that are positioned about each of the multiple truss channels. When slack exists between adjacent trusses a staple may be installed through a vertical wall of one of the multiple truss channels into a side of a truss of the multiple trusses to ensure that a resulting enclosed space has the predetermined depth. Joining the ventilation baffle to a second ventilation baffle may include overlapping a last truss channel of the second ventilation baffle upon a last truss channel of the ventilation baffle, and the ventilation baffles may have a nestable configuration that allows gravity or friction to keep consecutive ventilation baffles in place when laying them on trusses during construction of a structure.

[0007] A ventilation baffle in combination with two or more roof trusses and a roof decking defining an enclosed area is disclosed. The ventilation baffle includes a sheet of material with multiple channels separated by a regular distance, in which the regular distance corresponds to either half or one third of a distance between each of the two or more roof trusses measured center to center. The enclosed area may have a predetermined air gap depth between the roof deck and the ventilation baffle, and the depth of each of the multiple channels may be equal to the predetermined air gap. Each of the two or more roof trusses may be situated in one of the multiple truss channels. The enclosed area may be inaccessible by a person without damaging either the ventilation baffle or the roof decking, in the combinations described herein. In some of the combinations, the ventilation baffle may be made of recycled plastic.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. **1** is a perspective view of a first embodiment of a ventilation baffle;

[0009] FIG. **2** is a top plan view of the ventilation baffle of FIG. **1**;

[0010] FIG. **3** is a front elevation view of the ventilation baffle of FIG. **1**;

[0011] FIG. **4** is a perspective view of ventilation baffle of a second embodiment of the disclosure;

[0012] FIG. **5** is a top plan view of the ventilation baffle of FIG. **4**;

[0013] FIG. **6** is a front elevation view of the ventilation baffle of FIG. **4**;

[0014] FIG. **7** is a perspective environmental view of multiple ventilation baffles of the second embodiment of the disclosure installed on a manufactured home, illustrating multiple trusses, insulation, and roof decking;

[0015] FIG. **8**A is a perspective view of multiple ventilation baffles nested and rolled;

[0016] FIG. **8**B is a perspective view of the ventilation baffles of FIG. **8**A showing the length of the nested and rolled ventilation baffles;

[0017] FIG. **9** is a cross-sectional, semi-schematic view of a portion of a roof of a manufactured home illustrating roof decking, trusses, insulation material, a ventilation baffle, and an enclosed area, or plenum, created by this assembly of components; and

[0018] FIG. **10** is a flow diagram of a method for installation of a ventilation baffle on a manufactured structure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] Having reference to the drawings, where like reference numbers comprise like elements, there is illustrated in FIG. **1** a ventilation baffle, generally denoted by reference number **100**. This ventilation baffle **100** is made of a sheet of material **110** with a length L and a width W_p. The ventilation baffle **100** has a plurality of parallel truss channels **120** oriented along the length L of the sheet of material **110**. Between each pair of the truss channels **120** is a flat portion **130**. The overall shape of the sheet of material **110** is rectangular.

[0020] FIG. **2** is a plan view and FIG. **3** is a front elevational view of the ventilation baffle **100** of FIG. **1**. The distance, or pitch, P between adjacent truss channels **120**, measured from the midpoint of each truss channel **120**, is uniform across the width W_p of the ventilation baffle **100**. Each truss channel **120** has a height H and a width W_c. A flat bottom portion **122** and opposing sides **124** make up each truss channel **120**. The flat bottom portion **122** is substantially parallel to the flat portions **130** of the ventilation baffle **100**, while the opposing sides **124** with a height H, are substantially vertical and substantially perpendicular to both the flat bottom portion **122** and the flat portions **130** of the baffle and have a length which corresponds to the length L of the ventilation baffle. The distance of the flat portion **130** between each pair of truss channels **120** is F_L.

[0021] Each ventilation baffle has a regular distance (i.e., pitch) P between adjacent truss channels **120**, as measured from the midpoint of the channels. However, a distance E from the edge of the ventilation baffle to the midpoint of the first truss channel as viewed along the width W_p of the ventilation baffle **100** differs from the pitch P between adjacent truss channels **120**. Similarly, the last truss channel **120**, which has only one adjacent truss channel **120** is a distance E from its midpoint to the edge or end of the ventilation baffle.

