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(54) Container system.

(57) A container (10) has dimensions which enable it to be lifted and transported lengthwise by a conventional skip truck (34), while also allowing it to be accommodated crosswise with other containers (10) within a standard ISO container. The container (10) has both means for handling by normal container equipment, such as fork lift slots (26), and means such as lugs (30) for handling by skip truck.

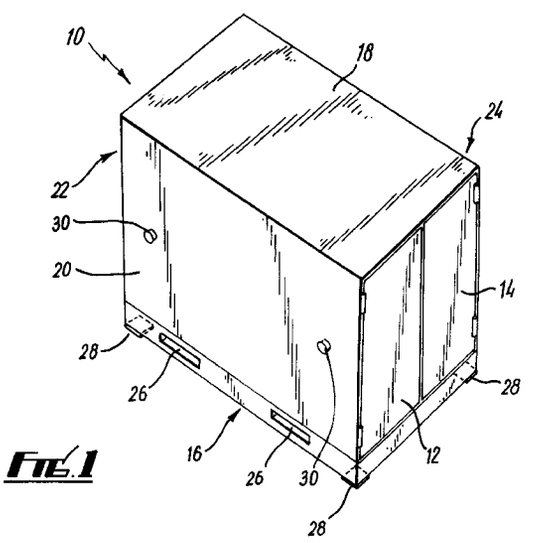


FIG.1

EP 0 596 755 A2

This invention relates to cargo containers and to systems utilising such containers.

The use of box-shaped containers for handling cargo has become extremely widespread. Most containers are to ISO standards, with a cross-section of approximately 2400mm width by 2250 - 2750mm height, and in lengths of 20, 30 or 40 feet.

There are problems in the use of ISO containers by shippers of relatively small quantities of goods. Even a 20 foot container has a considerable volume and it may be uneconomic to ship only in quantities which will fill such a volume. This problem especially affects producers of high value, low volume goods. Also, ISO containers are too large to be placed inside small industrial premises and, where container movements are only occasional, it is necessary either to invest in under-utilised container handling equipment or to rely on contractors attending on site with a truck-mounted crane for handling the container or a standard truck plus a separate crane.

Because of these factors, many shippers of small loads do not ship in full containers but rely on consolidation services. This, however, means multiple handling of goods and reduced security, with resulting risk of increased losses from damage and pilfering.

The present invention addresses these problems by providing a cargo container of relatively small size for use in a system for handling system containers of relatively large size, the container being of rectangular box shape having a base and four side walls, characterised in that the length of the container approximates to the width of the system container, and the width of the container is chosen such that a whole number of containers when placed side by side have an overall dimension approximating to the length of one of said system containers.

From another aspect, the invention provides a cargo handling system comprising system containers and subsystem containers;each system container having a standard width W1, a standard maximum height H1, and a length which is a multiple of a standard dimension L1, and each being provided with means for engagement by lifting apparatus and locking means for locking engagement with cooperating means secured to system vehicles; each subsystem container having a standard width W2 and length L2 and a standard maximum height H2; wherein L2 approximates W1, nW2 approximates mL1 (where n and m are whole numbers, preferably 2, 3 or 4), and H2 is less than H1; whereby the subsystem containers can be fitted crosswise within the system containers for handling and transportation within the system.

In preferred forms of the invention, the subsystem containers are dimensioned to fit in groups of three, four or six within ISO flatbed containers, and also to be handled and transported by conventional skip trucks.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a schematic perspective view of a cargo container forming one embodiment of the invention;

Fig. 2 is a side view illustrating the container of Fig. 1 being loaded on a conventional skip truck;

Fig. 3 is a schematic perspective view of the container of Fig. 1 positioned on a standard flat-bed container;

Fig. 4 is a side view showing the flat-bed container of Fig. 3 carrying four containers.

