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(54) RECONFIGURABLE PALLET

(57) A reconfigurable pallet (10) is disclosed for supporting items placed thereon. The pallet is reconfigurable between an assembled configuration for use and a disassembled configuration for storage and comprises at least two stringers (20) and a plurality of deck members (30) which are arranged to extend between the stringers. The stringers are arranged to support the deck members in spaced relation above a pallet support surface and comprise a plurality of deck receiving regions (24) formed therein for separately receiving at least a portion of deck member. The stringers further comprise a channel (26) which extends along each stringer between the regions. The pallet further comprises at least two locking members (40) which are separately removably insertable within a channel of a stringer and which are arranged to extend over at least a portion of each deck member and under at least a portion of a stringer, to lock the deck members to the respective stringer.

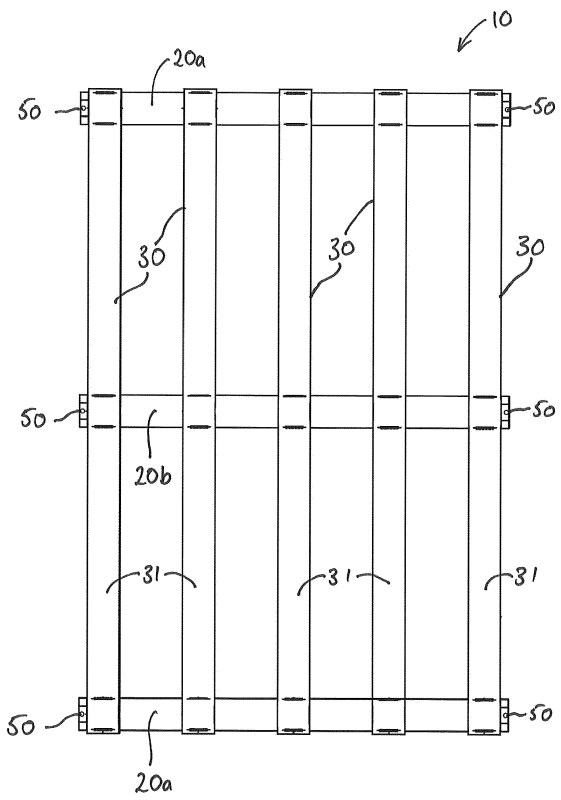

Figure 1

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Description

[0001] The present invention relates to a reconfigurable pallet.

[0002] Pallets are well-known industrial items which are used for supporting items placed thereon above the ground, so that the items can be readily lifted using lifting equipment, such as a fork-lift vehicle, for subsequent transportation and/or storage. The pallets are typically made of wood and comprise a decking which is supported above the ground by a number of runners or stringers. However, it is found that the wooden nature of the pallets often results in the pallet becoming heavy when wet, which has an implication for transportation, particularly air freight. The wooden pallets are known to distort under heavy loads and are easily damaged.

[0003] In view of the above, pallets formed of aluminium and steel have been proposed which are stronger and more durable. Moreover, the metallic pallets do not suffer from swelling or weight gain when wet. However, as with wooden pallets, the decking and stringers of the pallets are generally secured together using fasteners, such as screws and as such, are not easy to assemble and disassemble. Once the pallet has been used to support a load during transportation, the pallet is typically stored for subsequent use. However, this can result in the pallets occupying a significant floor space which is undesirable.

[0004] We have now devised an improved pallet.

[0005] In accordance with the present invention there is provided a reconfigurable pallet for supporting items placed thereon, the pallet being reconfigurable between an assembled configuration for use and a disassembled configuration for storage, the pallet comprising at least two stringers and a plurality of deck members which are arranged to extend between the stringers, the stringers being arranged to support the deck members in spaced relation above a pallet support surface, wherein

[0006] the stringers comprise a plurality of deck receiving regions formed therein for separately receiving at least a portion of deck member, and a channel which extends along each stringer between the regions, the pallet further comprising at least two locking members which are separately removably insertable within a channel of a stringer and which are arranged to extend over at least a portion of each deck member and under at least a portion of a stringer, to lock the deck members to the respective stringer.

[0007] In an embodiment, deck members separately comprise at least two ports formed therein, for separately receiving a locking member.

[0008] In an embodiment, the deck receiving regions comprise notches formed within the stringers. The notches preferably extend across the stringers, substantially transverse to a longitudinal axis of thereof. The notches are shaped and sized to substantially correspond with the cross-sectional shape and size of the deck members, such that when the deck members are positioned therein, an upper surface of the deck members and an upper surface of the stringers extend in substantially the same plane.

[0009] The stringers comprise an opening formed in opposite ends thereof for accessing the channel. The deck receiving regions of each stringer are preferably arranged in communication with the respective channel, such that the locking members are arranged to pass within the deck receiving regions in moving along the channel.

