

Feb. 15, 1955

J. B. MOMYER

2,702,140

YOKE FOR LIFT TRUCKS AND FLEXIBLE PALLET

Filed March 13, 1953

Fig. 1

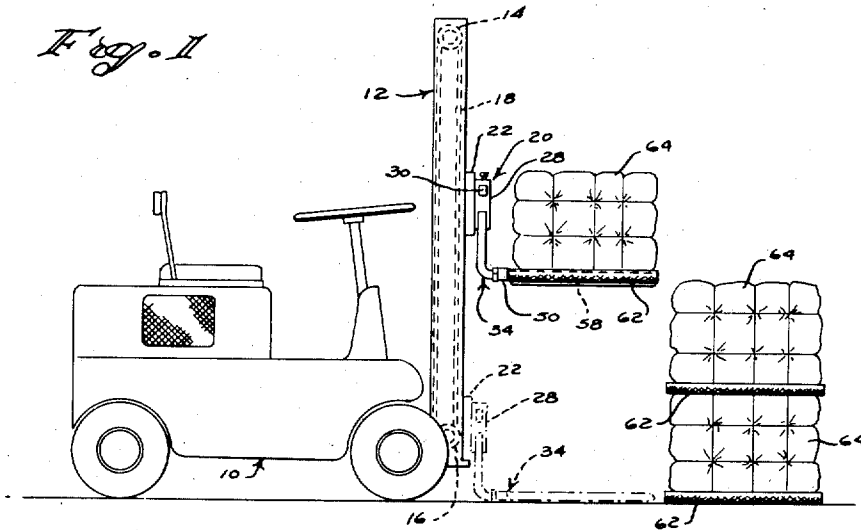


Fig. 2

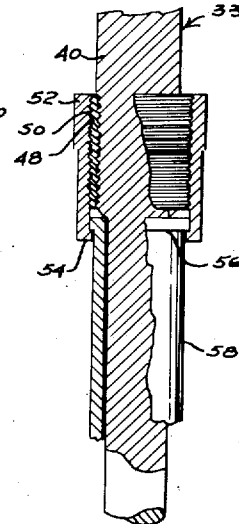
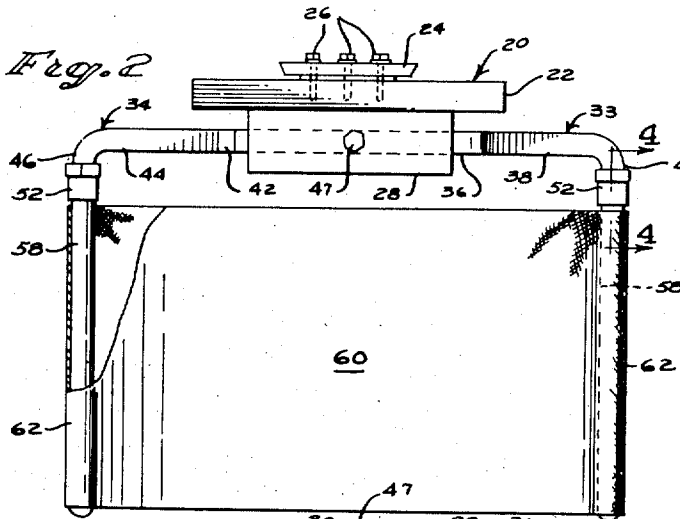


Fig. 3

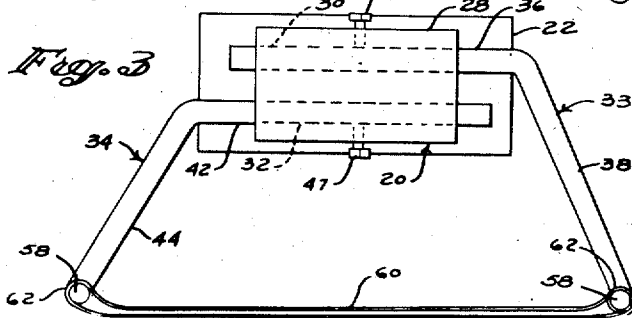


Fig. 4

INVENTOR.
JOE B. MOMYER
BY

McMurray, Serman & Davidson
ATTORNEYS

1

2,702,140

YOKE FOR LIFT TRUCKS AND FLEXIBLE PALLET

Joe B. Momyer, Scottsdale, Pa.

