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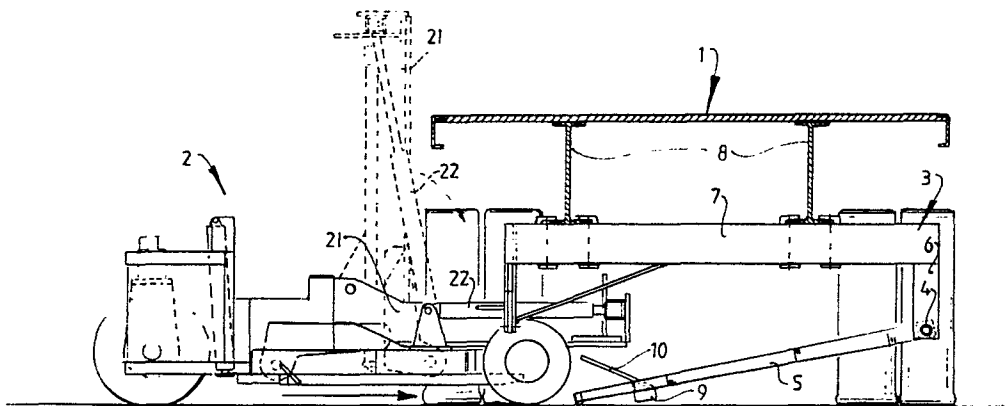
(54) An apparatus for the transportation of a fork-lift truck on a lorry.

(57) Apparatus for the transportation of a collapsible fork-lift truck (2) on a lorry (1) comprising a ramp - (5,5"), which is hingeable under the lorry (1) and which can be moved between a downward loading position (5") and a raised transport position (5).

The means for moving the ramp (5,5") between the two positions are either a piston (24) on the fork-lift truck (2) or on the lorry (1).

The ramp can be locked in its raised position - (5) by a support (15,16).

FIG.1



EP 0 204 363 A1

Apparatus for the transportation of a fork-lift truck on a lorry

This invention relates to an apparatus for the transportation of a collapsible fork-lift truck on a lorry.

From Dutch patent application 75.007II, there is known a transportation apparatus for a fork-lift truck. Therein, the fork-lift truck is placed on the rear of the lorry on a telescopic platform.

In certain circumstances it may be required to have the use of a fork-lift truck whose dimensions are greater than those which can be accommodated on the rear of the lorry. With such a larger fork-lift truck, the length of projection from the back of the lorry becomes undesirably large. The invention has for its object to provide an apparatus whereby larger, collapsible fork-lift trucks can be transported with the lorry.

This is achieved in accordance with the invention through a loading ramp to be mounted under a lorry which loading ramp is hingeable transversely with respect to the direction of travel around a substantial horizontal pin, means for the raising of the loading ramp and means for locking the loading ramp in a raised position.

It should be noted that collapsible fork-lift trucks are known from Dutch patent application 77.08747. Moreover, from Dutch patent application 78.01841, means are known for transporting such a collapsible fork-lift truck on a lorry. However, the means described therein are exceptionally elaborate. It is difficult to engage the collapsed fork-lift truck accurately into the bracket beneath the lorry intended for that purpose. Moreover, a complicated jacking mechanism is necessary in order to raise the fork-lift truck. Finally, accurate manipulation is required to position the fork-lift truck also into the second suspension bracket.

The present invention, in contrast, provides simple and reliable means for the transportation of a collapsible fork-lift truck.

The means for raising the loading ramp consist of a piston mounted on the fork-lift truck, there being applied to the loading ramp locking means which cooperate with the fork-lift truck. The raising means can also consist of a piston which is mounted on the loading ramp.

In accordance with another embodiment, the means for raising the loading ramp consist of a piston for pulling up the loading ramp which piston is mounted on the lorry.

The means for locking consist of a pivotable support, lockable by means of at least one pawl, applied to the lorry. Also, the means for locking can consist of a support which can be brought under the fork-lift truck.

The invention is further elucidated by reference to the drawings of an embodiment of the invention.

In the drawings:

Figures 1 to 3 inclusive show a rear view of part of a lorry and the respective positions of the fork-lift truck during positioning on the transportation apparatus, and

Figure 4 shows a perspective view of the embodiment according to figures 1 to 3.

