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(54) **SIDEWALL PLANK FOR CONSTRUCTING A TRAILER AND ASSOCIATED TRAILER SIDEWALL CONSTRUCTION**

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(57) **ABSTRACT**

A sidewall plank (14) for constructing trailers and an associated sidewall construction (10). The sidewall plank (14) has a body (15) defining a first edge portion (17) and has a second edge portion (19) for engaging the first edge portion (17) of another plank (14). The first edge portion (17) of the sidewall plank (14) defines a tongue (18) and the second edge portion (19) defines a primary groove (20) for receiving the tongue (18) of another sidewall plank (14). The first edge portion (17) also includes a second groove (24) for receiving an adhesive/sealant material and the second edge portion (19) is provided with a third groove (26) for receiving an adhesive/sealant material and for registering with the second groove (24) of another plank (14). The associated sidewall construction (10) includes a plurality of sidewall planks (14), and a roof support member (30).

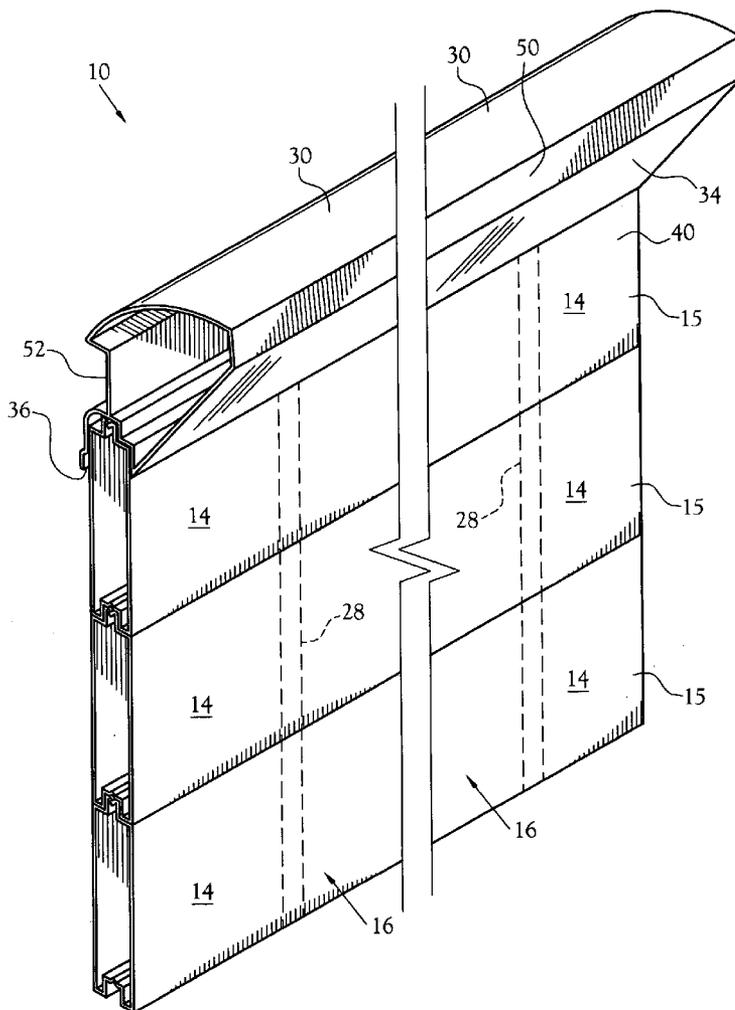
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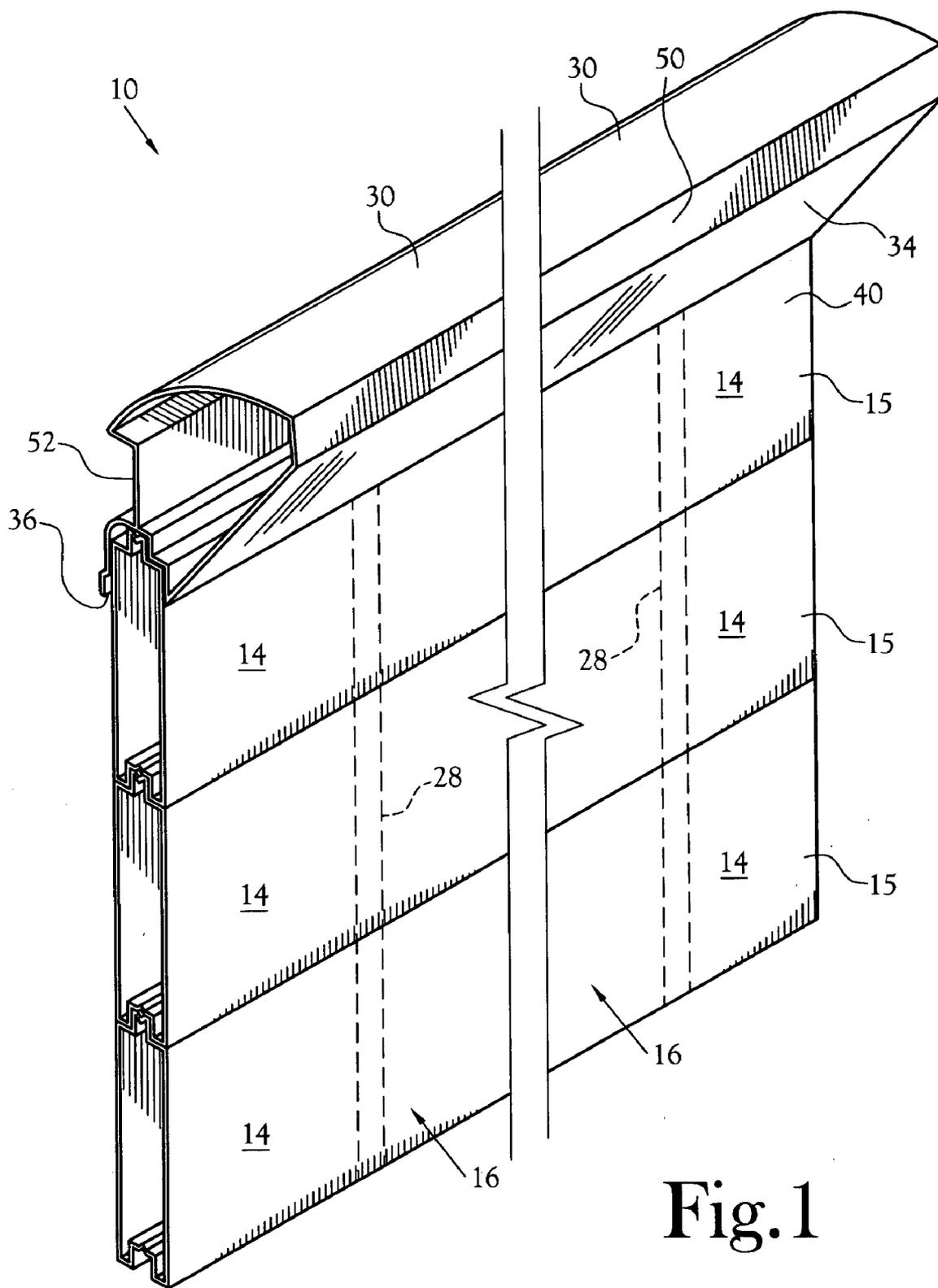


