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LOW-LIFT PALLET TRUCK

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Fig. 3

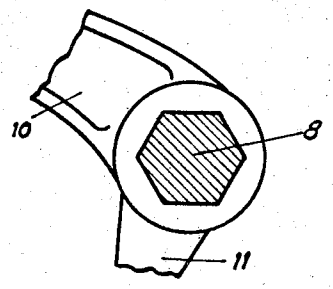
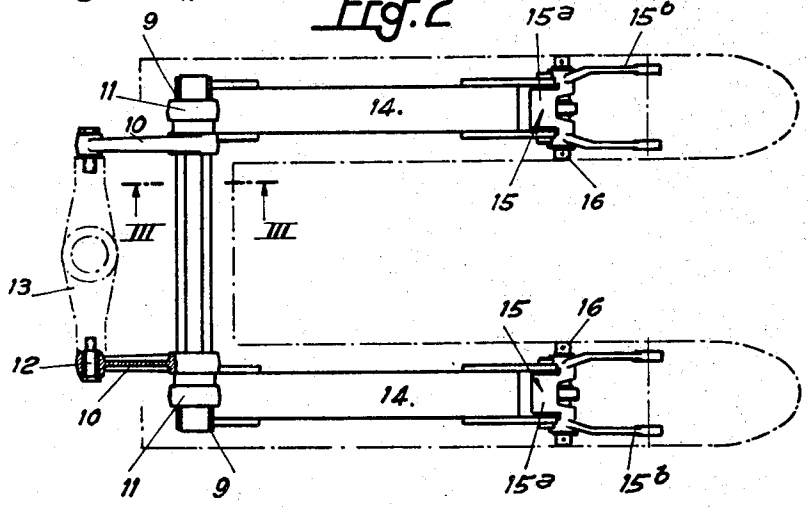


Fig. 1

Fig. 2



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LOW-LIFT PALLET TRUCK

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Int. Cl. B62b 3/00

ABSTRACT OF THE DISCLOSURE

A low-lift pallet truck having a pair of spaced, longitudinal lifting members connected by a bridge adjacent one end thereof. The truck is supported by casters connected to the lifting members adjacent the free ends thereof and a guide wheel connected adjacent the bridge. The guide wheel is connected to the bridge by means for raising the bridge end of the truck. Linkage means connects the elevating means to the casters for raising the other end of the truck.

The present invention relates to small handling machines of the type commonly referred to as low-lift pallet trucks, these machines being frequently provided with fork arms which are intended to be inserted beneath loads, pallets or skids for the purpose of lifting them slightly and displacing them over short distances.

Low-lift pallet trucks of known types generally comprise a frame having two longitudinal members or fork arms which are fitted at one end with casters and joined together at the other end by a bridge, said bridge being supported on an elevating unit which is carried by a guide-wheel axle.

The lifting action is performed by means of a link-rod system comprising a lifting cross-shaft which is rotatably mounted at each end on the truck frame and on each side of which are keyed respectively a top lever and a bottom lever, the end of said top lever being pivoted about a pin carried by the guide-wheel axle and the end of said bottom lever being pivotally coupled to one end of a transmission link-rod extending along the corresponding longitudinal member whilst the other end of said transmission rod is adapted to actuate a system for lifting and lowering casters relatively to the truck frame, with the result that the longitudinal members are lifted on the casters when the elevating unit lifts the bridge from the guide-wheel axle.

The aim of this invention is to provide an improvement to the above-described lift mechanism, the primary object of which is to simplify the manufacture of said mechanism and to facilitate the application of the system to low-lift pallet trucks of different widths.

The improvement according to the invention essentially consists in providing the lifting cross-shaft with a constant noncircular cross-section along its entire useful length between the end bearings and in mounting the top and bottom levers of the link-rod system by forcibly fitting the ends of said levers over said non-circular cross-section.

As a consequence, keys are no longer required and a free choice is permitted in the positions of said levers along the length of the lifting cross-shaft, with the result that the assembly can readily be adapted to the width of the corresponding elements of the pallet truck. These advantages in turn permit of simplification in both machining and assembly and therefore a reduction in cost price without in any way affecting the ruggedness of the mechanism as a whole.

