Oct. 18, 1960 R. G. LARSON 2,956,701

STRINGER IMPACT DEVICE FOR FORK TYPE LIFT TRUCKS

Filed June 6, 1958

Fig. 3.

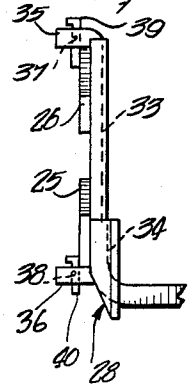


Fig. 1.

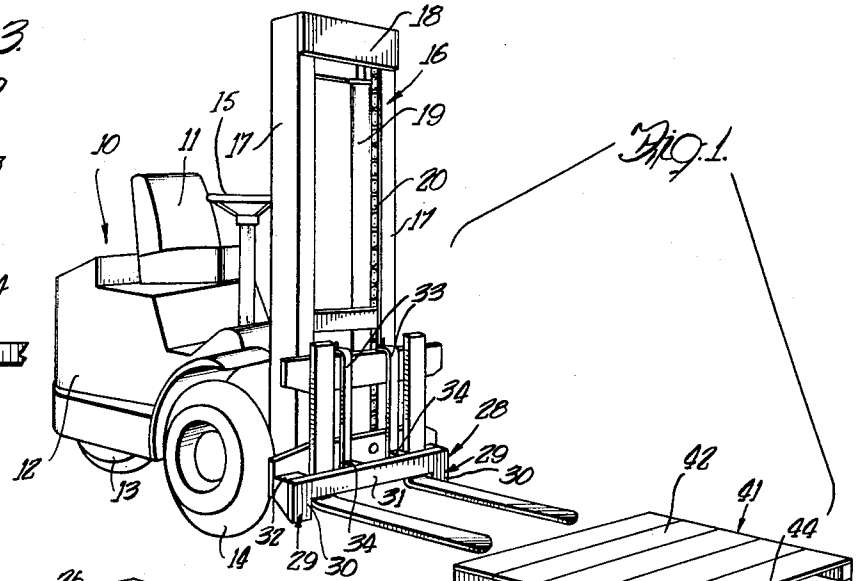


Fig. 2.

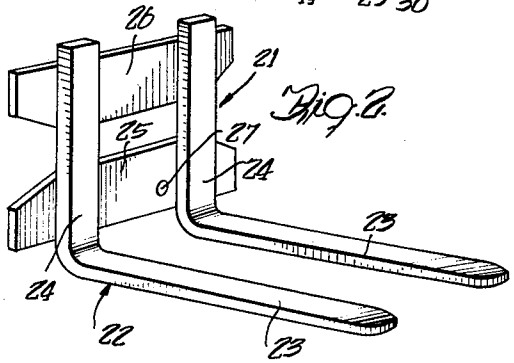


Fig. 4.

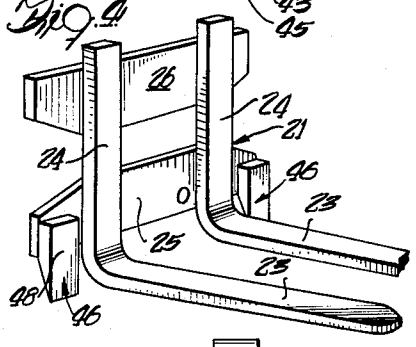


Fig. 5.

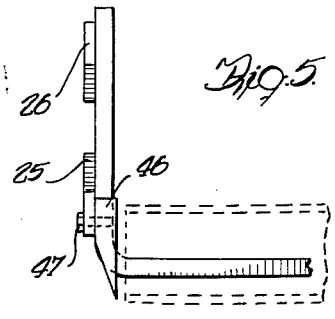
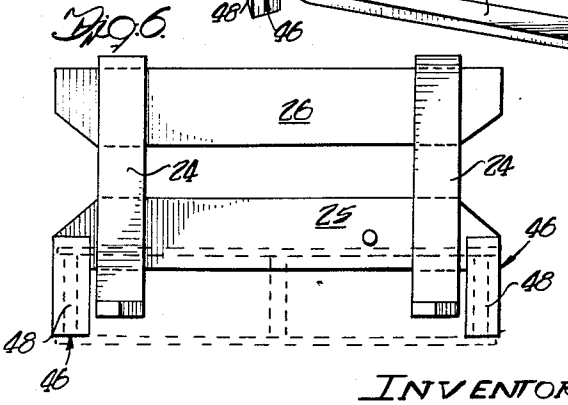


Fig. 6.