[0022] FIG. **4** is a perspective view of another embodiment **200** of a ventilation baffle. In addition to having a sheet of material **110**, the ventilation baffle **200** shown in FIGS. **4-6** has two or more parallel truss channels **120** which run along a length L of the ventilation baffle, as well as flat portions **130** between the truss channels **120**. As with the previous embodiment of a ventilation baffle **100**, each truss channel **120** has a flat bottom portion **122** and two opposing

sides **124**. Additionally, the ventilation baffle **200** has a plurality of gussets **140** along each of the two or more parallel truss channels **120**.

[0023] As illustrated in FIGS. **4-6**, each of the two or more parallel truss channels **120** of the ventilation baffle **200** has at least four gussets **140** reinforcing the two opposing sides **124**, with at least two gussets **140** along each of the two opposing sides **124**. FIG. **5** is a top plan view of the ventilation baffle **200** in which the gussets **140** are shown reinforcing each of the truss channels **120**. The gussets **140** which are adjacent to two other gussets **140** are spaced regularly apart at a distance d_1. The placement or positioning of the gussets is shown as symmetric in FIGS. **4-6**. The gussets **140** which are adjacent to only one other gusset, those which are along the perimeter of the ventilation baffle **200** along its width W_p, may be located away from the edge of the ventilation baffle **200** at a distance which is the same or different from d_1.

[0024] As illustrated in the front elevational view of FIG. **6**, the gussets **140** are substantially triangular in shape, with an apex **142** adjacent to the edge **143** where the flat bottom **122** meets an opposing side **124**. The foot **144** of the triangle that is the gusset **140** abuts the flat portion **130** between each pair of truss channels **120**. The angle at the apex **142** between the side **124** and the edge **143** may range from approximately 15 degrees to 75 degrees, such as from approximately 30 degrees to 60 degrees, including from approximately 50 degrees to 58 degrees. Each gusset **140** may have a width along its foot **144** of that is greater than that along the edge **143**, such that the width of the gusset gradually increases from the edge **143** to the foot **144**. The width of the gusset **140** along the foot **144** of the gusset may be approximately 20% to 50% of the length of the foot **144**, such as approximately 25% to 45% of the length of the foot **144**, including approximately 40% of the length of the foot **144**. Though the gussets **140** are shown with uniform shape throughout the ventilation baffle **100**, gusset shape may vary. For example the angle at the apex **142** may be smaller for gussets near the center of the ventilation baffle **100** compared to those along the edges of the ventilation baffle **100** or vice versa. Additionally, or alternatively, the angle at the apex **142** of gussets **140** may have 2 or more values throughout the ventilation baffle **100**, such as 3 or more values, and including 4 or more values.

[0025] Though the gussets **140** are illustrated in FIGS. **4** and **5** as pairs of gussets with a first gusset **140***a* on a first one of the opposing sides **124***a* directly across from a second gusset **140***b* on a second one of the opposing sides **124***b*, the gussets **140** along a first opposing side may be offset from the gussets **140** along a second opposing side (not shown). In other words, across a truss channel **120**, the set of gussets **140** along a first opposing wall **124** (e.g., opposing side) may not be directly across from the set of gussets **140** along a second opposing wall **124**. When an individual truss channel is examined from a top-down perspective, the positioning of the gussets may be asymmetrical with the median line of the channel used for reference. The gussets **140** may provide stiffening of the ventilation baffle **200**, preventing buckling or excessive torsion of the baffle **200** during installation, especially before the ventilation baffle **200** is secured to one or more trusses (**150** in FIGS. **7** and **9**). The number of gussets **140** along each opposing wall **124** may be 12 evenly spaced gussets. Alternatively, the placement and number of gussets **140** may differ for some of the truss channels **120** or for each truss channel **120**, optimizing for ability to stabilize the ventilation baffle **200**. In this case, the positioning of the gussets may be asymmetrical when viewing a truss channel from a top down view and the symmetry is determined with respect to the midpoint of the truss channel.

