(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 325 889 B1**

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification : **17.06.92 Bulletin 92/25**

(51) Int. Cl.^{5} : **B66F 9/18**

(21) Application number : **88730285.9**

(22) Date of filing : **29.12.88**

(54) **Spreader device.**

(30) Priority : **05.01.88 JP 58/88**

(43) Date of publication of application : **02.08.89 Bulletin 89/31**

(45) Publication of the grant of the patent : **17.06.92 Bulletin 92/25**

(84) Designated Contracting States : **DE FR GB SE**

(56) References cited :
DE-A- 2 053 507
GB-A- 1 328 101
GB-A- 2 031 841

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Description

FIELD OF THE INVENTION AND RELATED ART STATEMENT

The present invention relates to a spreader device for forklifts, cranes, straddle carriers and the like. According to GB-A-2 031 843 a spreader device is known having a main frame two pairs of booms inserted into said frame from the left and right ends of the spreader frame in such a way that said booms can extend and contract in the left and right directions; a right hollow connecting member and a left hollow connecting member for connecting the outer ends of each pair of said booms; twist lock pin boxes connected to the hollow connecting means; twist lock pins in said twist lock pin boxes and cylinders for the extension and contraction of said booms.

To cope with containers with different lengths, each boom is extended or contracted so that the distance between the right side group of the connecting member and twist lock pin box and the left side group of these is adjusted to the length of each container.

In the spreader according to GB-A-2 031 843, the distance between the pair of twist lock pin boxes on each side cannot be adjusted, it has been a problem that this spreader cannot be used if the width of a container varies one from another very much.

Therefore to fit containers with different widths the use of adjustmend frames is disclosed in the GB-A-1 328 101 and in the DE-A-2 053 507. The GB-A-1 328 101 shows adjustment frames comprising a transverse element which for example is recured to the end portions of the booms. This transverse element is of a complicated structure.

According to this document the transverse element can be telescopic or constructed of I-beams reinforced by plates and connected to the booms by welding and strengthening plate.

According to the DE-A-2 053 507 a spreader device is known which can also fit containers with different widths, by using a swivel arm which is rotatable about his horizontal axis by a drive shaft. The swivel arm according to this document is also provided with two rotatable trunnions to fix the containers.

The spreader devices according to prior art which are able to fit containers with different widths are of a complicated structure.

It is therefore an object of the present invention to provide an improved spreader device that is adjustable to containers with very different widths as well as with different lengths. That is, the present invention provides a spreader device for forklifts and the like carrying a container, being characterized in that said cylinders 8 for the extension and contraction of said booms 2 are disposed between the right and left connecting members 2′ and the spreader frame 1 and that two pairs of adjustment frames 3 are inserted into the right and left connecting members 2′ in such a way that said adjustment frames 3 can move in the front and back directions and that means 9 for the extension and contraction of said adjustment frames 3 are provided and that said means for the extension and contraction of said adjustment frames 3 are cylinders 9 disposed between the twist lock pin boxes 4 and the connecting members 2′ for the extension and contraction of the twist lock pin boxes.

The spreader device of the present invention is constructed as described above. To carry various containers with very different lengths, the connecting member cylinders move in the direction of extension or contraction so that the booms, connecting members and twist lock pin boxes are adjusted in the right and left directions (as indicated by the bi-directional arrow X in FIG.1) to a container to be carried. If the width of containers varies one from another by much, the pin box cylinders are activated to move the adjustment frames and twist lock pin boxes in the front and back directions (as indicated by the bi-directional arrow Y in FIG.1) about the connecting members.

4. BRIEF DESCRIPTION OF THE DRAWINGS

FIG.1 shows a plan of an embodiment of the spreader device of the present invention with the pin box cylinders on the right side being omitted;
FIG.2 is a front view of the embodiment of FIG.1 seen in the direction of an arrow II in FIG.1;
FIG.3 is a vertical sectional view of the embodiment of FIG.1 along the III-III line and seen in the direction of the arrows; and

5. DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

The spreader device of the present invention will be explained with reference to an embodiment shown in FIGS.1 to 3. In the figures, (1) indicates a spreader frame, (2) pairs of booms inserted into the right and left sides of the spreader frame (1) in such a way that the booms can be extended or contracted in the right and left directions (directions indicated by the arrow X in FIG.1), (2′) hollow connecting members connecting the outer ends of the booms, (3) two pairs of adjustment frames inserted into the connecting members (2′) in such a way that the adjustment frames can move in the front and back directions (directions indicated by the arrow Y in FIG.1), and (4) twist lock pin boxes fixed to the outer end of each of the adjustment frames (3).

(6) denotes twist lock pins located in the twist lock pin boxes, and (5) the central position of each of the twist lock pins.

(7) indicates friction metal pieces disposed between the inner surface of the spreader frame (1) and the outer surface of the boom (2), (8) connecting

member cylinders disposed between the right and left connecting members (2′),(2′) and the spreader frame (1) for extending and contracting the connecting members (2′), and (9) pin box cylinders disposed between a pair of the twist lock pin boxes (4),(4) and the connecting member (2′). In FIG.1 the pin box cylinders placed on the right connecting member are omitted from the figure for clarity.

