United States Patent

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[33] Great Britain
[31] No. 52299/67

[54] **LOAD CARRYING CONTAINER**
13 Claims, 15 Drawing Figs.

[52] U.S. Cl. 220/4, 16/114; 217/43; 220/1.5; 280/47.34
[51] Int. Cl. B65d 7/32
[50] Field of Search 220/1.5, 4; 217/43, 43A; 16/114; 280/47.34; 294/93.98

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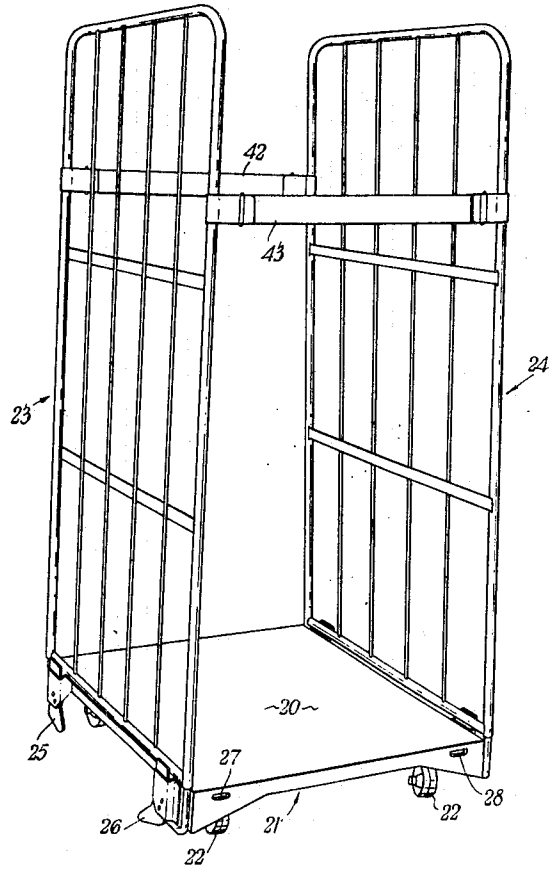
ABSTRACT: A container such as a pallet comprising a deck-frame with a vertical side face and a tubular wall for removable engagement with the side face, two horizontally spaced shoulders and two vertically spaced abutments on the sideface, a vertically-extending lug spaced transversely from the side face by the thickness of the wall, a pivotal member mounted on the side face so as to be rotatable about an axis normal to the side face, the lug and pivotal member being spaced vertically, the wall being formed with parts which substantially mate with the shoulders and abutments and the arrangement being such that, in one position of the pivotal member, the wall can be placed between the lug and the side face in mating engagement with the shoulders and abutments, after which the pivotal member can be pivoted to a position in which it engages the outside of the wall so as to lock the wall against the side face.



