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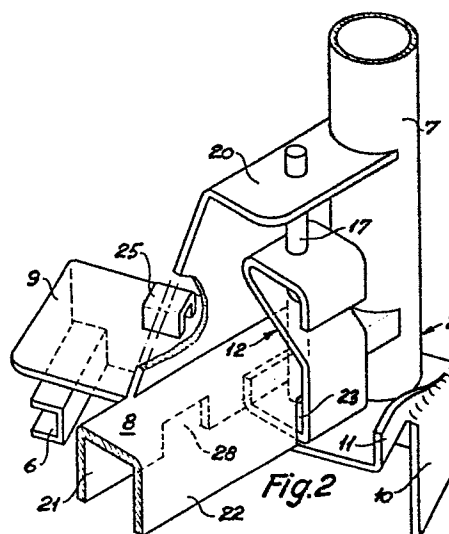
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(54) **A side member for loading pallets.**

(57) A side member for a loading pallet and with coupling means (Figure 2) to attach the side member to the pallet. The side member has a hook (6) which can be pivoted in behind a corner block on the pallet, and the side member is characterized by locking means to fix the position of the locking hook (6). In a preferred embodiment the locking means comprise a latch lock (12) which is movable between a locking position in which the latch lock (12) cooperates with a stop (11), and a position in which the base of the latch lock clears the stop (11) when the locking hook (6) is pivoted away from the pallet. The latch lock (12) is relatively small and is placed at a protected point behind a shield (20) so as to obviate unintentional release of the locking means in practice. On the other hand, it is clear to a user how to release the locking means, intentionally.



A side member for loading pallets

The invention concerns a side member for loading pallets, said side member having coupling means to secure said member to the pallet, said coupling means comprising a locking device positioned at each end of the side member and arranged to engage the top side of a pallet corner, at least one locking device of which comprising a locking hook which is pivotable about a substantially vertical axis in the position of use of the side member and which grips an edge portion of the pallet in a locking position in which the hook is secured against pivoting movement by locking means, said locking hook, when pivoted away from the locking position, allowing the locking device to be released from the pallet.

A locking device of the above-mentioned type is known from the Danish Patent Specification 97 692. This known locking device is so secured against pivoting movement about an associated corner pipe that a locking hook on the locking device cannot be pivoted away from the pallet and be disengaged from the top board of the pallet when the side member comprising the corner pipe is in its lower position. The reason is that the known side member can be raised and lowered and is so arranged that the locking device can be pivoted freely with respect to the side member when the side member has been lifted to its upper position, allowing the locking device and the associated locking hook to be pivoted away and disengaged from the corner of the pallet.

This known side member has operated quite well till now, but has been found to be vitiated by some drawbacks in use. First, unintentional vertical movement of the side



member, caused e.g. by a fork truck, entails that the locking device is released and may be disengaged from the pallet, either by impacts or as a consequence of a load on an associated cross member. The known locking device has moreover been found to be vitiated by the drawback that it is difficult for untrained persons readily to see how the locking device is to be released from the pallet because the locking means are concealed so that it does not appear from the structure that the side frame is to be lifted in order for the locking device to be released.

The object of the invention is to provide a side member with an improved locking device where the above-mentioned drawbacks are obviated, i.e. the side member cannot in practice be released unintentionally, but where on the other hand it appears clearly from the structure how the locking device is to be released when this is intended.

This object is achieved in that the locking means comprise a releasable latch lock and a stop to cooperate with the latch lock in the locking position, said means being visibly disposed in firm connection with the side member and with the locking hook and so that the latch lock is accessible for intentional release of it. The latch lock, which is preferably relatively small, can then be placed at a point protected against unintentional action, but is nevertheless visible to the user so that he can easily see how the locking device is to be released. The corner columns of the side member need then not be movable in the longitudinal direction thereof like in the prior art, which provides the additional advantage that only one of the two locking devices of the side member has to comprise a pivotable locking hook.



The locking hook may be provided on one end of a pivotable arm, while the other end carries the stop or the latch lock, but the locking hook is preferably integral with the locking device. It is likewise preferred that the stop is firmly mounted on the locking device, which entails that the latch lock is mounted on the side member.