[0010] In an embodiment, the deck members further comprise at least two slots formed therein, for separately receiving a locating member disposed on a stringer, for suitably aligning the decking member with the stringer. The locating members are located within the deck receiving regions such that the locating members are received within the slots, the ports disposed within the decking members become aligned with the channel in the stringer.

[0011] Whilst the invention has been described above, it extends to any inventive combination of features set out above or in the following description. Although illustrative embodiments of the invention are described in detail herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to these precise embodiments.

[0012] Furthermore, it is contemplated that a particular feature described either individually or as part of an embodiment can be combined with other individually described features, or parts of other embodiments, even if the other features and embodiments make no mention of the particular feature. Thus, the invention extends to such specific combinations not already described.

[0013] The invention may be performed in various ways, and, by way of example only, embodiments thereof will now be described, reference being made to the accompanying drawings in which:

Figure 1 is plan view of a pallet according to an embodiment of the present invention;

Figure 2 is a side view of the pallet illustrated in figure 1;

Figure 3 is a front view of the pallet illustrated in figure 1;

Figure 4 is a magnified side view of a deck receiving region labelled A in figure 2;

Figure 5 is a magnified view of the region labelled B in figure 3, illustrateding the locking member;

Figure 6a is a plan view of a stringer;

Figure 6b is a side view of the stringer illustrated in figure 6a;

Figure 6c is a view from the underside of the stringer

illustrated in figure 6a;

Figure 7a is a plan view of a decking member;

Figure 7b is a side view of the decking member illustrated in figure 7a;

Figure 7c is a view from the underside of the decking member illustrated in figure 7a;

Figure 8a is a plan view of a locking member; and

Figure 8b is a side view of the locking member illustrated in figure 8a;

[0014] Referring to figures 1 to 3 of the drawings there is illustrated a reconfigurable pallet 10 according to an embodiment of the present invention for supporting items (not shown) placed thereon. The pallet 10 is readily reconfigurable between an assembled configuration for use and a disassemble configuration for storage and may be formed of aluminium, steel or other metal material. In the assembled configuration, the pallet 10 comprises a base portion having three stringers 20 which are arranged to support a plurality of decking members 30 thereon, in spaced relation above a support surface, such as the ground. The illustrated pallet 10 comprises three stringers 20, namely two outer stringers 20a which extend along opposite sides of the pallet and a central stringer 20b which extends between the two outer stringers 20a, however, the skilled reader will recognise that the pallet 10 may comprise additional stringers 20 between the two outer stringers 20a. The stringers 20 are arranged in a substantially parallel orientation and the decking members 30 are arranged to extend across the stringers 20, substantially transverse thereto.

[0015] Referring to figure 6 of the drawings, the stringers 20 comprise a hollow support beam 21 and three support feet 22 integrally formed with the beam 21 and which in use, are disposed at the underside of the support beam 21. In the illustrated embodiment, a support foot 22 is located at each end of the beam 21 and at a central region thereof to define two pathways 23 through which the forks of a forklift truck (not shown) may extend to pass under the pallet 10 for lifting the pallet for example. The beam 21 comprises a plurality of deck receiving regions 24 disposed on an upper surface thereof which are arranged to receive a portion of a decking member 30. The regions 24 comprise notches which are spaced equidistantly along the beam 21 and which extend into the beam 21 from an upper surface 25 thereof. The notches 24 are sized and shaped to substantially correspond with the cross-sectional shape of the decking members 30, such that when the decking members 30 are located therein, an upper surface 25 of the beam 21 and an upper surface 31 of the decking members 30 extend in substantially the same plane. The stringers 20 further comprise a channel 26 which is arranged to extend along the beam 21, within the beam 21, through each of the notches 24 and can be accessed via an opening 27 disposed in end walls 28 of the stringer.

[0016] Referring to figure 7 of the drawings, the decking members 30 comprise substantially hollow, linear members having a substantially rectangular cross-section and comprise three ports 32 separately disposed on opposing side walls. The ports 32 are arranged in pairs, with the ports 32 of each pair being disposed directly opposite each other. One pair of ports 32 is disposed at each longitudinal end of each member 30 and one pair of ports 32 is disposed at a central region thereof. The pairs of ports 32 are separately arranged to extend in a collinear relationship with the channel 26 of a stringer 20 when the pallet 10 is arranged in an assembled configuration.

