

12

# EUROPEAN PATENT APPLICATION

21 Application number: 89303452.0

51 Int. Cl.<sup>4</sup>: B 65 D 19/06

22 Date of filing: 07.04.89

30 Priority: 07.04.88 DK 1885/88

43 Date of publication of application:  
11.10.89 Bulletin 89/41

84 Designated Contracting States:  
AT BE CH DE ES FR GB GR IT LI LU NL SE

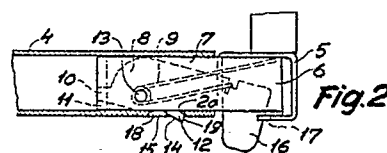
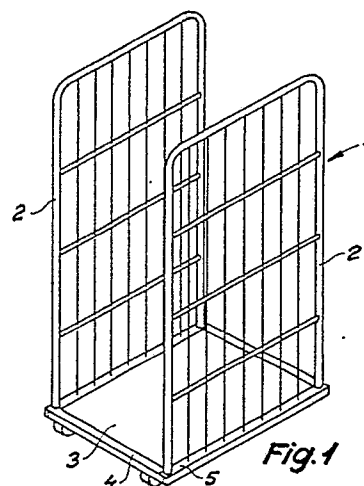
71 Applicant: VARIANTSYSTEMET INTERNATIONAL A/S  
Fynsvej 60  
DK-5500 Middelfart (DK)

72 Inventor: Sorensen, Jens  
Lønbjergvaenget 4 Vindinge  
DK-4000 Roskilde (DK)

74 Representative: Brooke-Smith, Fred et al  
STEVENS, HEWLETT & PERKINS 5 Quality Court  
Chancery Lane  
London WC2A 1HZ (GB)

54 A container having horizontally removable side members.

57 A container comprising a bottom section (3) having one or more horizontally removable side members (2) which have oblong locking parts (6) extending transversely to the plane of the side member, said bottom section having complementarily shaped locking parts (4). To transport goods of a stable as well as an unstable nature, independent upon stabling accuracy and goods displacements, the locking part of the bottom section is constructed as a pipe means (4) which is arranged as an integrated part of the side profile of the bottom section, and the locking parts (6) of the side members are constructed as guide means (7) which are adapted to be inserted into the bottom section pipe means (4) for tight reception and fixing in it.



## Description

### A container having horizontally removable side members

The invention concerns a container comprising a bottom section having one or more horizontally removable side members which have oblong locking parts extending transversely to the plane of the side member, said bottom section having complementarily shaped locking parts.

Such container types are more suitable than the previously known ones in connection with transport of various commodity types which are more or less robust.

Another circumstance, which has manifested itself in the pallet and container field especially for some time past, is that in connection with rational operations more and more retail shops, such as supermarket associations and the like, are supplied with goods which are moved into the actual shop floor or are moved into the shop floor via the store room by direct passage to commodity display arrangements provided in connection with this. In this manner, the pallet so to say "follows" the article, which is not removed from the pallet until picked up by the consumer. For this purpose, the retail shops have increasingly been provided with the said display arrangements, which have specified standard or modular measures adapted to a plurality of juxtaposed pallets, where the available space in the height does not always permit vertically removable side members to be removed. It will additionally be appreciated that the problems concerning fraying or destruction of some of the commodities will be extremely inexpedient for the appearance of the commodities.

A container type having laterally removable side members is known e.g. from the Finnish Published Application 52 057. However, this structure is vitiated by some drawbacks, since the locking rails of the side members are here merely moved inwardly over the edge area of the bottom pallet so that part of the locking rail protrudes over the actual loading surface. Moreover, the side members themselves likewise protrude over the loading surface in their width. It will be appreciated that this container type involves inexpedient removal and mounting of the side members when the container is loaded with commodities, it being difficult to mount and remove the side members because in many cases the locking rails of the side members will have to be pressed inwardly below goods disposed at the side edges of the pallet so that the goods will easily be damaged or directly prevent correct mounting. This is additionally aggravated by the fact that both the actual side member and its locking rails are to be moved inwardly over the loading surface of the pallet, which can be downright impossible in many cases so that also locking of the side members to the roller pallet is impossible.

The object of the invention is to provide a container structure which is extremely suitable for transport of goods of a stable as well as an unstable nature, and which is independent upon stacking accuracy and goods displacements to a much

greater degree than known structures. The object is moreover to provide the container so that it is easy and simple to handle through the aid of simple and inexpensive means.

