

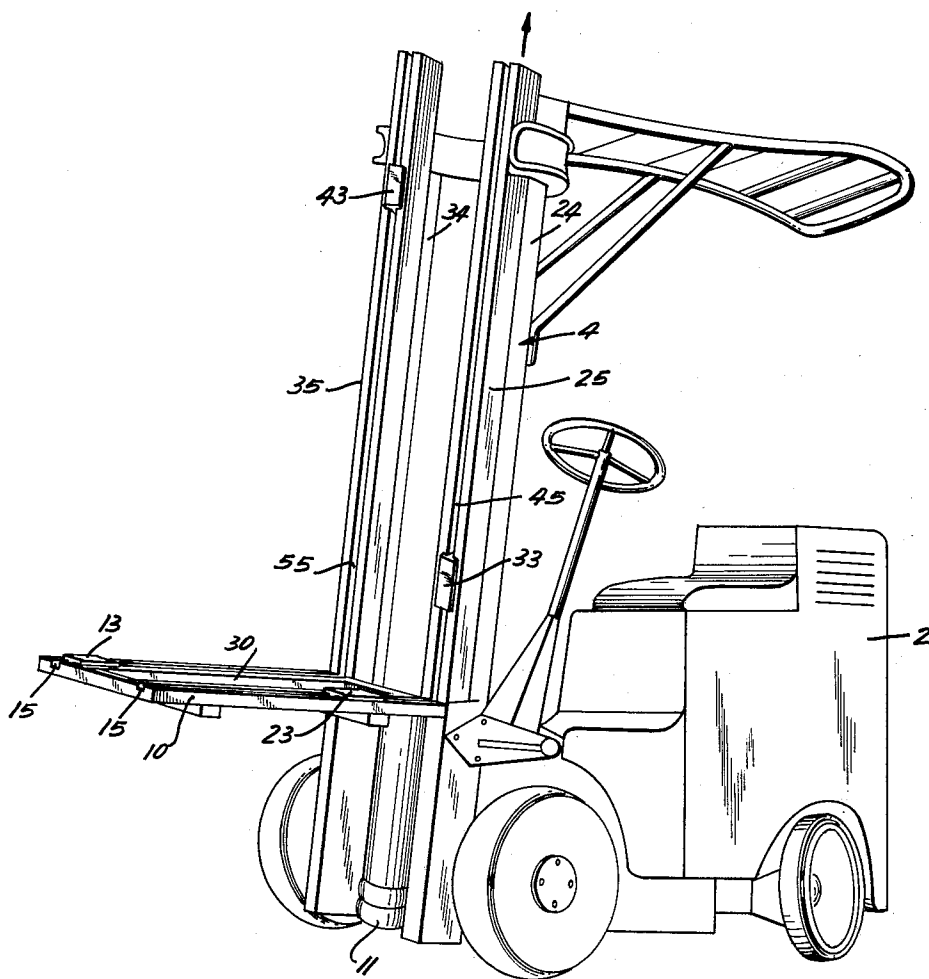
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LOAD HOLDING DEVICE FOR FORK LIFT TRUCKS

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The present invention relates to load holding devices for fork lift trucks.

If a relatively light load is placed on a horizontal support of a fork lift truck, provision has to be made for retaining this load on the horizontal support, particularly when the fork lift truck has to travel over uneven ground or has to take drive around curves.

Under such circumstances, a relatively light load will be displaced during transport if the fork lift truck is subjected to shocks. In extreme cases the relatively light load will fall off the horizontal support and the load or its container or in some cases both will be damaged.

If several light loads are to be transported on the horizontal support in superimposed relationship, every lateral displacement of each load will add to the effects of the lateral displacement of the superimposed load.

The load placed on the horizontal support of a fork lift truck may be an empty container or may be a container holding a relatively light article therein. Light articles are in a number of cases very valuable, and displacement or shocks to the articles on the horizontal support tend to damage them.

It is an object of this invention to provide simple load holding devices which will hold a load resting on the horizontal support of the fork lift truck.

It is a further object of this invention to provide holding devices on the horizontal support of a fork lift truck which will hold the load placed thereon by magnetic attraction.

It is still a further object of the present invention to provide magnetic holding devices on the article handling structure of a fork lift truck and to mount the devices adjustably and detachably on the article handling structure.

With these objects in view the present invention relates to a fork lift truck and comprises a frame, an article handling structure movably mounted on the frame for supporting an object, and magnetic means located on the article handling structure to secure thereto by magnetic attraction a magnetizable object resting on the horizontal support.

