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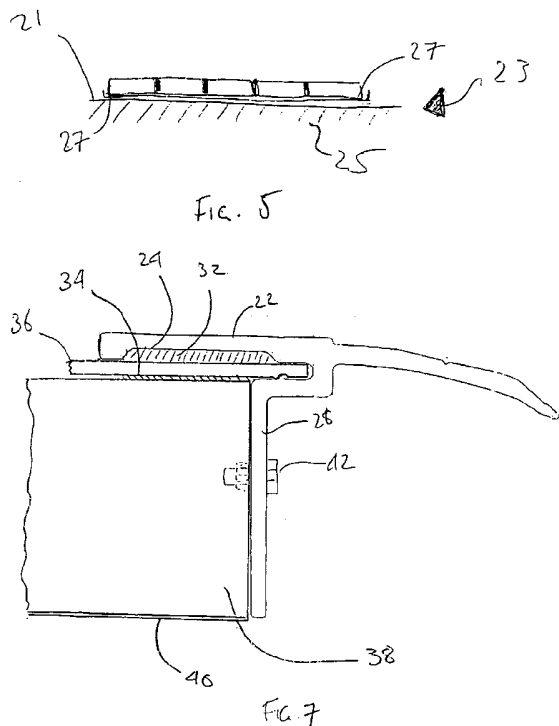
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(56) Documents Cited:
GB 2150088 A **GB 2078627 A**
GB 1488793 A **GB 1030114 A**

(58) Field of Search:
UK CL (Edition X) **B7B, B8P**
INT CL **B62D, B65D**
Other: **WPI, EPODOC**

(54) Abstract Title: **A method of applying a covering to a roof frame of a haulage container and a rail for use in the method**

(57) A method of applying a covering 21, 36 to a roof frame of a goods container, comprising the steps of: positioning the covering across the roof frame and across one or more roof sticks 38 which extend across the roof frame to, at least in part, cover the roof frame; supporting the covering at least between roof sticks; and attaching the covering to the roof frame, such that the covering sections which extend across the one or more roof sticks retain their shape. The covering may be supported upon a flat or curved surface 25, or a plurality of support surfaces (37, figure 8) may fit within the spaces defined by the frame. A shaped rail 22 may be attached to the edges of the cover and roof sticks by means of adhesive 32, 34 and mechanical fixtures 42. By supporting the covering when it is being attached it is prevented from sagging between the roof sticks.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 2007.