Application March 13, 1953, Serial No. 342,211

4 Claims. (Cl. 214—731)

This invention relates to a yoke adapted to be connected to the elevatable load support assembly of an industrial lift truck, and more particularly, the invention has reference to a yoke which, when mounted upon a truck of the type stated, is adapted to coact with a flexible pallet, in such a manner as to engage loop-like ends on said pallet while the pallet is in supporting relationship to stacked material to be moved.

Most usually, a pallet is of rigid formation, being constructed from either wood or metal material. A pallet so formed necessarily has an appreciable thickness, the thickness of each pallet in the stack accounting for an appreciable part of the height of the stack.

It will be seen, accordingly, that the conventional pallet has an undesirable characteristic, in that it acts as a limiting factor upon the number of objects which can be stacked upon a particular area of a warehouse floor.

The present invention, accordingly, is directed to a cooperating yoke and load support pallet, the pallet being formed as a web of burlap or like material and thus having no appreciable thickness when located in supporting relationship to stacked objects. The yoke, in this regard, is adapted to be mounted upon a conventional lifting frame of a truck of the type stated, and can be substituted readily for the yoke already on said lifting frame. The yoke is so designed as to be particularly adapted to extend into loop-like ends formed upon the flexible pallet, thus to cooperate with the pallet in moving stacked objects.

Another object is to provide a lift truck yoke which will be adjustable as to the distance between the yoke or fork arms thereof.

Another object is to provide, for coaction with the adjustable yoke, a flexible pallet which can be fashioned with minimum difficulty and expense.

A further object is to provide a yoke as stated in which the fork arms can, if desired, be equipped with sheaths, which sheaths can be used to advantage in engaging flexible pallets of the type stated, to better facilitate rotation of the flexible pallet and thus enable all loads to rise level. These sheaths can be removed at the option of the user to allow the yoke arms to engage conventional pallets.

Another object is to provide yoke arms which will be so designed as to engage flexible pallets at any height, including pallets disposed directly against the floor surface.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a side elevational view of a lift truck equipped with a yoke formed in accordance with the present invention, the yoke being illustrated in operative association to a flexible pallet and an object supported on said pallet, the dotted line indicating the position of the yoke when it is to engage a pallet disposed against the floor surface;

Figure 2 is an enlarged top plan view of the yoke and pallet, a portion of the pallet being broken away;

Figure 3 is a front elevational view, on an enlarged scale, of the yoke and pallet; and

Figure 4 is a greatly enlarged detail sectional view taken substantially on line 4—4 of Figure 2.

A lift truck 10 of conventional design has a lift frame 12 equipped with pulleys 14, 16, about which is trained a cable stretch 18.

These parts are conventional per se.

2

The yoke 20 constituting the present invention includes a base block 22 adapted to be bolted, welded, or otherwise fixedly connected to the conventional yoke mount of the lift frame 12. Base block 22 is flat, rectangular, and is provided, at the back surface thereof, with a clamping plate 24 of any desired outer configuration. Clamping plate 24 has clamping bolts 26 threaded thereto. The clamping bolts 26 would also extend through the yoke mount of the lift truck. In this way the base block 22 is connected to said yoke mount and will be shiftable upwardly and downwardly upon the lift frame 12 therewith.

Welded or otherwise fixedly connected to the front surface of the base block 22 is a support block 28. Support block 28 is also rectangular, but is smaller in area than base block 22.

In the support block 28 I form longitudinal bores 30, 32. These are of rectangular cross section, and are extended in parallel relation, the bores opening upon the opposite ends of the support block.

