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LOAD LIFT ASSEMBLY

Filed July 28, 1967

FIG. 1.

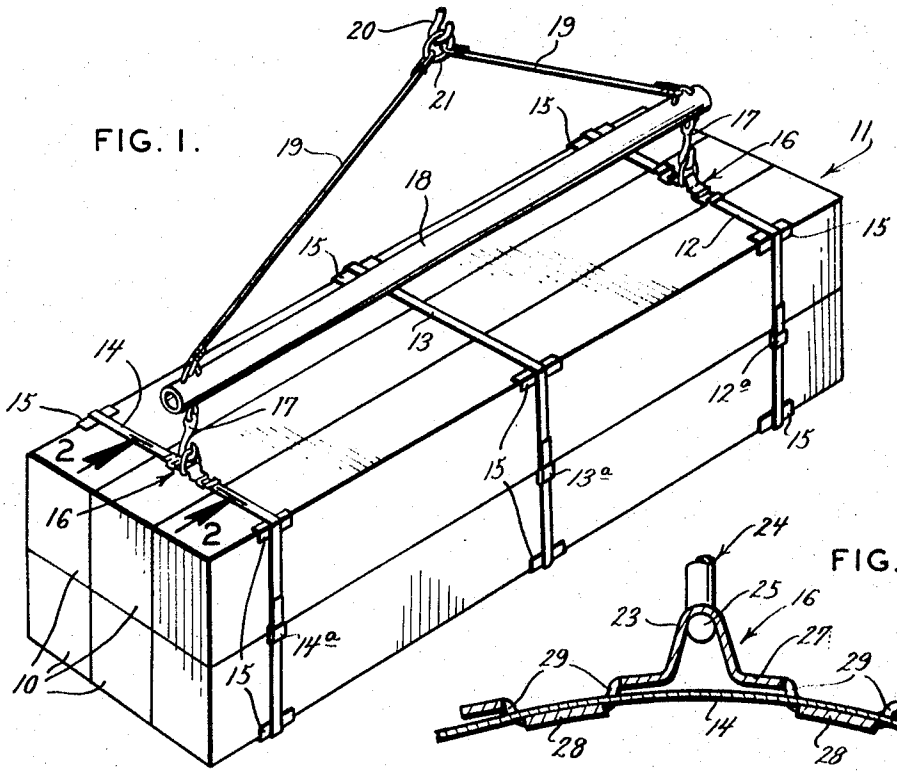


FIG. 6.

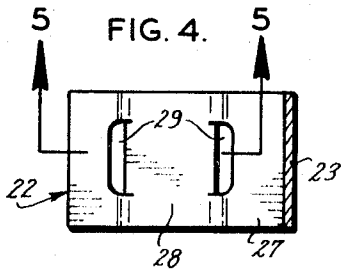


FIG. 4.

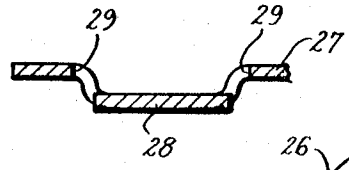


FIG. 5.

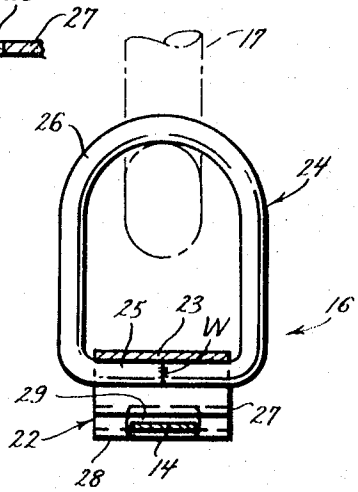


FIG. 3.

