July 24, 1951

S. WEISS

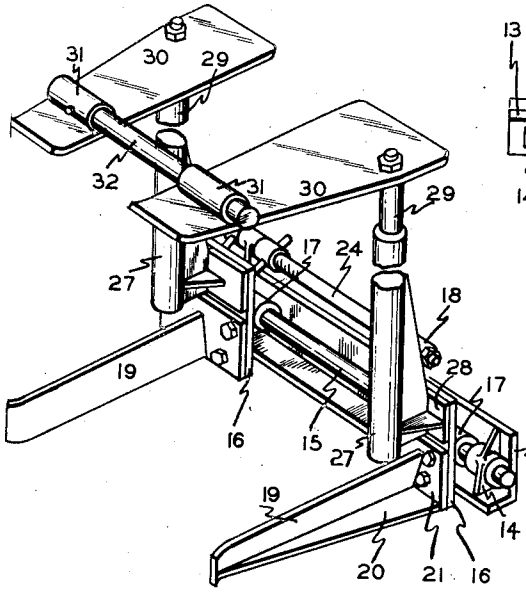
2,561,896

INDUSTRIAL TRUCK ATTACHMENT

Filed Feb. 19, 1949

2 Sheets-Sheet 1

Fig 4



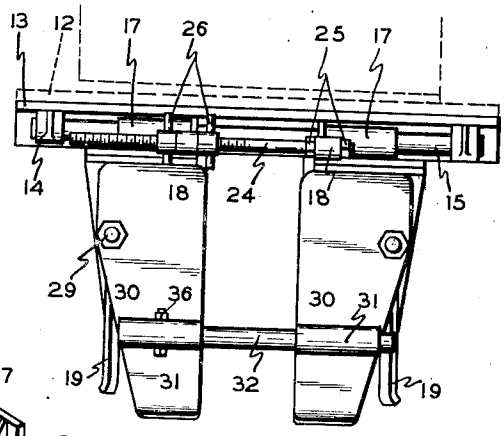
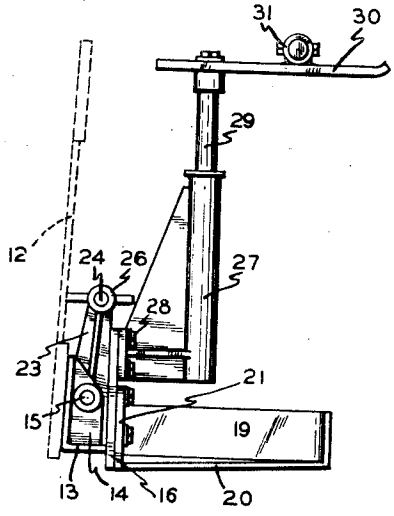


Fig 3

Fig 1



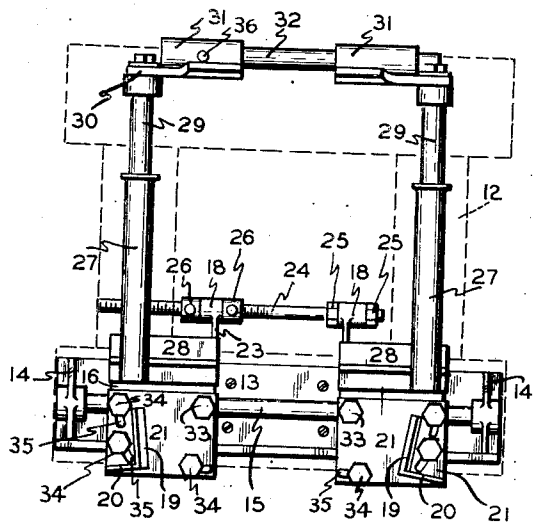


Fig 2

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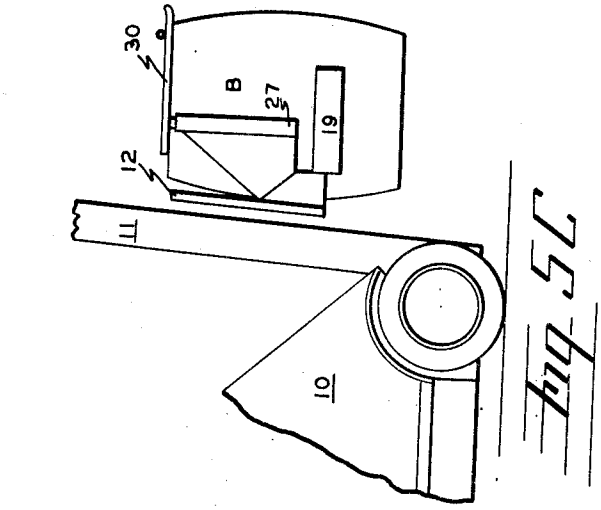