The yoke also includes yoke arms 33, 34. The yoke arm 33 has an inner end portion 36 of straight formation, said inner end portion 36 being slidably extended within bore 30. The inner end portion 36 is complementary in cross sectional shape to said bore and thus is held against rotation within the bore.

At its inner end, the inner end portion 36 merges into a depending portion 38, said depending portion 38 being disposed at an obtuse angle to the inner end portion 36.

The depending portion 38, at its lower end, merges into a forwardly projected outer end portion 40 of the yoke arm, said outer end portion being extended in a line normal to the line in which the inner end portion 36 is extended.

The yoke arm 34 has an inner end portion 42 parallel to the inner end portion 36 of yoke arm 33. The portion 42 is slidably mounted in the lower bore 32 of the support block 28. At its inner end, portion 42 merges into a depending portion 44, said depending portion 44 being substantially shorter in length than the depending portion 38 of yoke arm 33. At its lower end, depending portion 44 merges into forwardly projected outer portion 46, the portion 46 being disposed in a plane common to the outer end portion 40 of yoke arm 33, due to the abbreviated length of depending portion 44. The depending portions 38, 44, considered in their relationship to one another, diverge downwardly from the support block 28 as best shown in Figure 3.

The portions 36, 42 mounted in support block 28 are adjustable in the direction of their lengths, toward and away from the respective yoke arms. In other words, the inner end portion 36 of yoke arm 33 is adjustable toward and away from the yoke 34, while the portion 42 is adjustable toward and away from yoke arm 33. By reason of this arrangement, the forwardly projected outer end portions 40, 46 are adjusted as to the distance therebetween.

Set screws 47, threadable into the top and bottom surfaces, respectively, of the support block 28, engage the inner end portions 36, 42 in their selected positions of adjustment, to prevent movement of these portions of the yoke arms from said adjusted positions.

Adjacent the juncture of outer end portion 40 with depending portion 38, said outer end portion is, as shown in Figure 4, formed with threads 48. Engaging said threads are internal threads formed upon an open ended adaptor sleeve 50. Adaptor sleeve 50 has external threads engaged by internal threads formed upon a nut 52.

At one end of nut 52, an internally directed circumferential flange 54 is formed, engageable with a collar or shoulder 56 formed upon the inner end of a tubular sheath 58 adapted to be fitted over outer end portion 40. Sheath 58, at its outer end, is formed with a rounded end wall, to facilitate extension of the sheath into the loop-like end edges of flexible pallets 60.

It will be understood that the outer end portion 46 is equipped with an adaptor sleeve and nut like those of portion 40, and is also provided with a removable sheath 58.

The flexible pallet has loop-like ends 62 into which sheaths 58 are extendable.

3

Objects to be lifted have been designated by the reference numeral 64. As shown in Figure 1, said objects can be stacked vertically, with pallets 60 being located at selected points along the length of the stack. The pallets have their loop-like end edges 62 disposed beyond the sides of the stack, to facilitate extension of the outer end portions of the yoke arms thereinto.

In use of the yoke, one merely locates the yoke arms at a selected elevation, after which the truck 10 is driven toward the stack. The sheathed yoke arms are thus extended into the loop-like end edges 62 of the flexible pallets.

Thereafter, the yoke is lifted, thus causing the object 64 supported upon the engaged pallet to be lifted therewith.

The pallet has the desirable characteristic of having no appreciable thickness, and thus does not take up space which could and should be taken up by the stacked objects. This is important in warehouse operations, in which a continual effort is being made to devise more efficient ways of storing objects.

The pallet also has the desirable characteristic of lifting loads level. This is accomplished by the fact that the pallet, an endless webbing, will revolve on the sheaths until the distance from edge of load to sheath is equal on both sides of load.