One form of execution of the invention is shown

by way of example in the accompanying drawings, in which:

FIG. 1 is a simplified view in side elevation of a low-lift pallet truck;

FIG. 2 is a plan view of the link-rod system; and

FIG. 3 is a detail view on a larger scale, this view being taken in cross-section along the line III—III of FIG. 2.

The low-lift pallet truck is mainly of conventional design. It comprises a frame with two longitudinal members or fork arms **1** which are supported at one end on casters **2** and joined together at the other end by a bridge **3** which is supported on an elevating unit **4**, said elevating unit being carried on a guide-wheel axle **5**.

The elevating unit **4** is constituted by a jack which is supplied from a pump actuated by a drawbar **6**. The bridge **3** is supported by a pivot-pin **7** on the jack of the elevating unit **4**.

The link-rod system comprises a lifting cross-shaft **8** which, in accordance with the invention, has a hexagonal cross-section and is rotatably mounted at each end in bearing-bushes **9** which are rigidly fixed to the frame. There are fitted on each side of said cross-shaft **8** a top lever or pitman **10** and a bottom lever or pitman **11** which are provided for this purpose with terminal openings of corresponding cross-sectional configuration. The end of each upper lever **10** is pivoted on a pin **12** carried by one end of a cross-member **13** which is supported by the axle **5** by means of a thrust-bearing which permits the pivotal motion of said axle and of the elevating unit **4** with respect to said cross-member **13** as initiated by the operating handle **6**. The end of each bottom lever **11** is pivotally coupled to one end of a transmission link-rod **14** which extends along the corresponding fork arm **1**. The other end of said transmission link-rod is pivotally coupled to one end **15***a* of an elbowed lever **15** and a fork-arm caster **2** is rotatably mounted at the other end **15***b* of said elbowed lever **15** which is pivoted on a spindle **16**, said spindle being in turn rotatably mounted on the fork arm.

It is already known that, when the jack of the elevating mechanism **4** lifts the bridge **3** and is supported on the guide-wheel axle **5**, it initiates the simultaneous pivotal motion of the top levers **10** and bottom levers **11** on the one hand and of the elbowed levers **15** on the other hand, the pivotal motion of the top and bottom levers being transmitted to the elbowed levers by the link-rod **14**, with the result that the frame as a whole moves upwards parallel to itself.

The novelty of this invention lies in the structural design of the lifting cross-shaft **8** and of the levers **10** and **11** which are forcibly fitted on said cross-shaft, thereby securing the advantages which have been set forth in the introductory part of this specification.

It will be readily apparent that both the lifting shaft and lever end-passages can be endowed with a non-circular cross-sectional configuration other than hexagonal and that any detail modifications can be contempalted without thereby departing either from the scope or the spirit of the invention.

What I claim is:

1. In a low-lift pallet truck having a frame with two laterally spaced, longitudinally extending lifting members and a bridge fixedly connected between said lifting members adjacent one end thereof, casters mounted on said lifting members adjacent the other end thereof, a guide-wheel axle connected to said frame and having a guide wheel thereon for supporting the bridge end of said truck, elevating means connected between said bridge and said guide-wheel axle for raising the bridge end of said truck, and linkage means connected between said elevating

means and said casters for raising the other end of said truck in response to raising of the bridge end of the truck, said linkage means including pivot shaft means mounted on said frame adjacent each of said lifting members and a pair of first lever members positioned on the opposite sides of said truck adjacent said laterally spaced lifting members with one end of each of said first lever members being interconnected to said elevating means and the other end of each of said first lever members being nonrotatably secured to said pivot shaft means, said linkage means further including a pair of second lever members positioned on the opposite sides of said truck adjacent said laterally spaced lifting members with one end of each of said second lever members being nonrotatably secured to said pivot shaft means, a pair of intermediate rods connected between the other end of said pair of second lever members and said casters, and arm means pivotally mounting said casters on said lifting members with said arm means being pivotally connected to said rod members, the improvement wherein said pivot shaft means comprises a single cross-shaft extending between said laterally spaced lifting members with the opposite ends of said cross-shaft being pivotally connected to said pair of lifting members, the portion of said cross-shaft extending between said lifting members having a uniform noncircular cross section and the ends of said pairs of first and second lever members having noncircular openings substantially identical in size and shape to the cross-section of said cross shaft for nonrotatably securing said pairs of first and second lever members to said cross-shaft.

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