Fig. 5C

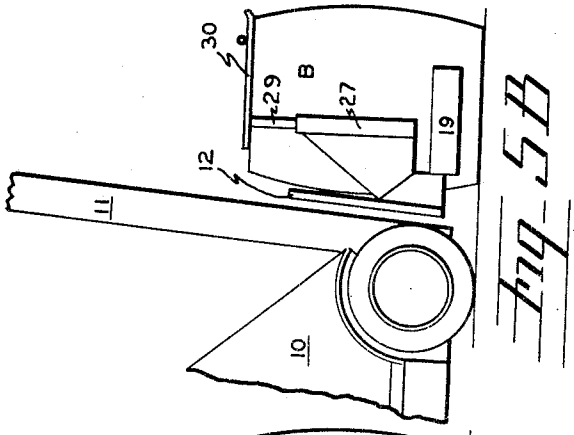


Fig. 5B

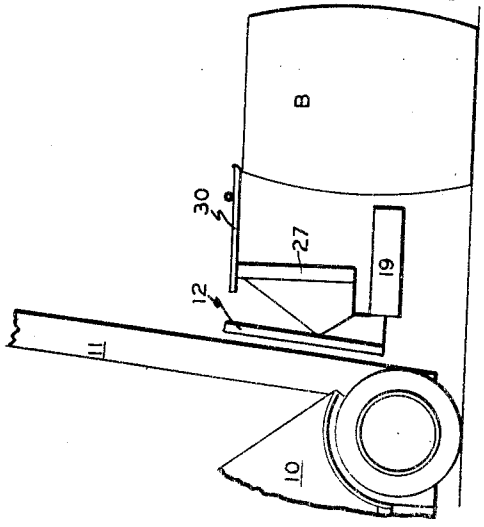


Fig. 5A

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2,561,896

UNITED STATES PATENT OFFICE

2,561,896

INDUSTRIAL TRUCK ATTACHMENT

Samuel Weiss, Portland, Oreg.

Application February 19, 1949, Serial No. 77,419

4 Claims. (Cl. 214—66)

This invention, like the invention described in my copending and companion application for patent, Serial No. 77,418, filed February 19, 1949, and also entitled "Industrial Truck Attachment," is concerned with an attachment for an end lift in an industrial end lift or elevator truck, and, like the invention in the said copending application relates to means to be used in combination with an end lift industrial truck to enable the operator of the truck to load the truck or handle certain articles with the truck without additional assistance and without the necessity of any manual contact with such articles on the part of the truck operator.

Whereas the invention in the said copending application relates more particularly to the lifting and moving of metal drums and crates having ribs or cleats on the vertical side walls, the present invention, while also being capable of being employed with such articles, is directed more specifically to the handling of ordinary wooden or metal barrels which have the usual outwardly-bowed or convex side wall.

The principal object of the present invention therefore is to provide an improved attachment for the end lift of industrial trucks of the type above indicated which will facilitate the handling of ordinary barrels and similar articles by the truck.

This object and other incidental advantages I attain by constructing, arranging and employing my industrial truck attachment as hereinafter described with reference to the accompanying drawings, in which:

Fig. 1 is a front elevation of the attachment;

Fig. 2 is a corresponding side elevation of the same;

Fig. 3 is a top plan view;

Fig. 4 is a view in perspective of the attachment itself; and

Figs. 5A, 5B and 5C are diagrammatic side elevations of the attachment illustrating the operation of the same in the handling of an ordinary barrel.

In the drawings, 10 indicates the forward portion of an industrial truck equipped with the customary end lift, the end lift being indicated in general by 11, which end lift is tiltably mounted at the forward end of the truck as usual. The end lift has an elevator frame 12 which is raised or lowered in the end lift by the operator on the truck.

My attachment is adapted to be removably secured to the elevator frame 12 by means of bolts by which the mounting member 13 is fastened

on the front face of the elevator frame 12. The mounting member 13 extends horizontally or transversely and may be made from a strip of angle iron or made in similar form with a back plate and bottom plate substantially perpendicular to each other and welded together to form the desired mounting member. A pair of vertical brackets 14 (Figs. 1 to 4) are formed integral with, or welded to, the mounting member 13, and are located near each end of the mounting member respectively. The purpose of these brackets is to support the transversely-extending hinge shaft 15 on which the load-engaging arm assemblies, to be presently described, are hingedly mounted.

Each arm assembly includes a main mounting plate 16 which has an integral sleeve 17 on its rear face and an integral rear upwardly-extending arm 23 terminating in a top sleeve 18. The sleeve 17 of each mounting plate 16 is slidably and hingedly mounted on the shaft 15 as shown.