Beneath the chassis of lorry 1, fork-lift truck 2 is transported on transportation apparatus 3.

Transportation apparatus 3 consists of a loading ramp 5, 5" rotatable around a substantial horizontal shaft 4. Shaft 4 is journaled in vertical supporting beams 6, 6", which are in turn are fastened to chassis members 7, 7" and 8. Loading ramp 5, 5" comprises connecting beam 9, disposed in the longitudinal direction of the lorry. On connecting beam 9 there is safety lip 10 fitted.

The fork-lift truck possesses a collapsible mast 21 which can be moved from the vertical position indicated by broken lines in figure 1 to a collapsed position, and vice versa, by means of hydraulic piston 22. With mast 21 in its collapsed position, fork-lift truck 2 is driven up loading ramp 5, 5", which for this purpose is placed in its lowered position, drawn with broken lines in figures 3 and 4. When the fork-lift truck has arrived in the position shown in figure 2 lifting jack 23 on the fork-lift truck is operated, whereby piston rod 24 moves downwards until it comes into contact with the ground. On further moving out of the piston rod, the fork-lift truck moves in an upwards direction, thereby also raising ramp 5 of transportation apparatus 3 as the inclined plate 26 engages the safety lip 10. After the fork-lift truck together with the transportation apparatus has been raised to the position shown in figure 3, supports 15 and 16 are placed in a horizontal position. Supports 15 and 16 are rotatable around shafts 11 and 12 respectively. Shafts 11 and 12 are journaled in lugs 13 and 14 which are welded to beams 7" and 7 respectively. Supports 15, 16 can be operated with the aid of grips 17, 18 respectively. Supports 15, 16 can be locked in the horizontal position with the aid of locking pins 19 and 20 respectively. It will be clear that lifting jack 23 can be situated on the transportation apparatus instead of on the transportable fork-lift truck. The loading and unloading of the fork-lift truck on the transportation apparatus remains principally the same.

Claims

1. An apparatus for the transportation of a collapsible fork-lift truck on a lorry, **characterized** by a loading ramp to be fitted under a lorry which loading ramp is hingeable transversely to the direction of travel around a substantial horizontal pin, means for raising the loading ramp and means for locking the raised loading ramp in the raised position.

2. A transportation apparatus as claimed in claim 1, **characterized** in that the means for raising the loading ramp consist of a piston mounted on the fork-lift truck and that on the loading ramp there are mounted locking means which cooperate with the fork-lift truck.

3. A transportation apparatus as claimed in claim 1, **characterized** in that the means for raising the loading ramp consist of a piston pulling up the loading ramp, mounted on the lorry.

4. A transportation apparatus as claimed in claims 1-3, **characterized** in that the means for locking consists of at least one pivotable support, lockable by means of a pawl, to be mounted on the lorry

5. A transportation apparatus as claimed in claims 1-4, **characterized** in that the means for locking consists of a support which can be brought under the fork-lift truck.

