

AUTOMATIC FITTING MACHINE FOR A LASHING PLATFORM AND SYSTEM
COMPRISING THE SAME

The invention relates to an apparatus for fitting a lashing platform with twistlocks and/or stackers.

For handling containers in port, i.e. for loading and unloading ships, several lashing platforms in various designs have already been proposed that speed up the handling and improve the work safety in the port area. A lashing platform of particularly preferable design is for example known from DE 10 2009 031 272 B3.

This known automatic lashing platform (ALP) features its own magazine for accommodating twistlocks removed from containers or for inserting twistlocks into the containers set down on the lashing platform. An internal magazine of this type can for example have a design as is known from DE 10 2008 061 204 B3.

In particular a lashing platform of preferable design can exhibit an internal magazine in which the twistlocks or also stackers are stored between adjacent rails in a way suspended from these.

Even though in tests this lashing platform has already shown that the unloading procedure can be speeded up considerably relative to the manual inserting and removing of the twistlocks from the container fittings to be handled and that the safety of the port personnel can be improved, on integration of the automatic lashing platform into the workflows in the port area the problem results that on account of certifications and certain classifications the twistlocks removed from the containers or inserted into the containers always have to remain with the ship.

In other words, twistlocks to be inserted into containers must first of all be provided by the ship transporting the container and brought manually to the internal magazine of the lashing platform, before they can be inserted into the containers to be transported by the ship. Vice versa, the twistlocks removed from the containers after unloading the ship and brought to the internal magazine have to be removed again from the internal magazine of the lashing platform prior to the ship leaving and then brought on board the ship.

For this reason, container ships transport boxes mounted on flat racks from which twistlocks and stackers are removed manually, in which they are collected and transported with the ship. During handling, these boxes have to be unloaded and be brought manually to the (internal) magazine of the lashing platform by appropriately trained port staff. Prior to the departure of the ship, excess twistlocks are collected again in the boxes and taken on board.

A disadvantage of this procedure is that the twistlocks are transported in the boxes in a completely disorderly manner and can be damaged by (this) inappropriate handling. On top of this, it requires a great amount of time and effort to remove the twistlocks from the boxes and to bring them to the lashing platform or to remove them from the lashing platform and deposit them in the boxes (if possible without damaging the twistlocks).

It is therefore the object of the invention to further simplify the unloading and loading of container ships, in particular to speed this up, and to treat the twistlocks gently.

This object is achieved by the apparatus having the features of Claim 1. The sub claims specify advantageous designs of the invention.

The basic idea of the invention is to create an apparatus by means of which (automatic) lashing platforms can be fitted largely automatically with twistlocks and/or stackers. Especially according to a particularly preferred design it is provided that instead of a simple box, the ship can carry along a transportable magazine in which the twistlocks are stored between (clamping) rails, so that the twistlocks (and stackers) can be brought from the transporting magazine into the lashing platform or preferably the lashing-platform magazine and vice versa by simply displacing the twistlocks.

The invention is explained using an exemplary embodiment of particularly preferred design that is illustrated in the appended drawings.

Figure 1 shows a first perspective view of the apparatus according to the invention;

Figure 2 shows a second perspective view of the apparatus according to the invention;

Figure 3 shows a front view of the inventive apparatus; and

Figure 4 shows a side view of the inventive apparatus.

Figure 1 shows a perspective view of an apparatus of particularly preferred design for fitting a lashing platform with twistlocks (TL) and or stackers. The apparatus 10 exhibits a transporting magazine 20 that holds twistlocks TL. The transporting magazine 20 can exhibit a frame construction in which a plurality of compartments for sorting the twistlocks is provided. The compartments can in particular be provided for accommodating pallet-like structures, these pallets exhibiting a frame having a plurality of parallel rails between which the twistlocks TL are stored in a suspended manner. In particular the rails are designed as clamping rails so that the twistlocks TL cannot shift when the magazine 20 tilts laterally.

The magazine 20 is designed in such a way that it can be inserted into the apparatus 10 or removed from the apparatus 10 and, for example using appropriate fittings, be lifted by a crane from the quayside to the ship and vice versa. In addition, fork-lift pockets are provided for accommodating the fork tines of a forklift, so that the magazine can be transported in the port area even without the aid of a crane.

The magazine 20 should in particular be designed such that it, too, can be mounted on flat racks and thus be transported safely on the ship. Here the pallets are designed in such a manner that they are secured in the magazine against sliding out by suitable means, but can be completely removed from the magazine 20 when necessary, e.g. using a forklift .