[0017] Referring to figure 6 of the drawings, the deck receiving regions or notches 24 of the stringers 20 separately comprise a first and second protuberance or tongue 29 (only one of which is shown) which extend along the region along opposite sides of the region 24, substantially parallel to a longitudinal axis of the stringer 20. The tongues 29 extend upwardly from an upper surface of a lowermost region of the region 24 and are arranged to locate within elongate slots 33 which extend across the decking members 30, as illustrated in figure 7 of the drawings. The slots 33 are disposed at either side of the ports 24 and serve to align the decking members 30 with the stringers 20 during assembly.

[0018] Referring to figure 8 of the drawings, the pallet 10 further comprises a plurality of locking members 40 for locking the docking members 30 to the stringers 20. Each locking member 40 comprises a hollow, linear member having a length which substantially matches that of the stringers 20, and a cross-sectional shape and size which is matched to the cross-sectional shape and size of the channel 26 of each stringer 20.

[0019] When assembling the pallet 10, the stringers 20 are placed in spaced apart, side-by-side relation on a flat surface, and the decking members are placed across the stringers, such that each decking member 30 becomes located within a notch 24 of each stringer 20. Referring to figures 4 and 5 of the drawings, upon locating the decking member 30 within the notches 24, the slots 33 disposed on the decking members 30 are arranged to separately receive a tongue 29, which facilitates the correct alignment of each decking member 30 with the stringer 20. Once all of the decking members 30 have been located within the respective notches 24, the decking members 30 extend in a substantially parallel configuration, owing to the equidistant spacing of the notches 24 along the stringers 20. A locking member 40 is then inserted within the channel 24 of each stringer, through an opening 27 in the end wall 28 thereof, such that the members 40 extend along the channel 26, through the co-aligned ports 32 of each decking member 30. In this respect, the locking members 40 are arranged to pass over a portion of the decking members 30 and under a portion of a

stringer 20, namely the upper surface 25, and thus prevent the decking members 30 from lifting from the stringers 20.

[0020] The beam support 21 of each stringer 20 further comprises an aperture disposed in an upper surface thereof, at each longitudinal end. The locking members 40 similarly comprise an aperture 41 disposed in an upper surface 42 thereof, at each longitudinal end. Once the locking members 40 have been fully inserted within a respective channel 26 a rivet or fastener 50 is then passed through aligned apertures 41, 25a in the locking members 40 and the stringers 20 to prevent the locking members 40 from sliding out from the respective channel 26.

[0021] In order to disassemble the pallet 10, the rivet or fastener 50 is removed and the locking members 40 are extracted from each channel 26. The decking members 30 can then be lifted from the stringers 20 and stored in a compact form with the stringers 20 and locking members 40.

Claims

1. A reconfigurable pallet for supporting items placed thereon, the pallet being reconfigurable between an assembled configuration for use and a disassembled configuration for storage, the pallet comprising at least two stringers and a plurality of deck members which are arranged to extend between the stringers, the stringers being arranged to support the deck members in spaced relation above a pallet support surface, wherein
   the stringers comprise a plurality of deck receiving regions formed therein for separately receiving at least a portion of deck member, and a channel which extends along each stringer between the regions, the pallet further comprising at least two locking members which are separately removably insertable within a channel of a stringer and which are arranged to extend over at least a portion of each deck member and under at least a portion of a stringer, to lock the deck members to the respective stringer.

2. A reconfigurable pallet according to claim 1, wherein the deck members separately comprise at least two ports formed therein, for separately receiving a locking member.

3. A reconfigurable pallet according to claim 1 or 2, wherein the deck receiving regions comprise notches formed within the stringers.

4. A reconfigurable pallet according to claim 3, wherein the notches extend across the stringers, substantially transverse to a longitudinal axis of thereof.

5. A reconfigurable pallet according to claim 3 or 4, wherein the notches are shaped and sized to substantially correspond with the cross-sectional shape and size of the deck members, such that when the deck members are positioned therein, an upper surface of the deck members and an upper surface of the stringers extend in substantially the same plane.

6. A reconfigurable pallet according to any preceding claim wherein the stringers comprise an opening formed in opposite ends thereof for accessing the channel.

7. A reconfigurable pallet according to any preceding claim, wherein the deck receiving regions of each stringer are arranged in communication with the respective channel, such that the locking members are arranged to pass within the deck receiving regions in moving along the channel.

8. A reconfigurable pallet according to any preceding claim, wherein the deck members further comprise at least two slots formed therein, for separately receiving a locating member disposed on a stringer, for suitably aligning the decking member with the stringer.

9. A reconfigurable pallet according to claim 8, wherein the locating members are located within the deck receiving regions.