6. A lorry provided with a transportation apparatus as claimed in claims 1-5.

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FIG.1

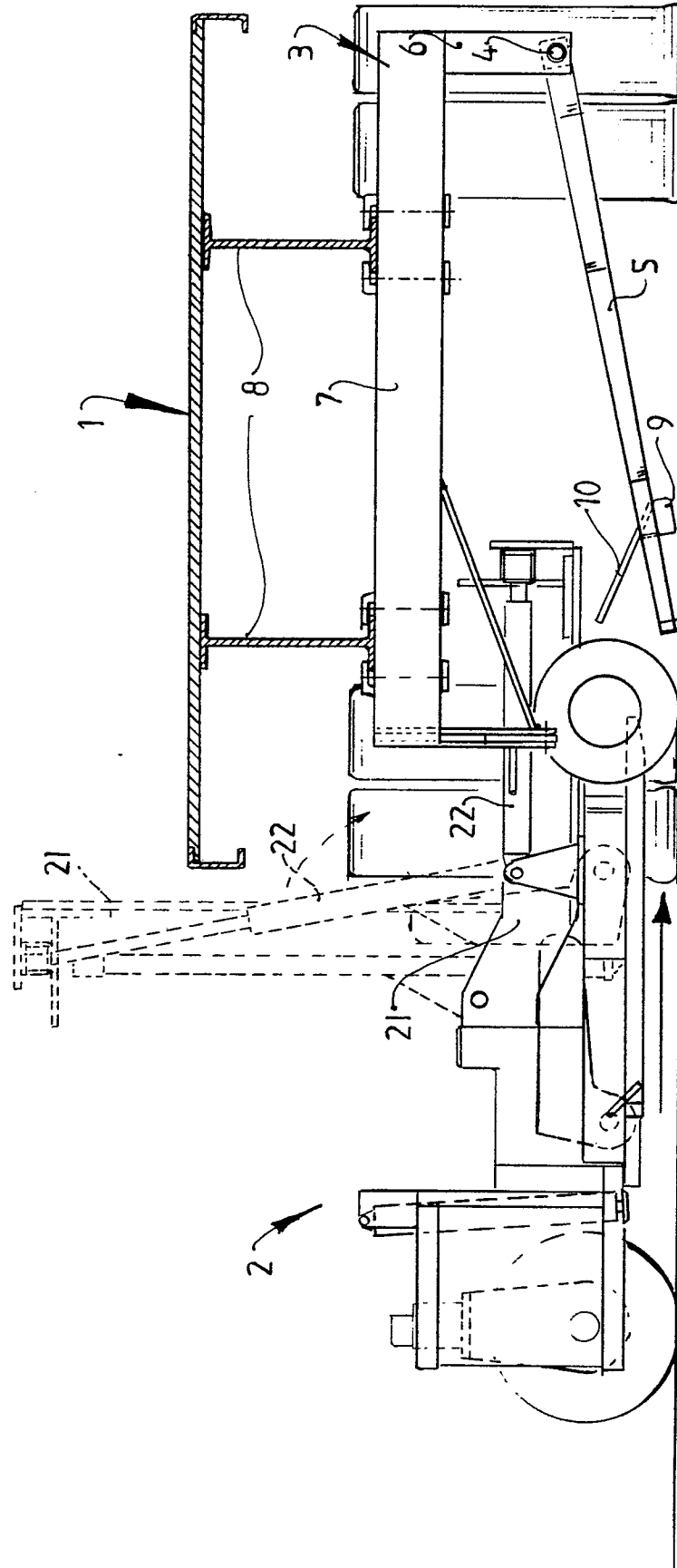


FIG. 2

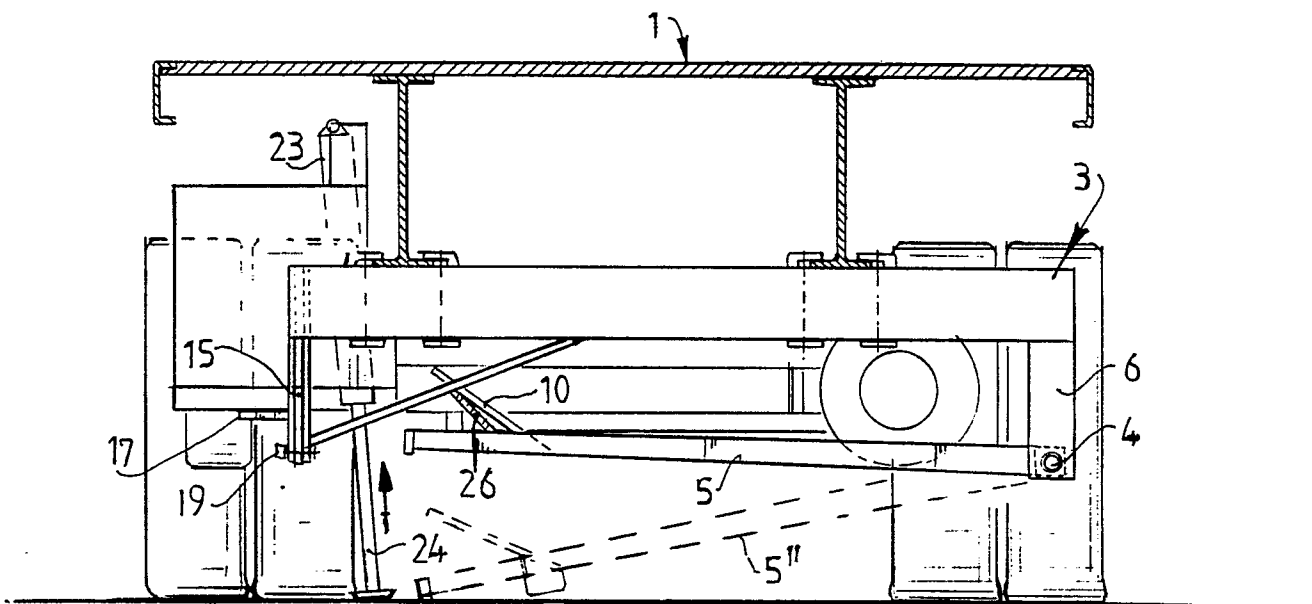
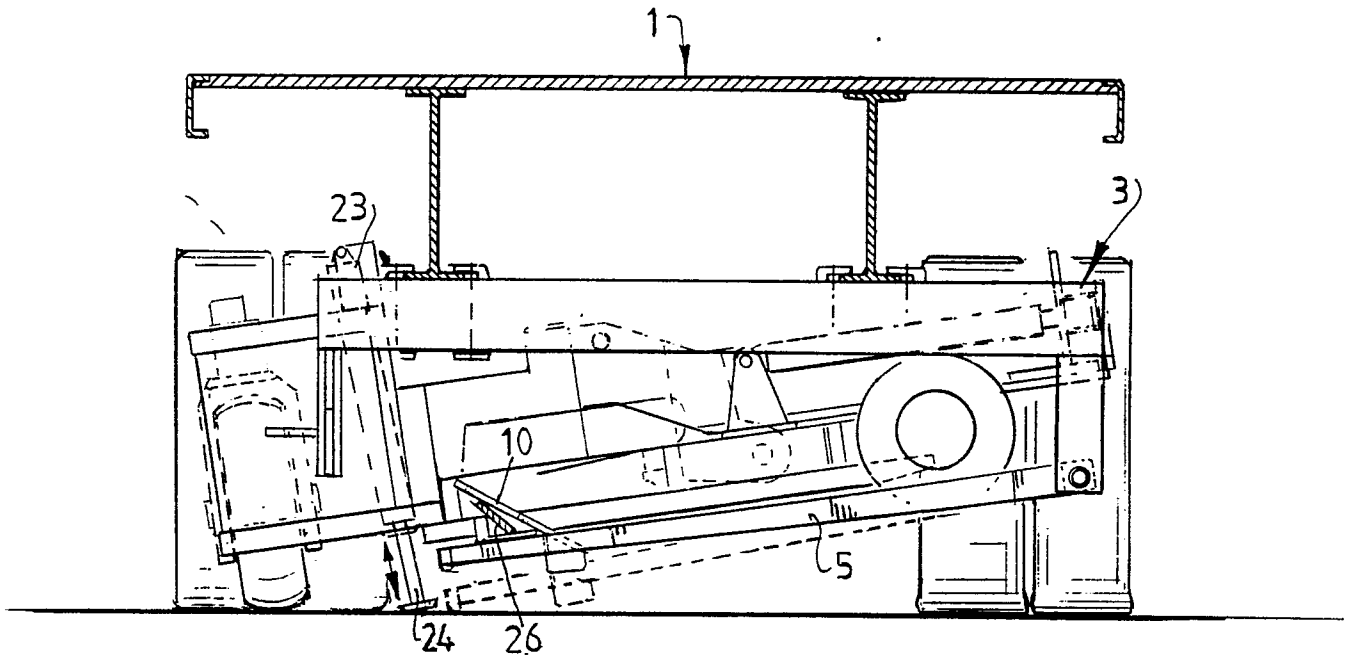


