Nov. 21, 1950 J. H. KEMP, JR 2,530,704

APPARATUS FOR HANDLING LOADS

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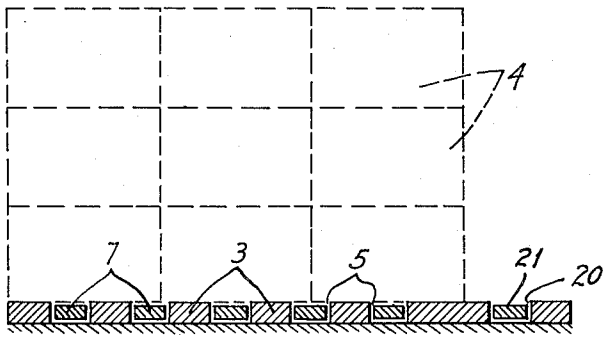
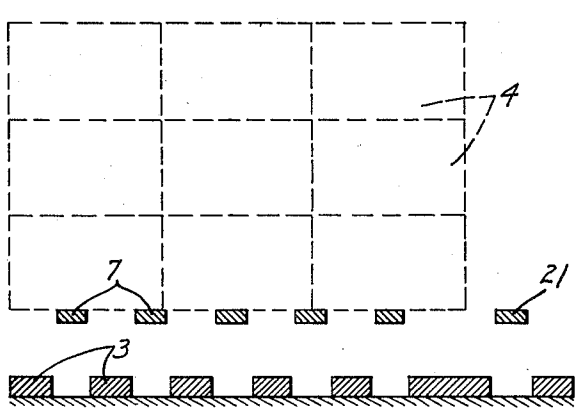


Fig. 1

Fig. 2



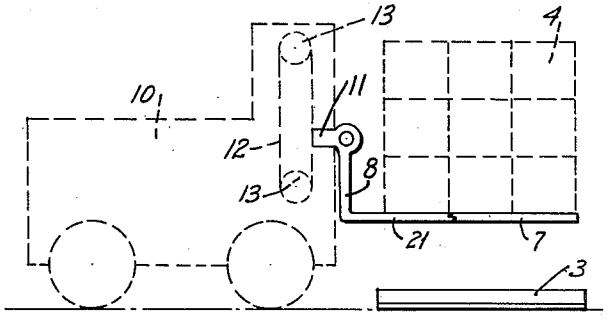


Fig. 3

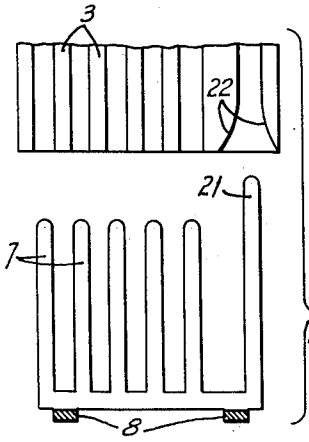


Fig. 4

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APPARATUS FOR HANDLING LOADS

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Original application December 10, 1946, Serial No. 715,175. Divided and this application September 7, 1948, Serial No. 47,991

3 Claims. (Cl. 214—113)

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This is a division of my parent application, Serial No. 715,175, filed December 10, 1946, now Patent No. 2,451,226, granted October 12, 1948.

In the parent application I have described load-handling apparatus for transferring a load of parcel goods from a lifting fork directly onto a deck or pallet, or for transferring such loads from one deck to another, without having to individually handle the parcels of the load, which apparatus includes means for guiding the load-carrying tines of the fork into engagement with grooves in the load receiving deck. In the present divisional application the claims are directed to a modified guide means for such apparatus.

The broad object of my invention is to facilitate the handling of loads of parcel goods, and more particularly to improvements in such handling by means of a fork truck for conveying loads of say a ton or more about a local area, as on a dock or within a warehouse.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of my invention. It is to be understood that I do not limit myself to this disclosure of species of my invention as I may adopt variant embodiments thereof within the scope of the claims.

Referring to the drawings:

Figure 1 is a diagrammatic sectional view of apparatus embodying my invention showing tines of a fork engaged between ribs of a load-carrying deck or pallet; and

Figure 2 is a similar view showing the fork supporting the load above the deck.

Figure 3 is a side elevational view of the fork of a truck supporting the load above the deck; and

Figure 4 is a plan view showing portions of the fork and deck and illustrating the position of these parts prior to insertion of the fork tines into the grooves of the deck.

In terms of broad inclusion my apparatus for handling a load comprises a deck having spaced ribs for supporting the load and providing parallel grooves between the ribs; and a lifting fork having load-carrying tines dimensioned and spaced for reception in the grooves, whereby the load may be deposited on or lifted from the deck when the tines are located in the grooves, the fork being mounted for vertical movement on a vehicular mount or truck. Means are also provided for establishing alignment of the load-carrying tines with their respective grooves, which means preferably comprises an indicator on the deck coacting with an indicator on the fork.