10. A reconfigurable pallet substantially as herein described and with reference to the accompanying drawings.

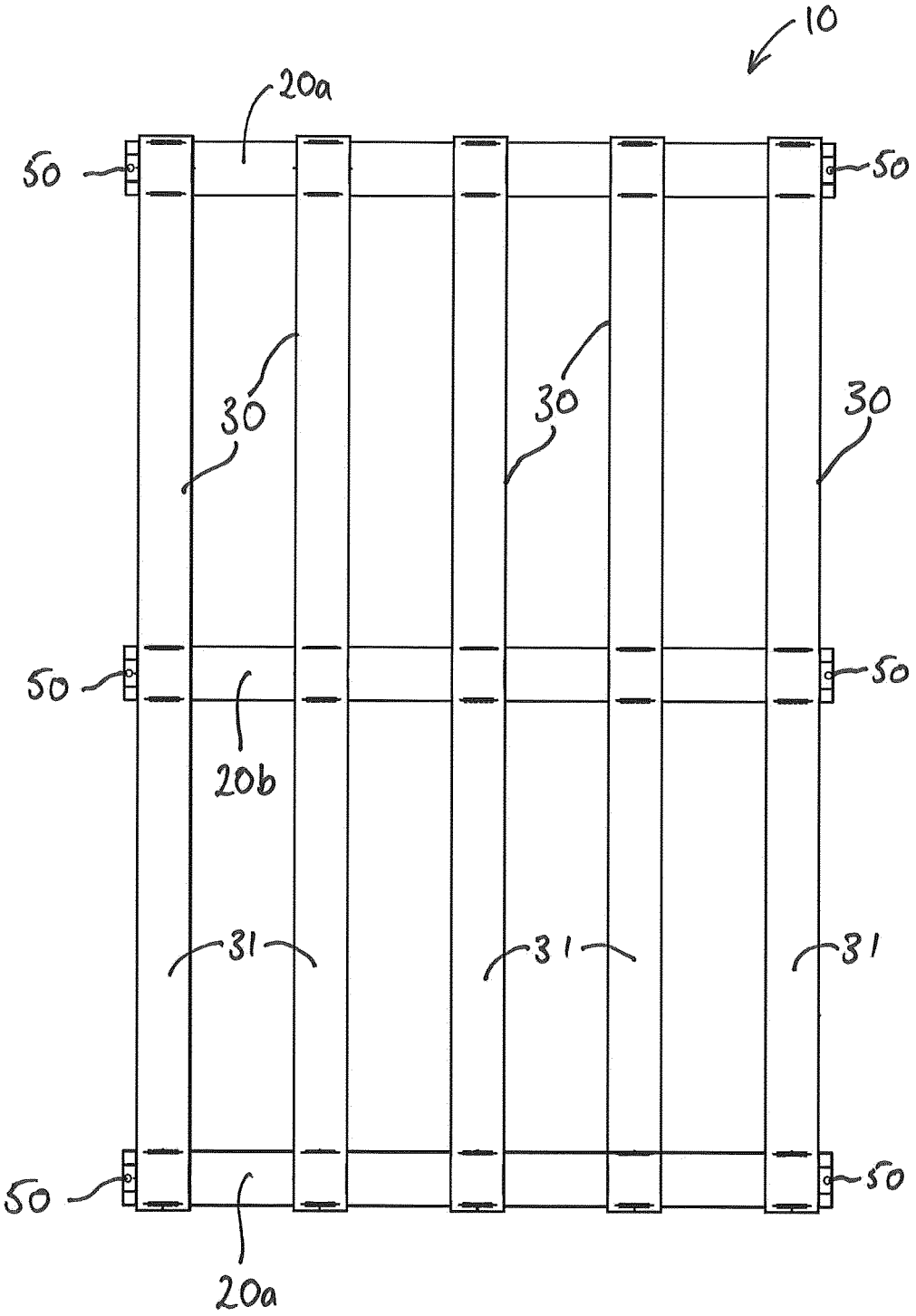