When the sheaths 58 are removed, the yoke arms can be used in a regular manner, for engaging conventional pallets.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A load support yoke for lift trucks and comprising: a flat base block including on one face thereof means to clamp the same fixedly and separably to a lift truck yoke mount; a flat support block fixed to the opposite face of the base block and having vertically spaced, parallel, horizontally extending bores of non-circular cross section opening at their ends upon the respective ends of the support block; a pair of yoke arms including straight, horizontal inner portions having a cross section complementing that of the bores and mounted within the bores for free sliding movement in the direction of their lengths responsive to manual adjustment by a user, depending portions integral with one end of the respective inner end portions, said depending portions being of different lengths with their lower ends terminating in a common horizontal plane, and load-engaging outer end portions integral with said lower ends of the depending portions and extending horizontally therefrom; and means threadable within the support block into said bores to retain the inner end portions in selected positions of slidable adjustment.

2. A load support yoke for lift trucks comprising: a flat, vertically disposed base block having mounted on one face thereof a clamping plate shiftable toward and away from said one face to engage, between said plate and base block, a portion of a lift truck yoke mount, thereby to fixedly and detachably demount the base block upon said yoke mount; a solidly constituted, vertically disposed support block fixedly mounted upon the opposite face of the base block and formed with vertically spaced, parallel, horizontally extending bores of non-circular cross section opening at their ends upon the respective ends of the

4

support block; a pair of yoke arms including straight, horizontal inner end portions having a cross section complementing that of the bores, and mounted within the bores for free sliding movement in the direction of their lengths responsive to manual adjustment by a user, depending portions integral with one end of the respective inner end portions, said depending portions being of different lengths with their lower ends terminating in a common horizontal plane, and load-engaging outer end portions integral with said lower ends of the depending portions and extending horizontally therefrom; and means threadable within the support block into said bores to retain the inner end portions in selected positions of slidable adjustment.

3. In a lift-truck-mounted load support device, a combination yoke and pallet structure comprising a support block; means to mount said support block upon the yoke mount of an industrial lift truck, said support block having vertically spaced, parallel, horizontally extending bores opening upon the opposite ends of the support block; yoke arms mounted in the bores of the support block, said yoke arms being mounted in said bores for free sliding movement, to adjust the yoke arms toward and away from one another responsive to manual shifting of the same by a user, said yoke arms having, at those ends thereof remote from the support block, coplanar, horizontally disposed end portions; and a flexible pallet formed as an endless length of fabric into which said arms are extendable, the end portions of said arms projecting into said pallet and having smooth surfaces for free rotational movement of the pallet about said end portions under the weight of a supported object, thus to center said object in level position between the arms.

4. In a lift-truck-mounted load support device, a combination yoke and pallet structure comprising a support block; means to mount said support block upon the yoke mount of an industrial lift truck, said support block having vertically spaced, parallel, horizontally extending bores opening upon the opposite ends of the support block; yoke arm mounted in the bores of the support block, said yoke arms being mounted in said bores for free sliding movement, to adjust the yoke arm toward and away from one another responsive to manual shifting of the same by a user, said yoke arms having, at those ends thereof remote from the support block, coplanar, horizontally disposed end portions; and a flexible pallet formed as an endless length of fabric into which said arms are extendable, the end portions of said arms projecting into said pallet and having smooth surfaces for free rotational movement of the pallet about said end portions under the weight of a supported object, thus to center said object in level position between the arms, said yoke arms additionally including elongated sleeves of circular cross section mounted upon said end portions of the yoke arm for free rotational movement independently of one another, the yoke arms including means holding said sleeves detachably assembled with their associated yoke arm end portions.

References Cited in the file of this patent

UNITED STATES PATENTS

1,277,084	Keith	Aug. 27, 1918
1,382,610	Streich	June 21, 1921
1,835,431	Ryerson	Dec. 8, 1931
1,923,617	Edensword	Aug. 22, 1933
2,036,359	Pride	Apr. 7, 1936
2,490,772	Benner	Dec. 13, 1949
2,561,896	Weiss	July 24, 1951
2,571,550	Ehmann	Oct. 16, 1951
2,575,552	Glenn, Jr.	Nov. 20, 1951
2,601,933	Seagraves et al.	July 1, 1952
2,640,583	Rechtin et al.	June 2, 1953