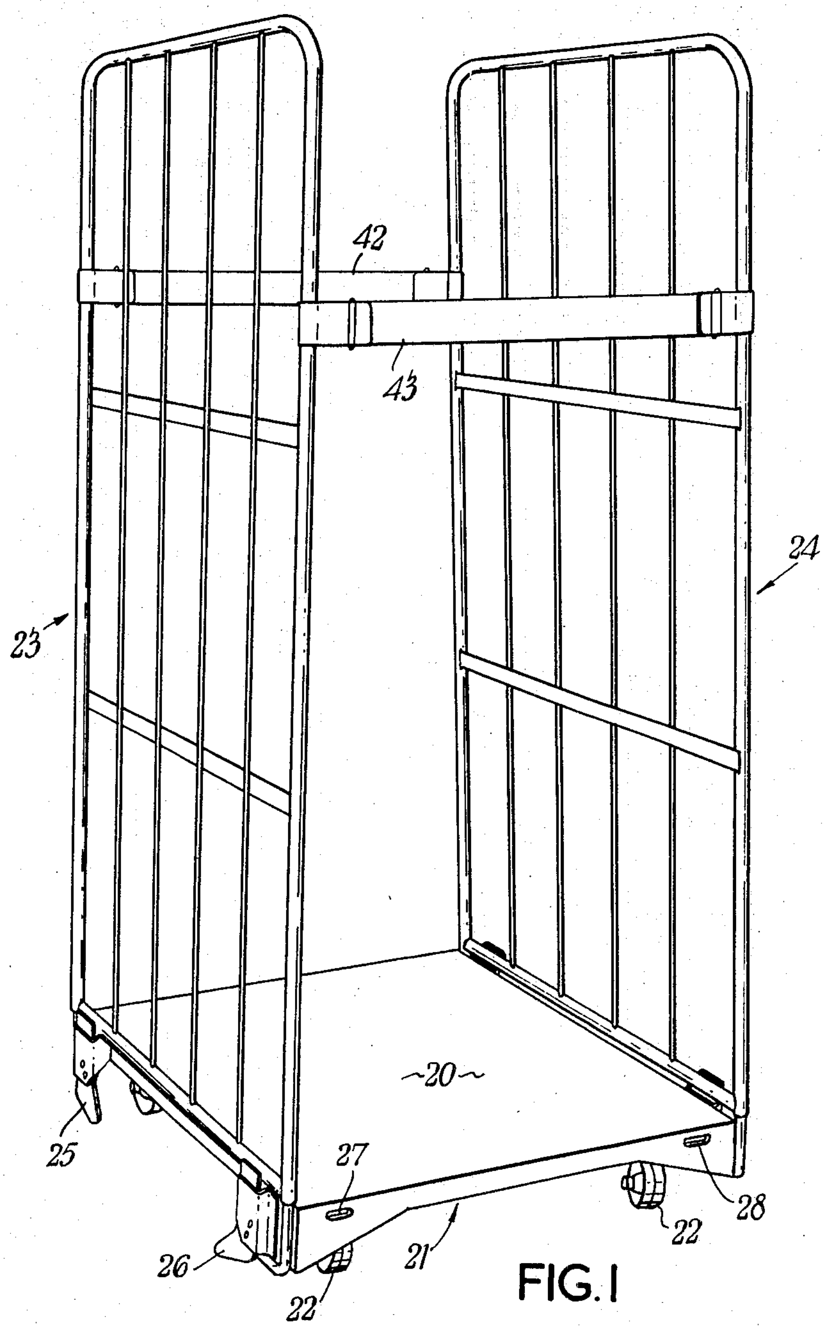


FIG. 1

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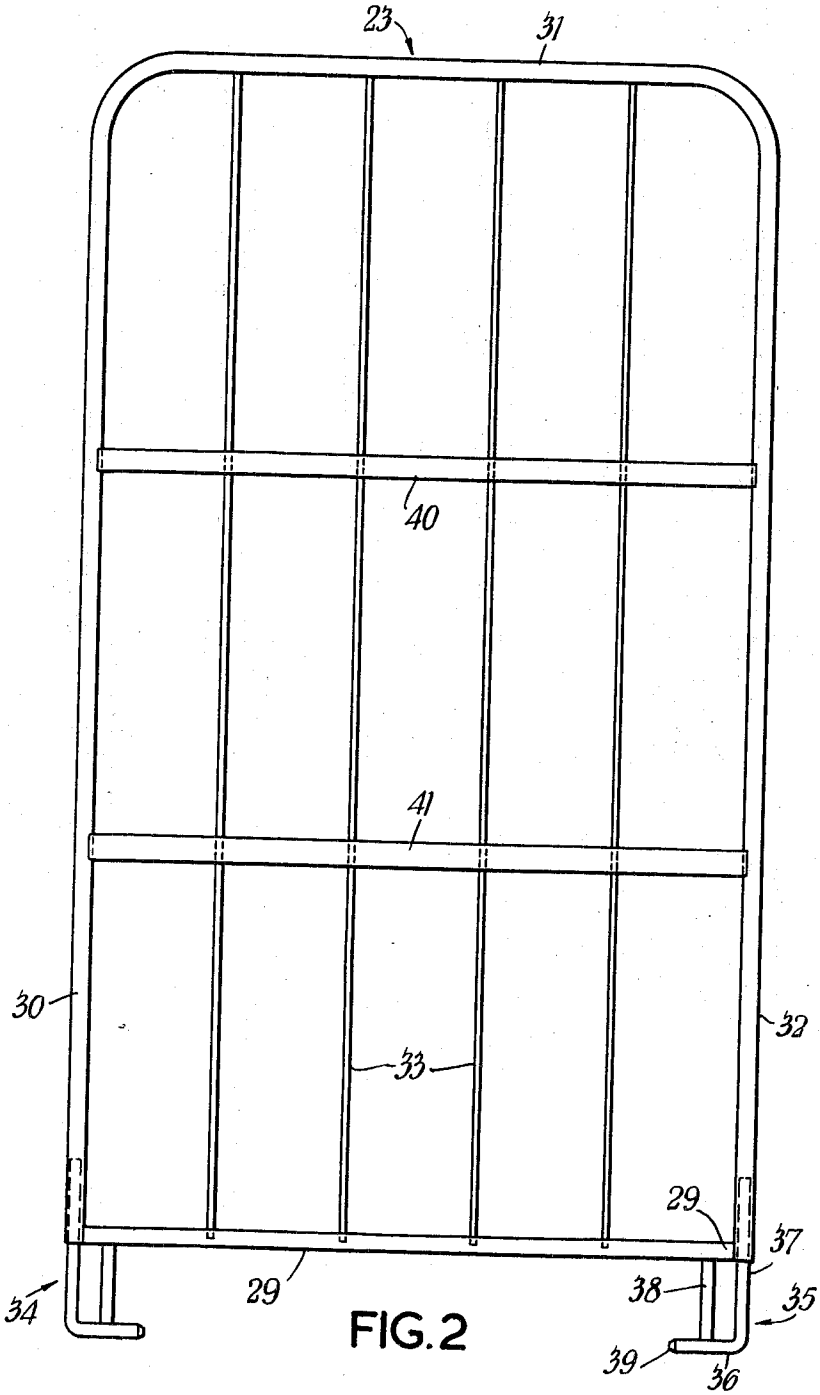