This object is achieved by providing a container which is characterized by the features defined in the characterizing portion of claim 1. Such a container where the side members are mounted and removed via oblong locking parts, which in pairs are complementarily formed on the side members and the container, respectively, thus provides a structure which does not necessitate careful stacking accuracy, and where goods displacements during transport do not interfere with the handling of the side members. The advantage of using part of the side profiles of the container as locking parts is that the cooperating coupling parts of the side members and the container are disposed in a plane below the loading surface, and the actual side members when mounted are not disposed on the side edges of the container so that complete utilization of the container area as a loading surface does not prevent mounting and removal of the side members.

This coupling principle moreover entails that the container has a particular stable shape in that the locking parts of the side members tightly engage the closed bottom profile.

It will consequently be appreciated that the container of the invention will be ideal in situations with restricted space in lateral direction since even locking parts having relatively short longitudinal extents provide great sturdiness.

Since it is now possible to fill a container with commodities or goods right out to the plane of the side members, also optimum space utilization is possible without any difficulties in connection with mounting and removal of the side members. In contrast to the use of the known containers, this actually provides a sort of "bracing coaction" between the side members and the continuous parts of the container as well as the goods. All these factors entail that the container of the invention involves much more freedom with respect to use and handling.

The side members of the container may advantageously be constructed as stated in claim 2, which provides a certain tolerance which may serve as an additional loading surface because of goods displacements during loading and transport. This is particularly advantageous in connection with articles such as modul boxes, packets, cartons and the like which may be relatively stiff so that compression of the articles is difficult. This feature also entails that a plurality of containers can be more readily stacked closely together in connection with return transport via positioning a plurality of container bottoms in a container having mounted side members so that these loose container bottoms do not readily wedge between the side members.

The guide means preferably comprises a U-shaped profile bracket whose outermost portion

with respect to the level of the side members is provided with a contraction which is formed transversely to the longitudinal axis of the guide means, which therefore does not tightly engage the pipe means in this area. This contraction of the U-profile forms an internal slot which is used for journalling a vertically movable locking fitting, a so-called latch fitting, which is adapted for locking engagement when the side member is inserted on the container part.

The contracted U-profile is additionally expedient in that the contracted, outermost portion of the guide means serves as control means so that correct coupling of locking parts is ensured rapidly and easily. However, the innermost portion tightly engages the internal faces of the pipe means for effective fixing. The contraction of the guide means may advantageously be provided in the U-profile so as to create a gap between the outermost face of the guide means and the adjoining side face adapted to receive the pipe means. This structure of the guide means is moreover utilized in this manner for creating clearance between the part of the guide means comprising coupling of the locking fitting and the opposed portion of the pipe means facing toward the opposed edge profile of the bottom section. Hereby it is prevented in a simple manner that the locking parts of the side member, in particular at the relatively sensitive coupling area, will be severely damaged by rough handling of the container as may happen by edge collisions and the like. This is stated in claims 3 and 4.

The above-mentioned locking engagement is provided in that the locking fitting is provided with a locking means, which can advantageously be formed with a slide face which forms a relatively acute angle with the longitudinal axis of the pipe means in the locking position of the locking fitting. In the vicinity of the plane of the side member the locking fitting is likewise provided with a projection, such as a foot or finger grip for releasing the locking engagement. The relatively acute angle of the locking means entails that in case of collision with the container transversely to the plane of the side members the guide means can be moved slightly additionally inwardly in the pipe means, which is possible without noticeable resistance from the locking means because of the acute angle.

The second face of the locking means is moreover shaped so as to form an acute angle with a vertical plane through a longitudinal axis of the guide means. This is a consequence of the selected journal point and expediently ensures that the latch locks the guide means and can simultaneously be released unobstructedly.

It will be appreciated with this feature that the container of the invention is provided with side members whose locking parts are greatly protected against impact and pressure loads in longitudinal as well as transverse directions, while providing a locking mechanism for the side members by very simple means. This is stated in claim 5.

The invention will be explained more fully below with reference to the drawing, in which

fig. 1 shows a container structure according

to the invention assembled in a position of use, fig. 2 is a side view of a section of a side member for the container illustrated in fig. 1, and

fig. 3 is a top view of the side member section illustrated in fig. 2.

