

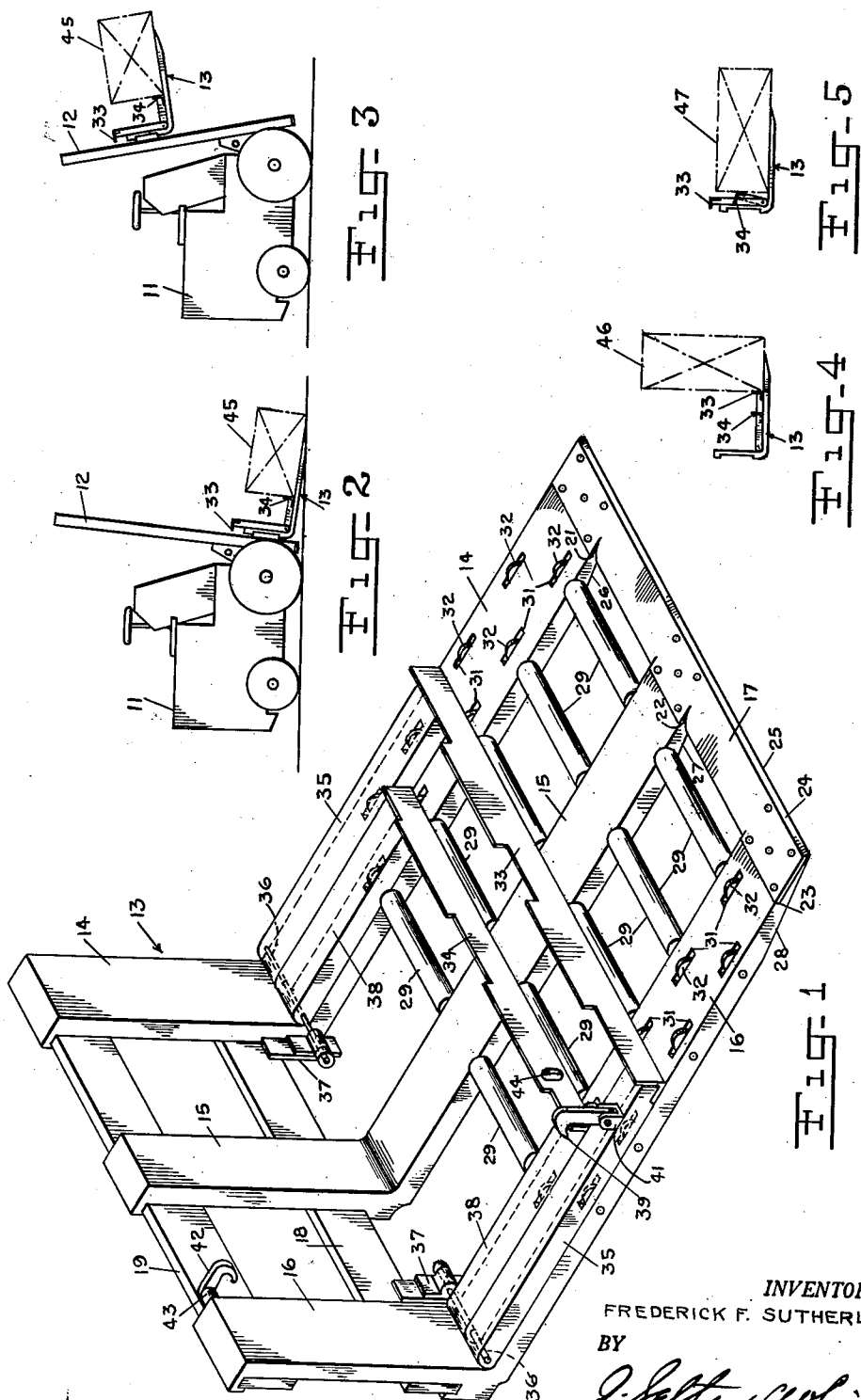
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FORK LIFT TRUCK

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FORK LIFT TRUCK

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This invention relates to fork lift trucks, and relates more particularly to lifting forks adapted for use with said trucks.

As is well known, the use of fork lift trucks permits of important savings to be effected in the handling of objects. However, despite their many advantages, fork lift trucks are of only limited application since they require that the objects being handled be supported on pallets, skids, cleats or in some other special manner. While many proposals have been made to adapt fork lift trucks to handle objects not specially supported, none of these proposals has met with widespread acceptance since they were not suitable for their intended purpose.

It is an important object of this invention to overcome the foregoing and other disadvantages of the prior fork lift trucks, and to provide a fork lift truck which will be especially simple in construction and efficient in operation.

A further object of this invention is to provide a fork lift truck which will permit objects that are not specially supported to be readily handled.