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In greater detail, and referring to the drawings, my apparatus comprises a load-carrying deck having a series of spaced ribs 3 providing parallel grooves 5 therebetween, which ribs support the load of parcels 4. These parcels may be boxes, cartons, bags or other conventional containers for the goods being handled. It is desirable to handle parcels of this kind in a group weighing a ton or more, and such loads are contemplated in my apparatus. Ribs 3 may be of any suitable material such as metal or wood, spaced say three inches apart, and may either be fastened to a fixed platform or formed as part of a portable platform or pallet. If the latter, the pallet is preferably of conventional pallet size, say 3' x 5'. A corrugated type of pallet such as disclosed in my parent application is preferred.

My apparatus also comprises a lifting fork 6 having parallel load-carrying tines 7 dimensioned and spaced for reception in the grooves 5 between ribs 3. These tines are preferably flat metal bars and are adapted to support the load independently of the deck or pallet. Tines about 2½ inches wide and spaced to mesh with the ribs 3 are satisfactory. Figure 1 shows the load supported on ribs 3 and Figure 2 shows the load supported on the fork above the deck. As shown in Figures 3 and 4, the tines of fork 6 are joined at the base ends and project outwardly with their upper surfaces lying substantially in a common plane. The plurality of closely spaced tines thus provide ample supporting surface for the parcels making up the load. This feature together with the interengagability of the tines with ribs 3 makes it possible to insert the tines endwise and lift a load from the deck. And, what is equally important, makes it possible to lower a loaded fork onto the deck and withdraw the tines endwise to leave the load resting on ribs 3. When using a portable pallet it is also understood that both pallet and load may be simultaneously lifted by engaging the fork under the pallet in the conventional manner.

With reference to Figure 3, fork 6 is preferably supported on a vehicular mount or truck 10 indicated by dotted lines, which truck is preferably of a type which is self-powered and steerable by an operator. In the structure illustrated the fork is provided with upstanding arms 8 fastened to a crossbar 11 on the front of the truck. Suitable elevator means is also provided on the truck for raising and lowering the fork while maintaining the tines substantially horizontal. A chain 12 driven by sprockets 13 is shown con-

nected to crossbar 11, but any other type of elevator mechanism may be employed

An important feature of my invention is that indicator means are provided for establishing alignment of the load-carrying tines 7 with the grooves 5 between ribs 3. Since the fork is used either to deposit a load onto the deck or to remove a load from the deck, it will be seen that the operator on the truck 10 has the problem of registering the fork tines with the deck grooves 5 under both of those conditions. In the case where the load is being deposited on the deck, the problem arises because the load 4 hides the underlying parts and makes it impossible for the operator to see either the load carrying tines 7 or the grooves 5 when a loaded fork is being lowered onto the deck. The aligning means in my present construction preferably comprises coacting indicators on both the deck and fork, including an indicator tine 21 along one side of the fork and so spaced from an adjacent load carrying tine 7 as to be in the view of the operator when the tines 7 are hidden by the load. The deck has an indicator groove 20 likewise spaced laterally from an adjacent groove 5 for receiving the tine 21. By this arrangement the operator can lower the loaded fork down onto the deck and by engaging visible indicator tine 21 with its groove 20, is able to establish registration of the invisible load carrying tines 7 with their respective grooves. Once the weight of the load has been transferred to the ribs 3 the fork may be withdrawn by merely backing up the truck.

In order to facilitate the operation in the case where the load-carrying tines are inserted endwise in the grooves to remove a load from the deck, the indicator tine 21 is preferably made longer than the load-carrying tines 7 so that the projecting end of tine 21 is adapted for insertion into its groove 20 prior to insertion of the other tines. Prior insertion of indicator tine 21 thus automatically aligns the other tines 7 with their respective grooves. To further facilitate insertion of indicator tine 21 the cooperating groove 20 preferably has an outwardly flared opening provided by the tapered ends 22 of the ribs which form the indicator groove. This flared opening functions as a guide to direct the tine 21 into engagement with the groove 20. After the load-carrying tines have been fully inserted the load is lifted from the deck by elevating the fork.

I claim:

1. In load-handling apparatus, the combination with a deck having parallel grooves, of a lifting fork having load-carrying tines dimensioned and spaced for reception in said grooves, whereby the load may be deposited on or lifted from the deck when said tines are located in said grooves, a vehicular mount for the fork, operating mechanism for effecting vertical movement of the fork, and indicator means on the fork and deck independent of said tines and grooves for aligning the load-carrying tines with their respective grooves, said means including a tine on the fork located alongside the load-carrying tines and projecting beyond the ends thereof.

2. In load-handling apparatus, the combination with a deck having parallel grooves, of a lifting fork having load-carrying tines dimensioned and spaced for reception in said grooves, whereby the load may be deposited on or lifted from the deck when said tines are located in said grooves, a vehicular mount for the fork, operating mechanism for effecting vertical movement of the fork, and indicator means on the fork and deck independent of said tines and grooves for aligning the load-carrying tines with their respective grooves, said means including a groove in the deck spaced laterally from one of said grooves and a cooperating tine equally spaced for one of the load-carrying tines.

3. In load-handling apparatus, the combination with a deck having parallel grooves, of a lifting fork having tines dimensioned and spaced for reception in the grooves, whereby the load may be deposited on or lifted from the deck when the tines are located in the grooves, a vehicular mount for the fork, and operating mechanism for effecting vertical movement of the fork, one of the grooves having a flared opening at an end thereof for guiding a tine therein.

JOHN H. KEMP, JR.

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