A threaded positioning shaft 24 extends through the upper sleeves 18 of the two arm assemblies and is secured in one of the sleeves 18 by a pair of nuts 25. A pair of threaded positioning collars 26, on the shaft 24 at opposite sides of the other sleeve 18, enable the arm assemblies to be positioned closer together or further apart on the hinge shaft 15 as desired.

A pair of standards, shaped as shown in Figs. 1, 2 and 4, each having an upright tubular portion 27 connected by suitable webs to a rear mounting flange 28, are bolted to the main mounting plates 16 respectively, and are positioned on the upper portion of the front face of each mounting plate. A telescoping bar 29 is slidably carried in each tubular portion 27. A top forwardly-extending plate 30 is secured on the upper end of each bar 29 as shown. A sleeve 31 is carried on the top face of each plate 30 near the front end thereof and a rod 32 extends through the two sleeves 31. The rod 32 is secured in one sleeve by a bolt 36 extending therethrough but the rod is slidable in the other sleeve 31. The purpose of the rod 32 and sleeves 31 is to keep the two top plates 30 and their supporting bars 29 from turning laterally while permitting the two top plates to move towards or away from each other, and also to move up and down, with their bars 29, in unison.

The load-engaging arm portion of each of the two arm assemblies includes a forwardly-extending arm 19 having a web-like bottom brace 20 with the arm and web extending from, and formed integral with, a supporting plate 21. The supporting plates 21 are attached by means of

bolts to the front face of the main mounting plates 16, respectively, below the upright standards.

As shown in Fig. 1, each arm plate 21 is attached to the main mounting plate 16 of the assembly by a bolt 33 near the upper inside corner of the arm plate 21 and by three additional bolts 34 which extend through slots 35 in the arm plate 21. The arms 19, instead of having their inside faces parallel to the vertical side edges of the plates 21, are so positioned on their respective plates that their inside faces will extend obliquely upwardly and outwardly when the side edges of their plates 21 are vertical. This particular mounting of the arms 19 is shown clearly in Fig. 1. However, the slots 35 in the mounting plates 21 through which the bolts 34 extend, permit these mounting plates to swing laterally on their other bolts 33 in their mutual vertical plane and thus enable the inside faces of the arms 19 to be brought more nearly into vertical position. The reason for this mounting arrangement will be indicated later.

When my attachment is secured in position on the end lift of the truck by having the mounting member 13 bolted near the bottom of the elevator frame 12, as previously mentioned, the manner in which my attachment is employed for lifting and moving an ordinary barrel can now be described with reference to Figs. 5A, 5B and 5C. In these figures an ordinary barrel is indicated by the reference character B and this barrel is understood as having the customary outwardly bowed side wall without any ribs on the side wall which might otherwise aid in the lifting of the barrel.

The arm assemblies of my attachment are first adjusted (Fig. 1) by means of the positioning collars 26 on the shaft 24 until the distance apart of the opposed faces of the two arms 19 is slightly greater than the bottom diameter of the barrel B, but less than the diameter of the barrel at its central thicker portion. With the arm assemblies so adjusted the truck 10 approaches the barrel B, with my attachment in the relative position shown in Fig. 5A, the elevator frame 12 of the end lift 11 being raised (or lowered) until the forward ends of the top plates 30 will strike the top face of the barrel. The top ends of these plates 30 are preferably curved slightly upwardly as shown in the drawings to aid in having these plates engage the top of the barrel and then slide over the top of the barrel as the truck moves forward.

When the top plates 30 are brought into engagement with the top of the barrel, in the position shown in Fig. 5A, the elevator frame 12 of the end lift is moved downwardly a short distance in order to lower the arms 19 near to the bottom or smaller diameter part of the barrel, and at the same time the truck is moved forward into position against the barrel. Consequently the truck and end lift attachment are now brought into the position illustrated in Fig. 5B. Since the top plates 30 are carried on their sliding bars 29, the arms 19 can be lowered while the top plates are sliding over the top face of the barrel.

When the members of the end lift attachment are in the position with respect to the barrel shown in Fig. 5B, the elevator frame 12 of the end lift is then raised. The raising of the frame in the end lift, and with it the lifting of the load-engaging arms will cause the arms 19 to slide upwardly on opposite sides of the barrel until they reach a point on the barrel where the outside diameter of the barrel has increased to such extent that the arms 19 will no longer slide upwardly on the barrel but will lift the barrel with them as they continue to move upwardly.

Due to the fact that the supporting plates 21 (Fig. 1) of the arms 19 can swing slightly laterally and outwardly in their mutual plane on their pivot bolts 33, as previously described, the opposed inside faces of the arms 19 which are in contact with the opposite sides of the barrel respectively, will automatically adjust themselves to conform to the slope of the outside surface of the barrel as the arms 19 move upwardly over the barrel surfaces. This fact not only enables the arms 19 ultimately to gain a more satisfactory hold on the barrel, but, in the event the barrel should have a relatively thin wall, prevents any likelihood of the engagement of the arms 19 with the barrel from damaging the barrel wall, which might possibly occur if such engagement between the arms and the barrel were limited only to points on the edges of the faces of these arms, for example.