Referring to Fig. 1, a container 10 embodying the invention is a rectangular-section box having overall dimensions of:

length	2350 - 2480 mm
width	1900 - 2300 mm
height	2250 - 2750 mm

The container 10 has hinged doors 12, 14 at one end and is otherwise enclosed by a floor 16, roof 18, and fixed walls 20, 22, 24. These items are constructed in a conventional manner, for example from steel or aluminium, in a similar manner to ISO containers. The floor 16 is suitably provided with apertures 26 for receiving the forks of a standard fork lift truck, and with locking devices of the "Twistlock" type at its corners, as indicated at 28.

Each of the side walls 20, 24 of the container is provided with a pair of lugs 30. As seen in Fig. 2, the lugs 30 are positioned at a height and spacing which enables them to be engaged by the lifting chains 32 of a conventional rubbish skip truck 34. The container 10 may thus be handled and transported by skip trucks which are widely available, and are more readily and more cheaply hired than a truck sufficiently large and having a sufficiently powerful crane to handle and transport an ISO container.

Turning to Figs. 3 and 4, the container 10 of the invention can readily be integrated into existing systems for handling and transporting ISO containers. The length of the container 10 is such that it can be fitted across a standard ISO flatbed container 36, and the width of the container 10 is such that four containers 10, as seen in Fig. 4, can be accommodated along the flatbed container 36 where this is a C-type container of 30 foot length. The containers 10 can be secured to a standard flatbed container such as 36 using tie-down straps. Alternatively, the containers 10 could be carried on a modified flatbed container whose bed is provided with posts for engagement with the locking devices 28.

In this way, a group of containers 10 can be handled as a single load and transported by truck, train or ship using existing equipment.

The arrangement shown in Fig. 4 with four containers 10 loaded within a 30 foot flatbed requires the width of each container 10 to be approximately 2200 mm. An alternative would be to use containers 10 having a width of approximately 1900 mm, which would permit three containers 10 to be held within a 20 foot flatbed, and six within a 40 foot flatbed. In either case, the width is suitable for use within the lifting arms of existing skip trucks, and a length for the container 10 within the width of standard flatbeds is suitable for the length dimension of the skip truck load bed.

The positioning of the doors 12, 14 allows access to the containers 10 when in position on the flatbed, if desired.

The structure of the container 10 can be of any suitable form, most conveniently by using components and techniques similar to those conventionally used for constructing ISO containers. The container 10 may be insulated or refrigerated, and in the latter case the refrigeration may be powered by an on-board engine or by solar cells.

Although described particularly with reference to a container in the form of a closed box, the invention is equally applicable to containers conforming to a standard box matrix but in the form of flatbed, tank or curtain-sided containers.

Rather than using an existing, conventional ISO container for mounting a plurality of containers 10, it would be possible to use a purpose built underframe or chassis, provided that this interfits with standard ISO mounting and lifting arrangements.

The invention permits small volume loads to be handled in an economical manner. The containers are sufficiently small to be placed within most industrial premises without the use of special equipment. Skip trucks are readily available at short notice and are much cheaper to hire than trucks and cranes for handling ISO containers. At the same time, the existing network of ISO container transportation can be utilised for the major part of the transport operation.

Claims

1. A cargo container of relatively small size for use in a system for handling system containers of relatively large size, the container being of rectangular box shape having a base and four side walls, characterised in that the length of the container approximates to the width of said system containers, and the width of the container is chosen such that a whole number of containers when placed side by side have an overall dimension approximating to the length of one of said system containers.

2. A container according to claim 1, in which the height of said container is such that, when the container is positioned on the floor of one of said system containers, the top of the container is within the existing height standard for the container system.

3. A container according to claim 1 or claim 2, in which the lengthwise side walls are provided with lifting attachments.

4. A container according to claim 3, in which said lifting attachments comprise, on each side wall, a pair of spaced apart, horizontally aligned lugs suitable for engagement by lifting chains of a skip truck.

5. A container according to any preceding claim, in which the base is provided with means for engagement by a fork lift truck.

6. a container according to any preceding claim, in which the base is provided with locking devices.