Figure 1

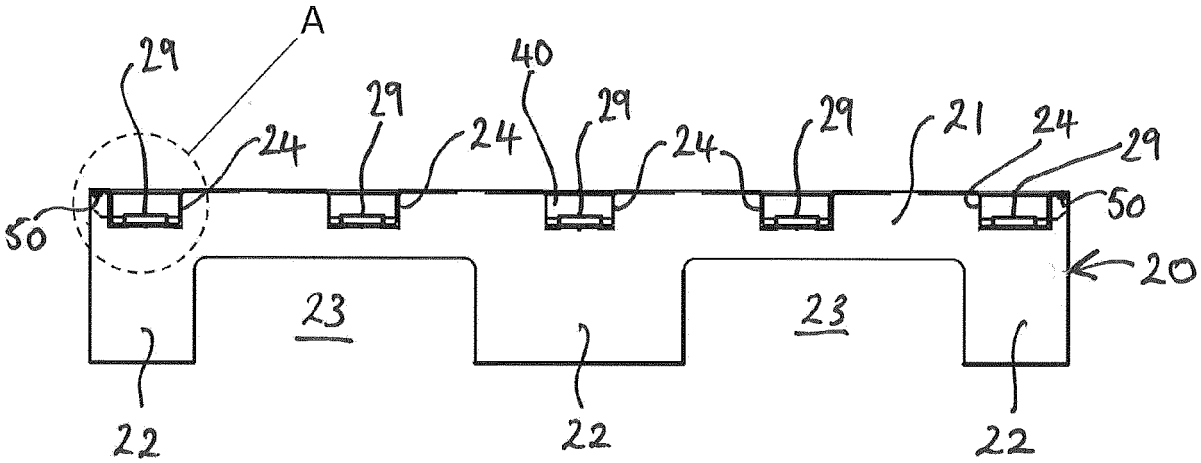

Figure 2

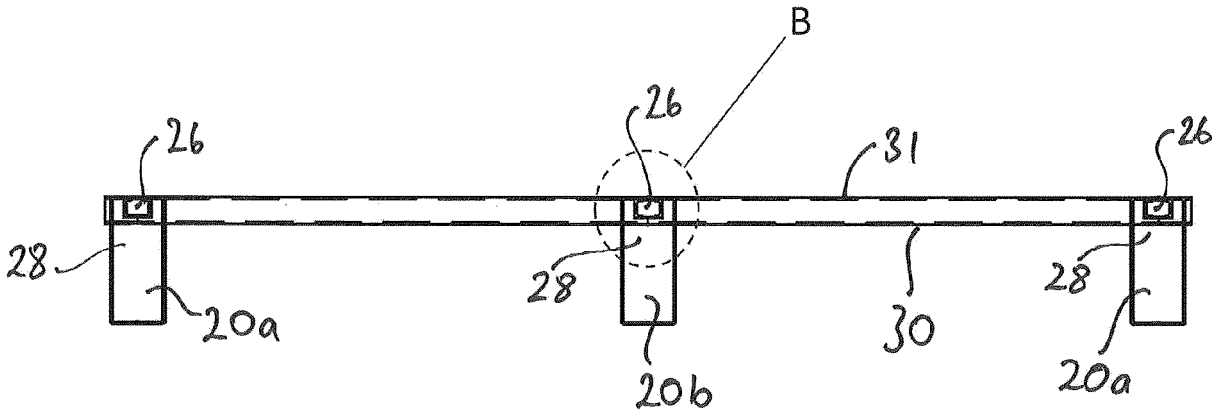

Figure 3

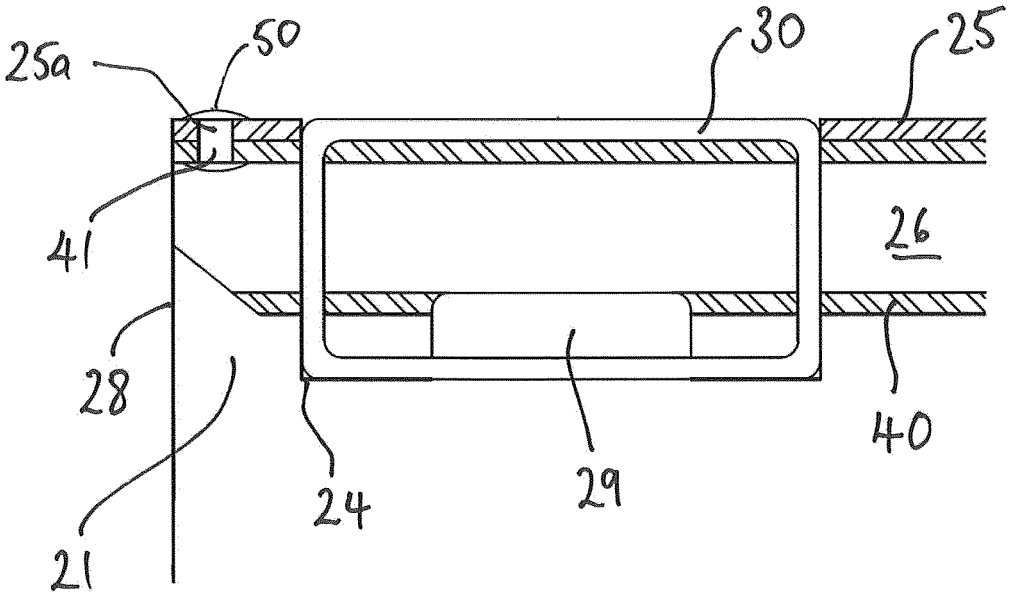

Figure 4