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FIG. 1

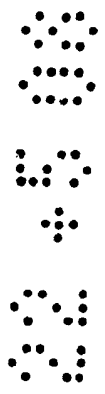
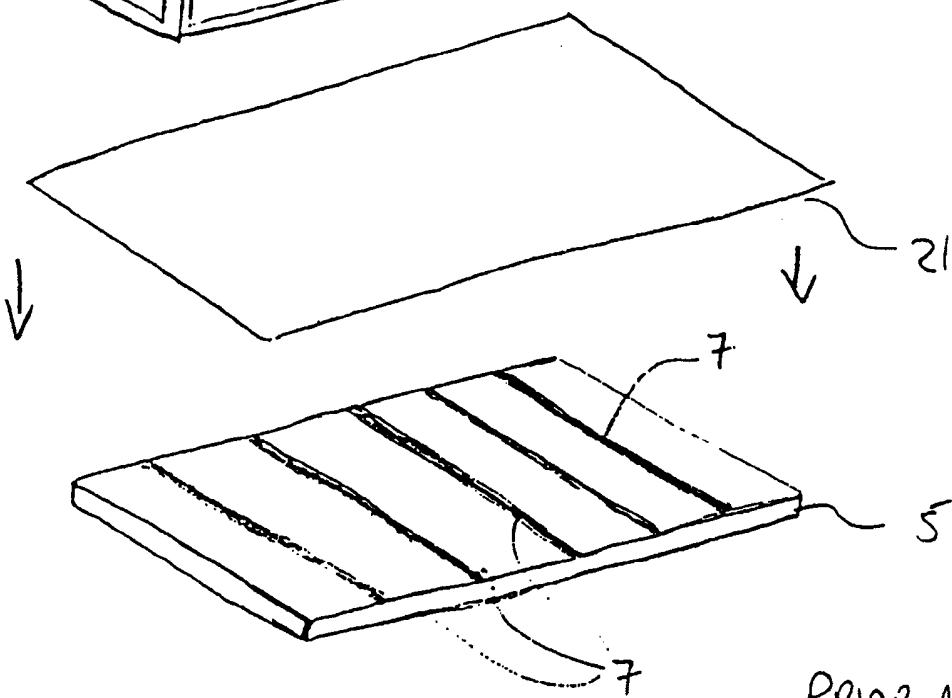
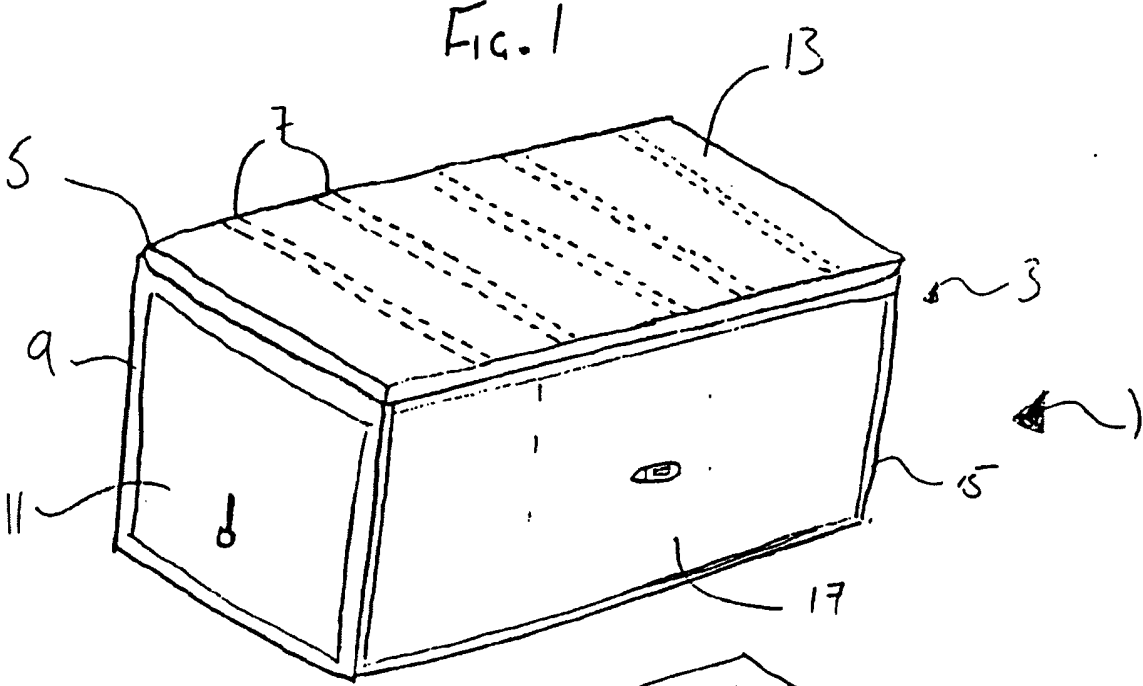


