

⑫ **EUROPEAN PATENT SPECIFICATION**

- ⑬ Date of publication of patent specification: **29.01.86** ⑭ Int. Cl.⁴: **B 66 F 9/075, B 66 F 9/19, B 66 F 9/12**
⑮ Application number: **82106909.3**
⑯ Date of filing: **30.07.82**

⑰ **Fork lift truck with inverting device.**

⑱ Priority: **14.08.81 NL 8103818**

⑲ Date of publication of application:
02.03.83 Bulletin 83/09

⑳ Publication of the grant of the patent:
29.01.86 Bulletin 86/05

㉑ Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

㉒ References cited:
GB-A-1 066 129
GB-A-1 582 559
US-A-2 468 326
US-A-3 438 525
US-A-4 268 210

㉓ Proprietor: **Selectiebedrijf Kooi Beheer B.V.**
Molen 25
NL-9077 ZV Vrouwenparochie (NL)

㉔ Inventor: **Hessel, Kooi**
Stienser Hogedijk 38a
Stiens (NL)

㉕ Representative: **Hojtink, Reinoud et al**
OCTROOBUREAU ARNOLD & SIEDSMA
Sweelinckplein 1
NL-2517 GK Den Haag (NL)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

Description

The invention relates to a device to be mounted to the mast of a fork lift truck comprising means for co-operating with guide means on the mast, means for turning the device through at least 180° with respect to the mast, a first vertical frame having protruding carrying forks and a second frame having protruding clamping forks, wherein the first frame is vertically movable with respect to the second frame, and a shifting device is adapted to move between the forks in the longitudinal direction of the forks. This device is known from US—A—3 438 525.

Such a known device is mounted on the mast of the fork lift truck and serves to discharge a load transported on a pallet so that the pallet can be retained. To this end the load transported on a pallet is clamped by the vertical movement of the first frame between the forks of the first and the second frame, the whole device being then turned through 180° with respect to the mast, the clamp and the carrying fork being moved slightly away from one another, whilst finally with the aid of the shifting device the load is shifted from the clamping forks onto the deposition surface. The pallet then remains on the carrying forks.

The known device is not adapted to be mounted on the fork lift truck transportable on a van. With this construction of the assembly the part protruding from the rear side of the van is too large so that the provisions of safety can no longer be satisfied. The invention has for its object to render the known device suitable for mounting on a transportable fork lift truck.

According to the invention this is achieved in that the second frame is arranged in the same vertical plane as the first frame and the shifting device is formed by a pivotal linkage which is also located in said vertical plane in the retracted position.

By the steps taken in accordance with the invention a very compact construction is obtained so that despite the presence of the device the extension of the part of the fork lift truck protruding from the rear side of the van can be drastically reduced, that is to say, in practice to about 240 mm.

In one embodiment an arm of the pivotal linkage is pivotally journaled in a beam of the first frame. The movement of the first frame can be guided in the second frame. Since the second frame is rotatable with respect to the mast, the whole device is rotatable with respect to the mast.

The invention will be described more fully with reference to the drawings.

The drawings show in:

Fig. 1 a schematic side elevation of a fork lift truck transportable on a van with a device embodying the invention.

Fig. 2 a perspective view of part of the device embodying the invention,

Fig. 3 a sectional view of the device embodying the invention with a shifting device partly slipped out and

Fig. 4 a sectional view of the device embodying the invention in the retracted position.

On a van 1 (shown partly) can be deposited a fork lift truck of known type by slipping the carrying forks 3 into the appropriate beam 4 and by subsequently causing the frame of the fork lift truck to move upwards. The device 5 embodying the invention can be mounted on this known, transportable fork lift truck.