Fig. 1 shows a container according to the invention, the container being shown here in a preferred embodiment with two mounted, opposed side members 2 which are attached at their lower ends to a bottom section 3, which, like the side members 2, has a structure which is known in principle. When the container is present in a completely or partially loaded state, the opposed side members of the container are adapted to be connected and thus mutually braced with bracing means (not shown), such as rubber straps or the like. The predominant part of the bracing effect is obtained by coupling with the bottom section. This coupling mechanism represents the special feature of the container and its use, which is described below.

Fig. 2 shows a partial section of the container, illustrated in a vertical sectional view through one of the side profiles 4 of the bottom section 3 and a bottom profile 5 for an adjoining side member. The side profile 4 constitutes a first locking part for the coupling mechanism, the unit received in it constituting the second or side member locking part 6, and the locking parts are illustrated in a mutual engagement in the figure.

As appears, the side members are shaped in their preferred embodiment so as to form an additional loading surface between the outer edge of the bottom section and the internal side face of the side member in assembled state, so that unobstructed mounting of the side members is ensured in spite of minor goods displacements during loading (this likewise appears from fig. 3).

While the first-mentioned locking part 4 is thus advantageously and simply formed by an open, tubular object, the locking part 6 of the side member comprises the actual mechanical properties. It appears that the locking part 6 has an oblong guide means 7 which protrudes into and is attached to the bottom profile 5 of the side member 2, and so that in relation to the plane of the side member it protrudes substantially horizontally from it. The guide means 7 is moreover provided with a height dimension which substantially corresponds to the internal height of the pipe means 4 so as to provide a relatively close fit when inserted and in coupled state.

To retain the side member on the bottom section 3 of the container 1 in case of loads transversely to the plane of the side member, the locking parts provided at each corner portion of the side member are in a preferred embodiment provided with latch fittings 8 which are disposed and journaled in the guide means 7, this being provided in the form of a U-shaped bracket, which appears most clearly from fig. 3. The latch fitting is shown journaled in the vicinity of its one end whereby it can assume a locking position by its own weight, the latch fitting being shown with a spring means 9 in the shown embodiment so as to better ensure the mechanical

function.

When the side member is inserted on the bottom section it will thus be appreciated that the latch fitting 8 will be present in the position shown in fig. 2, this angular position being ensured precisely via the stop boss 10 provided at the extremity of the latch fitting close to the bearing 13, said stop boss being adapted for engagement with the guide means 7 via a vertical slot 11 provided in said means. When the guide means is subsequently pushed into the pipe means 8, the latch fitting, when contacting a vertically downwardly protruding locking means 12, contacts the lower, internal face of the pipe means, and then a guide face 14 on the locking means forces it to move upwardly via rotation around the journal. Additional insertion of the guide means causes the locking means 12, immediately before the inner face on the bottom profile 5 of the side member engages the adjoining face on the bottom section, to be moved down into a slot 15 provided in the bottom of the pipe means for cooperation with the locking means. In this position the side members of the container are thus fixed and locked to the bottom section, and the side member may be removed by means of a release projection 16 which is provided on the latch opposite the journal end and protrudes down through a slot opening 17 downwardly in the bottom profile 5.

It likewise appears from fig. 2 that the locking means 12 has a slide face 14 which forms a relatively acute angle with respect to the longitudinal axis of the pipe means. This face is provided in this manner since in case of collision with the bottom profile 5 of the side member the latch fitting can slide up the innermost slot edge 18, thereby avoiding destruction of the engagement of the locking means with the slot 15 or even destruction of the entire guide mechanism. This additional movement of the guide means in the pipe means 4 will be a consequence of the manufacturing and fitting tolerances which are present in such products. The other face 19 of the locking means is seen to form a likewise acute angle with respect to vertical, and this is to be seen as a feature to ensure effective release of locking engagement with the slot, since the face 19, if it had a substantially vertical orientation in the locking position of the latch, would grip the rearmost edge 20 of the slot owing to the pivotal movement provided via the journal of the latch fitting. Release would therefore require certain clearance by pressure impact on the bottom profile 5 when the locking engagement is to be released. Of course, this is undesirable since it would entail insufficiently tight coupling. This drawback may be prevented by forming the other slide face 19 of the locking means with an angle which with respect to vertical plane corresponds to the angular rotation to which the latch fitting 8 is subjected by movement from engagement position to released position. With this solution, the elbow transition of the locking means 12 between the face 19 and the rearwardly disposed face part will have contact with the slot edge 20 of the pipe means 4.

