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(54) **Latching device for a rotary bar fastening mechanism.**

(57) A latch and anchor assembly for an axially rotatable locking rod (1) of the type used on doors (2) and transport containers is provided. The latch member (4) has a finger (7) which projects outwardly in a plane at right angles to the axis of the locking rod (1) and a heel (11) opposite the finger (7). A co-operant anchor member (10) for attachment to the surround or frame of the door (2) has a bridge (9) for retaining the finger (7) in the locked position and a stop (12) co-operating with the heel (11) to prevent movement of the finger (7) and of the bridge (9). The width of the bridge (9) is appreciably greater than that of the finger (7) to allow for deflection of the frame or surround to which the anchor (10) is secured in particular the deflection of the floor of the container.

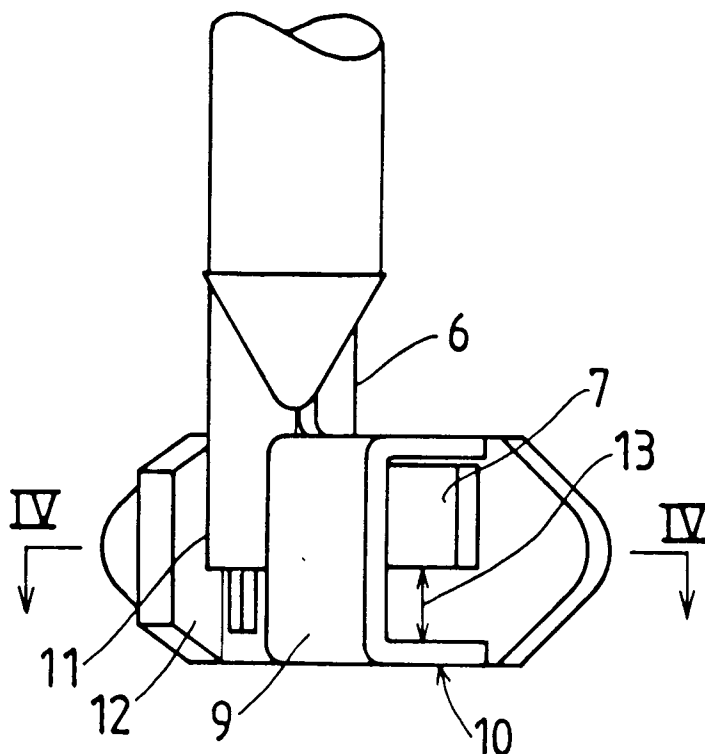


FIG. 2

THIS INVENTION relates to a latch and anchor assembly for an axially rotatable locking rod of the type commonly used on doors to transport containers. (including shipping containers), truck bodies or the like, where a locking rod extends across the entire width or height of a door to extend beyond the periphery thereof. The free ends of the locking rod have latch members adapted to co-operate with anchor members associated with

5 the surrounding frame or the like to which the door is to be secured.

The arrangement of a locking rod, rotatable about its own axis, extending up the entire height of a door to a transport container or other truck or vehicle body, is widely known and used. Usually the ends of the locking rod which project beyond the periphery of the door have a latch arrangement comprising two oppositely directed pairs of fingers adapted to co-operate with an anchor member fixed to the door frame, or container or

10 truck body, and wherein the anchor member has a bridge adapted to fit over one pair of fingers as well as two lugs adapted to fit between the members of each pair of fingers. The lugs locate the locking rod in the plane of the door or door frame, whilst the fingers engaging behind the bridge locate to the locking rod in a direction at right angles to the door thereby effectively locking same in a closed position. The same fittings are located at the upper and lower ends of the locking rod.

15 These arrangements operate effectively so long as the anchor members are correctly positioned longitudinally of the locking rod. In the case of containers or vehicle bodies having a rigid floor, this generally applies to doors located at an end of a vehicle body or transport container.

However, it has more recently become popular to provide side opening containers or bodies, in particular transport containers, where two pairs of doors form substantially the entire side-wall of a container. In such a case, and in the interests of decreasing the mass of a floor structure to a container, the floor structure is in fact designed to deflect within a predetermined specification.