Fig. 1

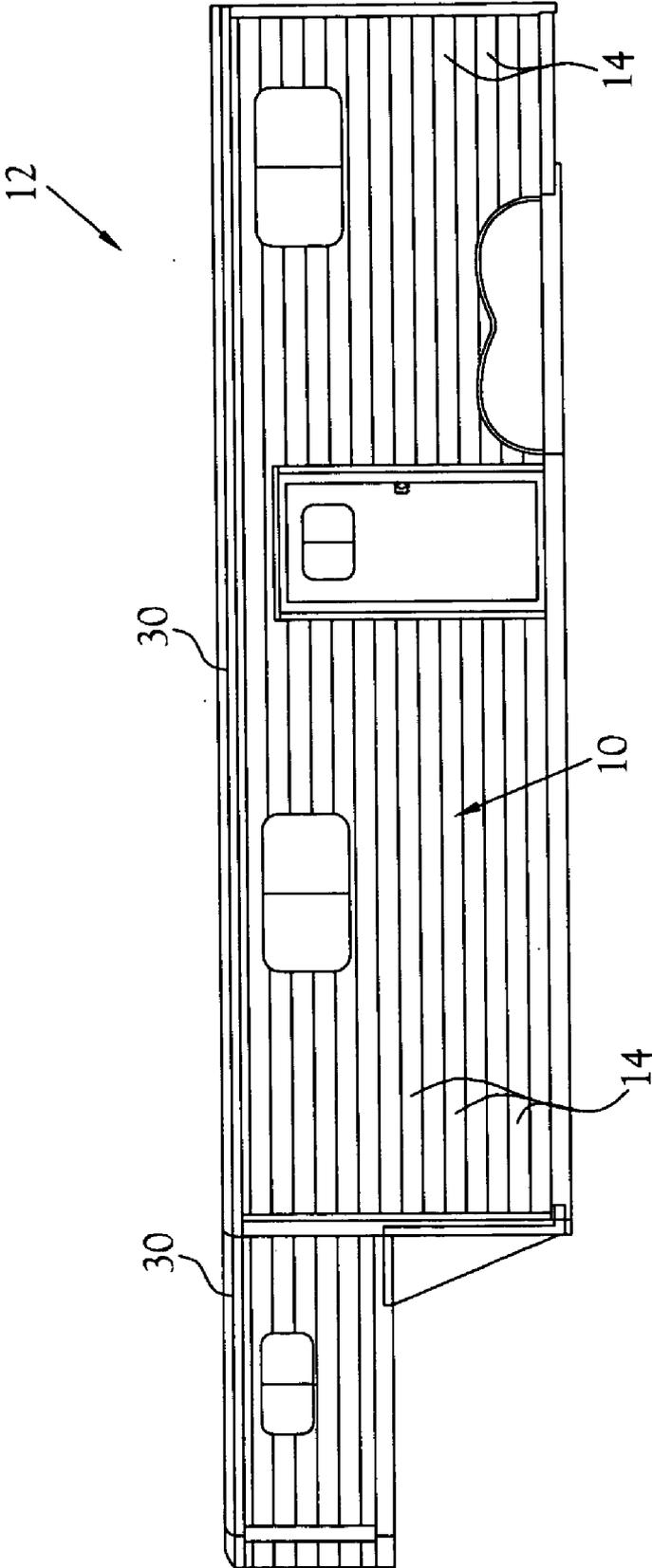


Fig. 2

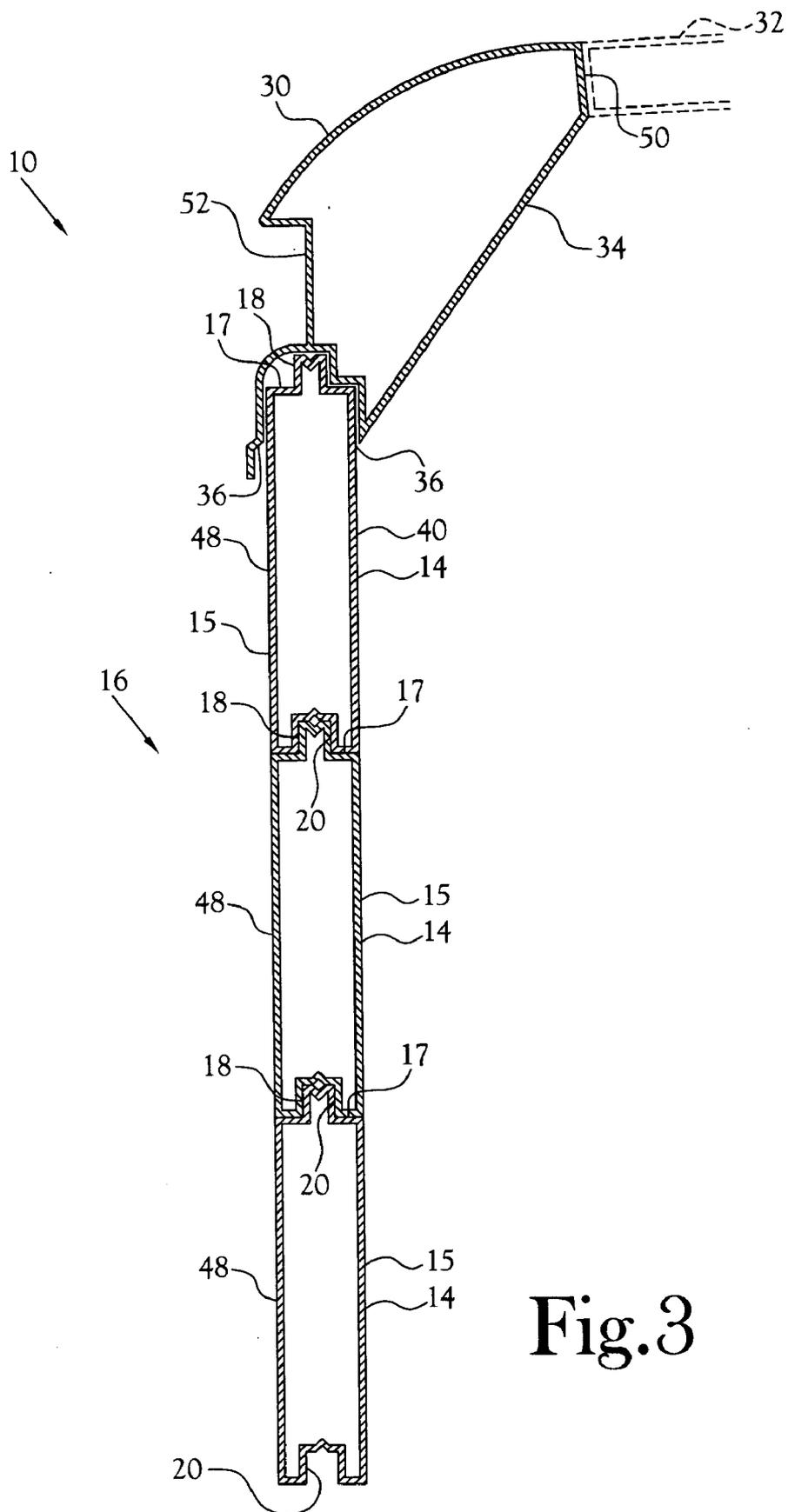


Fig. 3

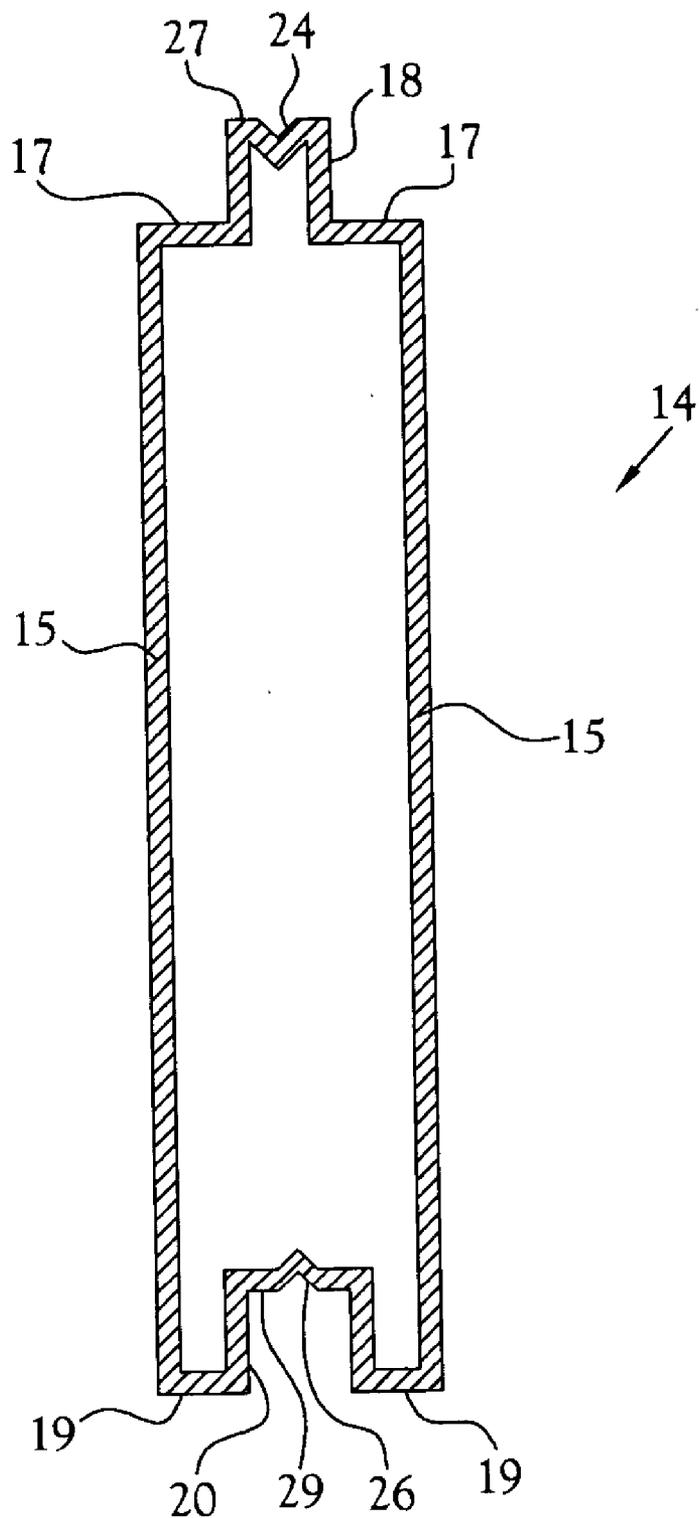


Fig. 4

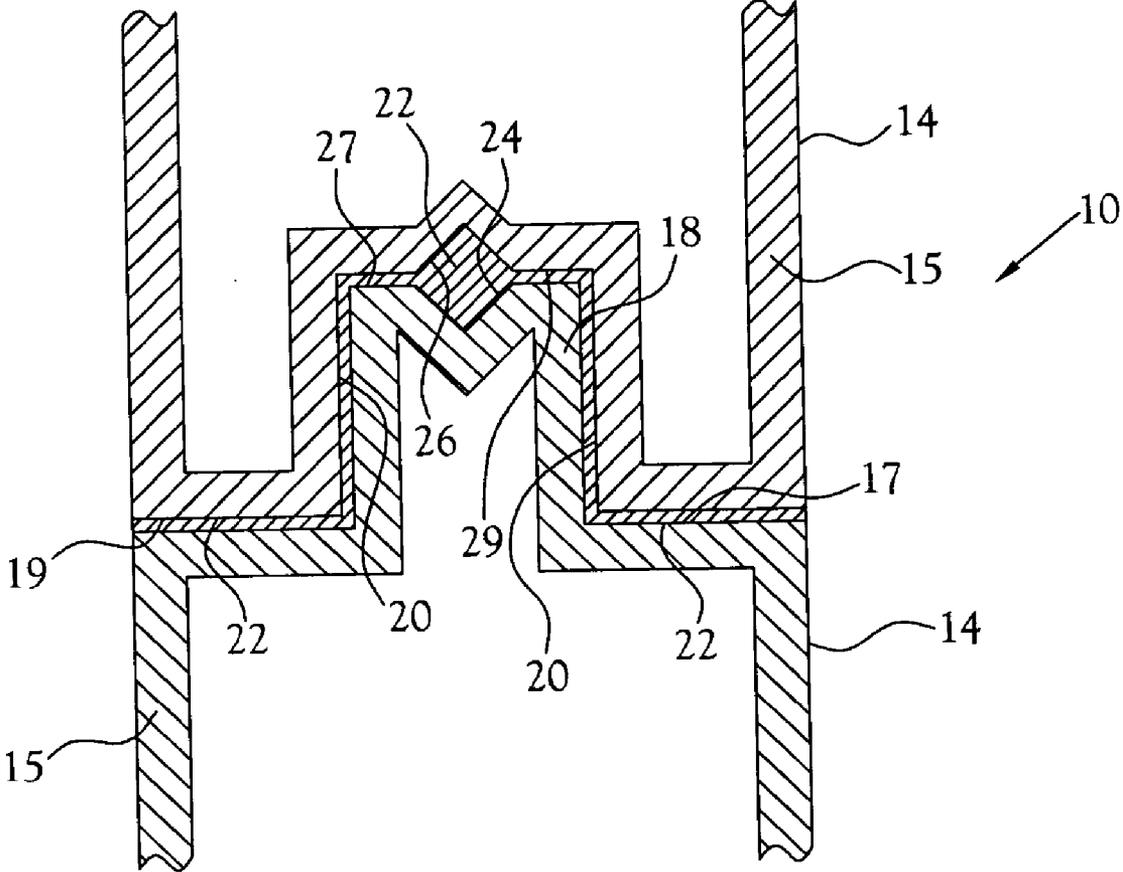


Fig.5

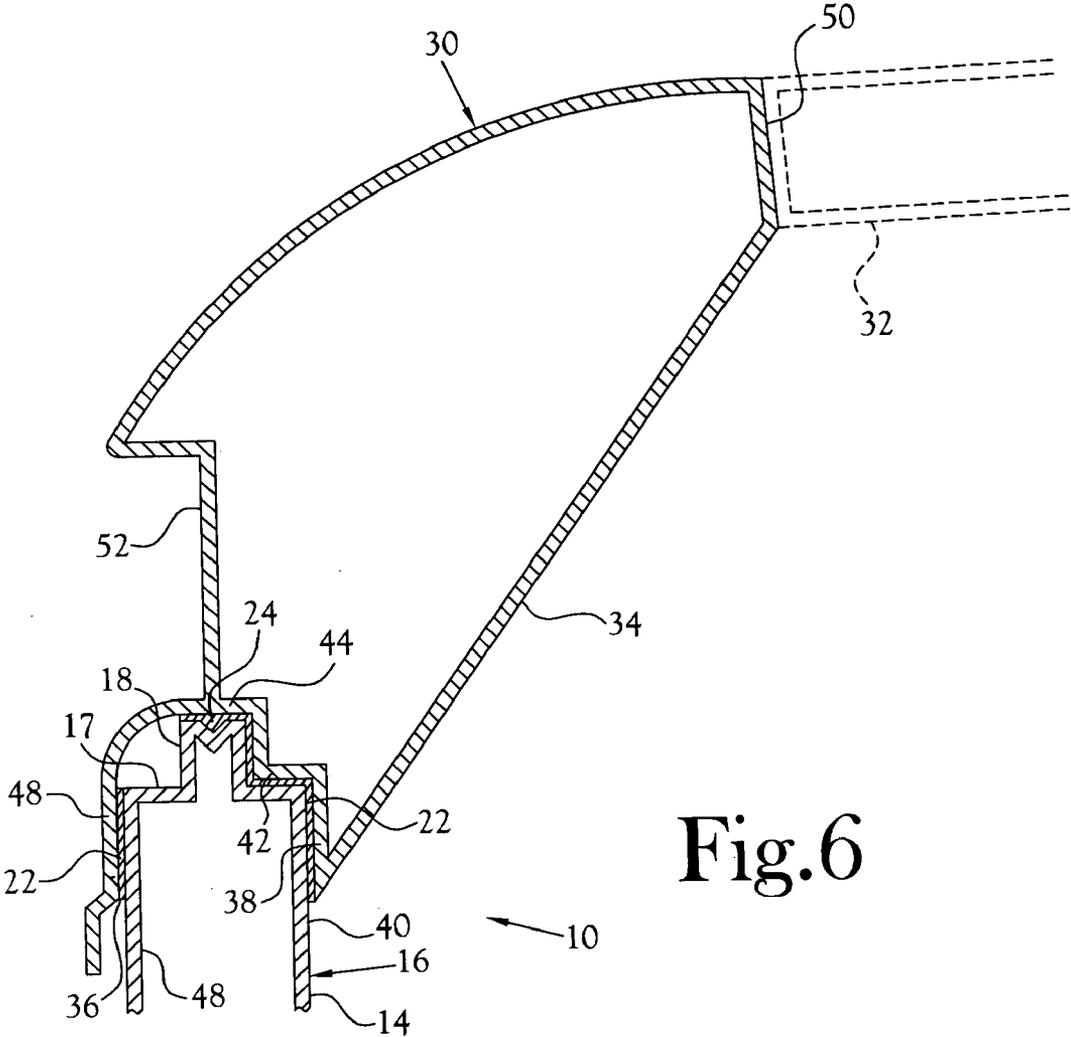


Fig.6

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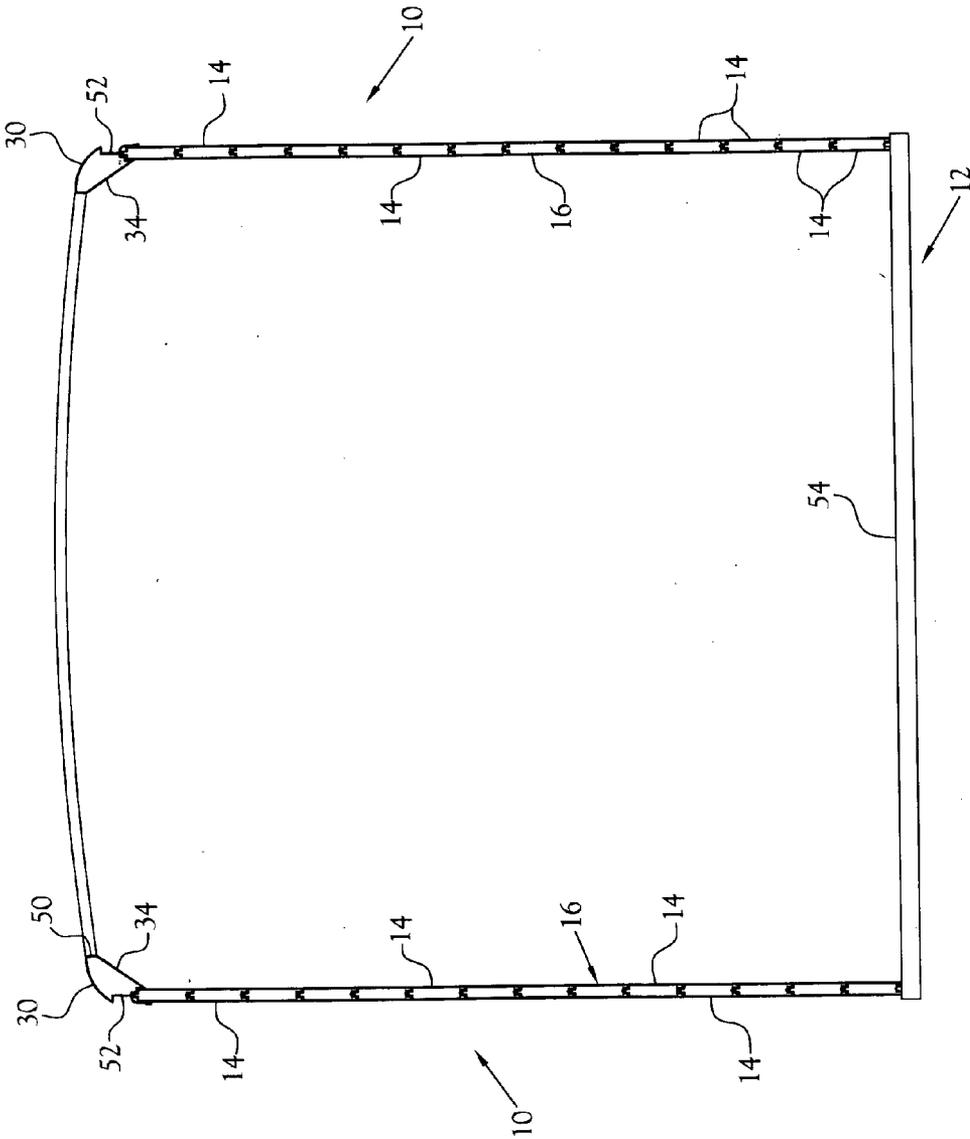


Fig. 7

SIDEWALL PLANK FOR CONSTRUCTING A TRAILER AND ASSOCIATED TRAILER SIDEWALL CONSTRUCTION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

BACKGROUND OF THE INVENTION

[0003] 1. Field of Invention

[0004] This invention relates to sidewall planks used in the construction of a trailer, such as a trailer for transporting horses or other livestock. The invention also relates to an improved system for constructing a sidewall portion of a trailer and supporting the roof of the trailer.

[0005] 2. Description of the Related Art