FIG. 3

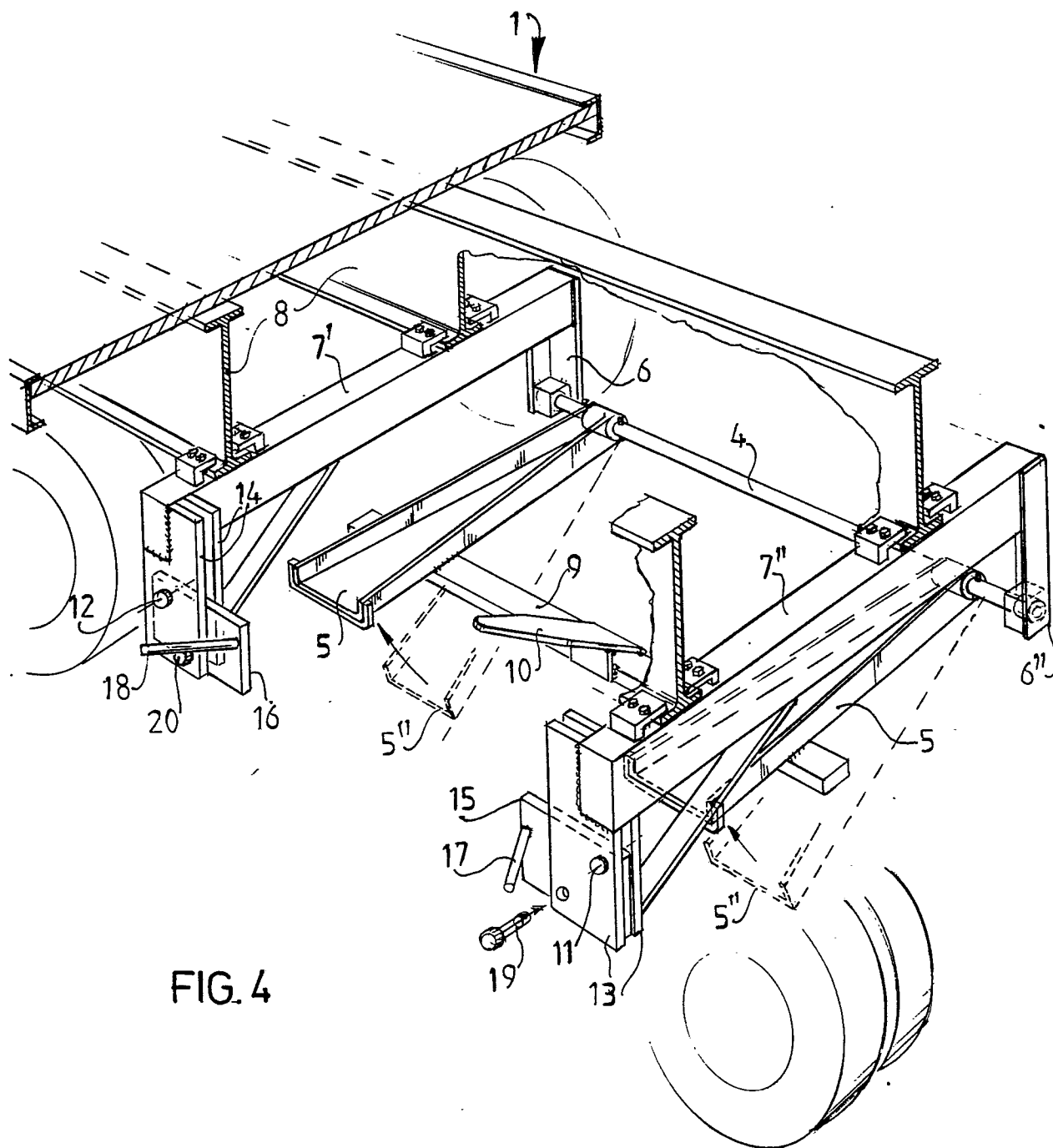


FIG. 4



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	DE-A-2 359 418 (SCHENK) * Page 4, last paragraph; page 5 * ---	1-6	B 66 F 9/075
Y	NL-A-6 516 696 (ROHRBÖCK'S SÖHNE) * Page 3, lines 13-25 * ---	1-6	
Y	US-A-4 435 113 (MOSELY) * Column 4, lines 40-68; column 5, lines 1-14 * ---	1-3,6	
Y	DE-A-1 580 265 (LANSING BAGNALL) * Page 4, last paragraph; pages 5-7 * ---	1-3,6	
A	US-A-3 741 604 (HEATH) ---		TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	US-A-4 396 341 (BROUWER) ---		B 66 F B 60 P
A	US-A-3 375 947 (KISSILOV) ---		
A	WO-A-8 201 363 (LUTZ) -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-09-1986	Examiner VAN DEN BERGHE E.J.J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			