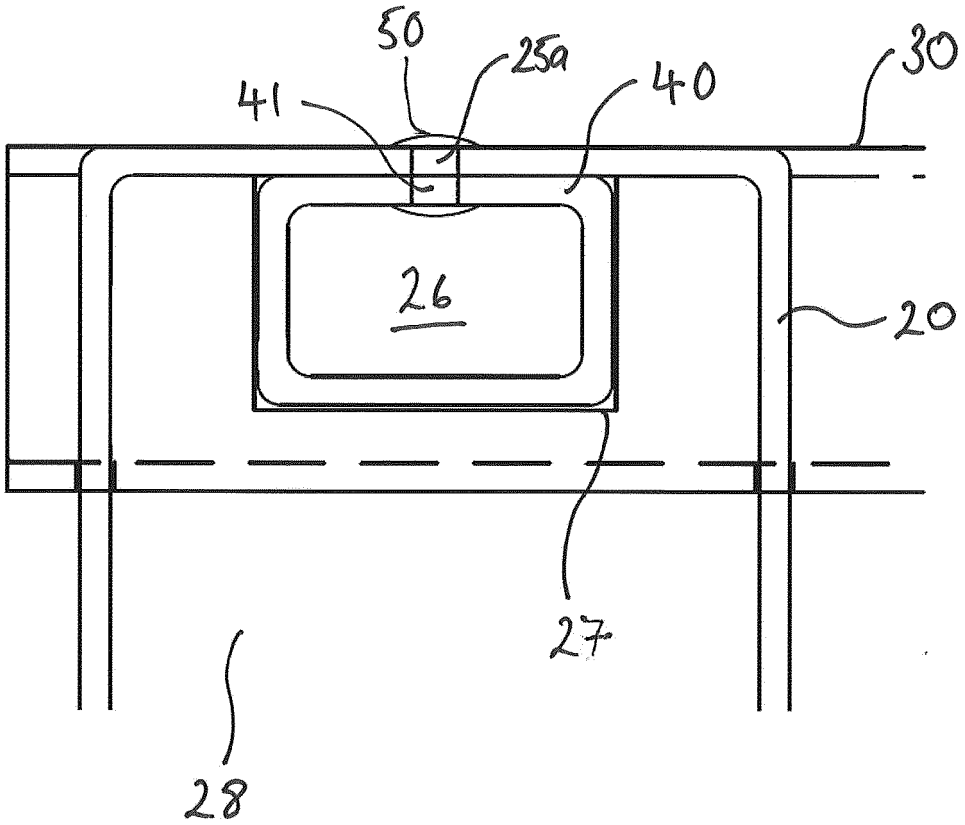

Figure 5

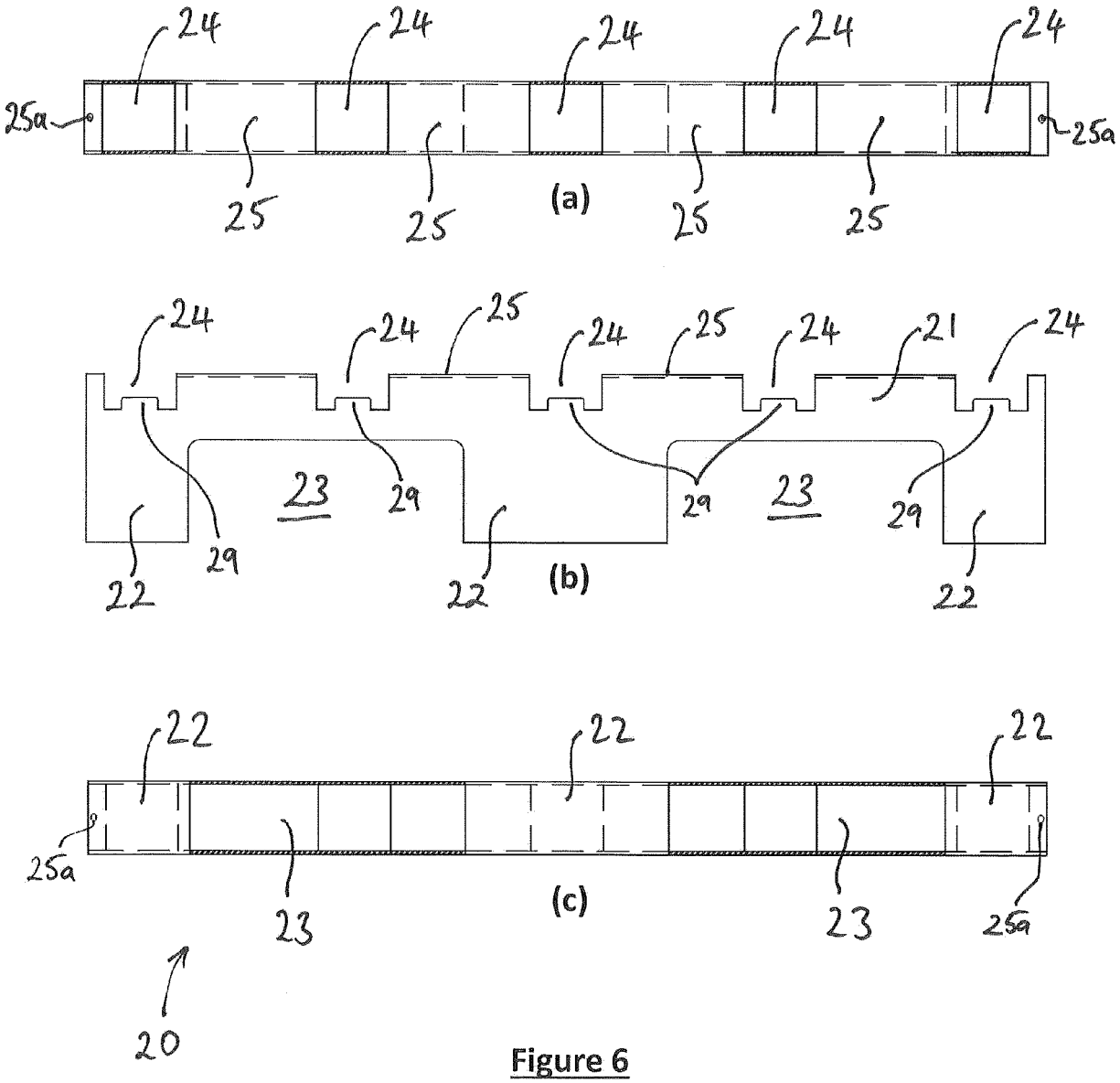
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Figure 6