[0026] The sheet of material **110** used to form the ventilation baffle **100**, **200** may be any easily formed material including a metal, a stamped metal, an extruded material, an extruded metal, an extruded polymer (e.g., plastic), an injection molded plastic (e.g., polymer), a recycled material, an injected molded recycled plastic, a cardboard material, a fibrous material, fiberglass, a composite material, or any combination thereof. The material for the sheet of material **110** may be selected for characteristics including being lightweight, temperature resistance, moisture resistance, robustness, toughness, resistance to degradation with exposure to other building materials. Toughness may include the ability of the material to resist fretting, fraying, or crumbling during or after installation near the areas where fasteners, such as staples, nails, or screws, pass through the sheet of material **110**. Temperature resistance may include a tolerance in the range of below −40 degrees C. to above 50 degrees C. Moisture resistance may include maintenance of toughness and ruggedness in extremely dry ambient conditions as well as in predominantly damp conditions.

[0027] The ventilation baffles **100**, **200** described herein are configured for use with manufactured homes having roof trusses **150** with intervals between the trusses, measured center to center of the trusses, of either 16 inches (40.64 cm) or 24 inches (60.96 cm). To accommodate both of these truss configurations, the pitch P between truss channels **120**, measured center to center of the truss channels **120**, is approximately 8 inches (20.32 cm). The spacing between trusses **150** may vary, and in some uses, every second truss channel **120** is laid over a roof truss **150**. In other words, the truss channels **120** of the ventilation baffles **100**, **200** may be regularly spaced apart at an interval of either one half or one third that of the interval between adjacent roof trusses **150**.

[0028] The width W_c of each of the truss channels **120** is sized to accommodate the width of a standard roof truss **150**, as well as variations in construction of roof framing construction. For example, the truss channels **120** may be sized to accommodate variation of the placement of roof trusses **150**, such as being **1.25** times the width of standard roof truss **150**. Because the truss channels **120** are larger than the trusses **150**, the ventilation baffle **100**, **200** can be used with trusses **150** assembled within a reasonable deviation from the most commonly used intervals of 16 inches (40.64 cm) and 24 inches (60.96 cm).

[0029] FIG. **7** illustrates a manufactured structure during construction, with multiple ventilation baffles **200** laid across roof trusses **150**. As illustrated in FIG. **7**, every third truss channel **120** is laid over a roof truss **150**, with insulation **190** under the ventilation baffles **200** and between trusses **150**. The ventilation baffles **200** illustrated in FIG. **7** include gussets **140** reinforcing the truss channels **120**. On one portion of the roof, decking **160** is shown covering part of a ventilation baffle **200** and partially bare trusses **150**.

[0030] The ventilation baffles **100**, **200** are held in place over the trusses **150** by gravity and/or friction until roof decking **160** is placed over the baffles **100**, **200** and fastened using the same fasteners used to secure the decking **160** to trusses **150**. Securing the ventilation baffles **100**, **200** to trusses **150** may involve placing roof decking **160** over the

baffles which are over-laid on the trusses and then using a single securing mechanism which penetrates all three of the components: the roof deck, the ventilation baffles, and the truss simultaneously. The location of the securement may be centered over each truss, with multiple securing mechanisms (e.g., screws, staples, nails) aligned on each truss, so that the roof decking **160** and ventilation baffles **100**, **200** are firmly secured to the trusses **150**.

[0031] For convenience during transportation, the ventilation baffles **100**, **200** are designed to be nestable, such that the ventilation baffles **100**, **200** can be stacked with their edges aligned. In addition to allowing the ventilation baffles **100**, **200** to be stacked with ventilation baffles of similar configurations for ease of transport, another benefit of the nestable nature of the ventilation baffles **100**, **200** is that the nestability allows a first ventilation baffle to be securely joined to another ventilation baffle of similar configuration to cover the length of a roof without the need for any fasteners. Two ventilation baffles, as described herein, of similar configuration may be joined without fasteners which join exclusively the two baffles. To join two consecutive ventilation baffles of similar configurations, that is to say ventilation baffles with truss channels of similar dimensions (e.g., similar width and depth) and pitch P, laid out one after the other, a last truss channel of a first ventilation panel is overlaid with the first truss channel of a second ventilation panel. In such ventilation baffles **100**, **200**, the edge distance E of the first ventilation panel is equal to that of the second ventilation panel. Friction and/or gravity keep the first and second ventilation panels in place relative to each other during the construction process prior to being sandwiched between the trusses and the roof decking. Following the sandwiching, the roof decking, ventilation baffles, and trusses are secured with fasteners which are inserted through the roof decking and extend into the trusses. The configuration of these nestable ventilation baffles allows gravity or friction to keep consecutive ventilation baffles in place when laying them on trusses in the construction of a structure.