FIG. 2

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FIG.4

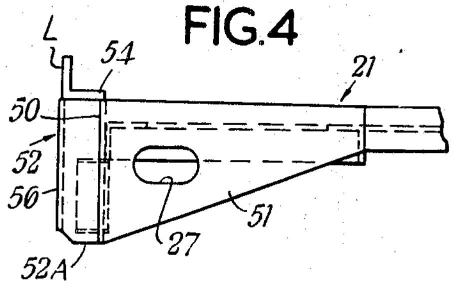

FIG.5

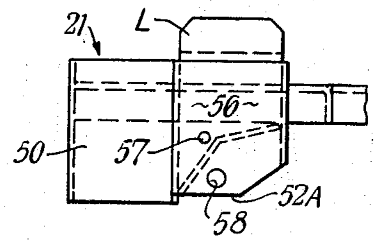

FIG. 3

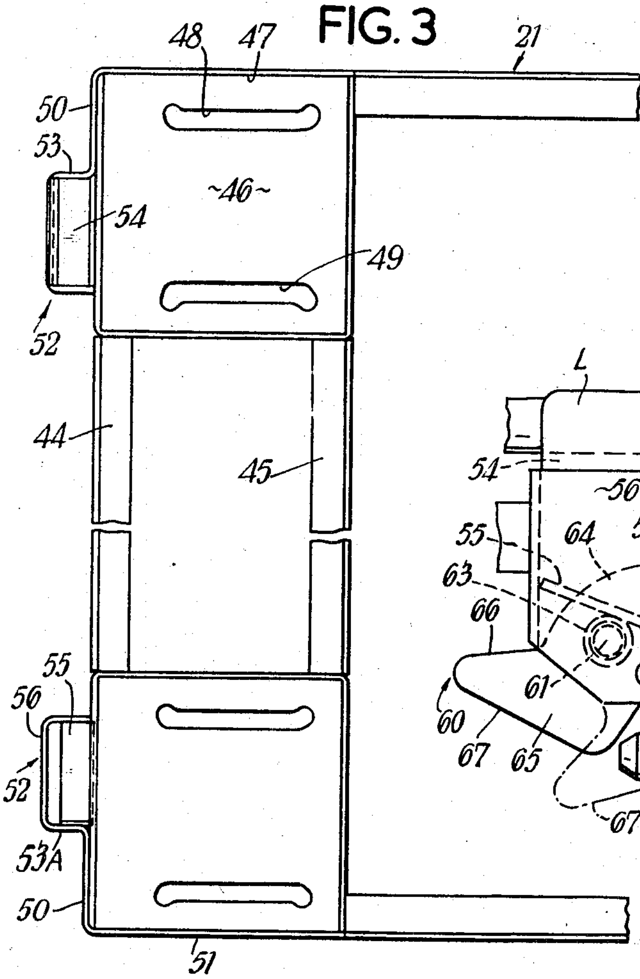

FIG.7

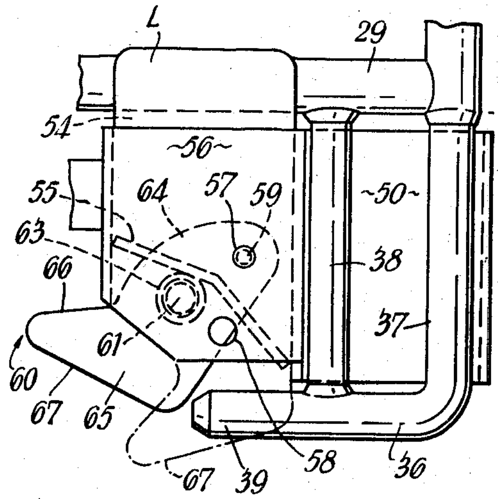

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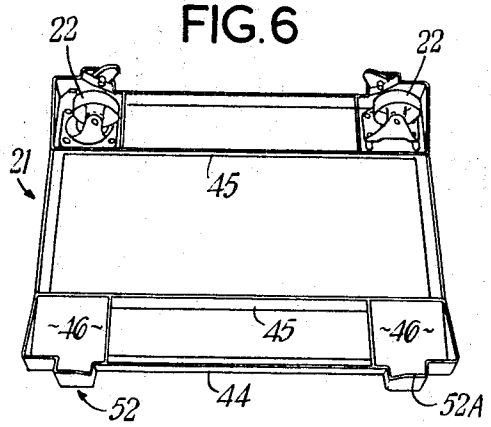
FIG.6