In a preferred embodiment of the side member comprising a pair of corner columns interconnected by means of a horizontal transom which in the position of use is horizontal and has an internal side part facing the pallet and an external side part spaced from the internal side part and facing away from the pallet, the latch lock is placed on the transom in such a manner that in the locking position it may cooperate with the stop in the vicinity of the said external side portion, which is arranged to clear the stop so that the locking device can be pivoted away from the side member when the latch lock is in its upper position. Thus, the pivotal movement of the locking device from the locking position in the said direction may be restricted by the internal side part of the transom. This movement may be restricted so that the locking device just clears the corner of the pallet, which can be provided for by a suitable spacing between the internal side part of the transom and the latch lock face cooperating with the stop.

Protected positioning of the latch lock can expediently be obtained in this preferred embodiment when in a section perpendicular to the transom the latch lock is S-shaped and has a substantially plane base so received in the transom through a cut in its external side portion that the base of the latch lock extends to the internal side portion of the transom and is freely movable between

a lower position corresponding to the locking position and the said upper position where the stop clears the base of the latch lock, and the upper part of the latch lock extends above the transom. As the base of the latch lock is substantially plane and extends to the internal side part of the transom, the latch lock can ride on the stop when the locking device has been pivoted in the first direction away from the locking position so that it is not necessary to subject the latch lock to any forces in order to pivot it away from the locking device.

Expediently, the latch lock is spring biased in a direction toward the locking position and is secured to a guide pin, which is vertically movable in holes in the transom and a protective shield for the latch lock, respectively. Since unintentional impacts are mainly horizontal, it is relatively seldom that the latch lock is unintentionally acted on in the vertical direction, and when this happens the spring inhibits the releasing movement.

The locking device can be pivoted right in under the side member when the side member is not used in that the locking device has an upwardly extending guide pin to retain a cross member against horizontal movements, and that the internal side portion of the transom has a cut to receive the guide pin when the locking device is pivoted in under the transom in a direction toward the side member. This is specially possible because the guide pin can be made relatively small since, unlike the prior art, it need not be arranged to secure the cross member against vertically upward movement. The cross member can be secured against this movement when the corner columns of the side member each have a pro-

jection extending in a direction toward an adjacent side of a cross member to cooperate with a projection on the cross member, the latter projection being disposed directly below the first projection when the cross member is engaged with the guide pins on the locking devices. This presupposes that the corner columns of the side member are not vertically movable with respect to the locking devices.

The invention will be explained more fully by the following description of a preferred embodiment with reference to the drawing, in which

fig. 1 shows a loading pallet mounting a pair of opposite cross members and a pair of opposite side members having schematically shown coupling means for attaching the side members to the loading pallet,

fig. 2 shows details in a preferred embodiment of the coupling means of the invention,

fig. 3 shows a section through the coupling means of fig. 2 in a locking position, while

fig. 4 shows the same as fig. 3 when the coupling means are pivoted away from the locking position.

Fig. 1 shows a known frame (see e.g. the Danish Patent Specification 97 692) comprising a pair of opposite cross members 4 and a pair of opposite side members 3, which are secured to a loading pallet 1 by coupling means 2. Moreover, at the top there is placed a locking device 5 in each corner for releasable coupling of the side and cross members. The coupling means 2 are shown in a locking position in which a hook 6 extends a distance in under an outer top board of the pallet and

engages an internal side of an associated corner block. The coupling means have an engagement plate 10 engaging the opposite side of the corner block, and the coupling means 2 are thus secured to the pallet 1 in such a manner as requires the locking hook to be pivoted away and disengaged from the corner block of the pallet in order for the side members 3, which are connected to the coupling means 2, to be released from the pallet. It will be explained later how the cross members 4 are fixed with respect to the coupling means 2.