The operation of this spreader device will now be explained in detail.

To carry containers of different lengths (different sizes in the right left direction), the connecting member cylinders (8),(8) for extending and contracting the connecting members are activated so as to adjust the connecting members (2′), the adjustment frames (3) and the twist lock pin boxes (4) in the left and right directions (as indicated by the arrow X). In FIG.1, (A) indicates the length of the spreader when the pin boxes (4),(4) are extended to the right and left, and (B) indicates the extension on one side. Thus the spreader can be used for containers of various lengths.

To carry containers of very different widths (different sizes in the front-back direction), the pin box cylinders (9),(9) for the extension and contraction of the twist lock pin boxes are activated to adjust the front and rear adjustment frames (3) and the twist lock pin boxes (4) in the front and back directions (indicated by the arrow Y). In FIGS.1 and 2, (C) notes the distance in the front-back direction between the pin boxes as they are in the extended positions, and (D) shows the extension on one side. Thus the spreader device can be used for containers of very different witths.

The operation of the cylinders explained above may be done using conventional methods such as a remote control method with the use of fluid pressure.

The spreader device of the present invention can be adjusted to different types of containers with different lengths by activating the means for contracting and extending the booms (these means are shown as the connecting cylinders in the above embodiment by way of example) to move the connecting members and the twist lock pin boxes in the right and left directions (as indicated by the arrow X). Also, for containers with quite different widths, the means for contracting and extending the adjustment booms (these means are shown as the pin box cylinders in the above embodiment by way of example) are activated to adjust the positions of the twist lock pin boxes relatively to the connecting members in the front and back directions (as indicated by the arrow Y). In this way, the spreader device of the present invention can be used not only for containers of different lengths but also for ones with much different widths.

Claims

1. A spreader device for forklifts and the like carrying a container, comprising:
A spreader frame (1) two pairs of booms (2) inserted into said spreader frame (1) from the left and right ends of the spreader frame in such a way that said booms (2) can extend and contract in the left and right directions; a right hollow connecting member (2′) and a left hollow connecting member (2′) for connecting the outer ends of each pair of said booms (2); twist lock pin boxes (4) connected to the hollow connecting means (2′); twist lock pins (6) in said twist lock pin boxes (4); cylinders (8) for the extension and contraction of said booms,
characterized in that said cylinders (8) for the extension and contraction of said booms (2) are disposed between the right and left connecting members (2′), and the spreader frame (1) and that two pairs of adjustment frames (3) are inserted into the right and left connecting members (2′) in such a way that said adjustment frames (3) can move in the front and back directions and that means (9) for the extension and contraction of said adjustment frames (3) are provided and that said means for the extension and contraction of said adjustment frames (3) are cylinders (9) disposed between the twist lock pin boxes (4) and the connecting members (2′) for the extension and contraction of the twist lock pin boxes (4).

Patentansprüche

1. Eine Greifvorrichtung für Gabelstapler und dergleichen, die einen Behälter trägt, mit:
Einem Greifergestell (1) zwei Paar Auslegern (2), welche von den linken und rechten Enden des Greifergestells in solch einer Weise in das Greifergestell (1) eingesetzt sind, daß die Ausleger (2) in die linke und rechte Richtung auseinarderfahren und zusammenfahren können; einem rechten Hohlverbindungsbauteil (2′) und einem linken Hohlverbindungsbauteil (2′) zur Verbindung der äußeren Enden von jedem Paar Ausleger (2); Dreh-Spannstift-Kästen (4), welche mit den Hohlverbindungsbauteilen (2′) verbunden sind; Dreh-Spannstiften (6) in den Dreh-Spannstift-Kästen (4); Zylindern (8) zum Auseinanderfahren und Zusammenfahrer der Ausleger,
gekennzeichnet dadurch, daß die Zylinder (8) zum Auseinanderfahren und Zusammenfahren der Ausleger (2) zwischen den rechten und linken Verbindungsbauteilen (2′) und dem Greifergestell (1) angeordnet sind und daß zwei Paar Einstellrahmen (3) in solch einer Weise in die rechten und linken Verbindungsbauteile (2′) eingesetzt sind, daß sich die Einstellrahmen (3) in die Vorwärts- und Rückwärtsrichtungen bewegen können und daß Mittel (9) zum Auseinanderfahren und Zusammenfahren der Einstellrah-

men (3) vorgesehen sind und daß die Mittel zum Auseinanderfahren und Zusammenfahren der Einstellrahmen (3) Zylinder (9) sind, welche zwischen den Dreh-Spannstift-Kästen (4) und den Verbindungsbauteilen (2′) zum Auseinanderfahren und Zusammenfahren der Dreh-Spannstift-Kästen (4) angeordnet sind.