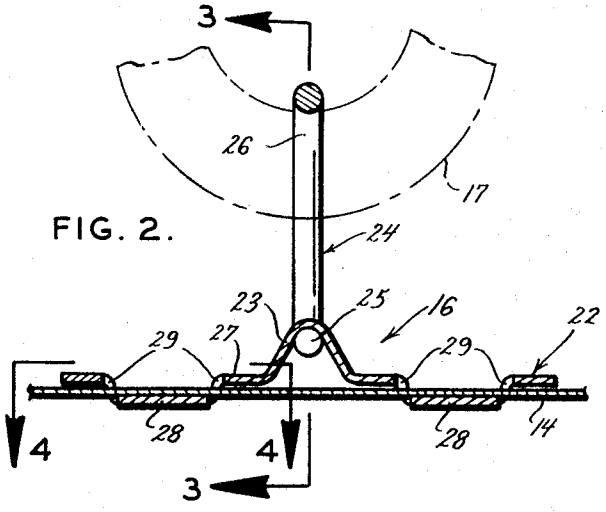


FIG. 2.

INVENTOR

ROBERT A. HUSMANN

BY Gravely, Lieder & Woodruff

ATTORNEYS

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LOAD LIFT ASSEMBLY

Robert A. Husmann, Alton, Ill., assignor to McDonnell Douglas Corporation, St. Louis County, Mo., a corporation of Maryland

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ABSTRACT OF THE DISCLOSURE

A load lift device useful with metallic banding straps which encircle an object to be hoisted, the lift device having a body member and a hoist ring that are rendered inseparable by the banding strap so that cooperation is obtained by the components of the resulting assembly for lifting loads.

This invention relates to improvements in load lifting assemblies and is particularly concerned with a novel and useful lift device constituting the major component of the assembly.

In the vast majority of cases where bulk loads and large objects are to be hoisted, a sling device is usually resorted to, and the sling loops must be manually inserted under the load before the hoist will become effective. It is also the prevailing practice in utilizing metallic banding straps to install the straps independently of any lifting devices so that hoisting slings must again be resorted to.

When attempts have been made to hook hoisting means into metallic banding straps, it has been found that the strap is subject to severe local stress which is sufficient to stretch the metal beyond its elastic limit and in a great many cases the straps have broken so that the banding straps do not form a particularly reliable anchorage for hoisting hooks and the like.

It is, therefore, an important object of the present invention to provide a unique load lift assembly which is able to utilize load banding straps without stressing or running the risk of fracturing the banding straps.

Another object of this invention is to provide a load lift device composed of a lifting body that will yield so as to prevent high concentration of loads, and a lifting eye retained in the lift body by means of the banding straps.

Other objects of the present invention reside in the components and features of the load lift device, a preferred form of which is shown in the drawings and will be hereinafter described.

In the drawings: FIG. 1 is a perspective view of a load composed of a plurality of separate articles secured by banding straps and particularly showing load lifting devices permanently a part of the assembly such that a hoist spreader bar may be applied to the load for hoisting purposes;

FIG. 2 is an enlarged sectional elevational view taken at line 2—2 in FIG. 1;

FIG. 3 is a partial sectional view taken at line 3—3 in FIG. 2;

FIG. 4 is a fragmentary plan view taken at line 4—4 of FIG. 2;

FIG. 5 is a sectional view taken at line 5—5 in FIG. 4; and

FIG. 6 is a view similar to FIG. 2 but showing the assembly under load to illustrate the yielding nature thereof to avoid stress concentration.

Referring now to the drawings, the group of articles 10 compose a load assembly 11, and the individual articles are secured to such an assembly by means of metallic banding straps 12, 13 and 14. The straps 12 and 13 are located at the ends and the strap 13 is located intermediate the length of the load assembly. The straps are secured in position by sealing the ends thereof as is shown respectively at 12*a*, 13*a*, and 14*a*. The outer corners of the articles are protected by any of a number of well known corner reinforcing elements 15, which are installed under the banding straps.

The endmost banding straps 12 and 14 are each provided with a load lift device 16 which will be described presently. The load lift device 16 is engaged by hooks 17 attached to the outer end portions of a spreader bar 18, and the spreader bar 18 is attached by sling lines 19 to a hoisting hook 20 by means of a ring 21.

Turning now to FIGS. 2 and 3, the typical load lift device 16 includes a lift body 22 which is formed from a flat strip of material in which there is provided a transverse groove 23 intermediate the ends of the lift body 22 and the remainder projects outwardly at each side to form body extensions. The groove 23 receives the lifting eye 24 which has a base portion 25 seated in the transverse groove 23 and a loop portion 26 which extends above the groove 23 and is engaged by the lifting hook 17. The banding strap, for example strap 14, is threaded through the outwardly projecting extensions which form the lifting body 22 after the lift eye 24 has been placed in position so that when properly installed the lift eye 24 is incapable of being accidentally displaced from its intended seating in the transverse groove 23 of the lift body 22.