7. A container according to any preceding claim, being of closed box form and having one end formed by a pair of hinged doors.

8. A cargo handling system comprising system containers and subsystem containers; each system container having a standard width W1, a standard maximum height H1, and a length which is a multiple of a standard dimension L1, and each being provided with means for engagement by lifting apparatus and locking means for locking engagement with cooperating means secured to system vehicles; each subsystem container having a standard width W2 and length L2 and a standard maximum height H2; wherein L2 approximates W1, nW2 approximates mL1 (n and m being whole numbers, preferably 2, 3 or 4), and H2 is less

than H1; whereby the subsystem containers can be fitted crosswise within the system containers for handling and transportation within the system.

9. The system of claim 8, in which each subsystem container is dimensioned to be transportable on a conventional skip truck.

10. The system of claim 9, in which each subsystem container is provided with both attachment means for engagement by the lifting apparatus of a skip truck and means for engagement by apparatus adapted to handle system containers.

11. The system of any of claims 8 to 10, in which the system containers are dimensioned such that a plurality of subsystem containers may be carried within a standard ISO flatbed container.

12. The system of claim 11, in which the dimensions of the subsystem containers are:

length	2350 - 2480 mm
width	1900 - 2300 mm
height	2250 - 2750 mm.

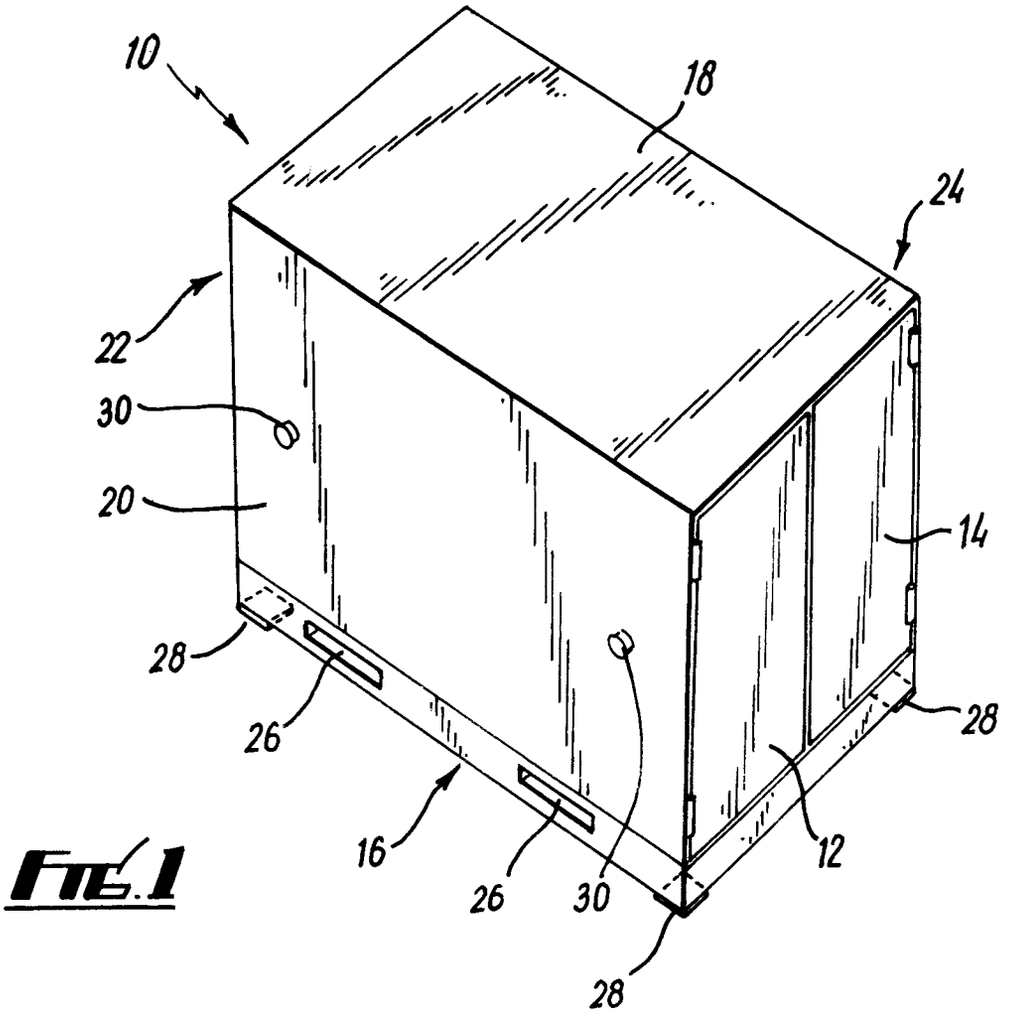


FIG.1

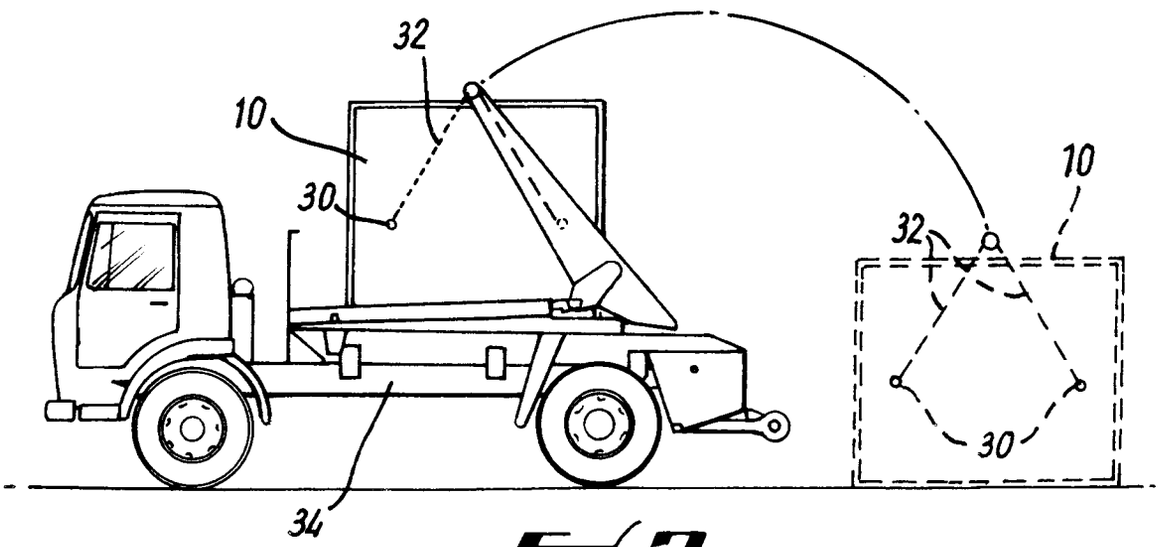
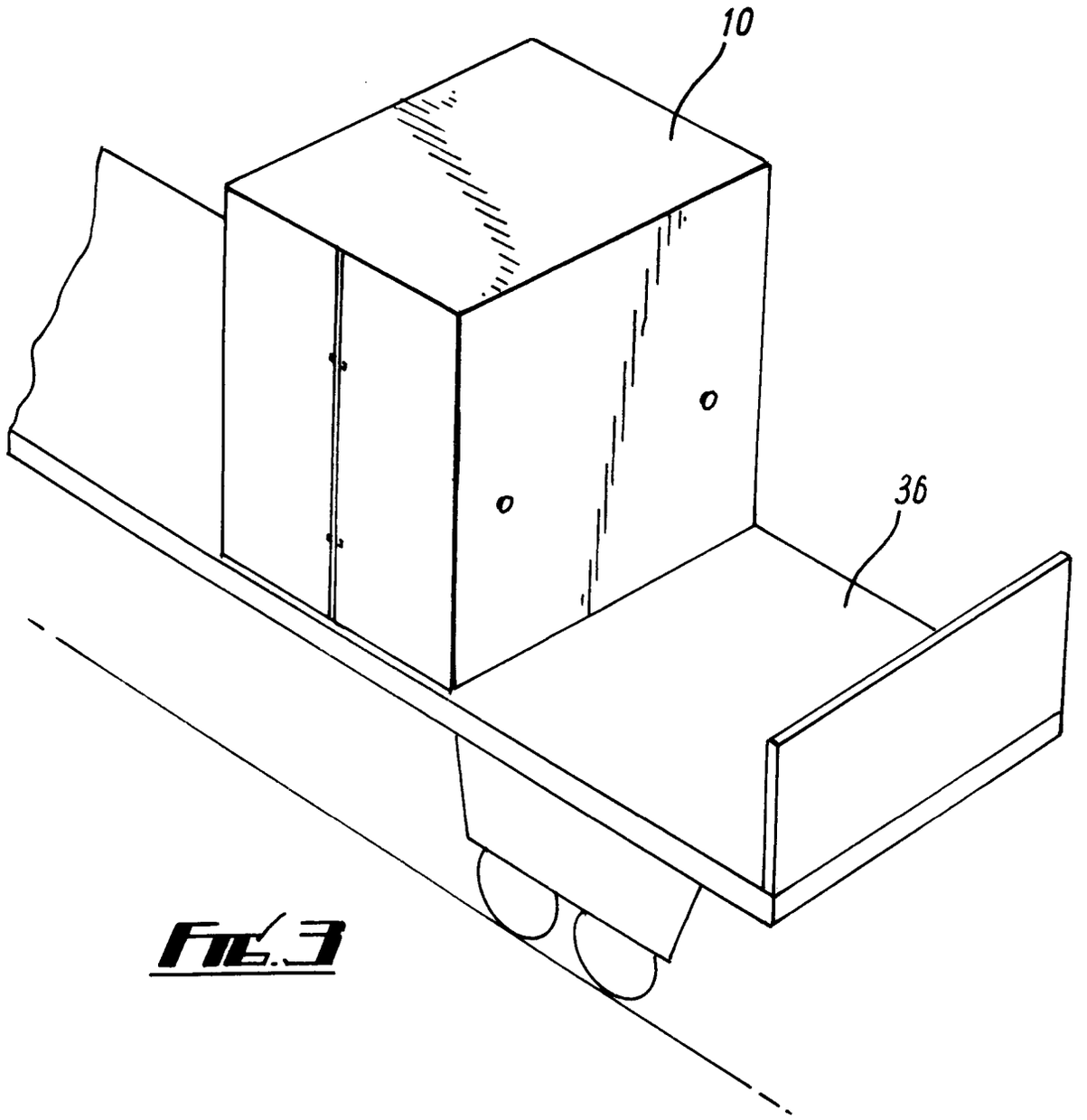
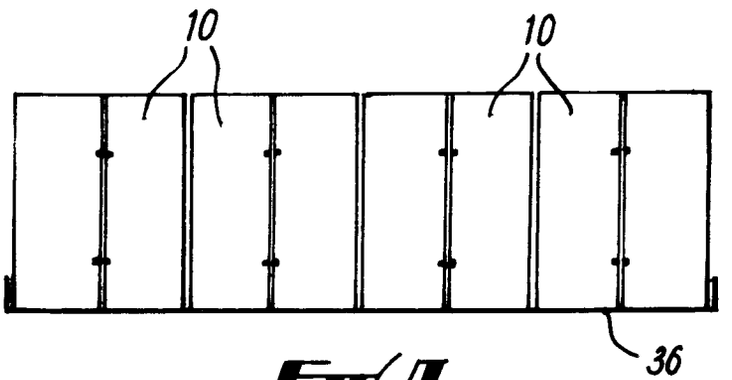


FIG.2



Фиг.3



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