Revendications

1. Cadre de préhension pour des chariots élévateurs à fourche et équivalent transportant un conteneur, comportant :
un bâti de cadre de préhension (1); deux paires de traverses (2) insérées dans ledit bâti de cadre de préhension (1) par les extrémités gauche et droite du bâti de cadre de préhension de manière à ce que lesdites traverses (2) puissent sortir et rentrer dans les directions gauche et droite; un élément de raccordement creux droit (2′) et un élément de raccordement creux gauche (2′) destinés à relier les extrémités extérieures de chaque paire desdites traverses (2); des boîtiers de verrou tournant (4) reliés aux moyens de raccordement creux (2′); des verrous tournants (6) dans lesdits boîtiers de verrou tournant (4); des vérins (8) destinés à sortir et rentrer lesdites traverses,
caractérisé en ce que lesdits vérins (8) destinés à rentrer et sortir lesdites traverses (2) sont disposés entre les éléments de raccordement droit et gauche (2′) et le bâti de cadre de préhension (1) et en ce que deux paires de bâtis de réglage (3) sont insérées dans les éléments de raccordement droit et gauche (2′) de manière à ce que lesdits bâtis de réglage (3) puissent se déplacer dans les directions avant et arrière et en ce que des moyens (9) destinés à sortir et rentrer lesdits bâtis de réglage (3) sont prévus et en ce que lesdits moyens destinés à sortir et rentrer lesdits bâtis de réglage (3) sont des vérins (9) disposés entre les boîtiers de verrou tournant (4) et les éléments de raccordement (2′) pour la rentrée et la sortie des boîtiers de verrou tournant (4).

FIG. 1

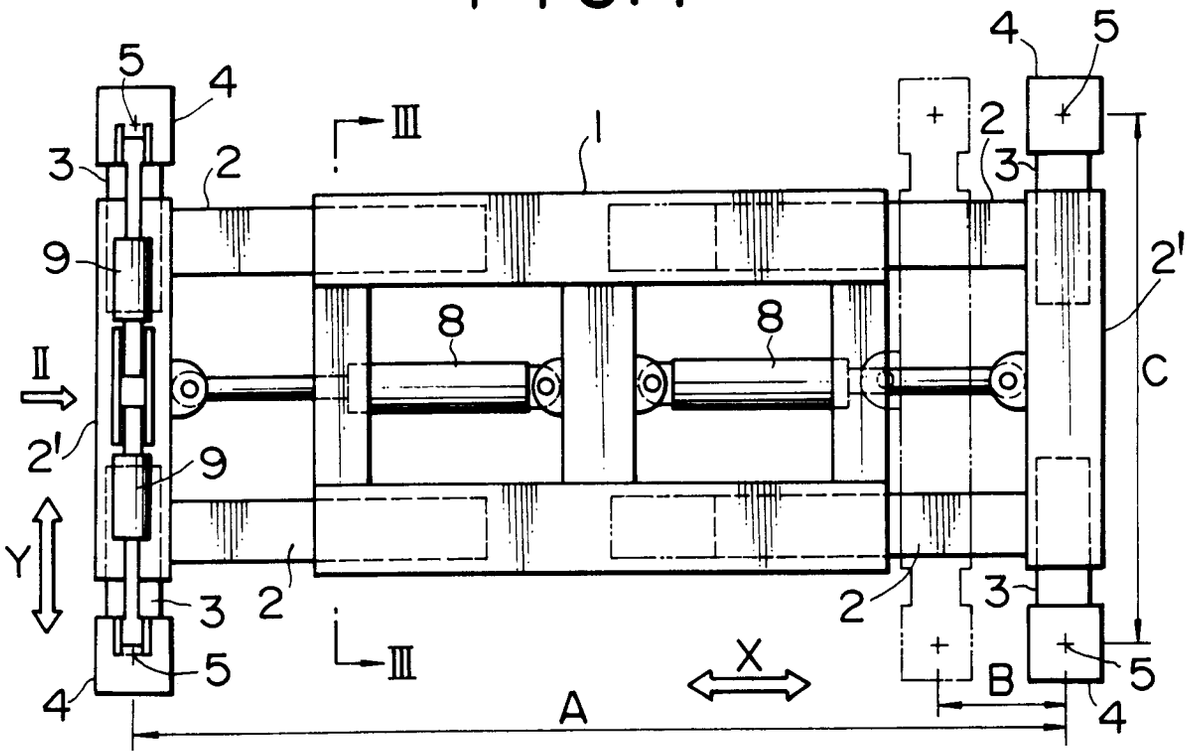

FIG. 2

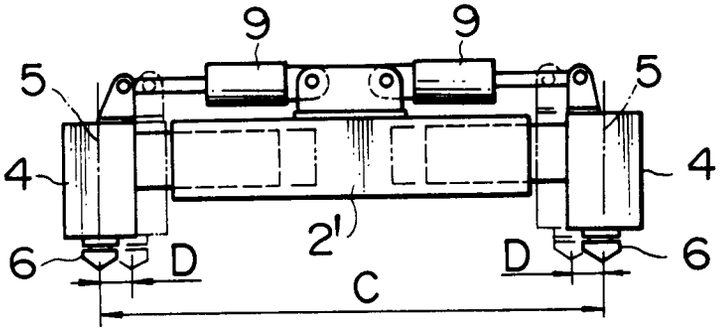

FIG. 3