[0006] The use of interlocking, horizontally oriented planks to form the sidewalls of a trailer for carrying livestock or other cargo is known in the art. See U.S. Pat. No. 6,382,671. Whereas, such planks often define tubular members with hollow interiors to reduce the weight of the planks, with aluminum being a common fabricating material. Further, as illustrated in U.S. Pat. No. 5,791,726, tongue and groove joints have been used to join such sidewall planks in the forming of a sidewall portion. However, in order to protect the cargo carried within the trailer, it is important that the trailer sidewall planks not only firmly and securely interlock with one another, but do so in a weatherproof fashion. In this regard, the joint between sidewall planks should be substantially fluid impervious such that wind and rain cannot enter the trailer. Whereas it is known to place adhesives or sealants between the adjoining sidewall planks as disclosed in U.S. Pat. No. 5,791,726 and Canadian Patent No. 2,097,340, sidewall plank joints are not typically engineered to facilitate the placing of adhesives and sealants between the planks. Moreover, providing a strong, durable and weatherproof means for securing the roof of the trailer to the stack of interlocking sidewall planks can be problematic. This is particularly true in view of the need to limit the distance which the roof support, and/or roof, overhangs the sidewall portions of the trailer such that the effective width of the trailer is limited.

[0007] Other examples of trailer construction are disclosed in U.S. Pat. No. 5,140,913; Canadian Patent No. 2,088,284; French Patent Nos. 1,497,184 and 2,510,061; United Kingdom Patent Nos. 842,388 and 1,455,564; and German Patent No. 1,093,222.

BRIEF SUMMARY OF THE INVENTION

[0008] The present invention provides a sidewall plank for constructing trailers, such as, for example, livestock trailers, and provides an associated sidewall construction for such trailers. The sidewall planks define an elongated body having a first edge portion and having a second edge portion for engaging the first edge portion of another sidewall plank. The first edge portion of the sidewall plank is provided with a tongue having an outwardly facing distal surface, and the

second edge portion defines a primary groove for receiving the tongue of another sidewall plank, the primary groove having an outwardly facing bottom surface. The distal surface of the tongue of the sidewall plank is provided with a second groove for receiving an adhesive/sealant material, and the bottom surface of the primary groove of the sidewall plank is provided with a third groove for receiving an adhesive/sealant material and for registering with the second groove of another sidewall plank when the second edge portion of the sidewall plank engages the first edge portion of the other sidewall plank.