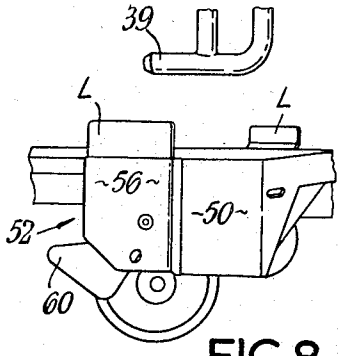


FIG.8

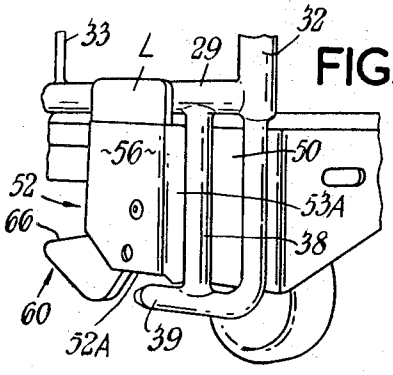
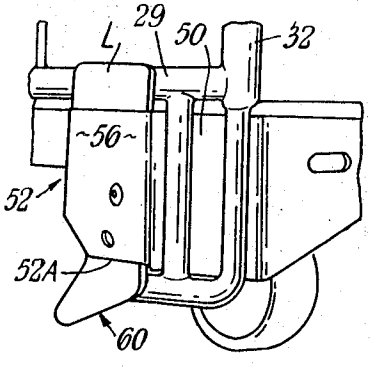


FIG.9

FIG.10



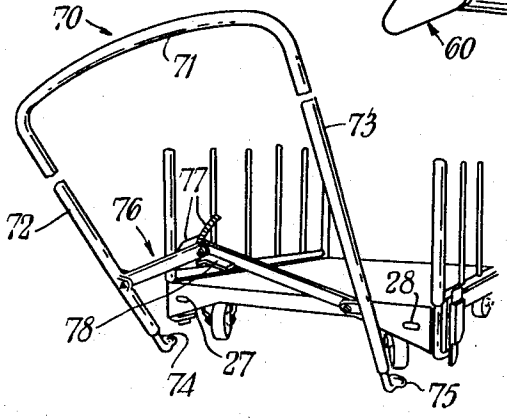


FIG.11

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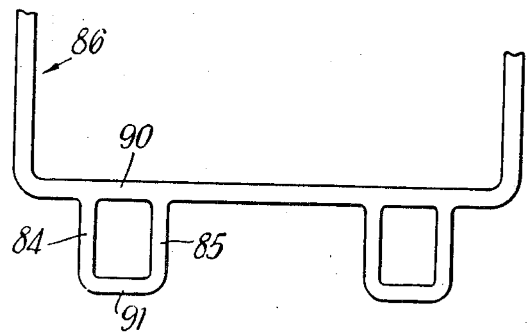

FIG.12.

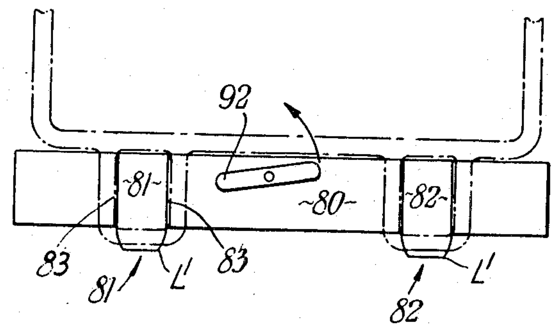

FIG.13.