FIG. 2

PRIOR ART

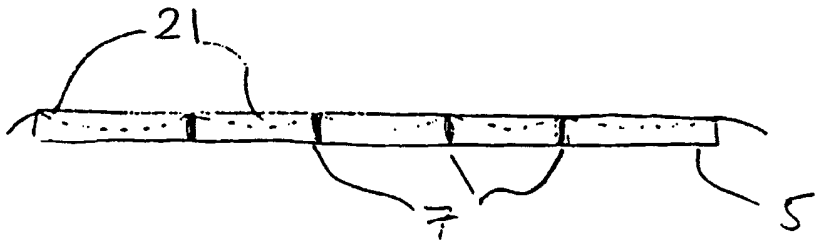


FIG. 3

PRIOR ART

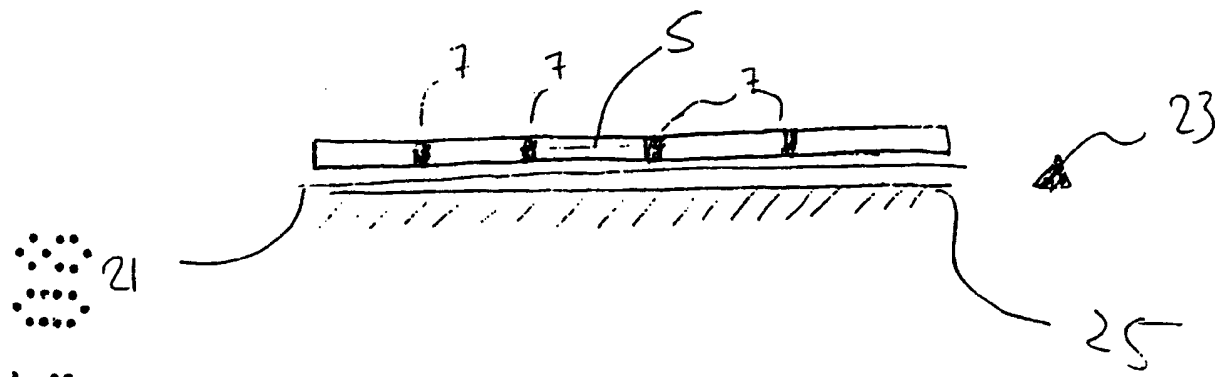


FIG. 4

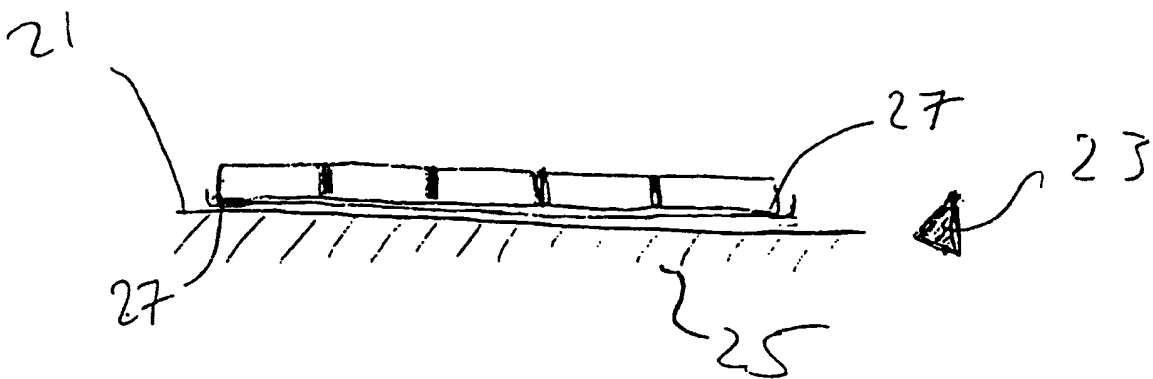


FIG. 5

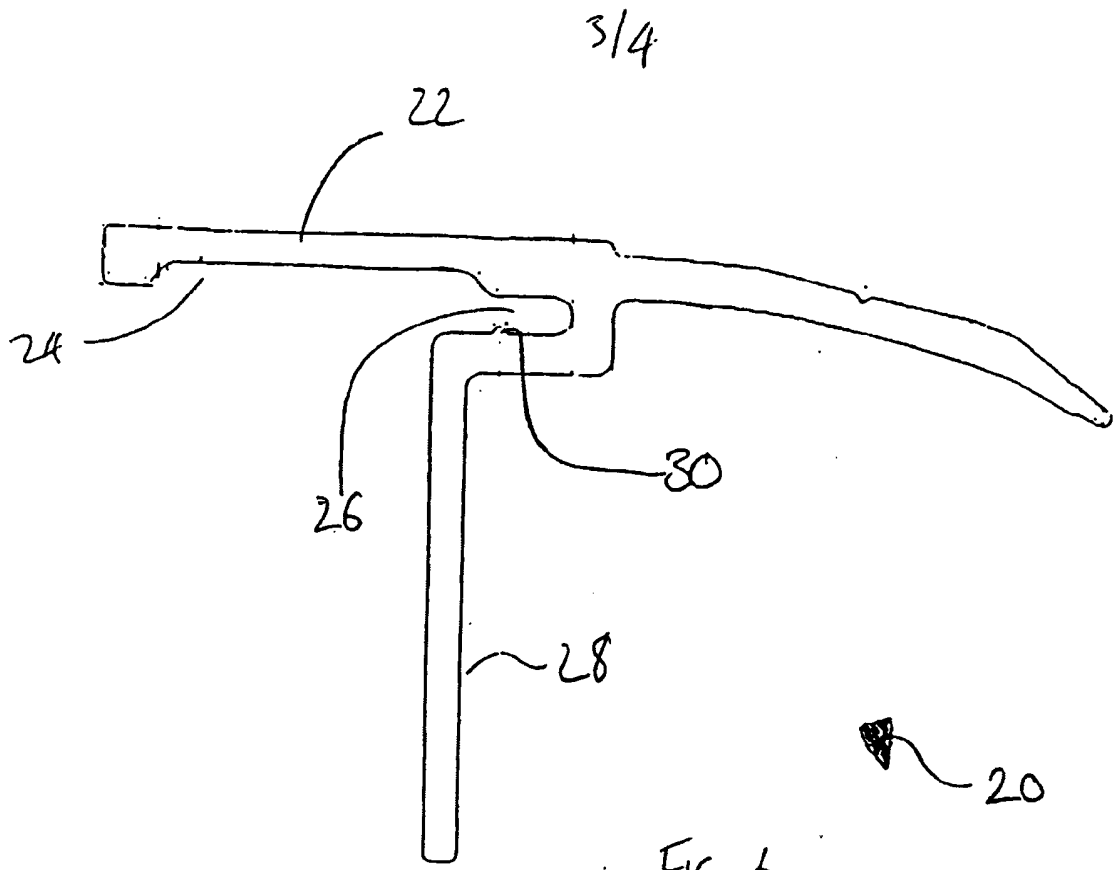


FIG. 6

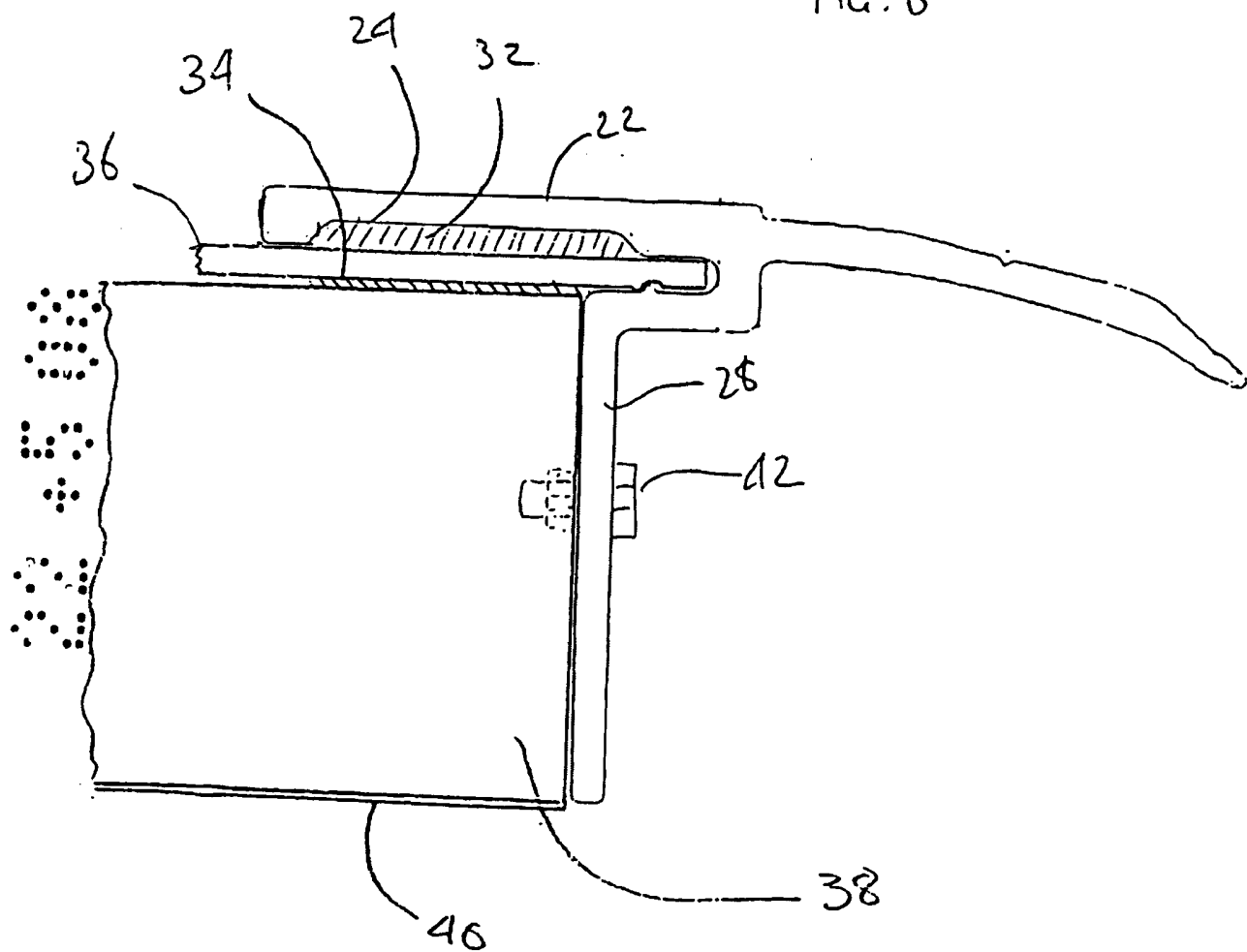


FIG. 7

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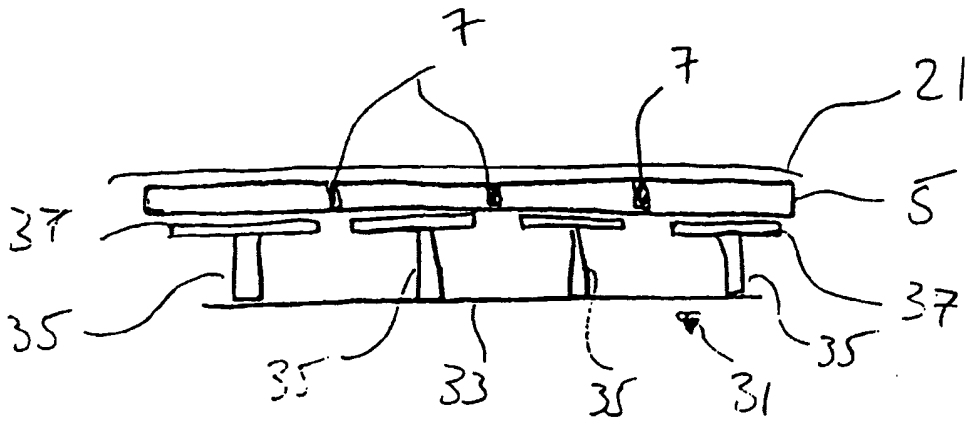
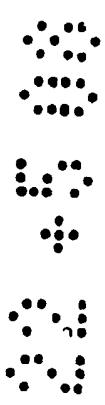


Fig-8



1 Improvements in and relating to Commercial Vehicle or
2 Haulage Container Roofing

3

4 The present invention relates to improvements in and
5 relating to commercial vehicle or haulage container
6 roofing and in particular to improvements in the
7 manufacture of roofing for a wagon, trailer or similar
8 haulage container.

9

10 Modern haulage containers such as that shown in figure 1
11 and denoted by reference numeral 1 comprise a frame 3