[0009] The associated sidewall construction includes a plurality of the sidewall planks stacked in an interlocking configuration with the tongue of one plank being received in the primary groove of an adjacent plank. Accordingly, when a first sidewall plank is stacked upon a second sidewall plank, with the tongue of the second plank seated in the groove of the first plank, the third groove of the first sidewall plank and the second groove of the second sidewall plank register and cooperatively form a channel for receiving an adhesive/sealant material. The sidewall construction also includes a roof support member that extends along at least a portion of the length of the uppermost sidewall plank for engaging and supporting at least a portion of the roof of the trailer. The roof support member is provided with a downwardly disposed receptor for receiving the upper portion of the uppermost sidewall plank, and defines a roof engaging surface for engaging at least a portion of the roof of the trailer. In one embodiment the roof support member is provided with a recessed portion for receiving a light fixture or other trailer accessories.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0010] The above-mentioned features of the invention will become more clearly understood from the following detailed description of the invention read together with the drawings in which:

[0011] **FIG. 1** is a partial perspective view of a trailer sidewall construction in accordance with the present invention;

[0012] **FIG. 2** is a side elevation view of a trailer incorporating the trailer sidewall construction of the present invention;

[0013] **FIG. 3** is an end view of at trailer sidewall construction in accordance with the present invention;

[0014] **FIG. 4** is an end view of a sidewall plank of the present invention;

[0015] **FIG. 5** is a partial end view, in section, of sidewall planks used in the trailer sidewall construction of the present invention;

[0016] **FIG. 6** is a partial end view, in section, of the trailer sidewall construction of the present invention; and

[0017] **FIG. 7** is an end view of a trailer utilizing the sidewall construction of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0018] A trailer sidewall construction incorporating the present invention is illustrated generally at **10** in the **FIGS.**

1, 2, and 5-7. Further, the sidewall planks of the present invention are illustrated generally at 14 in the figures. The sidewall construction of the present invention is utilized to produce trailers, such as the trailer 12 illustrated in FIG. 2. It will be understood by those skilled in the art that such trailers can be used for carrying various cargo, including, for example, horses or other livestock. As will be discussed in detail below, the improved construction provides greater sidewall strength, and greater strength in the junction between the sidewalls of the trailer and the roof portion of the trailer. Further, the improved construction results in a more weather proof sidewall, thereby better protecting the contents of the trailer.

[0019] As best illustrated in FIGS. 1 and 3-5, the sidewall construction 10 includes a plurality of sidewall planks 14 fashioned to interlock with one another in a stacked configuration to form a wall portion 16. It will be understood that the length of the individual planks 14 can vary greatly depending upon the length of the trailer being constructed and the point at which the particular plank 14 is incorporated into the trailer construction. In one preferred embodiment the sidewall planks 14 each define tubular a body 15 of an extruded material such as, for example, aluminum. This tubular construction provides a strong, durable structure which is lightweight. However, it will be understood that the planks 14 need not be tubular, and could define solid, or other non-tubular, bodies if desired. Further, various strong, durable materials can be used to fabricate the sidewall planks 14, and extruded aluminum is merely one desirable material which is strong, yet lightweight, and can be easily extruded into the desired configuration.

[0020] Each of the sidewall planks 14 has a first edge portion 17 defining a tongue 18 that, in one embodiment, extends the length of the plank 14, and has a second, opposite edge portion 19 defining a groove 20 that, in one embodiment, extends the length of the plank 14. In this regard, the tongue 18 of the sidewall plank 14 is configured to be closely received in the groove 20 of another plank 14 in order to interlock the planks together. Accordingly, as illustrated in FIGS. 1 and 3, a plurality of planks 14 can be stacked in an interlocking configuration to form a sidewall portion 16. It will be understood by those skilled in the art that, when incorporated into a sidewall portion, each of the planks 14 is preferably oriented such that the groove 20 is downwardly disposed and the tongue 18 of the plank 14 positioned below extends upwardly into the groove 20 such that water or other liquids do not collect in the grooves 20.

[0021] The interlocking of the tongues 18 and grooves 20 of adjacent planks 14 not only provide a strong joint for the securing the adjacent planks 14, but provide a joint which is highly weatherproof. However, to further strengthen the junction between adjacent planks 14, and to further weatherproof that junction, an adhesive/sealant material 22 is placed on the mating surfaces of the planks 14 as illustrated in FIG. 5. In this regard, the tongue and groove construction of the planks 14 provides greater surface area for bonding than a common butt joint or certain other conventional joint constructions, thereby enhancing the effectiveness of the adhesive/sealant material 22. With respect to the adhesive/sealant material 22, various materials having adhesive and/or sealing qualities can be used. For example, one acceptable adhesive/sealant material 22 is Silaprene® manufactured by Royal Adhesives and Sealants, LLC. It will also be noted

that, as illustrated in FIG. 1, selectively spaced ribs 28 can be welded or secured to the sidewall portion 16 with mechanical fasteners to further secure the planks 14 together and to strengthen the sidewall portion 16.

[0022] Further, in one embodiment of the planks 14, the first edge portion 17 of each plank 14 defines a second groove 24, and the second edge portion 19 of each plank 14 defines a third groove 26 which registers with the second groove 24 of an interlocking plank 14. As best illustrated in FIG. 5, the registering grooves 24 and 26 serve to receive the adhesive/sealant material 22, and the adhesive/sealant material 22 which fills the registering grooves 24 and 26 forms a gasket, thereby sealing the joint between the interlocking planks 14 and rendering the joint substantially fluid impervious. It will also be understood that the grooves 24 and 26 increase the surface area for bonding and add to the irregularity of the bonding surfaces defined by the first and second edge portions 17 and 19, respectively, thereby enhancing the strength and durability of bond effected by the adhesive/sealant material 22.