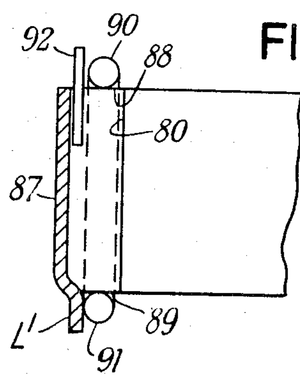

FIG.14.

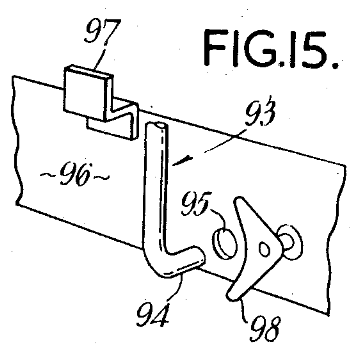

FIG.15.

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LOAD CARRYING CONTAINER

The present invention relates to an improved load-carrying container, such as a truck, trolley or pallet, provided with at least one removable wall.

Known containers of this kind often consist of a flat rectangular load-carrying deck having vertical sidefaces to one, or each, of which is attached, in removable fashion, a tubular wall. In this specification, the expression "tubular" is used to include both tube and rod of any section.

When the wall, whether it be tubular or not, has been attached to the sideface of the deck, it is necessary that is shall be restrained from movement in the following respects.

It must be locked from vertical movement both up and down in its own vertical plane, from horizontal to-and-fro movement in its own plane and from tilting movement about a horizontal axis lying approximately in the plane of the sideface

The present invention provides means whereby these objects are achieved and whereby the wall can be attached to and removed from the side face simply and quickly.

According to the invention there is provided a container such as a pallet or trolley comprising a deck-frame, having a substantially vertical sideface and a wall the lower end of which may be removably engaged against the sideface the side face carrying two horizontally spaced shoulders, two vertically spaced abutments, and, spaced transversely from the sideface by a distance approximately equal to the thickness of the wall, a vertically extending lug and a pivotal member rotatable about an axis normal to the side face, which lug and pivotal member are spaced vertically, the wall being formed with parts which substantially mate with the shoulders and the abutments, and the arrangement being such that, in one position of the pivotal member, the wall can be placed between the lug and the side face in mating engagement with the shoulders and abutments, after which the pivotal member can be pivoted to a position in which it engages the outside of the wall so as to lock the wall against the sideface

Usually a container in accordance with this invention is rectangular in plan view and is provided with two similar walls removably attached to two opposite sidefaces respectively.

Preferred forms of the invention will now be described with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of a container fitted with two removable walls,

FIG. 2 shows one wall,

FIGS. 3, 4 and 5 are respectively a plan, side and front elevation of the framework of the container, the deck and casters being omitted in this view,

FIG. 6 is an under perspective of the framework,

FIG. 7 is an elevation of a lever used on the container,

FIGS. 8, 9 and 10 are perspective views illustrating how a wall is engaged on the sideface of the frame of the container,

FIG. 11 is a perspective of a handle with which the container can be towed or pushed,

FIG. 12 is an elevation of an alternative form of wall,

FIGS. 13 and 14 are respectively a front and side elevation of the wall of FIG. 12 attached to a sideface of a deck-frame, and

FIG. 15 illustrates a detail of yet another modification.

The container illustrated in FIG. 1 consists generally of a flat rectangular deck 20, of wood for example, mounted on a steel framework 21 to the underside of which are attached two swivelling, and two nonswivelling, wheels such as those shown at 22.

Removably secured to two opposite vertical sidefaces of the framework are two similar walls 23 and 24. Each wall is preferably mounted on a sideface in such a way that no part of the wall rests on the flat surface of the deck 20 and each wall is locked to its sideface with the aid of pivotal members in the form of a pair of foot-operated levers 25 and 26.

Those sidefaces of the framework which do not carry walls are each formed with a pair of elongate holes 27, 28 for the reception of a removable towing handle to be described later.

One wall 23 is shown in detail in FIG. 2. Its outer members 29, 30, 31 and 32 are made of steel tube and its inner vertical members 33 are of steel rod. At its lower end, the wall carries two similar lever-engaging members 34 and 35 each made of steel rod. The member 35 (for example) consists of a length of rod 36, 37 bent to L-shape with the stem 37 of the L inserted in and welded to the tubular wall member 32. A short length of rod 38 is welded between the wall member 29 and the foot 36 of the L-rod so as to produce a closed loop 29, 37, 36, 38 and a lever-engaging finger 39.