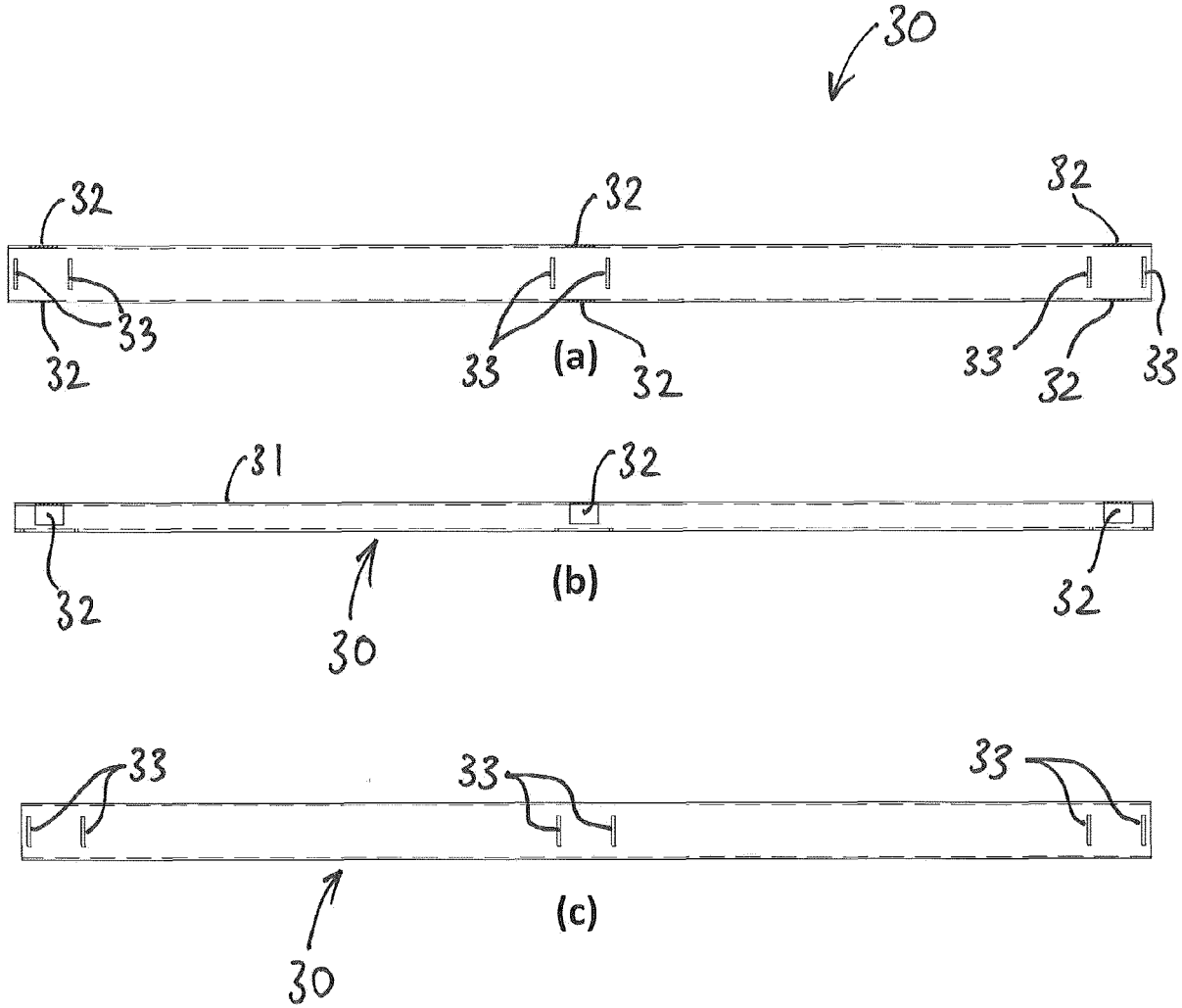

Figure 7

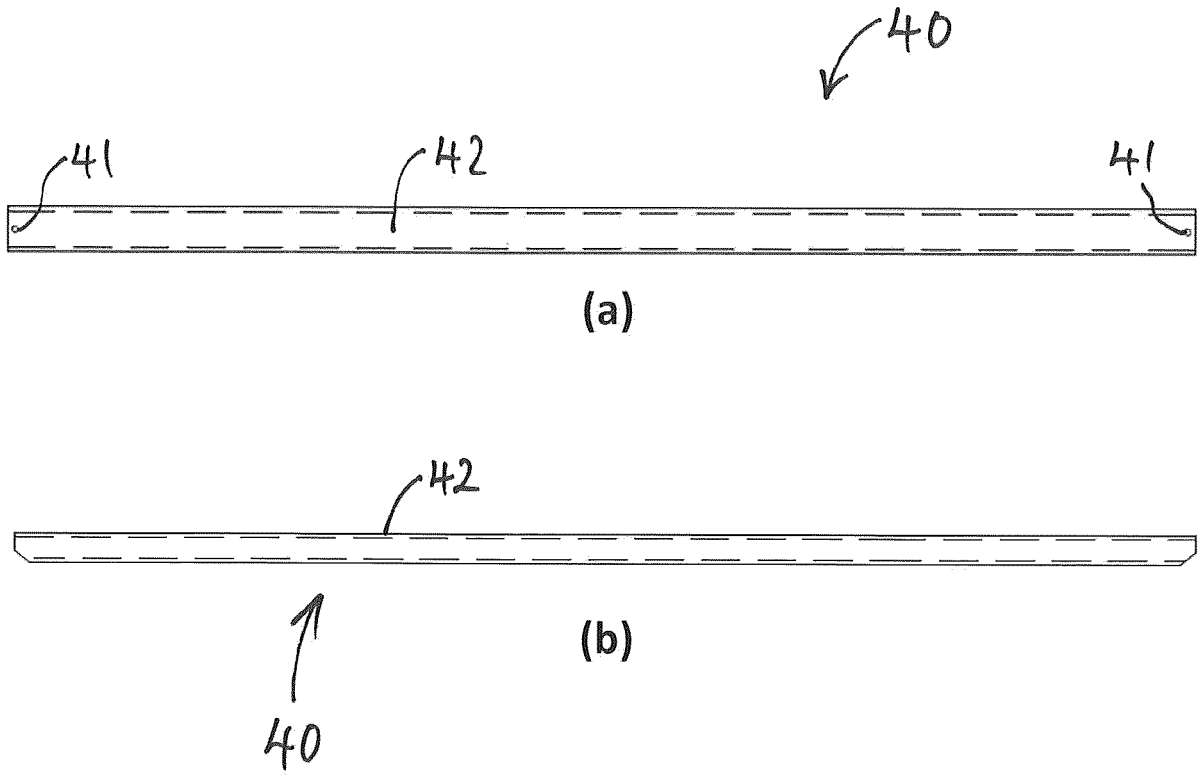

Figure 8

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EUROPEAN SEARCH REPORT

Application Number
EP 16 16 6187

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	US 2005/121658 A1 (SMITH DAVID [GB]) 9 June 2005 (2005-06-09) * paragraphs [0019], [0027] - [0032] * * figures 1,2 *	1-7,10	
X	JP H10 7143 A (MINAMI KK) 13 January 1998 (1998-01-13) * abstract; figures 1-15 *	1-7,10	
X	US 4 869 179 A (SAMMONS LARRY P [US] ET AL) 26 September 1989 (1989-09-26) * column 3, line 67 - column 4, line 44; figures 1-9 *	1-7,10	TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 August 2016	Fitterer, Johann

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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