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(54) Container system

Containersystem

Système de conteneurs

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Description

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. A system as defined in the preamble of Claim 1 is known from German Patent Application No 3 600 378, however this system suffers from operational disadvantages .

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, a pair of lengthwise side walls and a pair of end walls, the length of the container approximating to the width of said system containers, and the width of the container being 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, characterised in that the lengthwise side walls are each provided with lifting attachments in the form of a pair of spaced apart, horizontally aligned lugs suitable for engagement by lifting chains of a skip truck.

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, wherein each subsystem container is provided with lifting attachments in the form of a pair of spaced apart, horizontally aligned lugs suitable for engagement by lifting chains of a skip truck.

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 (10) of relatively small size for use in a system for handling system containers of relatively large size, the container (10) being of rectangular box shape having a base (16) a pair of lengthwise side walls (20, 24) and a pair of end walls (12, 14, 22), the length of the container (10) approximating to the width of said system containers, and the width of the container (10) being such that a whole number of containers (10) when placed side by side have an overall dimension approximating to the length of one of said system containers,
characterised in that:

   the lengthwise side walls (20, 24) are each provided with lifting attachments (30) in the form of a pair of spaced apart, horizontally aligned lugs (30) suitable for engagement by lifting chains (32) of a skip truck (34).

2. A container (10) according to Claim 1, being of closed box form and characterised in that one end wall is formed by a pair of hinged doors (12, 14).

3. A container (10) according to Claim 1 or Claim 2, characterised in that the height of said container (10) 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.

4. A container (10) according to any preceding claim, characterised in that the base (16) is provided with means (26) for engagement by a fork lift truck.

5. A container (10) according to any preceding claim, characterised in that the base (16) is provided with locking devices (28).

6. A cargo handling system comprising system containers and subsystem containers (10); 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 (10) 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 (10) can be fitted crosswise within the system containers for handling and transportation within the system, wherein each subsystem container (10) is provided with lifting attachments (30) in the form of a pair of spaced apart, horizontally aligned lugs (30) suitable for engagement by lifting chains (32) of a skip truck (34).

7. The system of claim 6, in which the system containers are dimensioned such that a plurality of subsystem containers (10) may be carried within a standard ISO flatbed container (36).

8. The system of claim 7, in which the dimensions of the subsystem containers (10) are:

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

Patentansprüche

1. Ein Frachbehälter (10) von relativ kleiner Größe zum Einsatz in einem System zur Handhabung von Systembehältern von relativ großen Ausmaßen, wobei der Behälter (10) in Form eines rechteckigen Kastens vorliegt und einen Boden (16) und ein Paar längsverlaufende Seitenwände (20, 24) und ein Paar Stirnwände (12, 14, 22) aufweist, wobei die Länge des Behälters (10) der Breite der Systembehälter ungefähr gleicht und die Breite des Behälters (10) derart ist, daß eine ganze Anzahl von Behältern (10) eine gesamte Dimension aufweist, die der Länge eines Systembehälters ungefähr gleicht, wenn sie nebeneinander plaziert werden,
dadurch gekennzeichnet, daß:

   die längsverlaufende Seitenwände (20, 24) jeweils mit Hebeansätzen (30) in Form eines Paars mit Zwischenraum waagerecht angeordneter Ansätze (30) versehen sind, die zum Eingriff der Hubketten (32) eines Autoschütters (34) geeignet sind.

2. Behälter (10) nach Anspruch 1, der in Form eines geschlossenen Kastens vorliegt und dadurch gekennzeichnet ist, daß eine Stirnwand durch ein Paar Scharnierklappen (12, 14) gebildet wird.

3. Behälter (10) nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Höhe des Behälters (10) derart ist, daß die Oberseite des Behälters innerhalb der vorliegenden Standardhöhe für Behälter dieses Systems liegt, wenn der Behälter auf den Boden eines Systembehälters gestellt wird.

4. Behälter (10) nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der Boden (16) mit einem Mittel (26) zum Eingriff eines Gabelstaplers versehen ist.

5. Behälter (10) nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der Boden (16) mit Sperrungen (28) versehen ist.

6. Ein Frachthandhabungssystem, das Systembehälter und Teilsystembehälter (10) umfaßt; wobei jeder Behälter eine Standardbreite W1, eine Standardspitzenhöhe H1 und eine Länge, die ein Vielfaches eines Standardausmaßes L1 ist, aufweist, und wobei jeder mit einem Mittel zum Eingriff von einer Hebevorrichtung und Sperrungen zum verriegelnden Eingriff mit an den Systemfahrzeugen befestigten zusammenwirkenden Mitteln versehen ist; wobei jeder Teilsystembehälter (10) eine Standardbreite W2, eine Standardlänge L2 und eine Standardspitzenhöhe H2 aufweist; wobei L2 W1 ungefähr gleicht, nW2 mL1 ungefähr gleicht und wobei n und m Ganzzahlen sind, vorzugsweise 2, 3 oder 4, und wobei H2 weniger als H1 ist; wobei die Teilsystembehälter (10) quer innerhalb der Systembehälter zur Handhabung und zum Transportieren gemäß des Systems eingesetzt werden können, wobei jeder Teilsystembehälter (10) mit einem Paar Hebeansätzen (30) in Form eines Paars mit Zwischenraum waagerecht angeordneter Ansätze (30) versehen ist, die zum Eingriff der Hebeketten (32) eines Autoschütters (34) geeignet sind.