The wall also has flat steel strip bracing members 40, 41. The two walls may be held at their upper ends by straps 42, 43 (FIG. 1).

The steel framework 21 of the deck is shown in FIGS. 3, 4, 5 and 6. The outer members of the rectangular framework are of L-section such as that shown at 44 and inner bracing members 45, also of L-section, are used at appropriate spacings to reinforce the outer members.

At each corner of the framework the members 44 and 45 are partially cut away to receive a caster plate 46 which is in the form of a shallow rectangular box with one side (at the position 47) removed. The open mouth of the boxlike caster-plate 46 faces downwardly. The roof of the plate is formed with two plunged, elongate apertures 48, 49 for the reception of screws or bolts with the aid of which a caster can be secured to the underside of the plate. The shape of the holes allows casters of different sizes to be accommodated.

Welded around the vertical side faces of each corner of the framework is a corner-plate 50 formed as a steel pressing. A portion 51 of this plate is triangular, extends along a side of the deck which does not receive a wall and is formed with one of the holes 27, 28 (FIGS. 1 and 4) which is to receive the towing handle.

Another portion of the plate 50 is bent to U-shape so as to constitute, with a side of the caster-plate, a channel-member 52 of box-section. A vertical sidewall 53 of this box-section constitutes of two spaced shoulders 53, 53A (FIG. 3) with the aid of which the wall 23 is prevented from moving horizontally, in its own plane, after it has been attached to the sideface of the deck-frame.

The side face of the deck-frame to which a wall is to be engaged is constituted by the portion 50 of the pressing.

Welded to the upper end of each box-section channel 52 is a short length of L-section metal the stem of which constitutes an upstanding retaining lug L (FIGS. 4 and 5) and the base of which constitutes an upper supporting abutment 54 for the wall. A plate 55 (FIG. 7) serves as a reinforcement to retain the shape of the box-section channel, and serves as a support for a lever (to be described) to ensure the lever stays in a vertical plane against the side loads.

The lower end of each box-section channel 52 constitutes a lower abutment 52A which, when a wall-finger 39 has been engaged under it, prevents the wall from moving up in its own plane.

It is to be noted that the lug L (FIG. 4) is spaced horizontally outwards from the sideface 50 of the deck so that a portion of the wall can be accommodated between the lug and the sideface.

The outer wall 56 (FIG. 5) of the box-section channel 52 is bored as at 57 and 58. The upper bore 57 receives a pivot pin 59 (FIG. 7) for a lever 60 and the lower bore 58 receives the ball of a spring-loaded ball-catch 61 (FIG. 7) mounted on the lever. It is to be noted that the pivot pin 59 has its axis normal to the side face 50.

The lever 60 is shown in detail in FIG. 7. It is bored for reception of the pivot pin 59 and carries the ball-catch 61 as a press-fitting in an aperture 63. It is of bellcrank shape, being pivoted at the end of one arm 64 and the other arm 65 serving to engage the outside of the wall-finger 39.

The slopes of the edges 66 and 67 of the free arm 65 are of some importance. The bellcrank lever 60 of the present invention can be operated by either pressing directly downwards on the edge 66 (for locking) or toeing the lever up (for un-

locking) by pressing upwardly with the toe on the edge 67. In order that this may be done easily the lower edge 67 is at an oblique angle when the lever is in the locked position shown in FIG. 7 and the upper edge 66 is approximately horizontal when the lever has been rotated, in clockwise direction with respect to FIG. 7, into the unlocked position.

The wall 23 is engaged on the side face 50 of the deck-frame 21 of the container in the following way:

The levers 60 are rotated by foot to their unlocked positions shown in full lines in FIG. 7. This is done by putting the toe under each lever and lifting it up.

The wall is then lifted so that its bottom crossmember 29 lies above the supporting upper abutments 54 with its upper end tilted inwardly slightly so as to be disposed over the deck surface. In this position the crossmember 29 can be lowered on to the abutments 54 whilst the fingers 39 clear the outsides of the channels 52. Then the top of the wall is tilted outwardly until the wall lies in a vertical plane (FIG. 9.) In this position the fingers 39 lie beneath the lower abutments 52A (constituted by the bottom ends of the box-section channels 52) so as to prevent the wall from moving up in its own plane and the rods 38 lie on the outside of the shoulders 53, 53A to prevent the wall from moving to left or right sideways in its own plane.