Fig. 2 shows details in a preferred embodiment of a coupling means 2 of the invention. The figure shows a length of a corner column 7 which is connected to the opposite corner column of the side member by means of transoms, a length of the lower transom 8 being shown in the figure. A locking device 9 is connected to the corner column 7 so that the locking device is pivotable about the axis of the corner column, the locking device having a pin (not shown) extending perpendicularly from the top side of the locking device and being pivotally received in the corner column 7 so that the locking device 9 is secured against movement with respect to the corner column longitudinally thereof. The invention concerns locking means for releasable locking of the pivoting movement of the locking device 9 with respect to the corner column 7; a preferred embodiment of these locking means will be described with reference to figs. 2-4, where fig. 3 shows a section through the locking means in a locking position, while fig. 2 shows the locking means where the locking device 9 is pivoted away from the locking position in a direction which is possible only when the side frame has been released from the pallet. Pivoting of the locking device 9 in the opposite direction from the locking position provides

the pivoting movement necessary for the locking hook 6 to be pivoted away from the corner block of the pallet, which appears from the section of the locking means shown in fig. 4.

5 The locking device 9 has a stop 11 extending a distance up over the top side of the locking device and disposed in alignment with a latch lock 12 mounted to be vertically movable on the side member. As appears from fig. 3, the latch lock 12 may be substantially S-shaped with
10 a plane base 13 whose free end preferably has a bend 14. The upper portion of the latch lock extends, as shown, across the transom 8 and has a plane top side 15 which may have a downwardly bent portion 16. The bent portions
15 in certain circumstances, as explained below. The latch lock 12 is secured to a guide pin 17 extending through guide holes 18, 19 in the top side of the transom and a protective shield 20, respectively. Thus, the latch lock is vertically movable between a lower locking position,
20 shown in fig. 3, and an upper position, shown in fig. 4, in which the base 13 of the latch lock clears the stop 11 so that the locking device 9 can be pivoted to the position in fig. 4 in which the stop 11 engages an internal side portion 21 of the transom 8, whose external
25 side portion 22 has a cut 23 to receive the base 13 of the latch lock in the upper position.

When the coupling means are placed as shown in fig. 1, the locking means are in the position shown in fig. 3 in which the locking device 9 cannot be pivoted toward
30 the pallet because of the engagement with the pallet, nor can it be pivoted away from the pallet because the stop 11 engages the latch lock 12 in the lower position of said lock. The coupling means are thus locked to the

pallet. When the side member is to be released from the pallet, the latch lock is lifted manually or by the foot to the upper position, which is shown in fig. 4; then the locking device 9 can be pivoted away from the pallet. This outward movement should expediently be restricted, and this is provided for in that the stop 11, in the extreme position, hits an internal side portion of the transom 8, as shown in fig. 4. In this position the locking hook 6 is free of the corner block of the pallet so that the locking device 9 can be pulled off the pallet in a direction perpendicular to the side member. It is noted that it is usually sufficient that just one of the locking hooks 6 on the side frame is pivotable as explained in the foregoing. When the side frame is to be mounted on the pallet, the locking device 9 is placed in advance in the position shown in fig. 4 where it may be pushed across the corner of the pallet, and then the locking device can be pivoted by the foot to the position in fig. 3 in which the latch lock 12 falls down and locks the opposite pivoting movement. The latch lock 12 can fall down because of gravity, but to add to the reliability of the function the screw spring 24 shown in the figure is preferably provided. It is noted that because of its plane base 13 the latch lock 12 rides on the stop 11 during the movement between the positions shown in fig. 3 and fig. 4.

To guide the cross members 4 shown in fig. 1 the locking device 9 is provided with an upwardly extending projection 25, which must be relatively large in the prior art because it must be capable of securing the cross members against vertically upward movement, which is due to the fact that the known side members are vertically movable, the known locking means being released by this vertical movement. According to the invention, in which

the side members are secured against vertical movement with respect to the locking device 9, the cross frames may be secured by means of projections, cooperating in pairs, on a side and a cross member, respectively. Fig.

5 1 shows a projection 26 on the side member 3, and this projection is disposed directly above a projection 27 on the cross member 4. It will be appreciated that such pairs of projections are provided in all corners of the frame. The projection 25 of the locking device 9 can
10 therefore be made relatively thin because it is only to guide the base of a cross member against horizontal movement. The transom 8 will therefore not be weakened noticeably by having the cut 28, which is shown in
15 fig. 2 and is sufficiently large to receive the projection 25 when the locking device 9 is pivoted in under the transom 8. This pivoting movement, which is restricted by the engagement of the projection 25 with the external side portion 22 of the transom, is particularly expedient when the side members are to be stored
20 and take up as little space as possible.