INVENTOR
RUDOLPH G. LARSON
Paul O. Pippel
ATTORNEY

United States Patent Office 2,956,701 Patented Oct. 18, 1960

2,956,701

STRINGER IMPACT DEVICE FOR FORK TYPE LIFT TRUCKS

Rudolph G. Larson, Aurora, Ill., assignor to International Harvester Company, Chicago, Ill., a corporation of New Jersey

Filed June 6, 1958, Ser. No. 740,244

5 Claims. (Cl. 214—750)

This invention relates particularly to a lift truck or pallet loader of the fork type. More particularly, the invention relates to an impact device for the lifting assembly of a fork type pallet loader. The conventional fork type pallet loader consists of a pair of L-shaped forks which are connected in laterally spaced relation by means of a pair of vertically spaced and laterally extending beams generally positioned with the upright portions of the L-shaped forks projecting forwardly of the beams. This assembly comprises essentially a lifting combination which engages open-end pallets for raising and lowering the same to achieve stacking and loading. The pallets may be of the two-way or four-way entry type consisting of horizontally extending stringers or spacer members which support an upper deck and a lower deck, these decks generally being constructed of a plurality of individual boards nailed to the stringers. During the engagement of the forks with an open-end or entry pallet, the forks are inserted into the openings provided. During the entry of the forks between the deckboards and baseboards of the pallet, the truck is propelled forwardly, and in the conventional arrangement, the upright portions of the L-shaped forks often engage the outermost deckboards of the pallet with a great amount of force and impact. The stringers of the pallet which are positioned outwardly of the forks, are not usually engaged in any manner by the lifting frame and thus the impact of the lifting frame against the pallet is completely absorbed by the outermost deckboards. The repeated impact of the outermost boards causes early and premature failure of the pallets. The upright portions of the forks generally project forwardly of the lift frame which may consist of transverse members connecting the upright members and thus the upright members engage the outermost deckboards at laterally spaced points, thus causing considerable displacement or damage to the deckboards during conventional use, as above stated. Thus pallets generally have a relatively short life since the damage to the deckboards is cumulative, eventually requiring repairs to the pallet. It is a prime object of this invention, therefore, to provide a pallet impact transferring device which may be quickly attached and detached from the lifting fork assembly or which may be permanently attached to the lifting assembly as an integral portion thereof.

A still further object is the provision of an impact device for the lifting fork assembly of a lift truck, the said impact device including impact surfaces arranged, with relation to the forks of the trucks, in such a manner that the impact surfaces are engaged by the ends of the stringers of a pallet during insertion of the fork into the open spaces of the pallet whereby the outer deckboards are in no way displaced relative to the stringers during engagement of the forks with the pallet.

A still further object is the provision of a quickly attachable and detachable impact assembly for a fork type lift truck, the said assembly being adapted to prevent displacement of the deckboards relative to the stringers of a pallet and to transmit the impact of the stringers to structural portions of a lift assembly.

Still a further object is the provision of a pair of laterally spaced impact plates having impact surfaces which are so disposed on a fork type lift assembly of a lift truck that the impact surfaces receive and are engaged by the ends of the stringers of an entry type pallet, whereby the stringers absorb the impact occasioned by engagement of the forks so that damage is prevented with respect to the deckboards.

These and other objects will become more readily apparent from a reading of the specification when examined in connection with the accompanying sheet of drawing.

In the drawing:

Figure 1 is a perspective view of a lift truck having a fork type lift assembly including a quickly attachable and detachable impact device associated therewith, the said view disclosing the lift assembly in operative relation with respect to a conventional reversible double-faced pallet;

Figure 2 is a detail perspective view of a typical fork type lift assembly;

Figure 3 is a fragmentary side elevational view showing a quick attachable and detachable means for an impact device for the fork type lift truck shown in Figures 1 and 2;

Figure 4 is a perspective view of a fork type lift assembly having a modified type of pallet impact device connected thereto;

Figure 5 is a fragmentary elevational view of the lift assembly shown in Figure 4 including said modified impact device; and

Figure 6 is a front view of the modified assembly shown in Figures 4 and 5.

Referring now particularly to Figures 1, 2 and 3, a lift truck and components thereof are generally designated by the reference character **10**. The lift truck comprises an operator station **11** supported on a body **12** which in turn is supported on a steerable wheel **13** and ground wheels **14**. A steering column **15** is adapted to provide for steering of the steerable wheel **13**.