The partial corner portion section described above is shown in top view in fig. 3, from which it

appears that the guide means 7 is provided as a U-shaped profile object which is provided with an outermost contraction in the lateral direction so that the cross section of the guide means only partially engages the side walls of the pipe means. This structure of the guide means entails that the side members can be guided relatively "loosely" without great positioning requirements in a simple and effective manner by initial insertion, and this structure of the U-profile additionally entails that the locking parts can be coupled and released one at a time in a simple and advantageous manner since the side member can be rotated or "twisted" in a horizontal plane. When the pipe means contact the wide cross section of the guide means or the U-profile 7 upon additional insertion of the side members, the guide means are received relatively tightly in the pipe means 4 both in height and lateral direction so that correct fixing of the side member is achieved. In addition, the contraction area 21 of the guide means entails that the established gap between the legs of the U-profile may be used for journalling and thus sidewise control of the locking fitting or latch 8 without using additionally journalling devices. Moreover, in this preferred construction of the guide means and in the coupled state with the pipe means 4 there is formed a gap between the guide means between its external face and the adjoining, outer wall of the pipe means. This gap is advantageously utilized for clearance so that the guide means, in particular at the relatively sensitive coupling area, will be protected to some degree if the bottom section at said points are subjected to collisions or other strong impacts.

## Claims

1. A container comprising a bottom section with one or more horizontally removable side members having oblong locking parts which extend transversely to the side member, said bottom section having complementarily shaped locking parts, **characterized** in that the locking part of the bottom section is constructed as a pipe means arranged as an integrated part of the side profile of the bottom section, and that the locking parts of the side members are constructed as guide means adapted to be inserted into the bottom section pipe means for tight reception and fixing in it.

2. A container according to claim 1, **characterized** in that the side members have a bottom profile protruding in transverse direction somewhat from the inwardly directed side face of the side member so as to form a free, substantially horizontal edge face which, when the side members engage the bottom section in mounted state, is substantially flush with the loading surface of the bottom section.

3. A container according to claims 1-2, **characterized** in that the guide means on the second locking part is constructed as a substantially U-shaped profile bracket whose outermost portion with respect to the plane of

the side member has a horizontal contraction provided in the side direction, and that the legs of the U-profile in the contraction area form an internal slot between which a vertically movable locking fitting having locking means and release projection is journaled.

4. A container according to claims 1-3, **characterized** in that the contraction of the guide means is provided in the u profile so as to

create a gap between it and the adjoining outer wall of the pipe means.

5. A container according to claims 1-4, **characterized** in that the locking means has a first slide face which forms an acute angle with the longitudinal axis of the pipe means, and a second face forming a likewise acute angle with a vertical plane.