20 What this deflection means in respect of the locking arrangement is that the lower anchor member will in fact move further away from the upper anchor member in consequence of the deflection of the floor. In such a case, correct alignment of the anchor members and the two latch members may be difficult, if not impossible, as the latch members are not designed to accommodate relative movement between the anchor and latch member in a direction of the axis of the locking rod.

25 It is, accordingly, the object of this invention to provide a latch member and co-operating anchor member which will accommodate the limited deflection mentioned above.

In accordance with this invention there is provided a latch and anchor assembly wherein the latch has a body having an axis of rotation, a locking finger projecting outwardly in one direction in a plane at substantially right angles to the axis of rotation, a heel in a region opposite the finger and wherein the body is, or is adapted to be, mounted to an end region of a rotatable locking rod with the body axis coincident with that of the locking rod, and wherein further the anchor member comprises a base for mounting same to a support therefor, a bridge for receiving the locking finger and a stop projecting upwardly from the base at a position spaced from the bridge and adapted to co-operate with the heel of the latch body when the locking finger is located in the bridge, the width of said bridge being appreciably greater than the width of said locking finger relative to the anchor member to provide for different positions of the locking finger in the axial direction within limits.

30 The invention also provides a locking rod assembly comprising a latch member and anchor member as above defined at at least the lower end of the locking rod as well as a door fitted with such a locking rod assembly, and transport containers fitted with such doors.

40 In order that the invention may be more fully understood one embodiment thereof will now be described with reference to the accompanying drawings.

In the drawings:-

45 FIG. 1 is an elevation of a container door having a locking rod fitted with a latch according to the invention at its lower end;

FIG. 2 is a perspective view somewhat from the front of the anchor member;

FIG. 3 is a similar view but somewhat from the rear of the anchor member;

FIG. 4 is a cross-section taken along line IV to IV in Figure 2; and

50 FIG. 5 is an illustration of a transport container to which doors of the type illustrated in Figure 1 may be fitted.

In the embodiment of the invention illustrated in the drawings the invention is particularly adapted to be applied to the lower projecting end of a locking rod 1 rotatable about its own axis in known manner and the ends of which project beyond the periphery of a door 2 of a transport or shipping container of the type illustrated in Figure 5. The locking rod is, in the usual way, adapted to be rotated by means of a handle 3.

55 The operatively upper end of the locking rod may be provided with a latch member 4 of substantially conventional design and adapted to co-operate with an anchor member having a stirrup and lugs adapted to become located between two oppositely directed pairs of fingers 5 thereof.

Such an arrangement provides for little or no axial misalignment of the lugs and fingers and, accordingly,

in the locked position, will locate the locking rod axially as well as locating the door in plane parallel to the plane of the door frame or surround. The fingers 5 engaging behind a stirrup (not shown) of an anchor member operate to hold the top end of the door in association with the door frame or surround.

As provided by this invention, and in order to accommodate downward deflection of the floor of a container, the lower end of the locking rod is fitted with a latch member 6 having a body with an axis of rotation coincident with the axis of rotation of the locking rod 1. The body has a single outwardly projecting locking finger 7 which is located in a plane at right angles to the body axis and which has a rear surface 8 shaped so that it can be introduced, by rotation about the body axis, under a bridge 9 of an anchor member 10. The body of the latch member further has a heel 11 at a position substantially diametrically opposite the finger, the heel co-operating with a stop 12 of the anchor member in the locked position.

Furthermore, as provided by this invention, the width of the bridge 9 is appreciably greater than the width of the co-operating finger 7. Thus, there is provided a pre-determined distance, indicated by arrow 13, which can accommodate deflection of a floor.

In the embodiment of the invention illustrated, where the anchor member is to be attached to the floor or floor support, the finger 7 is shown at its position corresponding to full deflection of the floor. If the container were unloaded the finger would be located towards the bottom of the bridge as the floor and, with it, the anchor member would have risen by virtue of the deflection having been removed.

In order to further assist in locating the finger in the operatively closed position, as shown most clearly in Figure 4, the heel communicates with a rib 14 which in turn registers with a recess 15 in the base 16 of the anchor member to assist in restraining further lateral movement of the finger in a direction into the bridge. This particular movement is also prevented by virtue of the fact that the front end of the body is adapted to co-operate with the edge of the bridge at a position indicated by numeral 17 in Figure 3.