A lifting frame is generally designated at **16**, the said frame **16** comprising a pair of laterally spaced upright members **17** connected at their upper ends to an upper support **18**. The lift truck **10** shown, includes at least one hydraulic cylinder **19** suitably supported on the lifting frame **16**. The hydraulic cylinder **19** is adapted to move a chain **20** in an upward direction to suitably raise and lower a lifting assembly generally designated at **21**. The lifting assembly **21** includes lift members **22** which comprise a pair of laterally spaced horizontal forks **23**, each fork **23** having an upright back-up member **24**. The back-up members **24** have connected thereto suitable vertically spaced and transversely extending beams **25** and **26** which are suitably connected to the lifting frame **16** for relative vertical movement. The chain **20** may be connected as indicated at **27** to the transverse beam **25**. The structure shown may be conventional and various different types of lifting arrangements and refinements are found in lift trucks presently on the market. All these different lift truck arrangements and designs need not be described since the present invention is applicable to all of these variations.

An impact device is generally designated at **28**. The impact device comprises a pair of laterally spaced impact members **29** which are disposed outwardly of the forks **23**. Each impact device **29** comprises an impact surface **30** which is so disposed as either to be flush with the forward vertical plane of the back-up members **24** or to project forwardly with respect thereto. A connecting member **31** is shown to be integral with the impact members **29**; or the said member **31** could also be a separate piece suitably attached to said impact mem-

bers 29. The impact surfaces 30 thus are positioned immediately adjacent outer portions of the forks 23, the said impact surfaces 30 projecting downwardly below the upper surfaces of the forks 23. A pair of spacer blocks 32 are suitably connected to the impact members 29, the connection possibly being a weld or other conventional securing means. The spacer blocks 32 engage the forward faces of the transverse member 25.

The impact device 28 is removably supported on the lifting assembly 21 by means of a pair of hanger members 33. As shown in Figures 1 and 3, the hanger members 33 each have at their lower portions a forwardly projecting portion 34 which may be suitably secured to the connecting member 31 by means of welding or other securing means. Each hanger member 33 includes an upper rearwardly extending bracket 35 and a lower rearwardly extending bracket 36. The brackets 35 and 36 are respectively provided with openings 37 and 38 through which pins 39 and 40 are inserted. As best shown in Figure 3, the brackets 35 and 36 are arranged to straddle the transverse members 25 and 26 and upon the positioning of the pins 39 and 40 the impact device 28 is firmly though detachably secured to the lifting assembly 21.

A double-faced pallet is designated generally at 41. The double-faced pallet 41 is of conventional reversible construction consisting essentially of a plurality of deckboards 42 and a plurality of baseboards 43 suitably nailed to horizontally extending stringers 44. The stringers 44 include ends 45 which are in flush relation with respect to the outermost deckboards 42 and baseboards 43. This is of a conventional construction, the type of pallet shown being of a two-way entry. In other words, the forks of a lift truck may be inserted into open opposite ends of the pallet. In a reversible double-faced pallet, the term "deckboards" and "baseboards" can be used interchangeably, of course, depending upon the position of the pallet with respect to the ground. The impact device is also useable with other conventional single and double face pallets.

Figures 4, 5 and 6 show a modified type of impact assembly construction. In these figures the lift assembly 21 is identical to that shown in Figures 1, 2 and 3, so that the same reference characters will be applied. In this modification impact members 46 are suitably connected to the transverse member 25 by means of bolts 47. Impact surfaces 48 are provided on the impact members 46. The impact members 46, if desired, can also be rigidly attached to the transverse member 25. Here again, as in the above described disclosure, the impact surfaces 48 are positioned outwardly and immediately adjacent the lifting members 22. The surfaces 48 are flush or project forwardly with respect to forward the vertical plane of the members 24. Also, the surfaces 48 extend below the upper surfaces of the forks 23. The positioning of the impact surfaces 48 and 30 is of course important with respect to the relation of the stringers 44 to the pallet 41. The impact surfaces 48 are so positioned that when the forks 23 make their entry into the pallet the ends 45 of the stringers 44 initially engage the impact surfaces 30 and 48 so that a great amount of the impact is transmitted directly to the transverse member 25. Since the ends 45 of the stringers 44 are considerably more rugged than deckboards 42, the said deckboards are protected against displacement, damage and breakage.

The impact assemblies are quickly and easily attached and detached with respect to the lifting assembly 21. This is highly desirable since many of the lift trucks in use are used for other purposes than handling of pallets. Therefore, by the quick attachable means shown in Figs. 3 and 5 the impact members may be quickly attached and detached whenever desired. Thus it is apparent that the objects of the invention have been fully achieved and that an improved impact device and a

modification thereof has been disclosed and described. It must be understood that changes and modifications may be made without departing from the spirit of the invention as disclosed or the scope thereof as defined in the appended claims.