The device 5 is mounted on the mast 6 of the transportable fork lift truck. The device 5 embodying the invention comprises a first frame 9 of vertical and horizontal beams, from which protrude carrying forks 3. The device 5 furthermore comprises a second, vertical frame 7, from which protrude the clamping forks formed in this case by a plate 10. By means of guide rollers 11 the first frame 9 can be vertically guided in the second frame 7. In its vertical movement the first frame is controlled by hydraulic means, for example, a plunger 12. With the first frame is connected a shifting device 13 formed by a pivotal linkage comprising the arms 14 and 15. The linkage is controlled, for example, by a hydraulic or pneumatic plunger 16. With respect to the mast the second frame 7 can be reversed, since it is adapted to rotate by a shaft 17 in a hub 18. The movement of the frame and hence of the whole device is performed by the rolling movement of a driving gear wheel 19 on the inner toothing 20 of the shaft 17.

The device operates as follows: The carrying forks 3 of the first frame are slipped into a pallet 21, on which a load is deposited. Subsequently, with the aid of the plungers 12, the carrying forks 3 are lifted until the load rests on the clamping forks 10. Then with the aid of the reversing mechanism 17, 18, 19 and 20 the device embodying the invention is turned through 180° so that the position shown in Fig. 3 is obtained. Then the first frame is moved vertically upwards so that the load is set free of the pallet 21 and bears on the clamping forks 10. Then with the aid of the plunger 16 the shifting device 13 is actuated so that the load is slipped in the direction indicated in Fig. 3 from the clamping forks 10 onto a deposition surface, for example, 22. Subsequently the device is again turned and the pallet can be deposited back on the van. Owing to the compact construction in accordance with the invention the added length of the transportable fork lift truck 23 (see Fig. 4) is limited to about 240 mm.

Claims

1. A device (5) adapted to be mounted on the mast (6) of a fork lift truck comprising means for co-operating with the guide means on the mast (6), means (17, 18, 19) for turning the device (5) through at least 180° with respect to the mast (6), a first, vertical frame (9) having protruding carrying forks (3) and a second frame (7) having protruding clamping forks (10), wherein the first frame (9) is vertically movable with respect to the

second frame (7), and a shifting device (13) is adapted to move between the forks (10) in the longitudinal direction of the forks (10), characterized in that the second frame (7) is located in the same vertical plane as the first frame (9) and the shifting device (13) is formed by a pivotal linkage (14, 15) which is also located in said vertical plane in the retracted position.

2. A device as claimed in claim 1 characterized in that one arm (14) of the pivotal linkage is pivotally journaled in a beam of the first frame (9).

3. A device as claimed in claims 1 and 2 characterized in that the first frame (9) is guided in the second frame (7).

4. A device as claimed in claims 1 to 3 characterized in that the second frame (7) is rotatable with respect to the mast.

Revendications

1. Dispositif (5) adapté pour être monté sur le mât (6) d'un chariot élévateur à fourche comprenant des moyens pour coopérer avec le dispositif de guidage sur le mât (6), des moyens (17, 18, 19) pour faire basculer le dispositif (5) sur au moins 180° par rapport au mât (6), un premier cadre vertical (9) muni de fourches (3) de support faisant saillie et un second cadre (7) équipé de fourches saillantes de serrage (10), dans lequel le premier cadre (9) est déplaçable verticalement par rapport au second cadre (7), et un dispositif de manoeuvre (13) est adapté pour se déplacer entre les fourches (10) dans la direction longitudinale de ces dernières, caractérisé en ce que le second cadre (7) est situé dans le même plan vertical que le premier cadre (9), et le dispositif de manoeuvre (13) est constitué par un système articulé pivotant (14, 15) également situé dans ledit plan vertical en position rétractée.

2. Dispositif selon la revendication 1, caracté-

térisé en ce qu'un bras (14) du système articulé pivotant est monté rotativement dans une poutre du premier cadre (9).

3. Dispositif selon les revendications 1 et 2, caractérisé en ce que le premier cadre (9) est guidé dans le second cadre (7).

4. Dispositif selon les revendications 1 à 3, caractérisé en ce que le second cadre (7) est monté rotatif par rapport au mât.