5

10

15

20

25

30

35

40

45

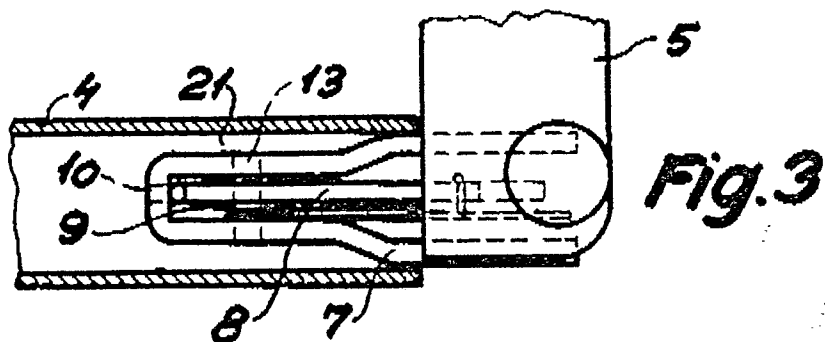
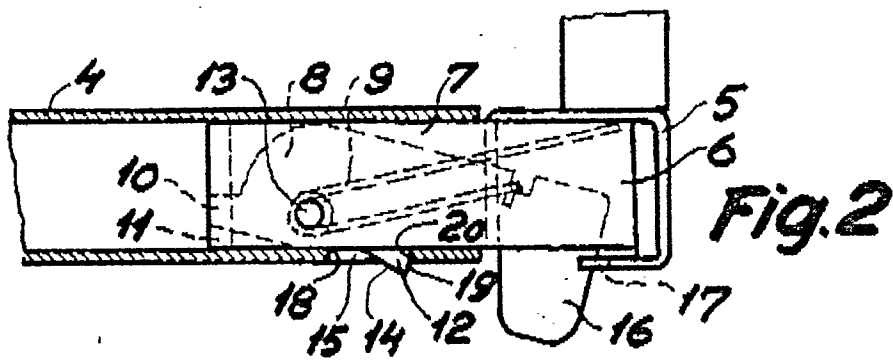
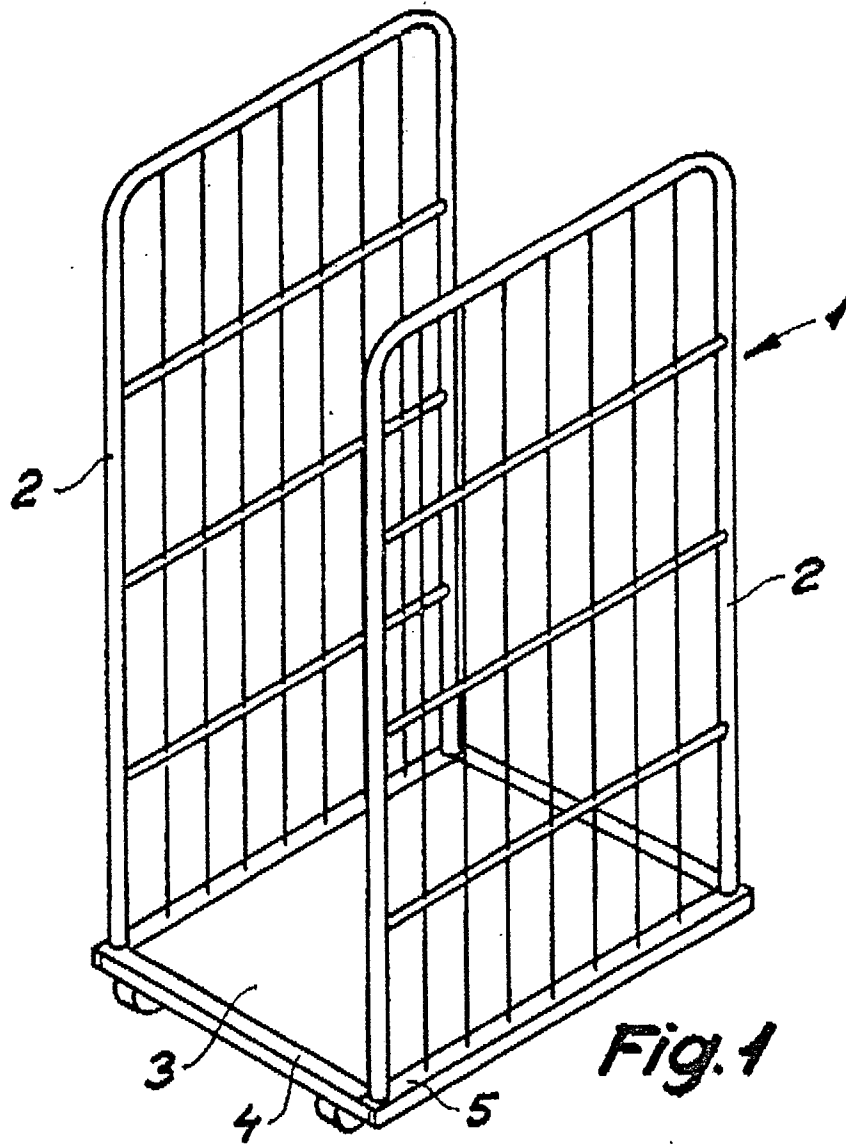
50

55

60

65

5





DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)		
A	DE-A-2 253 151 (WENNMACHER) * Page 3, line 4 - page 4, line 4; figures 1-9 * ---	1	B 65 D 19/06		
A	US-A-2 833 550 (FRICK) * Column 1, line 71 - column 2, line 11; figures 1-2 * ---	1			
A	US-A-3 277 848 (RUNGE) * Column 3, lines 20-57; figures 1-3 * -----	1			
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)		
			B 65 D B 62 B		
The present search report has been drawn up for all claims					
Place of search THE HAGUE		Date of completion of the search 30-06-1989	Examiner VANTOMME M.A.		
<table><tr><td><b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</td><td>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... &amp; : member of the same patent family, corresponding document</td></tr></table>				<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document	T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document	T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document				