It is to be noted that in this position, while the levers are still in their unlocked positions, the parts 29, 38 and 39 of the wall are in mating engagement with, respectively, the upper abutments 54, the two horizontally spaced shoulders 53, 53A and the lower abutments 52A. It follows that the wall cannot move in any direction in its own plane.

But the wall can still tilt about a horizontal axis lying approximately in the plane of the side face To prevent this and thus lock the wall to the sideface the levers are pushed down with the foot, by treading on the edges 66, so that they pass to the outside of the fingers 39, to the position shown in FIG. 10. When this has been done, tilting is prevented because the sideface 50 of the deck bears against the inside of the wall and the lugs L and levers 60 bear against the outer side of the wall, the lugs and levers being spaced vertically, above and below the sideface

Once the load, for example boxes, have been loaded on to the deck, these good themselves assist in preventing the walls from tilting inwardly and the two straps 42 and 43 shown in FIG. 1 assist in securing the load.

A spring steel handle with the aid of which the container may be towed is indicated generally at 70 in FIG. 11. It is of U-shape and has a web 71, two limbs 72 and 73 and outwardly turned feet 74 and 75. The limbs are joined by a toggle link 76.

When the link is in the "broken" position illustrated, the natural resilience of the spring holds the feet at a separation such that they can be inserted in the elongate holes 27, 28 in the container. Then an upper pad 77 is pressed upon with the foot to move the toggle link over its dead-centre so as to move the feet slightly further apart and thus cause them to engage behind the edges of the apertures. The handle is released by toeing an underpad 78 upwardly to move the link back over its dead-centre position.

The modification of the invention illustrated in FIGS. 12, 13 and 14 operates upon the same principle as that described above, but the positions of the lugs and levers have been reversed, that is to say, each lug now lies below a lever, instead of above as in FIGS. 1 to 11.

In this modification, the side face 80 of the deck-frame is provided with two channels 81, 82 each of box-section. The sides 83 of each channel constitute horizontally spaced shoulders which mate with parts 84 and 85 on the wall 86, to prevent the wall moving sideways, in either sense, in its own plane.

The outer wall 87 of each channel is extended downwardly to constitute a lug L'. The upper and lower ends 88 and 89 of each channel constitute vertically-spaced upper and lower abutments against which the parts 90 and 91 of the wall can mate.

A lever 92 is pivoted on the side face 80, at a position higher than the lugs, so that its axis is normal to the sideface

In order to engage the wall 86 to the side face 80, the top of the wall is in this case tilted outwardly, the member 91 of the wall are passed under the lugs L' to lie between the sideface and the lugs and the wall is then tilted back to the vertical.

In this position the shoulders 83 and the abutments 88 and 89 substantially mate with the parts 84, 85 and 90, 91 of the wall, to prevent the wall from moving in its own plane. Nevertheless the wall can still be tilted outwardly about a horizontal axis parallel to the sideface. To prevent this, and finally lock the wall to the sideface the lever 92 is rotated, in the direction of the arrow shown in FIG. 13, so that it lies on the outside of the wall. The lever together with the two lugs then retain the wall flat against the sideface of the deck-frame.

In the forms of the invention so far described the shoulders and abutments extend outwardly from the sideface of the deck-frame. In the modification illustrated in FIG. 15, however, these members are formed internally of the sideface. Thus, the wall 93 is formed with a transverse, inwardly directed, cylindrical stub 94 which can be seated in a round hole 95 in the sideface 96 of the deck-frame. Spaced from the sideface, by the thickness of the wall, *i.e.* by a distance equal to the external diameter of the tubular wall 93, are a lug 97 and a lever 98, the latter being pivotal about an axis normal to the sideface.

In operation, the wall is tilted inwardly at its top end, a crossbar (not shown) of the wall is engaged on the inside of the lug, the wall is then tilted to the vertical so that the stub 94 enters the hole 95, whereupon the lever 98 is rotated to lie on the outside of the wall member 93.

In this modification, the shoulders are constituted by the inside edges of the hole 95 lying at the ends of a horizontal diameter, whilst the abutments lie at the ends of a vertical diameter of the hole.

In the modifications described above each wall is preferably supported upon two horizontally spaced, upper supports. These could, however, be replaced by a single support extending horizontally. Furthermore lever-engaging parts of the wall, such as the rods 38 of FIG. 2, could be arranged to butt against the inside of the channels 52 instead of, as shown, against the shoulders 53 and 53A which are on the outsides of the channels.