Patentansprüche

1. Vorrichtung (5) zum Anbau am Mast (6) eines Gabelstaplers mit einer Vorrichtung zur Zusammenarbeit mit der Führungsvorrichtung auf dem Mast (6), einer Vorrichtung (17, 18, 19) zum Drehen der Vorrichtung (5), um mindestens 180° relativ zum Mast (6), einem ersten vertikalen Rahmen (9) mit vorspringenden Tragabeln (3) und einem zweiten Rahmen (7) mit vorspringenden Klemmgabeln (10), wobei der erste Rahmen (9) vertikal bewegbar ist relativ zum zweiten Rahmen (7), und einer Schiebevorrichtung (13), die zwischen den Gabeln (10) in Längsrichtung der Gabeln (10) bewegt werden kann, dadurch gekennzeichnet, daß der zweite Rahmen (7) in der gleichen vertikalen Ebene wie der erste Rahmen (9) angeordnet ist und die Schiebevorrichtung (13) durch ein Schwenkgestänge (14, 15) gebildet ist, welches in der zusammengezogenen Stellung ebenso in der Vertikalebene liegt.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß ein Arm (14) des Schwenkgestänges schwenkbar am einem Ausleger des ersten Rahmens (9) angelenkt ist.

3. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der erste Rahmen (9) im zweiten Rahmen (7) geführt ist.

4. Vorrichtung nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß der zweite Rahmen (7) relativ zum Mast drehbar ist.

45

50

55

60

65

FIG.1

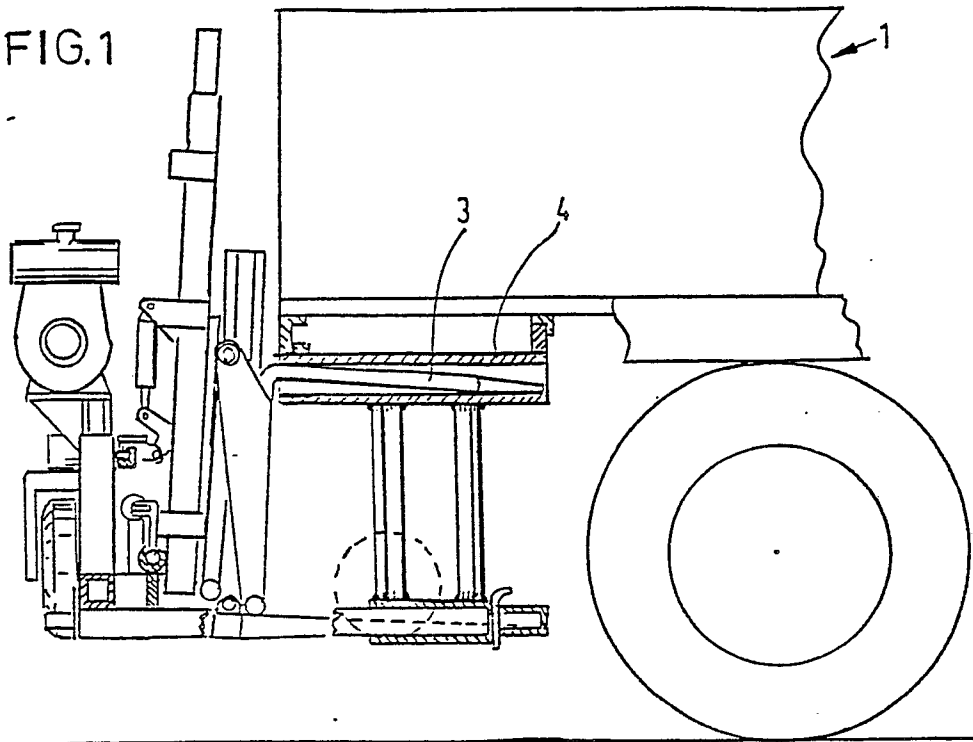


FIG.2