[0032] In addition to being nestable, the ventilation baffles **100**, **200** may be compliant along their width W_p. Depending on the ventilation baffle material, the ventilation baffles **100**, **200** may be rigid in along their length L and compliant in the direction perpendicular to that of the length of the truss channels **120**. The ventilation baffles **100**, **200** made of materials (e.g., plastic, flexible polymers, malleable sheet metal, flexible composite materials) which are suitably compliant may be rolled, such that periodically truss channels **120** nest on top of each other and/or themselves. A single ventilation baffle **100**, **200** may be configured to, or be able to, roll around itself so that a first one of its truss channels **120** can be overlaid onto a second truss channel **120**, so that the first truss channel **120** and the second truss channel **120** are separated by a distance along the width W_p of the ventilation baffle. The first and second truss channels **120** can have one or more truss channels **120** between them along the width W_p of the ventilation baffle. Additionally, two or more ventilation baffles **100**, **200** may be configured to nest one on top of each other and to roll in a fashion similar to that of a single ventilation baffle. The difference between the manner in which multiple ventilation baffles **100**, **200** roll and a single ventilation baffle rolls is that when having a stack of multiple ventilation baffles one or more truss channels of the bottommost ventilation baffle can nestle into, or be overlaid upon, truss channels of the topmost ventilation baffle in the stack. This ability to be rolled increases the portability of ventilation baffles **100**, **200**, including the ease with which the ventilation baffles may be carried onto a roof framing of a manufacture structure or manufactured home.

[0033] FIGS. **8**A and **8**B show ventilation baffles that are nested and rolled. In FIG. **8**A, there is a bundle **800** of nested and rolled ventilation baffles shown in a perspective view. FIG. **8**B shows the same bundle **800** from another perspective in which the length of the bundle L can be seen. The overlapping channels **120**, flat portions **130**, and gussets **140** are also visible in FIG. **8**A and **8**B. The rolled bundle **800** of ventilation baffles has a diameter of D_r. In an exemplary case, conventional ventilation baffles would occupy a footprint of at least 4 feet by 2.5 feet (1202 cm by 76.2 cm), while in contrast the bundled **800** nested and rolled ventilation baffles shown in FIGS. **8**A and **8**B have a diameter D_r that may range from approximately 0.75 feet (22.86 cm) to approximately 3 feet (91.44 cm), including having a D_r value of approximately 1 foot (30.5 cm). This difference in footprint during storage allows more ventilation baffles to be retained in a storage facility, potentially preventing delays in production. Each bundle **800** can include all of the ventilation baffles needed to complete a roof of a structure, specifically a roof of a manufactured home. Such bundles **800** can be carried by a single person easily to the top of a structure's frame, or lifted to an installation height using a rope, with or without a pulley, allowing for efficiency during structure manufacturing.

[0034] A plurality of fasteners **170** are used to secure the roof decking **160** to at least two trusses **150**. As described above, the ventilation baffle **100**, **200** is sandwiched between the trusses **150** and the roof decking **160** and secured in place with the plurality of fasteners **170**. These fasteners **170** may include any of a nail, a screw, a strap, or a combination of a strap and a nail or screw. The ventilation baffle **100**, **200** may be secured to the truss **150** without employing a separate securing means to affix the ventilation baffle **100**, **200** to the truss **150**. The ability of the ventilation baffle **100**, **200** to be temporarily affixed to trusses **150** and to each other prior to the roof decking being added reduces the number of fasteners needed in the over-all construction of a manufactured home, reducing the parts needed and the time to assemble the manufactured home.