12 which, in turn, consists of a roof frame 5, cross beams
13 (also known as roof sticks) 7 which extend across the
14 roof frame 5, a door frame 9, a door 11 and a side frame
15 15. The door 11 and side frame will be provided with
16 suitable covers which can be easily opened or drawn
17 closed.

18

19 The roof frame 5 and the roof sticks 7 form a support
20 structure for a roof skin which may be made of a thin
21 pliable sheet of, for example, aluminium or glass fibre
22 which is placed across the roof frame 5 and roof sticks
23 7.

1

2 Figure 2 shows, the manner in which roof material 21 is
3 applied to the frame 5 and roof sticks 7. Typically the
4 roof material 21 is lowered onto the frame and cross
5 beams and fixed in a cant rail along the edge of the
6 frame by means of one or more mechanical fixings, such as
7 clips, rivets, staples, screws or the like. In addition,
8 the roof sticks will typically be curved in order to give
9 a camber to the completed roof. It is desirable to
10 temporarily flatten the roof sticks 7 during assembly by,
11 for example attaching them to weights, such that when the
12 roof sticks are released, the skin tightens across the
13 roof sticks.

14

15 The drawing of figure 3 is a cross-section of the roof
16 material 21 in position on top of the frame 5 and cross
17 beams 7. The thin and pliable nature of the roof
18 material 21 means that when it is placed upon the roof
19 frame 5 and cross beams 7, the unsupported parts of the
20 roof material 21 will tend to sag between the cross beams
21 7. It is an object of the present invention to provide
22 an improved method of manufacturing a roof for a
23 commercial vehicle, wagon, container or the like.