Another object of this invention is the provision of a lifting fork, adapted for use on fork lift trucks, which is provided with locating baffles to limit the extent to which said lifting fork may be inserted under an object and which is also preferably provided with a sharp leading edge and rollers or other anti-friction means on its upper surface to permit said lifting forks to be loaded or unloaded more readily.

Other objects of this invention, together with certain details of construction and combinations of parts, will be apparent from the following detailed description and claims.

I have now discovered that various objects, such as packages, containers and the like, which are not specially supported may be handled readily with a fork lift truck by providing the lifting fork thereof with baffles to limit the extent to which said lifting fork may be inserted under said package. The baffles should be positioned so as to permit the package to rest on the lifting fork with its center of gravity over said lifting fork, but with its end overhanging the leading end thereof. In addition, the leading end of said lifting fork is preferably provided across its entire width with a relatively sharp edge which can be inserted readily under a package, and with rollers, or other anti-friction devices on its upper surface, to permit said lifting fork to slide under or to be withdrawn readily from under the package.

A preferred embodiment of my invention is

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illustrated in the accompanying drawing in which

Fig. 1 is a view in perspective, on an enlarged scale, of the lifting fork of this invention,

Fig. 2 is a side elevation of a fork lift truck equipped with the lifting fork shown in Fig. 1 in the loading or unloading position,

Fig. 3 is a side elevation of the fork lift truck shown in Fig. 2 in the carrying position,

Fig. 4 is a side elevation of the lifting fork shown in Fig. 1 carrying a package, having a base of small dimensions, and

Fig. 5 is a side elevation of the lifting fork shown in Fig. 2 carrying a package having a base of large dimensions.

Like reference numerals indicate like parts throughout the several views of the drawing.

Referring now to the drawing, the reference numeral 11 designates a truck, which is provided with a lifting column 12 on which is mounted the lifting fork indicated generally by the reference numeral 13. The lifting column 12 is constructed and arranged so that it may be tilted forward about 5 degrees from the vertical and tilted backward about 10 degrees from the vertical. In addition, the lifting column 12 is powered to permit the lifting fork 13 to be raised and lowered as desired.

The lifting fork 13 comprises tines 14, 15 and 16 which are joined to each other at their forward end by means of a plate 17 and at their rear end by means of straps 18 and 19. The plate 17 is set into recesses 21, 22 and 23 in the tines 14, 15, and 16, respectively, so that its upper surface will be flush with the upper surface of said tines. In addition, the plate 17 is tapered at 24 to provide a leading edge 25 which is relatively sharp and which may be readily inserted under the edge of a package. The lower surface of the tines 14, 15 and 16 is tapered at 26, 27 and 28 to permit the leading edge 25 of the plate 17 to be brought into contact with the floor when the lifting column 12 is tilted forward and the lifting fork 13 is lowered.

A plurality of freely rotatable rollers 29 are provided between the tines 14, 15 and 16 and are so mounted thereon that they will project to a slight extent above the surface of said tines. Each of the tines 14 and 16 is provided with a plurality of recesses 31 in which there are mounted for free rotation a plurality of rollers 32 which project above the surface of said tines to the same extent as the rollers 29. By providing the lifting fork 13 with the rollers 29 and 32, the frictional forces during loading and unloading are reduced to a minimum.

The lifting fork 13 is also provided with locating baffles 33 and 34 which limit the extent to which said lifting fork may be inserted under a package. The locating baffle 33 is fastened to arms 35 which are pivotally mounted on stub shafts 36, which shafts are supported in hangers 37 fastened to the strap 18. Similarly, the locating baffle 34 is fastened to arms 38 that are also pivotally mounted on the shafts 36. A hook 39, pivotally mounted in a bifurcated bracket 41, is fastened to one of the arms 35 in a position to engage the upper end of the tine 16 and hold the locating baffle 33 and arms 35 in non-operative position. The locating baffle 34 and arms 38 may also be held in non-operative position by means of a hook 42 that is pivotally mounted in a bearing 43 that is fastened to the strap 18 and which engages a slot 44 in said locating baffle.

During operation when a package 45 having a base of medium dimensions is being handled, the locating baffle 33 is brought to its inoperative position, as shown in Figs. 2 and 3, leaving the locating baffle 34 in operating position. The lifting column 12 is then tilted forward and the lifting fork 13 is lowered until the leading edge 25 of the plate 17 is in contact with or spaced slightly from the floor. The truck 11 is then moved forward, and the edge 25 will enter under the package 45. As the truck 11 continues to move forward the package 45 rides on the rollers 29 and 33 until it strikes the locating baffle 34. The lifting column 12 is then tilted backward and the lifting fork 13 raised to the carrying position as shown in Fig. 3. When it is desired to unload the package 45, the lifting fork 13 is lowered and the lifting column 12 tilted forward until the edge of said package is brought into contact with the floor. The truck 11 is then moved away from the package 45 permitting it to slide off the lifting fork 13.