[0035] FIG. **9** is a cross-sectional view of a roof of a manufactured home in the process of being assembled. The section shows a ventilation baffle **200** with every third truss channel **120** laid over a truss **150**. A section of roof decking **160** is shown as secured to trusses **150** with fittings **170** which also pass through and secure the ventilation baffle **200** to the trusses. Once affixed to the trusses **150**, the roof decking **160** and the ventilation baffle **200** create an enclosed area or plenum **180** that is sealed once the roof is fully constructed. The enclosed space, or plenum **180**, is bounded in part by the ventilation baffle **200** on a first side and in part by the roof decking on a second side, with the first and second sides opposite each other. The plenum **180** is constructed so that once the roof is complete, a person cannot access the plenum **180** without damaging the ventilation baffle **200** or the roof decking **160**. In other words, the plenum **180** is inaccessible upon competition of the roof of the structure. It should be appreciated that a plenum as used in this disclosure may refer to any area or space which is

partially or fully enclosed. The area or space may contain air or air combined with other matter.

[0036] The height H of the truss channels **120** may be selected to create a plenum **180** that defines an air gap of a predetermined height, for example a 1-inch (2.54 cm) air gap. To create such an air gap, the height H of each truss channel **120** is approximately 1 inch (2.54 cm). The truss channels **120** are sized or configured to accommodate the standard roof trusses used in the manufactured home industry, including slight variations in the placement of the roof trusses during construction of a manufactured home. Preferably, the truss channels **120** have a width W_c of approximately 1.25 inches (3.175 cm). As indicated above, truss channels **120** are wide enough to accommodate deviations in roof assembly in structures, including in manufactured homes. Construction may deviate from the ideal truss pitch (i.e., distance between the center of each truss), truss thickness, or both pitch and thickness. To accommodate these deviations in construction, the truss channels **120** have a width greater than that of a standard truss. Truss channels **120** may vary in width from the ideal (i.e., standard) width of a truss **150** in a range of +5% to +10% of standard truss thickness. For example, some structures may use lumber that has a cross-section of 2 inches (5.08 cm) by 4 inches (10.16 cm) (i.e., 2×4s), and in that case truss channels **120** may have a width in the range of 2.1 inches (5.334 cm) to 2.2 inches (5.588 cm).

[0037] In order to accommodate the overlap of a first and second ventilation baffle, the distance E from a first or last truss channel **120** to an edge of a ventilation panel is consistent. This distance E may be, for example, preferably 4 inches (10 cm). The dimensions of the sheet of material **110** which make up the ventilation baffle **100**, **200** are length L by width W_p. Length L is preferably approximately 30 inches (76.2 cm), and the width W_p is preferably approximately 96 inches (243.84 cm), though other sizes are possible. The regularity of the placement of truss channels **120** and the ability of ventilation baffles **100**, **200** to be overlapped allows for any excess ventilation baffle material to be trimmed and used in the construction of another structure. This also reduces waste with respect to the ventilation baffles **100**, **200**.

[0038] The width of the truss channels may accommodate the trusses used in fabrication of the structures as well variations in construction, as described above. The depth of the truss channels may also conform to current building standards and may preferably be 1 inch (2.54 cm). These dimensions may be adjusted to accommodate changes in the standards used by the manufactured structure industry or to improve manufacturability of the ventilation baffle. For example, should the required air gap become 2 inches (5.08 cm), then the height H of the truss channels **120** can change to be 2 inches. Additionally, the distance between truss channels as measured on center may be varied to accommodate the pitch of trusses of the structures in which they will be used.

[0039] The sheet of material used to fabricate the ventilation baffle may be selected for various characteristics including strength to weight ratio, being lightweight, temperature resistance, moisture resistance, toughness (e.g., ability to resist fraying during and after installation), formability, "greenness", insulative properties, robustness, cost, and the like. For example, post-consumer recycled polymer (e.g., recycled plastic) may be selected as the sheet material because it may have a reduced carbon footprint, it may be easily and quickly molded, and it may be suitably tough to endure the handling and securing process, as well as the temperature fluctuations endured by a typical roof. The material selected for the ventilation baffle may be sufficiently robust to resist fraying during the installation and securing process, as well as being sufficiently resistant to fretting (e.g., wear) around points of securement.