24

25 In accordance with the first aspect of the invention
26 there is provided a method for applying a covering to a
27 roof frame of a goods container, the method comprising
28 the steps of:
29 positioning the covering across the roof frame and across
30 one or more roof sticks which extend across the roof
31 frame to, at least in part, cover the roof frame;
32 supporting the covering at least between roof sticks; and

1 attaching the covering to the roof frame, such that the
2 covering sections which extend across the one or more
3 roof sticks retain their shape.

4

5 Preferably, the step of attaching the covering to the
6 roof frame comprises:

7 introducing a shaped rail to the frame;

8 applying an adhesive to an adhesive receiving recess in
9 the shaped rail;

10 attaching the covering to the shaped rail by means of the
11 adhesive;

12 positioning a roof stick in the shaped rail and attaching
13 the roof stick to the covering; and

14 fixing the roof stick to the shaped rail.

15

16 Preferably, the step of fixing the roof stick in the
17 shaped rail comprises providing a blanking piece in the
18 end of the roof stick to receive a mechanical fixing.

19

20 Preferably, the mechanical fixing is a screw, rivet or
21 bolt.

22

23 Preferably, the shaped rail has a covering recess adapted
24 to receive the covering.

25

26 Preferably, the covering recess is substantially U-
27 shaped.

28

29 Preferably, the covering recess has an abutment
30 positioned to restrict movement of the covering in the
31 recess.

32

1 Preferably, the step of positioning the covering further
2 comprises inverting the roof frame and laying the
3 covering on a support surface for attachment to the roof
4 frame.

5

6 Preferably, the support surface is flat.

7

8 Alternatively, the support surface is curved.

9 The support surface is shaped to conform to the curvature
10 of the roof sticks.

11

12 Advantageously, the present invention provides a stable
13 support surface for positioning the covering or roof
14 material, such that it remains substantially flat or
15 conforms to a predetermined shape. This allows the use
16 of an adhesive for fixing the covering in place. In
17 prior art systems where the covering is unsupported or
18 placed under tension along its edges, movement will occur
19 in the roof covering that makes it difficult to use an
20 adhesive because of the relative movement between the
21 frame and the covering during the time for which it will
22 take the adhesive to set.

23

24 Alternatively, the step of supporting the covering
25 comprises providing a platform below the frame, the
26 platform being sized to support the covering in the
27 spaces defined by the frame.

28

29 Preferably, the support platform comprises a base upon
30 which are located a number of support surfaces shaped to
31 fit into the spaces defined by the frame to support the
32 covering at a predetermined level in order that the

1 covering will conform to the shape determined by the roof
2 sticks.

3

4 In accordance with a second aspect of the invention there
5 is provided a shaped rail for use in the method of the
6 first aspect of the invention, the shaped rail
7 comprising:

8 a first member adapted to contact a covering, the first
9 member having an adhesive receiving recess for attaching
10 the surface of the covering to the rail;

11 a covering recess operatively positioned to receive an
12 edge of the covering; and

13 fixing means for fixing a roof stick to the shaped rail.

14

15 Preferably, fixing means comprises a plate that extends
16 from the first member and covering recess.

17

18 Preferably, the step of fixing the roof stick in the
19 shaped rail comprises providing a blanking piece in the
20 end of the roof stick to receive a mechanical fixing.

21

22 Preferably, the mechanical fixing is a screw, rivet or
23 bolt.

24

25 Preferably, the shaped rail has a covering recess adapted
26 to receive the covering.

27

28 Preferably, the covering recess is substantially U-
29 shaped.

30

31 Preferably, the covering recess has an abutment
32 positioned to restrict movement of the covering in the
33 recess.

1

2 The present invention will now be described by way of
3 example only with reference to the accompanying drawings
4 in which:

5

6 Figure 1 is a perspective view of a wagon or container
7 having a roof covering as described herein;

8

9 Figure 2 shows a prior art method for attaching a roof
10 covering to a roof frame;

11

12 Figure 3 is a cross-sectional view of a prior art roof
13 frame with a covering attached thereto;

14

15 Figure 4 is a cross-sectional view of a first embodiment
16 of the present invention;

17

18 Figure 5 is a cross-sectional view of the embodiment of
19 the present invention shown in figure 4;

20

21 Figure 6 is a side view of a shaped rail in accordance
22 with the present invention;

23

24 Figure 7 is a side view of the shaped rail of figure 6,
25 roof skin and roof stick; and

26

27 Figure 8 is a side view of a second embodiment of the
28 present invention.

29

30 Figure 4 shows an apparatus 23 which comprises a support
31 surface 25 upon which is placed, a covering such as a
32 thin layer of glass fibre or aluminium and upon which is
33 set a roof frame 5. The support surface 25 may be any

1 suitable flat or curved surface which provides a base
 2 upon which the roof material or cover can be placed prior
 3 to attachment to the frame 5. In this example of the
 4 present invention, the support 25 is placed below an
 5 inverted roof frame 5 and the roof material or cover 21
 6 is placed between them.


7

8 As will be apparent from the drawings of figure 4 and
 9 figure 5, the weight of the frame 5 and the action of the
 10 surface 25 opposing movement of the roof material 21
 11 allows the roof material 21 to be laid out flat over the
 12 surface 25 for easy and stable attachment of the roof
 13 material 21 to the frame 5. This attachment may be by
 14 use of adhesive 27 and/or other fixing means such as,
 15 clips, edge caps, adhesive tape, screws, rivets, staples
 16 or the like.

17

18 Figure 6 shows a second embodiment of the present
 19 invention in which a shaped rail is provided for
 20 attaching the skin or sheet.

21

 22 Figure 6 shows a shaped rail 20 comprising a first member
 23 22 which has a recess 24 into which an adhesive such as
 24 glue or adhesive tape may be positioned in use. The
 25 cover recess 26 is, in this example, operatively arranged
 26 substantially at right angles to the recess 24. An
 27 abutment 30 is provided to assist with retaining the skin
 28 in place within recess 26 and plate 28 extends downwards
 29 from recesses 24 and 26 and provides a surface to which a
 30 mechanical fixing may be applied in use.

31

32 Figure 7 shows the shaped rail 20 of figure 6 with a roof
 33 skin 36 and roof stick 36 attached thereto. In use, the

1 arrangement shown in figure 6 and figure 7 is inverted,
2 such that, the shaped rail 20 is placed on a supporting
3 surface (not shown) designed to fully support the skin in
4 a way that it conforms to the shape of the roof sticks
5 which typically provide a radius or camber to the overall
6 roof shape.

7

8 An adhesive such as glue or an adhesive tape 32 is
9 applied to the recess 24 and the roof skin 36 is
10 positioned within the recess 26 such that an adhesive
11 bond is formed between the first member 22 and the roof
12 skin 36. A second adhesive 34 is then applied to a
13 second surface of the roof skin and the roof stick 38
14 attached to the roof skin by means of the adhesive 34.

15

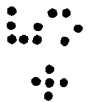
16 In order to properly secure the roof stick to the shaped
17 rail 20, a mechanical fixing, such as a bolt 42 is
18 connected to the end of the roof stick 38. Typically the
19 roof stick will comprise an elongate radiused member
20 which is hollow or open at the bottom and is often top
21 hat shaped. Where this is the case, a blanking end or
22 other component is required in order to allow attachment
23 of the bolt 42 to the roof stick 38. Once the skin 36 is
24 securely attached to the shaped rail 20, the combined
25 structure may be inverted and correctly positioned to
26 form the roof of a vehicle wagon or the like.

27

28 Figure 8 shows a third embodiment of the present
29 invention in which the method of the present invention is
30 enabled by the use of a support structure. In this
31 example, unlike the example of figure 4 to 7, the frame 5
32 and roof material 21 have not been inverted.

33

1 Instead, a support 31 is provided which comprises a base
2 33 upon which is located a number of support columns,
3 each of which have a support surface mounted thereon.
4 The support surface is sized to fit within the spaces
5 provided between the frame 5 and the cross beams 7. In
6 this way, the support surface 37 can extend through the
7 space to a suitable height in order to fully support the
8 roof material 21 whilst it is being attached to the frame
9 5 without any offset in the height of the roofing
10 material which could, in other circumstances where the
11 roof material was unsupported, cause it to sag.
12
13 Improvements and modifications may be incorporated herein
14 without deviating from the scope of the invention.
15
16
17



Claims

1. A method for applying a covering to a roof frame
 5 of a goods container, comprising the steps of:
 positioning the covering across the roof frame and
 across one or more roof sticks which extend across the
 roof frame to, at least in part, cover the roof frame;
 supporting the covering at least between roof sticks;
 10 and

attaching the covering to the roof frame, such that the
 covering sections which extend across the one or more
 roof sticks retain their shape.