Although it is preferable to engage each wall at both of its bottom corners as shown in FIG. 1, since by doing so, a forklift may be passed under the container between the points of engagement, nevertheless a wall can if desired be engaged with only one pivotal member, located either at a corner or at the centre of the bottom member of the wall.

In yet another modification, the wall carries the shoulders and abutments and the sideface is formed with recesses cooperating with the shoulders and abutments.

The claims which follow are to be construed as including these and like equivalent variations of the preferred embodiments described.

I claim:

1. A container such as a pallet or trolley comprising a deck-frame, a vertical side face on the deck-frame, a wall for removable engagement with the side face two horizontally spaced shoulders on the sideface two vertically spaced abutments on the sideface, a vertically-extending lug spaced transversely from the side face by a distance approximately equal to the thickness of the wall, a pivotal member mounted on the sideface so as to be rotatable about an axis normal to the sideface, the lug and pivotal member being spaced vertically, the wall being formed with parts which substantially mate with the shoulders and abutments and the arrangement being such that, in one position of the pivotal member, the wall can be placed between the lug and the sideface in mating engagement with the shoulders and abutments, after which the pivotal member can be pivoted to a position in which it engages the outside of the wall so as to lock the wall against the sideface.

2. A container as claimed in claim 1, wherein the upper of the two abutments serves as a support for the wall.

3. A container as claimed in claim 1, wherein the wall carries a finger at its lower end and the pivotal member is in the

form of a lever mounted about a pivot normal to the sideface, the arrangement being such that, in an unlocked position of the lever, the wall may be inwardly tilted, then lowered on to the upper abutment so as to be disposed on the inside of the lug and held against horizontal movement in the plane of the sideface by the horizontally spaced shoulders, then tilted to a vertical position in which the finger engages under the lower abutment to prevent the wall from moving upwardly, whereupon the lever may be rotated to engage the outer side of the finger so as to lock the wall against the sideface of the deck.

4. A container as claimed in claim 1, wherein the wall carries two horizontally spaced fingers and the side face carries a pair of horizontally spaced shoulders for the wall, a pair of upper abutments, a pair of lower abutments, a pair of upstanding lugs each outwardly spaced from the sideface, a pair of horizontal pivots located below each lug respectively and a lever on each pivot.

5. A container as claimed in claim 1, wherein the sideface of the deck-frame is provided with two box-section channel members the sides of which constitute the said horizontally spaced shoulders and the top and bottom of which constitute the said upper and lower abutments.

6. A container as claimed in claim 1, wherein the side face of the deck-frame is provided with two box-section channel members the sides of which constitute the said horizontally spaced shoulders and the top and bottom of which constitute the said upper and lower abutments, there being provided, between the sideface and the outer wall of each channel member, a lever pivoted for angular movement about an axis normal to the sideface.

7. A container as claimed in claim 1, wherein the sideface of the deck-frame is provided with two box-section channel members the sides of which constitute the said horizontally spaced shoulders and the top and bottom of which constitute the said upper and lower abutments, there being provided, between the sideface and the outer wall of each channel member, a lever pivoted for angular movement about an axis normal to the side face, the wall being provided with a pair of fingers and each lever cooperating with a finger to lock the wall against a sideface.

8. A container as claimed in claim 6, wherein each lever projects downwardly out of the lower end of the channel member and cooperates with a finger on the wall to lock the wall against the side face.

9. A container as claimed in claim 3, wherein each lever is of bellcrank shape having one arm receiving the pivot and the other free, the lever being so mounted on its pivot that, in its unlocked position, the upper side of the free arm approaches a horizontal position.

10. A container as claimed in claim 3, wherein the wall is of tubular metal and is formed at its lower end with a downwardly extending closed loop from which a finger extends in a horizontal direction.

11. A container as claimed in claim 1, wherein the deck is rectangular in plan view, has four vertical sidefaces, is provided with removable walls along two opposite sidefaces and each of the other two opposite side faces is formed with a pair of spaced apertures for the reception of a removable handle.

12. A container as claimed in claim 11, wherein the handle comprises a U-shaped spring having a web and two limbs and, between the limbs, a toggle link with the aid of which the distance between the limbs may be varied against the natural resistance of the spring.

13. A container as claimed in claim 12, wherein each of those sidefaces of the deck-frame not provided with a wall is formed with a pair of horizontally spaced apertures and the limbs of the spring-handle are provided at their ends with feet for engagement in the apertures.