It will be appreciated that only a preferred embodiment of the side member of the invention has been described in the foregoing. It is thus evident that the locking device 9 might be fixed with respect to the corner
25 column 7 as the hook 6 might be placed on a separate locking arm whose other end was formed with the stop 11 or a latch lock to cooperate with a latch lock or another stop on the side frame, respectively. It is essential to the invention that the locking means are pro-
30 tected as much as possible, but nevertheless readily visible so that a user is not in doubt how to release the locking means, while unintentional release is obviated as far as possible. The latch lock is relatively small and is partly protected by the shown protective
35 shield 20 in the embodiment described in the foregoing.

It will also be appreciated that the bend 16 on the latch lock reduces the risk of unintentional release of the locking means, but it may be desirable in certain embodiments that the locking means may be released e.g. by the foot, and in that case the bend 16 is usually not provided. It will likewise be appreciated that the transom 8 may have another profile shape than the one shown in the figures. Also the upper part of the latch lock may be designed in other ways for example as a loop. In case of a round profile it is clear that the bent portion 14 of the base 13 of the locking hook must be omitted. In respect of four-sided profiles this bend serves to distribute the engagement pressure.

P a t e n t C l a i m s :

1. A side member (3) for a loading pallet (1) and with coupling means (2) to secure said member to the pallet, said coupling means comprising a locking device (9) positioned at each end of the side member and arranged to engage the top side of a pallet corner, at least one locking device of which comprising a locking hook (6) which is pivotable about a substantially vertical axis in the position of use of the side member and which grips an edge portion of the pallet in a locking position in which the hook is secured against pivoting movement by locking means, said locking hook, when pivoted away from the locking position, allowing the locking device to be released from the pallet, c h a r a c t e r i z e d in that the locking means comprise a releasable latch lock (12) and a stop (11) to cooperate with the latch lock in the locking position, said means being visibly disposed in firm connection with the side member (3) and with the locking hook (6) and so that the latch lock is accessible for intentional release of it.

2. A side member according to claim 1, in which the side member comprises a pair of corner columns (7) interconnected by means of a lower transom (8), which is horizontal in the position of use and has an internal side portion (21) facing the pallet and an external side portion (22) spaced from the internal side portion and facing away from the pallet, c h a r a c t e r i z e d in that the latch lock (12) is placed on the transom (8) in such a manner that in the locking position it may cooperate with the stop (11) in the vicinity of the said external side portion (22), which is arranged to clear the stop (11) so that the locking device (9) can

be pivoted away from the side member (3) when the latch lock (12) is in its upper position.

3. A side member according to claim 2, c h a r a c-
t e r i z e d in that in a section perpendicular to
5 the transom the latch lock (12) is S-shaped and has a
substantially plane base (13) so received in the
transom through a cut (23) in its external side portion
(22) that the base of the latch lock extends to the in-
ternal side portion (21) of the transom and is freely
10 movable between a lower position corresponding to the
locking position and the said upper position where the
stop (11) clears the base (13) of the latch lock, and
that the upper part of the latch lock extends above
the transom.

15 4. A side member according to claim 3, c h a r a c-
t e r i z e d in that the latch lock (12) is spring
biased in a direction toward the locking position and
is secured to a guide pin (17), which is vertically
movable in holes in the transom (8) and a protective
20 shield (20) for the latch lock (12), respectively.

5. A side member according to any of the preceding
claims, in which the side member (3) is arranged to co-
operate with cross members (4) for interconnecting two
opposite side members, c h a r a c t e r i z e d in
25 that the locking device (9) has an upwardly extending
guide pin (25) to retain a cross member against hori-
zontal movements, and that the internal side portion
(21) of the transom has a cut (28) to receive the
guide pin (25) when the locking device is pivoted in
30 under the transom in a direction toward the side member
(3).

6. A side member according to claim 5, c h a r a c-
t e r i z e d in that the corner columns (7) of the
side member (3) each have a projection (26) extending
in a direction toward an adjacent side of a cross

5 member (4) to cooperate with a projection (27) on the
cross member (4), the latter projection being disposed
directly below the first projection when the cross
member (4) is engaged with the guide pins (25) on the
locking devices (9).

