

CONTAINER FLOOR**BACKGROUND OF THE INVENTION**

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Typically in the shipping of large products, transportation will be
5 by means of a large shipping container, (hereinafter "container"), which
both facilitates the transportation of the product to the dock on a lorry
but also the storage of the container on the ship and the subsequent
off-loading at the ship's destination for transport to the final customer.

10 Typically such containers are of an internationally, (ISO), agreed
size which may include containers which are 6.1m (20 foot) or 12.2m
(40 foot) long.

To speed up movement of product into and from a container
15 various proposals have been put forward including a specially designed
floor which can receive liftable and rollable "skates". These can
facilitate the product being raised from the floor and transported out to
be received onto a waiting conveyor.

20 Such proposals have suffered from various disadvantages, a
major one being that many ports do not have facilities for dealing with
such specialised containers so that having reached their destination the
containers are not able to be utilised for the return journey and are
returned empty to their original departure point.

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OBJECTS OF THE INVENTION

It is thus an object of at least one embodiment of the invention
to provide a container floor and/or a method of modifying a container
30 which overcomes or at least obviates the above disadvantages.

Further objects of this invention will become apparent from the following description.

SUMMARY OF THE INVENTION

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According to one aspect of the present invention, there is provided a removable floor for a container, said floor being adapted to be positionable within a container so as to lie over an existing container floor but to be removable therefrom and to further include a plurality of
10 spaced apart channels extending along at least a substantial portion of the length of the floor, each channel being adapted to receive in use a product lifting and transporting means, which when operated, is able to raise the product for movement above and along the removable floor.

15 According to a further aspect of the present invention there is provided a method of modifying a container including the steps of:

- (i) providing a removable floor;
- (ii) adapting said removable floor so as to be inserted within
20 a container so as to be positionable within said container to lie over the normal floor of the container; and
- (iii) providing said removable floor with a plurality of spaced apart channels extending along at least a substantial
25 portion of its length, each channel being adapted to receive a product lifting and transporting means, which when operated, is able to raise the product for movement above and along the removable floor.

According to a further aspect of the present invention a
30 removable floor, and/or a method of modifying, a container, is

substantially as herein described with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

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FIGURES 1(a) & (b): show respectively, and diagrammatically, plan and end views of a removable container floor according to one possible embodiment of the invention;

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FIGURE 2: shows a plan view of the removable floor of Figure 1 with product mounted thereon;

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FIGURE 3: shows diagrammatically the removable floor on Figures 1 and 2 in association with a conveyor; and

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FIGURE 4: shows very diagrammatically a locking means for interconnecting a pair of removable floors.

BRIEF DESCRIPTION OF PREFERRED EMBODIMENTS

Referring firstly to Figures 1 and 2 a floor referenced generally
25 by arrow 1 is adapted to fit within a container and for this purpose may be of any required length and/or width. In one example the floor 1 may therefore be of the order of 6.1m (20 foot) long so as to fit within a standard 6.1m (20 foot) container.

The floor 1 may be of any suitable material including a metal, such as aluminium or steel, or rigid plastics. Additionally the floor 1 may be in any number of parts secured or securable together although, as shown for simplicity, the floor 1 is illustrated as being an integral unit.

At one end the floor 1 is shown with tapered sides 2 which may facilitate the entry of the floor 1 into a container. Locking or latching means 3, described in greater detail later, are shown extending outwardly from that end of the floor 1.

Suitably at or towards an opposite end of the floor 1 further locking means 4 are provided. The locking means 4 may be of any suitable type but typically will be a bolt or latch, which may be suitably biased by a spring or the like, and which may engage within or abut against a typical corrugation provided in the side wall or door frame of a typical container. With such engagement the longitudinal movement of the floor 1 within the container may be avoided or minimised.

The floor 1 at its left hand side in Figure 1(a) and 2, and referenced generally by arrow 5, is shown provided with apertures 6 suitable to receive the forks of a fork lift truck for the purpose of moving the floor 1 into and from the container.