7. System gemäß Anspruch 6, wobei die Systembehälter so dimensioniert werden, daß eine Vielzahl von Teilsystembehältern (10) in einem Standardflatbed-Lkw (36), der dem ISO Standard entspricht, transportiert werden kann.

8. System nach Anspruch 7, wobei die Dimensionen der Teilsystembehälter (10) wie folgt sind:

Länge	2350 - 2480 mm
Breite	1900 - 2300 mm
Höhe	2250 - 2750 mm

Revendications

1. Un conteneur de fret (10) de relativement petite taille utilisable dans un système de manutention de conteneurs de système de relativement grande taille, le conteneur (10) étant en forme de caisse rectangulaire ayant un fond (16), une paire de parois latérales en longueur (20, 24) et une paire de parois d'extrémité (12, 14, 22), la longueur du conteneur (10) étant approximativement égale à la largeur des dits conteneurs de système, et la largeur du conteneur (10) étant telle qu'un nombre entier de conteneurs (10) lorsqu'ils sont placés les uns à côté des autres ont une dimension totale approxi-

mativement égale à la longueur d'un des dits conteneurs de système,
caractérisé en ce que:

les parois latérales en longueur (20, 24) sont chacune munies de fixations de levage (30) de la forme d'une paire de pattes (30) alignées horizontalement et espacées l'une de l'autre adaptées pour pouvoir être accrochées par les chaînes de levage (32) d'un camion-benne (34).

2. Un conteneur (10) selon la revendication 1, étant en forme de caisse fermée et caractérisé en ce qu'une des parois d'extrémité est formée par une paire de portes à charnières (12, 14).

3. Un conteneur (10) selon la revendication 1 ou la revendication 2, caractérisé en ce que la hauteur du dit conteneur (10) est telle que, lorsque le conteneur est placé sur le plancher d'un des dits conteneurs de système, le sommet du conteneur tient à l'intérieur de la hauteur standard existante du système de conteneurs.

4. Un conteneur (10) selon l'une quelconque des revendications précédentes, caractérisé en ce que le fond (16) est muni de moyens (26) dans lesquels peut passer la fourche d'un chariot élévateur à fourche.

5. Un conteneur (10) selon l'une quelconque des revendications précédentes, caractérisé en ce que le fond (16) est muni de dispositifs de verrouillage (28).

6. Un système de manutention de fret comprenant des conteneurs de système et des conteneurs de sous-système (10); chaque conteneur de système ayant une largeur standard W1, une hauteur maximale standard H1, et une longueur qui est un multiple d'une dimension standard L1, et chacun étant muni de moyens d'accrochage par un appareil de levage et de moyens de verrouillage pour un accrochage avec verrouillage avec des moyens coopérants fixés à des véhicules de système; chaque conteneur de sous-système (10) ayant une largeur W2 et une longueur L2 standards et une hauteur maximale standard H2; dans lequel L2 est approximativement égale à W1, nW2 est approximativement égal à mL1, n et m étant des nombres entiers, de préférence 2, 3 ou 4, et H2 est plus petit que H1; par lequel les conteneurs de sous-système (10) peuvent être placés transversalement à l'intérieur des conteneurs de système pour la manutention et le transport à l'intérieur du système, dans lequel chaque conteneur de sous-système (10) est muni de fixations de levage (30) de la forme d'une paire de pattes (30) alignées horizontalement et espacées l'une de l'autre adaptées pour pouvoir être accrochées par les chaînes de levage (32) d'un camion-benne (34).

7. Le système de la revendication 6, dans lequel les conteneurs de système sont dimensionnés de manière à ce que plusieurs conteneurs de sous-système (10) puissent être transportés à l'intérieur d'un conteneur plat standard (36) correspondant aux normes ISO.