According to another aspect of the present invention, a fork lift truck comprises a frame including guide members, article handling structure movably mounted on the guide members of the frame and including upright members mounted on the guide members for upward and downward movement thereon and a horizontal support for an object connected to the upright members. Magnet means are located on the article handling structure in adjustable and detachable relationship to secure thereto by magnetic attraction an object resting on the horizontal support.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of a specific embodiment when read in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of a fork lift truck incorporating a load holding device according to the present invention.

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Referring to the drawing, a fork lift truck 2 has mounted at the front thereof a frame 4, which includes a pair of guide members 24 and 34. A pair of uprights 25, 35 are mounted on the guide members 24, 34 of frame 4 for upward and downward movement thereon. A horizontal support 10 is supported on uprights 25, 35. A fluid operated jack 11 is operatively connected to the article handling structure 10, 25, 35 for raising and lowering the same. The connection between the jack 11 and the upright members 25 and 35 and support 10 is not illustrated since it is not part of this invention, and may be of any conventional construction.

The horizontal support 10 is of rectangular shape and has at the upper face 30 thereof formed two grooves 15. A magnet 13 is adjustably and detachably mounted in one of the grooves 15 of platform 10 and a magnet 23 is similarly adjustably, slidably and detachably mounted in the other groove 15 of the platform 10 so that grooves 15 constitute guide means for magnets 13, 23.

A groove 45 is formed on the front face of upright 25 and a groove 55 is formed on the front face of upright 35.

Magnets 33 and 43 are detachably and adjustably secured in the grooves 45, and 55, respectively, and slidably guided in the same.

When a load having a magnetizable portion rests on platform 10, the magnetizable portions are arranged to rest on the magnets 13, 23 which are located on diametrically opposite corners of the rectangular platform 10. The load will in this manner be securely held by magnetic attraction of the magnets 13, 23 acting on the magnetizable part of the load.

If the load has to be removed from the platform 10 and the magnets 13 and 23 are permanent magnets, the load is tilted about the corners of the platform which are not provided with the magnets.

The load or the container may be magnetizable, for example made out of steel. In the case of bales of fibers, such as cotton, the steel bands conventionally located around the cotton bales will provide the magnetizable material to hold the load by magnetic attraction of the magnets on the steel bands. If the load is not magnetizable a magnetizable chain may be secured to the load either by tying it around it or by anchoring one end thereto while the other end may be held to one or both of the magnets 13 and 23.

If a number of load units are placed in superimposed relationship on the horizontal support 10, or if the article is very high, magnets 33 and 43 are inserted in grooves 45, 55 of the upright members 25, 35. Since the magnets 33, 43 are adjustable, that is they can slide up and down in the grooves, the magnets 33 and 43 can be located in convenient locations so that a relatively high load or a number of superimposed load units will be held securely by magnetic attraction.

The grooves 15 are shown as rectilinear. They may be replaced by curved grooves in order to accommodate and securely hold curved goods or loads on the platform 10. Similarly, a holding member may be arranged to extend over the load and provided with magnets to hold the load on the platform 10 by magnetic attraction.

Magnets 13, 23, 33 and 43 are preferably permanent magnets, since they are independent of a supply of electric current and do not require for their operation an electric circuit.

The magnets can, however, be electrically operated so that their magnetic attraction can be switched on and off. The unloading of the articles will in this case produce no difficulty as the article will not stick to the magnets.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of load holding devices

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for fork lift trucks differing from the types described above.

While the invention has been illustrated and described as embodied in a magnetic holding means, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a fork lift truck, in combination, a frame including guide members; article handling structure movably mounted on said frame and including upright members mounted on said guide members for upward and downward movement thereon and a horizontal support for an object supported in front of said upright members, said horizontal support having an upper face formed with grooves therein; and permanent magnet means comprising at least one plate having a face engaging the upper face of said horizontal support and a tongue on said face

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of said plate inserted in one of said grooves, said tongue and groove cooperating to provide means for adjustably and detachably positioning said magnet means on said horizontal support by magnetic attraction and to secure thereto also by magnetic action a magnetizable object resting on said horizontal support.

2. In a fork lift truck, in combination, a frame including guide members; article handling structure movably mounted on said frame and including upright members mounted on said guide members for upward and downward movement thereon and a horizontal support for an object supported in front of said upright members, said upright members having a front face formed with grooves therein; and permanent magnet means comprising at least one plate having a face engaging the front face of said upright members and a tongue on said face of said plate inserted in one of said grooves, said tongue and groove cooperating to provide means for adjustably and detachably positioning said magnet means on said upright members by magnetic attraction and to secure thereto also by magnetic action a magnetizable object resting on said horizontal support.

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