15 2. A method according to Claim 1 wherein the step of
 attaching the covering to the roof frame comprises:
 introducing a shaped rail to the frame;

applying an adhesive to an adhesive receiving recess in
 the shaped rail;

20 attaching the covering to the shaped rail by means of
 the adhesive;

positioning a roof stick in the shaped rail and

attaching the roof stick to the covering; and

fixing the roof stick to the shaped rail.

25

3. A method according to Claim 2 wherein the step of
 fixing the roof stick in the shaped rail comprises
 providing a blanking piece in the end of the roof stick
 to receive a mechanical fixing.

30

4. A method according to Claim 3 wherein the mechanical fixing is a screw, rivet or bolt.

5 5. A method according to anyone of Claims 2 to 4 wherein the shaped rail has a covering recess adapted to receive the covering.

6. A method according to Claim 5 wherein the covering recess is substantially U-shaped.

10

7. A method according to Claim 5 or Claim 6 wherein the covering recess has an abutment positioned to restrict movement of the covering in the recess.

15

8. A method according to anyone of the previous claims wherein the step of positioning the covering further comprises inverting the roof frame and laying the covering on a support surface for attachment to the roof frame.

20

9. A method according to Claim 8 wherein the support surface is flat.

25

10. A method according to Claim 8 wherein the support surface is curved.

30

11. A method according to Claim 8 where in the support surface is shaped to conform to the curvature of the roof sticks.

12. A method according to anyone of Claims 1 to 7 wherein the step of supporting the covering comprises providing a platform below the frame, the platform being sized to support the covering in the spaces defined by the frame.

13. A method according to Claim 12 wherein the support platform comprises a base upon which are located a number of support surfaces shaped to fit into the spaces defined by the frame to support the covering at a predetermined level in order that the covering will conform to the shape determined by the roof sticks.

14. A shaped rail for use in a method for applying a covering to a roof frame of a goods container, the shaped rail comprising:
 a first member adapted to contact a covering, the first member having an adhesive receiving recess for attaching the surface of the covering to the rail;
 a covering recess operatively positioned to receive an edge of the covering; and
 fixing means for fixing a roof stick to the shaped rail.

15. A shaped rail according to Claim 14 wherein the fixing means comprises a plate that extends from the first member and covering recess.

16. A shaped rail according to Claim 14 or 15 wherein the fixing means comprises a mechanical fixing.

17. A shaped rail according to Claim 16 wherein the mechanical fixing is a screw, rivet or bolt.

5 18. A shaped rail according to anyone of Claims 14 to 17 wherein the shaped rail has a covering recess adapted to receive the covering.

10 19. A shape rail according to Claim 18 wherein the covering recess is substantially U-shaped.

20. A shaped rail according to Claim 18 or 19 wherein the covering recess has an abutment positioned to restrict movement of the covering in the recess.

15 21. A method for applying a covering to a roof frame of a goods container as generally hereinbefore described with reference to and/or illustrated in Figures 4 to 8 of the accompanying drawings.

20 22. A shaped rail for use in the method for applying a covering to a roof frame of a goods container as generally hereinbefore described with reference to and/or illustrated in Figures 4 to 8 of the accompanying drawings.

25



14

Application No: GB0706478.5

Examiner: Peter Gardiner

Claims searched: 1 to 13, 21

Date of search: 30 July 2008

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1,8-11	GB 2150088 A (WHILLOCK) See the whole document.
X	1,8-11	GB 2078627 A (WHILLOCK) See the whole document.
X	1,8-11	GB 1488793 A (BROOKES) See the whole document.
X	1,8-11	GB 1030114 A (YORK TRAILER CO) See the whole document.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

B7B; B8P

Worldwide search of patent documents classified in the following areas of the IPC

B62D; B65D

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
B65D	0090/02	01/01/2006
B62D	0025/06	01/01/2006
B62D	0027/02	01/01/2006
B62D	0033/04	01/01/2006