[0040] The selection of the material of the ventilation baffle in combination with the plenum's air gap can increase the insulative capability of a roof and decrease the humidity levels in the roof area. The decrease in the humidity levels in the roof area is facilitated by more robust air exchange due to the materials used for the baffles and the configuration of the created plenum. These features combined may aid a structure, such as a manufactured home, in meeting energy efficiency standards. The use of fasteners that secure the roof decking and ventilation baffle at once to the trusses reduces the time needed to complete that portion of the roof structure, thus increasing the efficiency of constructing a manufactured home.

[0041] In use, a ventilation baffle may be installed as illustrated in the method illustrated in FIG. **10**. A first step includes laying the ventilation baffle over multiple roof trusses in a manufactured structure as in **1001**. While laying the ventilation baffle over roof trusses, or after such laying, each truss of a roof frame may be slotted into a corresponding truss channel in the ventilation baffle. Installing roof decking over the ventilation baffle is a next step **1002**. Securing the roof decking to at least two of the trusses using a plurality of fasteners, sandwiching in the ventilation baffle between the roof decking and the trusses is a following step **1003**, a single fastener, or a single securing mechanism, may be used to secure the roof decking to a truss, with a ventilation baffle in between. It is not necessary to use staples to secure the ventilation baffle to a truss then secure the roof decking using yet another staple or a nail or screw. The ventilation baffle may be visually inspected after the roof decking has been overlaid and both the ventilation baffle and roof decking have been secured to the roof trusses (e.g., roof frame). Should this visual inspection, or any other visual inspection, show that there is slack in the ventilation baffle between trusses, staples or other securing means may be used to secure a side of one or more truss channel to a side of a truss to lessen the slack. In this case, slack in the ventilation baffle may be a bowing downward, under the pull of gravity, of the sheet of material so that a plenum created between the ventilation baffle and the roof decking has a depth greater than the depth of any of the truss channels in the ventilation baffle. For example, when the desired plenum, or air gap, between the roof decking and ventilation baffle has a height of 1 inch (2.54 cm), then the depth of the truss channels in the ventilation baffle will be 1 inch. Should the portions of the ventilation baffle not directly hang on a truss so that a plenum would have a height of more than 1 inch at any point, then the ventilation baffle can be said to have slack. That slack can be taken up by the use of additional securing means as described above.

[0042] While various embodiments of ventilation baffles for construction of manufactured homes have been described herein, it is recognized that this disclosure is not limited to these embodiments. Variations may be made thereto which are still within the scope of the appended claims.

What is claimed is:

1. A ventilation baffle comprising a sheet of material with two or more truss channels separated by a distance measured from each truss channel's center, the ventilation baffle comprising a plurality of gussets along each of the two or more truss channels, wherein the gussets are positioned on opposing sides of each truss channel.

2. The ventilation baffle of claim **1**, wherein each of the two or more truss channels has at least four gussets reinforcing the two opposing sides, with at least two gussets for each of the opposing sides.

3. The ventilation baffle of claim **1**, wherein for each of the two or more truss channels, the plurality of gussets is regularly spaced along a length of the sheet with each gusset of the plurality of gussets located directly across from a second gusset.

4. The ventilation baffle of claim **1**, wherein for each of the two or more truss channels, a first set of the plurality of gussets which reinforce a first one of the two opposing sides are regularly spaced along a length of the sheet are offset from a second set of the plurality of gussets which reinforce a second one of the two opposing sides.

5. The ventilation baffle of claim **1**, wherein for each of the two or more truss channels, the plurality of gussets are positioned symmetrically about each truss channel, each gusset having a corresponding gusset across from it.

6. The ventilation baffle of claim **1**, wherein each sheet of material is rectangular, with a width in a first direction, the width corresponding to a multiple of the distance between each of the two or more truss channels, and a second direction, the second direction being along a length of the two or more truss channels.

7. The ventilation baffle of claim **1**, wherein each of the two or more truss channels has a depth corresponding to a predetermined plenum depth.