The formation of the lift body 22 is accomplished by well known stamping, punching and bending operations, all of which result in the formation of the transverse groove 23 above the plane of the body plate 27 and the lift body 22 (as viewed in FIG. 2) and the formation of depressed transverse channels 28 in the extensions at each side of the transverse groove 23. As shown in greater detail in FIGS. 4 and 5, the depressed transverse channels 28 are formed by pushing an area of the body plate 27 below the plane of the body plate. At a suitable time in the manufacturing process the body plate 27 is punched at four places, two in each transverse channel 28, to form elongated apertures 29. After the formation of the apertures 29, the edges are freed of burrs and sharp projections which might otherwise cut into or weaken the banding strap 12.

Referring now to FIG. 3, it is noted that the lift eye 24 is characterized by a base portion 25 which is relatively straight and approximately the width of the body plate 27. The remainder of the lift eye 24 is completely exposed above the lift body 22 and is characterized by the loop 26 which is adapted to be engaged in the hoisting hook 17. The opposite ends of the lift eye 24 may be butt-welded as is indicated at W, and the weldment is preferably disposed under the transverse groove 23 where it will be subject to minimum bending loads.

As a result of forming the plate by well known stamping and bending operations so as to provide the transverse groove 23 and the depressed transverse channels 28, there is provided a unique lift body 22 which can be joined with the banding straps so that the lift eye 24 will be locked to the body 22 and will be rendered useful as a lifting device so long as the banding strap remains on the load assembly. This avoids the necessity for using separately applied slings which are difficult to install unless the load is blocked up so that the slings may be passed under the load. The present load lift assembly has the important advantages that it is exceedingly easy to manufacture, it is very inexpensive, and it will permit hoisting load assemblies without requiring the usual delays of blocking to permit installation of crane slings and

the like. There is a further advantage which is that the lift eye **24** being a permanent part of the load lift assembly can result in the complete abandonment of the use of blocking devices under the load assemblies when they are initially deposited in a trailer, van, or other means of conveyance. This permits a more efficient utlization of the capacity of the transporting rigs, trucks and the like.

In FIG. 6 there is shown a lift assembly under load and with some yield in the band strap **14**. As the strap **14** yields upwardly the body **22** can easily follow the band strap by flexing in the bight of the groove **23**. This is a primary advantage because as a band strap flexes or deforms under load the body **22** can go right with it. The flexing therefore maintains the lift plate in the same contour as the band, thereby continuing the original load distribution with reduction or elimination of the shearing action that might develop on the bands.

What is claimed is:

1. A load lift assembly comprising a load lifting body having a groove projecting to one side and spaced extensions at each side, a load binding member engaged in said lifting body opposite said groove and extending in alignment with said extensions, and a lift eye engaged in said lift body groove and retained against separation by said binding member, said lift body being yieldable about an axis substantially coincident with said lift eye.

2. The load lift assembly set forth in claim **1** wherein said lift body is formed with spaced apertures in said extensions to receive said load binding member therethrough, and a portion of said lift eye is disposed between said lift body and load binding member to exert lift effort only upon said lift body.

3. In a load lift assembly having binding straps encircling a load, the improvement of a load lift device mounted on certain of the binding straps comprising an elongated body plate having a transversely extending groove formation intermediate its length and at least one transversely extending indentation at each side of said groove, said body plate having binding strap receiving apertures opening through said indentations with said apertures being substantially aligned with each other and spaced along the length of said body plate, and a lift eye having a portion engaged in said groove, said eye portion engaged in said groove being loosely retained therein by the binding strap received in said aligned apertures.

4. The improvement set forth in claim **3** wherein said groove formation projects from one side, said indentations project from the opposite side of said body plate, and said body plate flexes under load about said groove.

5. The improvement set forth in claim **4** wherein said indentations having opposed walls in which said apertures are formed, whereby the load lift effort of said lift eye is in said groove formation.

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ANDRES H. NIELSEN, Primary Examiner