It will be understood that the latching member is moved into and out of the operative position simply by rotating the locking rod and simultaneously releasing or closing the door by a small distance which enables the axis of the body to move into and out of a position between the bridge and the stop of the anchor member. Movement is thus prevented in all directions except the axial direction, in which case movement is limited by the width of the bridge to the amount indicated by the arrow 13.

It will be understood that numerous variations may be made to the embodiment of the invention described above without departing from the scope hereof. In particular the design of the body could be varied widely, as could the design of the finger and bridge with which it is to co-operate.

Claims

1. A latch and anchor assembly wherein the latch 6 has a body having an axis of rotation, and is, or is adapted to be, mounted to an end region of a rotatable locking rod 1 with the body axis coincident with that of the locking rod, and wherein the anchor member 10 comprises a base for mounting same to a support therefor, and a bridge 9 for co-operation with the latch; the assembly being characterised in that the latch body has a locking finger 7 projecting outwardly in one direction in a plane at substantially right angles to the axis of rotation, and a heel 11 in a region opposite the finger, the bridge being adapted for receiving the locking finger and the anchor having a stop 12 projecting upwardly from the base at a position spaced from the bridge and adapted to co-operate with the heel of the latch body when the locking finger is located in the bridge, the width of said bridge being appreciably greater than the width of said locking finger relative to the anchor member to provide for different positions of the locking finger in the axial direction within limits.
2. A latch and anchor assembly as claimed in claim 1 in which the heel has a rib or projection 14 registering, in the latched position, with a co-operating recess 15 in the base to prevent movement of the finger relative to the anchor member in the direction in which the finger extends.
3. A locking rod assembly comprising a latch member as defined in either of claims 1 and 2 at least its operatively lower end adapted to co-operate with an anchor member as defined in either of claims 1 and 2.
4. A door 2 fitted with a locking rod assembly as claimed in claim 3.
5. A transport container 1 having a door as claimed in claim 4.