Additionally, the floor 1 is shown provided with spaced apart elongate channels 7 extending for at least a substantial part of its length. Normally the channels 7 would be parallel and extend the full length of the floor 1 so that two or more floors 1 can be used together. These channels 7 may typically be of a known type which are each capable of receiving an elongate "skate" which typically with rollers

facilitates the movement into and out of the container across the floor 1 of a product, such as the large paper rolls 9 shown in Figure 2 by way of example only. The skates may each include a pair of elongate channels within which is located an inflatable bladder which when 5 inflated will lift up the upper channel and thereby raise the product 9 from the floor 1 as the skates are controlled to move on their rollers within the channels 7. This avoids the bottom of the product 9 being damaged. To facilitate the insertion of the skates into the channel 7 the left hand side of the floor 1 is shown with electronic reflectors or 10 the like 8 which can automatically place the floor 1 in the correct position relative to the dock with the skates. In Figure 3 the skates 10 are shown having been withdrawn into the corresponding channels 11 of a conveyor system 12 prior to insertion into the channel 7 for transporting the product 9 onto the moveable conveyors 13.

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For an extra long container such as a 24.4m (40 foot) length container a pair of removable floors 1, 1', see Figure 4, may be utilised. For this purpose the locking means 3 (see also Figure 1) provided at an edge of the removable floor 1 can engage with an adjacent edge of the 20 removable floor 1' which has previously been inserted into the extra long container, thus locking the two removable floors 1, 1' together within the container.

When the removable floors 1, 1' are to be removed from the 25 container, a fork lift truck engaged with the floor 1 nearer the container door will be able to pull back both the removable floors 1, 1' until the edge of the removable floor 1 is able to be dropped down to release the locking means 3 from behind the flange or the like 14.

It is thus seen that the removable floors 1 have no, or relatively no, movable parts, and so are therefore able to be of low maintenance. Also the removable floors 1 enable standard containers to be utilised in a way they could not otherwise be used in an enhancement of their
5 ability to transport product into and from them. Furthermore it is no longer necessary to have containers with permanently fitted floors returning empty from facilities where there is no ability to utilise those permanently fitted floors. Instead a single container can be returned to the originating port with a plurality, possibly 25, of the removable
10 floors 1 contained within it ready for further use.

Where in the foregoing description, reference has been made to specific components or integers of the invention having known equivalents then such equivalents are herein incorporated as if
15 individually set forth.

Although this invention has been described by way of example and with reference to possible embodiments thereof, it is to be understood that modifications or improvements may be made thereto
20 without departing from the scope of the invention, as defined in the appended claims.

CLAIMS:

1. A removable floor for a container, said floor being adapted to be positionable within a container so as to lie over an existing container floor, but to be removable therefrom and to further
5 include a plurality of spaced apart channels extending along at least a substantial portion of the length of the floor, each channel being adapted to receive in use a product lifting and transporting means, which when operated, is able to raise the product for movement above and along the removable floor.
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2. A removable floor as claimed in Claim 1, wherein the channels extend the full length of the floor.
3. A removable floor, as claimed in Claim 1 or Claim 2, wherein at
15 least one end of the removable floor includes tapered sides to facilitate the entry of the removable floor into a container.
4. A removable floor, as claimed in any one of Claims 1 to 3, including locking means provided at least at one end of said
20 removable floor and adapted to be engagable with a second removable floor in combining the removable floors together for use in an extra long container.
5. A removable floor, as claimed in Claim 4, wherein further
25 locking means are provided, at least at one end of the removable floor, and adapted to engage within, or abut, in use a side wall or door frame of the container.
6. A removable floor, as claimed in any one of the preceding
30 claims, in which at least one end of the removable floor includes

positioning means adapted to correctly align the channels in the removable floor with respective channels provided for a conveyor system used for transporting the product into and from the removable floor.

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7. A removable floor, as claimed in any one of the preceding claims, wherein at least one end thereof includes a plurality of apertures adapted to receive means for moving the removable floor into and from the container.

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8. A method of modifying a container, including the steps of:

- (i) providing a removable floor;
- (ii) adapting said removable floor so as to be inserted within a container so as to be positionable within said container to lie over the normal floor of the container; and
- (iii) providing said removable floor with a plurality of spaced apart channels extending along at least a substantial portion of its length, each channel being adapted to receive a product lifting and transporting means, which when operated, is able to raise the product for movement above and along the removable floor.

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9. A removable floor for a container, substantially as herein described with reference to the accompanying drawings.

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10. A method of modifying a container, substantially as herein described with reference to the accompanying drawings.