Here, the apparatus 10 is especially designed such that a transporting arrangement 30 is provided above the magazine 20, on which a pallet can be set down, the arrangement of the pallets relative to the transporting arrangement 30 taking place in such a manner that the transporting arrangement 30 carries out a movement transversely to the longitudinal axis of the pallet or its rails. This movement of the transporting arrangement 30 is necessary so that a transfer arrangement 40 that is preferably arranged in a fixed manner above the transporting arrangement 30 (that is in the port area) has access to the intermediate spaces that are formed by the parallel rails of the pallet.

As an alternative, the transporting arrangement 30 can also shift the entire magazine 20 so that the transfer arrangement 40 gains access to the intermediate spaces formed by the parallel rails of the pallet.

If the transfer arrangement 40 is preferably designed as a rake that carries out a movement along the longitudinal axis of the pallet or of the rails of the pallet, usage for a lashing platform of particularly preferred design having an internal magazine formed by rails is advantageous. For this purpose, the position of the transporting arrangement 30 and of the transfer arrangement 40 have to be arranged such that the rails of the magazine of the lashing platform and the rails of the (transporting) magazine of the apparatus are aligned at one level, so that at least one intermediate space, formed by rails, of the (transporting) magazine of the apparatus 10 borders flush on an intermediate space formed by rails of the magazine of the lashing platform. In this way, the transfer arrangement 40 designed as a rake can shift for example the twistlocks TL and/or stackers that are present in the magazine 20 of the apparatus, over into the magazine of the lashing platform. The other way round, the transfer arrangement 40 can shift the twistlocks TL and/or stackers from the lashing-platform magazine over into the transporting magazine of the arrangement of the apparatus 10. No manual intervention by port personnel is required for this.

Figure 2 illustrates, in a further perspective view, the movement sequences by way of example using a pallet that rests on the transporting arrangement 30. Here the pallets can be adapted such that the intermediate spaces formed by rails are laterally closed on one side of the pallet, so that the twistlocks TL and/or stackers can only be removed from one side of the pallet.

If for example the uppermost pallet shown in figure 2 is emptied and the twistlocks TL mounted in the pallet are transferred into the magazine of a lashing platform, the pallet can remain on the transporting arrangement for accommodating twistlocks TL and/or stackers. As an alternative, the pallet that is not empty can be swapped for a full pallet for example by means of a forklift, in case the lashing platform has to be supplied with further twistlocks TL and/or stackers.

Figure 3 shows the apparatus 10 in a front view where the compartments of the magazine 20, that are filled with pallets, can be clearly seen. Here the magazine 20 is arranged between two columns that are preferably attached in the port area adjacent to an automatic lashing platform, to which column the transfer arrangement 40 is fastened. This makes it possible to position the transfer arrangement 40 of the apparatus 10 immovably on the container terminal adjacent to the lashing platform and the transporting magazine 20 to be introduced in a simple manner between the columns. This creates only a limited additional space requirement by the transfer apparatus 10 according to the invention relative to the lashing platform.

Figure 4 finally shows a side view of the apparatus 10 in which together with figure 3 it can be easily recognised that in the case of a very simple design of the transfer arrangement, only a linear movement of the rake is necessary to bring the twistlocks TL from the magazine pallets into the lashing-platform magazine.

PATENT CLAIMS

1. An apparatus (10) by means of which a lashing platform having a lashing-platform magazine is fitted with twistlocks (TL) and/or stackers,

characterized

by a transporting magazine (20) which can be inserted into the apparatus (10), and removed from the apparatus (10), and has at least one pallet which consists of a plurality of parallel rails and is intended for accommodating twistlocks (TL) and/or stackers,

by a transporting arrangement (30) for displacing the pallet and/or the transporting magazine (20) transversely to the longitudinal axis of the rails, and

by a transfer arrangement (40) for transferring the twistlocks and/or stackers from the transporting magazine into the lashing-platform magazine and vice versa.

2. The apparatus according to Claim 1, characterized in that the transfer arrangement (40) is a rake that can be moved in the longitudinal direction of the rails.

3. The apparatus according to one of the preceding claims, characterized in that the transporting magazine (20) exhibits a plurality of compartments for accommodating a plurality of pallets.

4. The apparatus according to one of the preceding claims, characterized in that the transporting magazine (20), the transporting arrangement (30) and the transfer arrangement (40) are interconnected releasably.

5. The apparatus according to one of the preceding claims, characterized in that the transporting magazine (20) exhibits forklift pockets.

6. A system having

- a lashing platform that exhibits at least one lashing-platform magazine having a plurality of in each case two parallel rails for accommodating a plurality of twistlocks (TL) or stackers; and
- an apparatus according to one of the preceding claims,

wherein at least two rails of the lashing-platform magazine and two rails of the transporting magazine, on transferring twistlocks (TL) or stackers from the apparatus to the lashing platform and/or vice versa, are aligned adjacent and flush to each other.