What is claimed is:

1. For a fork type pallet loader having a lifting frame, a lift assembly connected to said lifting frame and including a pair of L-shaped laterally spaced lift members, each lift member comprising a horizontal fork, a vertical backing member connected to said fork, and a pair of transversely extending laterally spaced beams connected to said vertical backing members and being positioned between said backing members and said lifting frame; a pallet impact device comprising a pair of upright impact plates positioned outwardly of and adjacent said vertical backing members, said plates having impact surfaces extending below the horizontal forks, a cross bar connecting said impact plates, means detachably securing said impact plates to said lift frame including a pair of vertically extending hanger members connected to said cross bar between said backing members, and means detachably connecting said hanger members to each of said beams, said impact surfaces being arranged to receive the impact of ends of the stringers of an entry type pallet during engagement of said pallet by the horizontal forks.

2. For a fork type pallet loader having a lifting frame, a lift assembly connected to said lifting frame and including a pair of L-shaped laterally spaced lift members, each lift member comprising a horizontal fork, a vertical backing member connected to said fork, and a pair of transversely extending laterally spaced beams connected to said vertical backing members and being positioned between said backing members and said lifting frame; a pallet impact device comprising a pair of upright impact plates positioned adjacent said vertical backing members, said plates having impact surfaces extending below at least portions of the horizontal forks, a cross bar connecting said impact plates, means detachably securing said impact plates to said lift frame including a pair of vertically extending hanger members connected to said cross bar between said backing members, and means detachably connecting said hanger members to each of said beams, said impact surfaces being arranged to receive the impact of ends of the stringers of an entry type pallet during engagement of said pallet by the horizontal forks.

3. For a fork type pallet loader having a lifting frame and including a pair of L-shaped laterally spaced lift members, each lift member comprising a horizontal fork, a vertical backing member connected to each fork, and a pair of transversely extending laterally spaced beams connected to said vertical backing members and being positioned between said backing members and said lifting frame; a pallet impact device comprising a pair of upright impact plates positioned adjacent said vertical backing members, said plates having impact surfaces extending below portions of the horizontal forks, a cross bar connecting said impact plates, means detachably securing said impact plates to said lift frame including a pair of vertically extending hanger members connected to said cross bar, and means detachably connecting said hanger members to each of said beams, said impact surfaces being arranged to receive the impact of ends of the stringers of an entry type pallet during engagement of said pallet by the horizontal forks.

4. For a fork type pallet loader having a lifting frame, a lift assembly connected to said lifting frame and including a pair of L-shaped laterally spaced lift members, each lift member comprising a horizontal fork, a vertical backing member connected to said fork, and a pair of transversely extending laterally spaced beams connected to said vertical backing members and being positioned between said backing members and said lift-

ing frame; a pallet impact device comprising a pair of upright impact plates positioned adjacent said vertical backing members, said plates having impact surfaces extending below portions of the horizontal forks, means detachably securing said impact plates to said lift frame including a pair of vertically extending hanger members connected to said impact plates, and means detachably connecting said hanger members to each of said beams, said impact surfaces being arranged to receive the impact of ends of the stringers of an entry type pallet during engagement of said pallet by the horizontal forks.

5. For a fork type pallet loader having a liftting frame, a lift assembly connected to said lifting frame and including a pair of L-shaped laterally spaced lift members, each lift member comprising a horizontal fork and a vertical backing member connected to said fork; a pallet impact device comprising a pair of upright impact plates positioned adjacent said vertical backing members, said plates having impact surfaces, means detachably securing said impact plates to said lift frame including a vertically extending hanger member assembly connected to said impact plates, and means detachably connecting said hanger member assembly to said lift frame, said impact surfaces being arranged to receive the impact of ends of the stringers of an entry type pallet during engagement of said pallet by the horizontal forks.

References Cited in the file of this patent

UNITED STATES PATENTS

1,921,661	Conner	Aug. 8, 1933
2,456,320	Repke	Dec. 14, 1948
2,496,039	Crawford	Jan. 31, 1950

Dedication

2,956,701.—*Rudolph G. Larson*, Aurora, Ill. STRINGER IMPACT DEVICE FOR FORK TYPE LIFT TRUCKS. Patent dated Oct. 18, 1960. Dedication filed Sept. 20, 1974, by the assignee, *International Harvester Company.*

Hereby dedicates the entire remaining term of said patent to the Public. [*Official Gazette April 29, 1975.*]