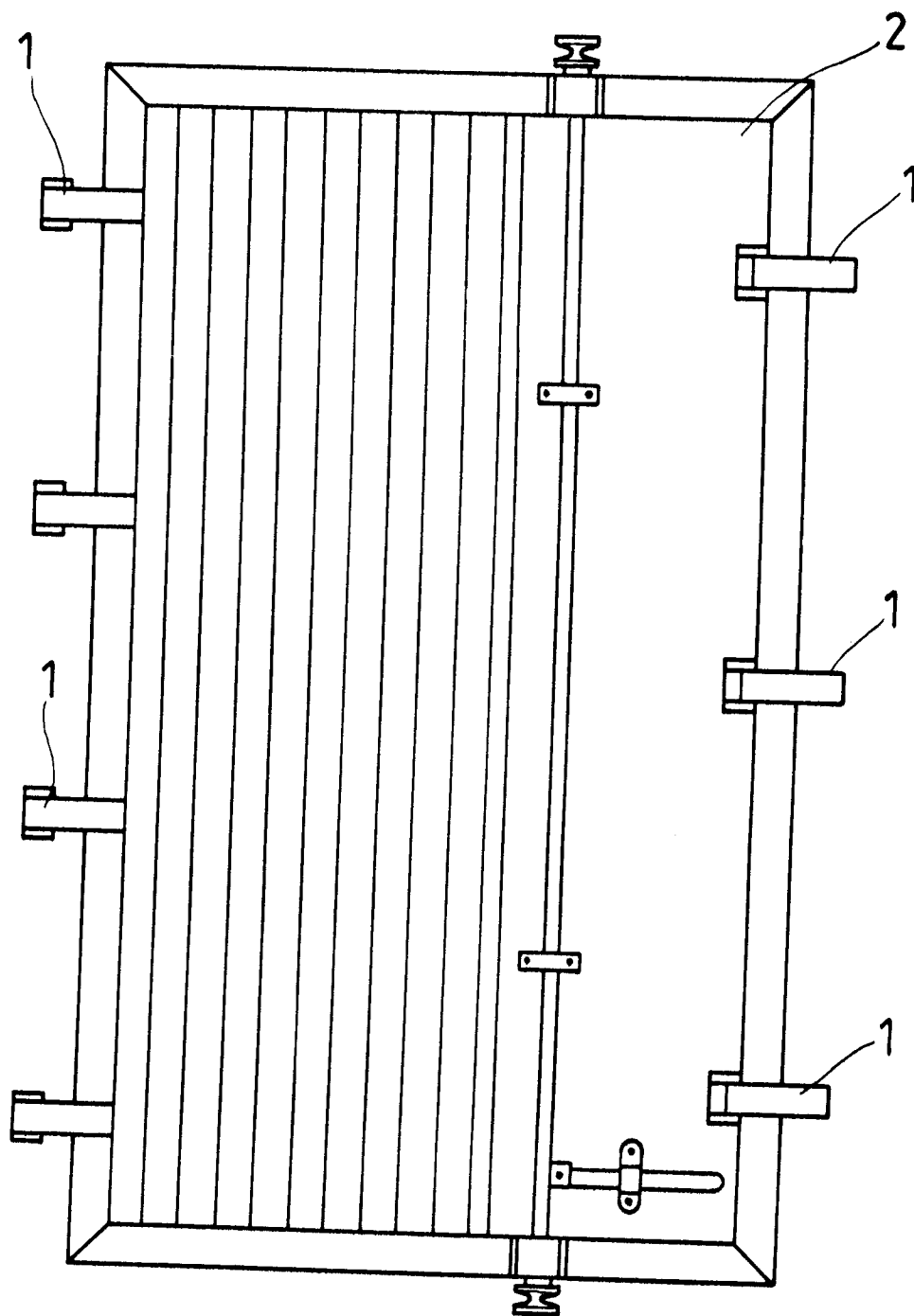


FIG. 1

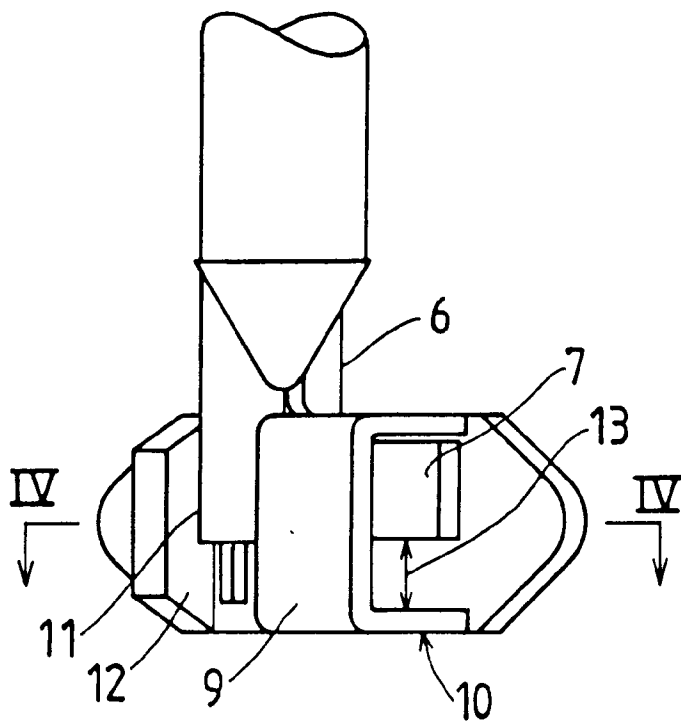


FIG. 2

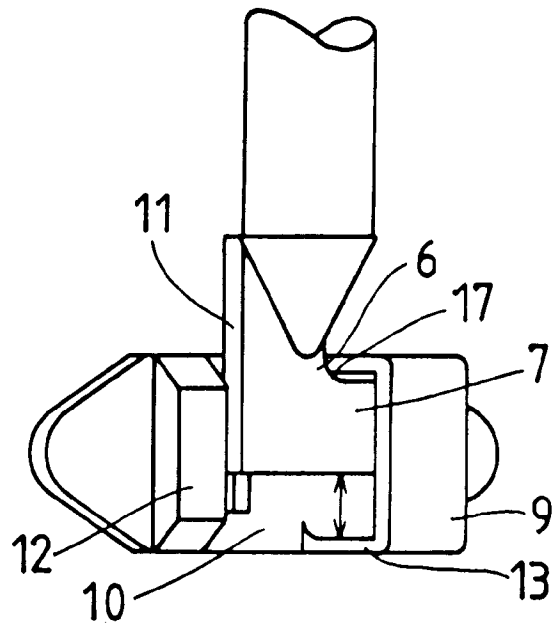


FIG. 3

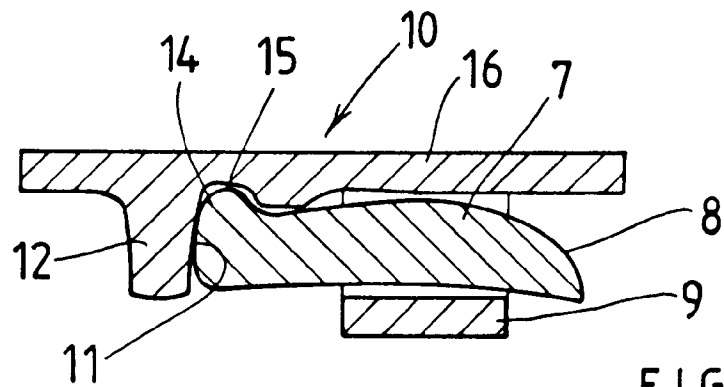


FIG. 4

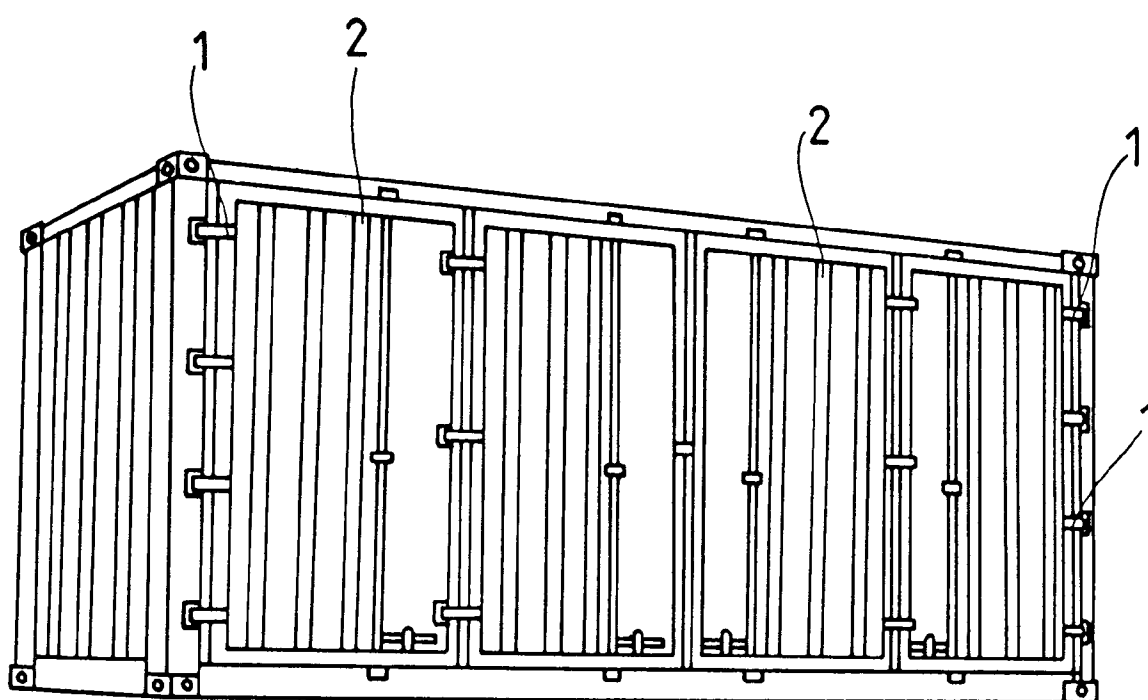


FIG. 5



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 93 30 7928

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.5)
A	US-A-3 989 289 (RINGE) * column 2, line 11 - line 27 * * abstract; figures * ---	1	E05B65/16
A	US-A-1 761 208 (HASELTINE) * claim 1; figures * ---	1	
A	US-A-4 029 349 (SWEDA ET AL.) * abstract; figures * ---	1	
A	DE-A-37 31 747 (KONTEC GMBH) * abstract; figures * ---	1	
A	US-A-4 869 023 (BAKULA ET AL.) ---	1	
A	US-A-4 844 523 (PASTVA) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			E05B E05C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 January 1994	Examiner Gimenez Burgos, R
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