The locating baffle 34 should be positioned so as to permit the package 45 to rest on the lifting fork 13 with its center of gravity over said lifting fork, but with its end overhanging the end of said lifting fork. This insures the safe carriage of the package 45 when the telescopic column 12 is in the carrying position as shown in Fig. 3, but permits the package 45 to be readily unloaded when desired. When handling a package 46 having a base of small dimensions, the locating baffle 33 is moved into its operative position to restrict still further the extent to which the lifting fork 13 can extend under said package, as shown in Fig. 4. On the other hand, when handling a package 47 having a base of large dimensions, both of the locating baffles 33 and 34 are raised to inoperative position permitting the lifting fork 13 to extend under said package for substantially its full length, as shown in Fig. 5.

While the lifting fork 13 shown in the accompanying drawing is provided with two locating baffles 33 and 34, it may obviously be provided with a smaller or larger number of baffles depending on the total length of the tines and the number of different sizes of packages being handled.

It is to be understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of my invention.

Having described my invention, what I desire to secure by Letters Patent is:

1. In a fork lift truck, the combination with

a lifting column which may be tilted from the vertical, of a lifting fork having a sharp leading lower edge extending across its entire width, anti-friction means in the upper surface of said lifting fork, a plurality of separately and selectively operable locating baffles to limit the extent to which said lifting fork may be inserted under an object and means for holding said locating baffles in non-operative position.

2. In a lifting fork adapted for use with fork lift trucks, the combination with a plurality of tines, of a plate having a sharp leading lower edge set into the forward ends of said tines so that the upper surface of said plate is flush with the upper surface of said tines, a plurality of rollers extending above the upper surface of said tines and mounted for free rotation between said tines, and a plurality of rollers extending above the upper surface of said tines and mounted for free rotation in said tines.

3. In a lifting fork adapted for use with fork lift trucks, the combination with a plurality of tines, of a locating baffle for limiting the extent to which said lifting fork may be inserted under an object, a plurality of pivotally mounted arms supporting said locating baffle whereby said locating baffle may be moved to non-operative position, and means for holding said locating baffle in non-operative position.

4. In a lifting fork adapted for use with fork lift trucks, the combination with a plurality of tines, of a plurality of locating baffles for limiting the extent to which said lifting fork may be inserted under an object, and a plurality of pivotally mounted arms independently supporting said locating baffles whereby said locating baffles may be selectively moved to non-operative position.

5. In a lifting fork adapted for use with fork lift trucks, the combination with a plurality of tines, of a plurality of locating baffles for limiting the extent to which said lifting fork may be inserted under an object, a plurality of pivotally mounted arms independently supporting said locating baffles whereby said locating baffles may be selectively moved to non-operative position, and means for holding said locating baffles in non-operative position.

6. In a lifting fork adapted for use with fork lift trucks, the combination with a plurality of tines, of a plate having a sharp leading lower edge set into the forward ends of said tines so that the upper surface of said plate is flush with the upper surface of said tines, a plurality of anti-friction means extending above the upper surface of said tines, and a locating baffle for limiting the extent to which said lifting fork may be inserted under an object.

7. In a lifting fork adapted for use with fork lift trucks, the combination with a plurality of tines, of a plate having a sharp leading lower edge set into the forward ends of said tines so that the upper surface of said plate is flush with the upper surface of said tines, a plurality of rollers extending above the upper surface of said tines and mounted for free rotation between said tines, a plurality of rollers extending above the upper surface of said tines and mounted for free rotation in said tines, a plurality of locating baffles for limiting the extent to which said lifting fork may be inserted under an object, a plurality of pivotally mounted arms independently supporting said locating baffles whereby said locating baffles may be selectively moved to non-operative position, and means for holding said locating baffles in non-operative position.

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8. In a lift truck, load supporting means having a sharp leading edge extending substantially across the front thereof and having an upper surface adjacent to said leading edge, rotatable anti-friction means mounted on said load supporting means and so aligned with said upper surface that a package may be slid on said upper surface and onto said anti-friction means, means for lifting said load supporting means, tilting means operable to tilt said load supporting means forward so that said leading edge may engage and move under a package with the package riding onto said anti-friction means and operable to tilt said load supporting means backward so that the package may be carried thereby, and locating baffle means constructed and arranged to provide a plurality of positions limiting the extent to which said load supporting means may be inserted under the package.

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