[0023] It will be noted that in the preferred illustrated embodiment of the planks 14 the second groove 24 is defined in the outwardly facing distal surface 27 of the tongue 18 and extends the length of the tongue 18, and the third groove 26 is defined in the bottom surface 29 of the groove 20 and extends the length of the groove 20. (See FIG. 5) However, it will be understood that the registering grooves 24 and 26 can be disposed at other locations on the bonding surfaces provided by the first and second edge portions 17 and 19 of the planks 14. Moreover, in the illustrated embodiment the grooves 24 and 26 define V-shaped grooves, but it will be understood that other groove configurations could be used if desired.

[0024] As illustrated in FIGS. 6 and 7, in one embodiment the sidewall construction 10 also includes a roof support member 30 that engages, and extends along, the uppermost plank 14 of the sidewall portion 16 and supports the roof 32 of the trailer. Preferably, the roof support member 30 is formed as a closed, tubular extrusion from a strong, durable material such as, for example, aluminum. Such tubular construction enhances the strength of the roof support member 30 while allowing it to be lightweight. Moreover, the tubular construction provides an aesthetically pleasing surface structure 34 for improving the appearance of the interior of the trailer. Moreover, the tubular construction allows electrical wiring (not shown) to be run through the roof support member 30 such that it is hidden from view. It will, however, be understood that the roof support member 30 need not be tubular, and could define a solid or other non-tubular construction if desired. Further, various strong, durable materials can be used to fabricate the roof support member 30, and extruded aluminum is merely one desirable material which is strong, yet lightweight, and can be easily extruded into the desired configuration.

[0025] In order to secure the roof support member 30 to the uppermost plank 14 of the sidewall portion 16 the roof support member 30 is provided with a downwardly disposed receptor 36 which, in the illustrated embodiment, extends the length of the roof support member 30. As best illustrated in FIG. 6, in the preferred embodiment, the receptor 36 is configured to receive not only the tongue 18 of the plank 14, but the upper portion of the plank 14. More specifically, the

receptor 36 is defined by an inner wall 38 which is bonded or secured to the upper portion of the inner wall 40 of the plank 14, and a shoulder portion 42 which follows at least a portion of the bonding surface provided by the first edge portion 17 of the plank 14. Further, the receptor 36 is configured such that the tongue 18 terminates proximate, and can be bonded or secured to, an upper wall 44 of the receptor 36. Further, the receptor 36 is defined by an outer wall section 46 which extends below the first edge portion 17 of the plank 14 such that it can be bonded to a portion of the outer wall 48 of the plank 14. As illustrated in FIG. 6, the adhesive/sealant 22 can be used to bond the upper portion of the plank 14 to the interior surfaces of the receptor 36. However, it will be understood that mechanical fasteners can also be used.

[0026] Because the receptor 36 of the roof support member 30 is configured to receive the upper portion of the uppermost plank 14, rather than the tongue 18 alone, a more stable interlocking of the roof support member 30 and the plank 14 is accomplished, thereby providing greater support for the roof 32. In this regard, the roof support member 30 defines a roof engaging surface 50 to which the roof 32 is secured. It will be understood by those skilled in the art that the roof 32 can be secured to the roof engaging surface 50 by welding, mechanical fasteners (not shown), or other suitable securing means.

[0027] It will also be noted that in the illustrated embodiment the roof support member 30 defines a recessed portion 52 above the outer wall section 46. The recessed portion 52 provides a location for the mounting of lights, reflectors, and/or other trailer accessories, without increasing the overall width of the trailer. It will also be understood by those skilled in the art that the irregular cross section created by providing the recessed portion 52 strengthens the roof support member 30 when the member 30 defines an extruded tubular configuration.

[0028] In light of the above, it will be recognized that the trailer sidewall construction 10 provides advantages over the prior art. The tongue and groove construction ensures that the planks 14 securely interlock, and provide a strong, durable sidewall. The registering grooves 24 and 26 of the planks 14 allow the adhesive/sealant 22 to effectively bond adjacent planks 14 together and render the resulting joint substantially fluid impervious. Where extruded aluminum is used to construct the planks 14, the resulting sidewall is lightweight, and strong. Moreover, the roof support member 30 provides a stable, yet lightweight, means for securing the roof 32 to the sidewalls of the trailer. Thus, in accordance with the present invention opposing sidewall portions 10 can be joined by a floor 54 and a roof 32 to provide a strong, but lightweight trailer 12, such as a horse or livestock trailer.

[0029] While the present invention has been illustrated by description of several embodiments and while the illustrative embodiments have been described in considerable detail, it is not the intention of the applicant to restrict or in any way limit the scope of the appended claims to such detail. Additional advantages and modifications will readily appear to those skilled in the art. The invention in its broader aspects is therefore not limited to the specific details, representative apparatus and methods, and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the spirit or scope of applicant's general inventive concept.

Having thus described the aforementioned invention, we claim:

1. A sidewall plank for interlocking with other said sidewall planks in the construction of at least a portion of the sidewall of a trailer, said sidewall plank comprising an elongated body having a first edge portion and having a second edge portion for engaging said first edge portion of another said sidewall plank, said first edge portion defining a tongue and said second edge portion defining a primary groove for receiving said tongue of said another said sidewall plank, said first edge portion of said sidewall plank being provided with a second groove for receiving an adhesive/sealant material, said second groove being oriented so as to open toward a surface of said second edge portion of said another said sidewall plank.

2. The sidewall plank of claim 1 wherein said second edge portion of said sidewall plank is provided with a third groove for receiving an adhesive/sealant material and for registering with said second groove of said another said sidewall plank when said second edge portion of said sidewall plank engages said first edge portion of said another said sidewall plank.

3. The sidewall plank of claim 2 wherein said second groove is defined in and extends along at least a portion of said tongue, and said third groove is defined in and extends along at least a portion of said primary groove.

4. The sidewall plank of claim 3 wherein said tongue defines an outwardly facing distal surface and said primary groove defines an outwardly facing bottom surface, and wherein said second groove is defined in said distal surface of said tongue, and said third groove is defined in said bottom surface of said primary groove.