8. Le système de la revendication 7, dans lequel les dimensions des conteneurs de sous-système (10) sont:

longueur	2350 - 2480 mm
largeur	1900 - 2300 mm
hauteur	2250 - 2750 mm

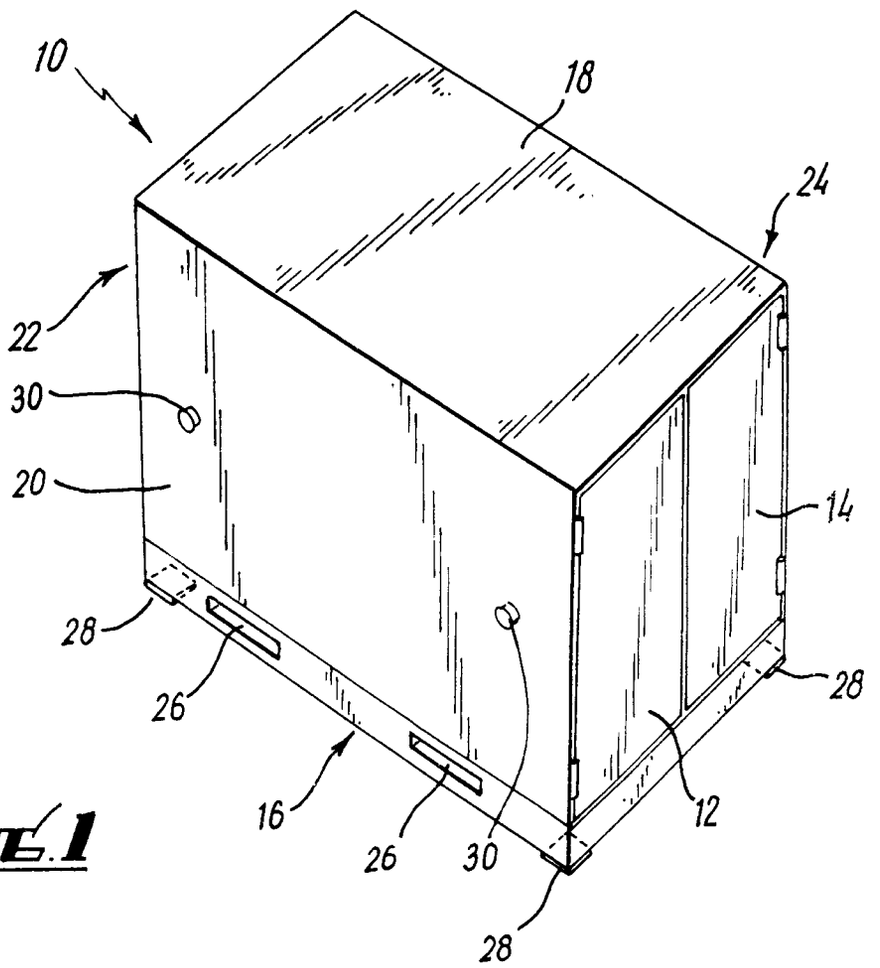


FIG.1

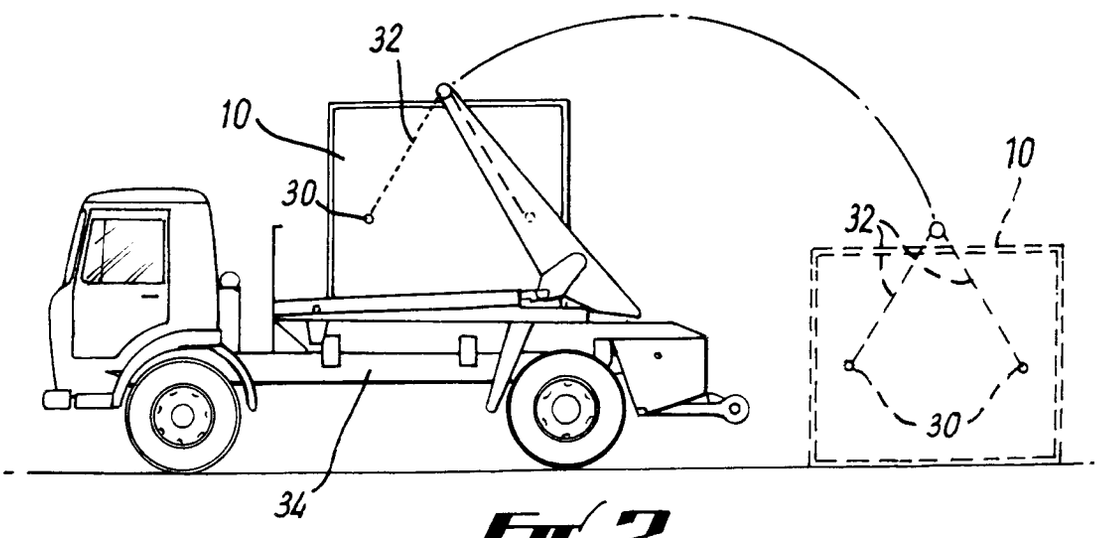


FIG.2

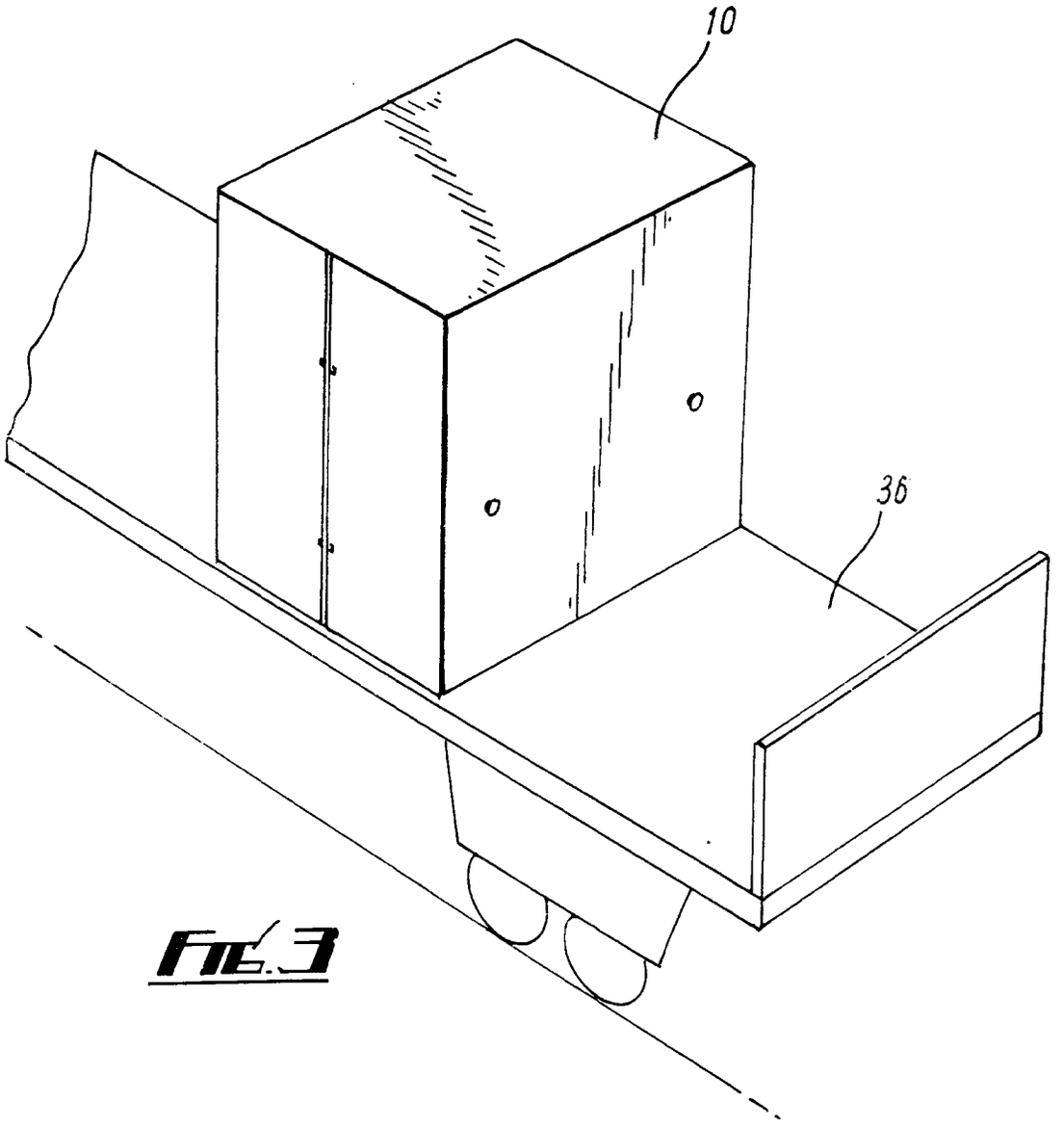


FIG.3

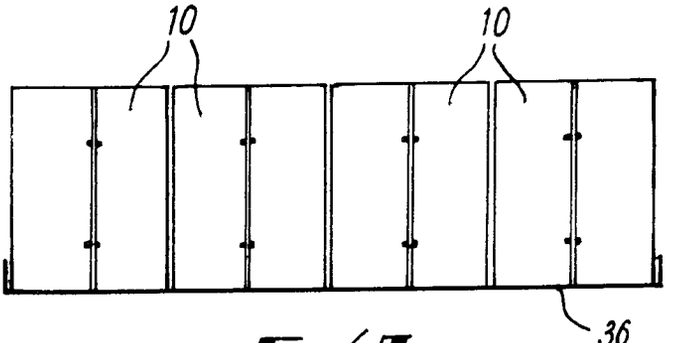


FIG.4