8. The ventilation baffle of claim **1**, wherein each of the two or more truss channels has a width greater than that of a standard roof truss.

9. The ventilation baffle of claim **8**, wherein the width of each of the two or more truss channels accommodates deviations in a pitch of trusses in a structure in which the ventilation baffle will be used.

10. The ventilation baffle of claim **8**, wherein the width of each of the two or more truss channels accommodates deviations in a width of the standard roof truss.

11. The ventilation baffle of claim **1**, wherein the material is lightweight, temperature resistant, moisture resistant, and sufficiently robust to resist fraying during installation and securing, the material comprising any of a fibrous material, a cardboard material, fiberglass, a plastic, a recycled material, a composite material, and a metal material.

12. The ventilation baffle of claim **11**, wherein the material is a recycled plastic.

13. The ventilation baffle of claim **1**, wherein a first ventilation baffle is configured to nest above a second ventilation baffle of similar dimensions such that when the first ventilation baffle is laid above the second ventilation baffle, the two or more truss channels of the first ventilation baffle are overlaid onto the two or more truss channels of the second ventilation baffle and edges of the first ventilation baffle align with edges of the second ventilation baffle.

14. The ventilation baffle of claim **13**, wherein a first truss channel of the two or more truss channels is located a first edge distance from a first end of the sheet and a last truss channel of the two or more truss channels is located a second edge distance from a second end of the sheet, the first edge distance being equal to the second edge distance.

15. The ventilation baffle of claim **13**, wherein the first ventilation baffle and the second ventilation baffle have a nestable configuration that allows gravity or friction to keep consecutive ventilation baffles in place when laying them on trusses during construction of a structure.

16. The ventilation baffle of claim **1**, wherein the ventilation baffle is configured to nest with itself, such that when the ventilation baffle is rolled, at least a first one of the two or more truss channels of the ventilation baffle is overlaid onto a second one of the two or more truss channels of the ventilation baffle.

17. A method of using a ventilation baffle, the method comprising:

laying the ventilation baffle over multiple roof trusses in a manufactured structure;

slotting each of the multiple roof trusses into one of multiple truss channels of the ventilation baffle;

installing roof decking over the ventilation baffle; and

securing both the roof decking and the ventilation baffle to the multiple trusses at multiple locations along each of the multiple trusses, such that for each location along each of the multiple roof trusses, a single securing mechanism penetrates the roof decking, the ventilation baffle, and the one of the multiple roof trusses simultaneously, the single securing mechanism including any of a staple, a nail, a screw, a strap, or a combination of a strap and a staple, a nail or screw.

18. The method of claim **17**, wherein the ventilation baffle comprises multiple truss channels, the multiple truss channels regularly spaced apart at an interval of either one half or one third that of the interval between the multiple roof trusses.

19. The method of claim **17**, wherein the multiple locations include centered locations on each truss.

20. The method of claim **17**, wherein securing both the roof decking and the ventilation baffle to the multiple trusses creates a space bounded in part by the ventilation baffle and the roof decking, the ventilation baffle and the roof decking making up opposite sides of the space.

21. The method of claim **17**, wherein in laying the ventilation baffle over multiple roof trusses, the ventilation baffle includes at least two gussets positioned about each one the multiple truss channels.

22. The method of claim **17**, further comprising securing the ventilation baffle to each of the multiple roof trusses after slotting each of the multiple roof trusses into one of the multiple truss channels of the ventilation baffle.

23. A ventilation baffle in combination with two or more roof trusses and a roof decking to create an enclosed area, the ventilation baffle comprising a sheet of material with multiple channels separated by a regular distance, the regular distance corresponding to either half or one third of a distance between each of the two or more roof trusses measured from a center of each of the two or more roof trusses, the enclosed area having a first side defined by the roof decking and a second side opposite the first side that is defined by the ventilation baffle.

24. The combination of the ventilation baffle with the two or more roof trusses and the roof decking of claim **23**, wherein the enclosed area has a predetermined air gap depth

between the roof deck and the ventilation baffle, and wherein the depth of each of the multiple channels is equal to the predetermined air gap depth.

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