5. The sidewall plank of claim 2 wherein said body of said sidewall plank is tubular.

6. The sidewall plank of claim 5 wherein said body of said sidewall plank is fabricated from an extruded material.

7. The sidewall plank of claim 6 wherein said extruded material is aluminum.

8. The sidewall plank of claim 4 wherein said body of said sidewall plank is tubular.

9. The sidewall plank of claim 8 wherein said body of said sidewall plank is fabricated from an extruded material.

10. The sidewall plank of claim 9 wherein said extruded material is aluminum.

11. A sidewall plank for interlocking with other said sidewall planks in the construction of at least a portion of the sidewall of a trailer, said sidewall plank comprising an elongated body having a first edge portion and having a second edge portion for engaging said first edge portion of another said sidewall plank, said first edge portion defining a tongue and said second edge portion defining a primary groove for receiving said tongue of said another said sidewall plank, said second edge portion of said sidewall plank being provided with a further groove for receiving an adhesive/sealant material.

12. The sidewall plank of claim 11 wherein said primary groove defines an outwardly facing bottom surface and said further groove is defined in and extend along at least a portion of said bottom surface of said primary groove.

13. A sidewall construction for constructing at least a portion of the sidewall of a trailer, said sidewall construction comprising:

a plurality of sidewall planks, each said sidewall plank having an elongated body defining a first edge portion

and defining a second edge portion for engaging said first edge portion of another said sidewall plank, said first edge portion of each said sidewall plank defining a tongue and said second edge portion defining a primary groove for receiving said tongue of said another said sidewall plank, said first edge portion of each said sidewall plank being provided with a second groove for receiving an adhesive/sealant material and said second edge portion of each said sidewall plank being provided with a third groove for receiving an adhesive/sealant material and for registering with said second groove of said another said sidewall plank when said second edge portion of said sidewall plank engages said first edge portion of said another said sidewall plank; and

a roof support member extending along at least a portion of one said sidewall plank for engaging and supporting at least a portion of the roof of the trailer.

14. The sidewall construction of claim 13 wherein said second groove of said sidewall planks is defined in and extends along at least a portion of said tongue, and said third groove of said sidewall planks is defined in and extends along at least a portion of said primary groove.

15. The sidewall construction of claim 13 wherein said tongue of each said sidewall plank defines an outwardly facing distal surface and said primary groove defines an outwardly facing bottom surface, and wherein said second groove of each said sidewall plank is defined in said distal surface of said tongue, and said third groove is defined in said bottom surface of said primary groove.

16. The sidewall construction of claim 13 wherein said body of each said sidewall plank is tubular.

17. The sidewall construction of claim 16 wherein said body of each said sidewall plank is fabricated from an extruded material.

18. The sidewall construction of claim 17 wherein said extruded material is aluminum.

19. The sidewall construction of claim 13 wherein said roof support member is provided with a downwardly disposed receptor for receiving an upper portion of at least one of said sidewall planks, and defines a roof engaging surface for engaging at least a portion of the roof of the trailer.

20. The sidewall construction of claim 13 wherein said roof support member defines a recessed portion extending along at least a portion of its length for receiving trailer accessories.

21. The sidewall construction of claim 19 wherein said roof support member is tubular and defines a recessed portion extending along its length for receiving a light fixture.

22. The sidewall construction of claim 21 wherein said roof support member is fabricated of an extruded material.

23. The sidewall construction of claim 22 wherein said extruded material is aluminum.

24. A sidewall construction for constructing at least a portion of the sidewall of a trailer, said sidewall construction comprising:

a plurality of sidewall planks, each said sidewall plank having an elongated body defining a first edge portion and defining a second edge portion for engaging said first edge portion of another said sidewall plank, said first edge portion of each said sidewall plank defining a tongue having an outwardly facing distal surface and

said second edge portion defining a primary groove for receiving said tongue of said another said sidewall plank, said primary groove having an outwardly facing bottom surface, said distal surface of said tongue of each said sidewall plank being provided with a second groove for receiving an adhesive/sealant material, and said bottom surface of said primary groove of each said sidewall plank being provided with a third groove for receiving an adhesive/sealant material and for registering with said second groove of said another said sidewall plank when said second edge portion of said sidewall plank engages said first edge portion of said another said sidewall plank; and

a roof support member extending along at least a portion of the length of one said sidewall plank for engaging and supporting at least a portion of the roof of the trailer, said roof support member being provided with a downwardly disposed receptor for receiving an upper portion of at least one of said sidewall planks, and defining a roof engaging surface for engaging at least a portion of the roof of the trailer, said roof support member further defining a recessed portion extending along its length for receiving trailer accessories.

25. The sidewall construction of claim 24 wherein said body of each said sidewall plank is tubular, and wherein said roof support member is tubular.

26. The sidewall construction of claim 24 wherein said body of each said sidewall plank is fabricated of an extruded material, and said roof support member is fabricated of said extruded material.

27. The sidewall construction of claim 26 wherein said extruded material is aluminum.

28. A trailer for carrying livestock, said trailer comprising:

first and second sidewalls each including a plurality of sidewall planks, each said sidewall plank having an elongated body defining a first edge portion and defining a second edge portion for engaging said first edge portion of another said sidewall plank, said first edge portion of each said sidewall plank defining a tongue and said second edge portion defining a primary groove for receiving said tongue of said another said sidewall plank, said first edge portion of each said sidewall plank being provided with a second groove for receiving an adhesive/sealant material and said second edge portion of each said sidewall plank being provided with a third groove for receiving an adhesive/sealant material and for registering with said second groove of said another said sidewall plank when said second edge portion of said sidewall plank engages said first edge portion of said another said sidewall plank;

a floor extending between said first and second sidewalls;

first and second roof support members, said first roof support member extending along at least a portion of one said sidewall plank of said first sidewall and said second roof support member extending along at least a portion of one said sidewall plank of said second sidewall; and

a roof extending between and supported by said first and second roof support members.

29. The trailer of claim 28 wherein said second groove of said sidewall planks is defined in and extends along at least a portion of said tongue, and said third groove of said

sidewall planks is defined in and extends along at least a portion of said primary groove.

30. The trailer of claim 28 wherein said tongue of each said sidewall plank defines an outwardly facing distal surface and said primary groove defines an outwardly facing

bottom surface, and wherein said second groove of each said sidewall plank is defined in said distal, surface of said tongue, and said third groove is defined in said bottom surface of said primary groove.

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