While the arms 19 slide upwardly on the barrel surface until they come into gripping and lifting engagement with the barrel, the top plates 30 will continue to rest on the top face of the barrel due to the fact that the bars 29, to which the top plates 30 are attached, will slide in their mountings. The lifted barrel will finally occupy the position in the attachment as illustrated in Fig. 5C and in this position the barrel may be moved by the truck as desired.

Since the lifting arms 19 must engage the barrel below its widest diameter portion, and thus below the normal center of gravity of the barrel load, there might be a tendency, under some conditions, for the barrel to tip forwardly instead of remaining balanced on the arms 19 when in raised position and, if such forward tipping became exaggerated, conceivably the barrel might then swing down forwardly and out from the arms if this were not prevented. However, the weight of the top plates 30 and their engagement with the top face of the barrel at all times while the barrel is being supported on the arms 19, and the fact that these top plates 30 while movable up and down can not tip on their supporting bars 29, will prevent any tendency on the part of the barrel to tilt while supported by the arms 19.

Thus both the fact that the automatic adjustment permitted for the arms 19 enables these arms to have a better grip on the barrel, and the fact that the top plates are in constant engagement with the barrel top, insures proper handling of the barrel with my attachment.

As apparent from the preceding description, the handling of an ordinary barrel can therefore be performed by a single operator on the truck without any other assistance and without the necessity of any manual contact with the barrel.

I claim:

1. In a barrel-lifting attachment for use in combination with an industrial truck, a main mounting member adapted to be secured to the end lift on said truck, a pair of arm assemblies, means for supporting said arm assemblies on said member, said arm assemblies being laterally adjustable with respect to each other, a positioning shaft for adjusting the lateral spacing between said arm assemblies, a forwardly-extending arm in each of said assemblies, and a pair of upwardly-extending bars in said arm assemblies, mountings for said bars in said assemblies permitting said bars to slide up and down in said assemblies, a

pair of top plates secured to the upper ends of said bars respectively, said top plates extending forwardly substantially parallel to said arms and adapted to rest on top of the barrel being lifted by said arms to prevent tilting of said barrel in said arms.

2. A barrel-lifting attachment of the character described for use in combination with an industrial truck, said attachment including a main mounting member adapted to be secured to the end lift on said truck, a pair of arm assemblies, means for supporting said arm assemblies on said member, said arm assemblies being laterally adjustable with respect to each other, means for adjusting the lateral spacing between said arm assemblies, an arm-supporting plate in each of said assemblies, said plates extending in the same substantially vertical plane, a barrel-engaging arm extending forwardly from each plate, said arms having opposing faces for engaging opposite sides of a barrel to be lifted, a mounting for said arm-supporting plates permitting each plate a restricted lateral swing in their mutual substantially vertical plane, whereby said opposing faces of said arms may be tilted to conform respectively to the upward slopes of the corresponding sides of the barrel to be lifted, and a pair of upwardly-extending members in said arm assemblies, mountings for said members in said assemblies permitting said members to slide up and down in said assemblies, a pair of top plates secured to the upper ends of said members respectively, said top plates extending forwardly substantially parallel to said arms and adapted to rest on top of the barrel being lifted by said arms to prevent tilting of said barrel in said arms.

3. In a removable attachment of the character described for an end lift truck, a main mounting member removably securable to the elevator of the end lift, a horizontal hinge shaft carried by said member, a pair of load-engaging arm assemblies laterally slidable on said shaft, a positioning shaft for adjusting the lateral spacing between said arm assemblies, each of said arm assemblies comprising a substantially vertical main plate, an arm-carrying plate adjustably

mounted on the front face of said main plate and a forwardly-extending arm extending from said arm-carrying plate, said forwardly-extending arms having opposed load-engaging faces, whereby said opposed faces can be set at any desired angularity with respect to the vertical, for any predetermined spacing between said arms, to conform to the respective sides of the load to be engaged, a standard secured to and extending upward from each main plate, and top load-engaging means adjustably carried in said standards.

4. A removable attachment for an end lift truck including a main mounting member removably securable to the elevator of the end lift, a horizontal hinge shaft carried by said member, a pair of load-engaging arm assemblies laterally slidable on said shaft, means for adjusting the lateral spacing between said arm assemblies, each of said arm assemblies comprising a main plate and a forwardly-extending arm adjustably secured to said main plate, said forwardly-extending arms having opposed load-engaging faces, whereby said opposed faces can be set at any desired angularity with respect to the vertical, for any predetermined spacing between said arms to conform to the respective sides of the load to be engaged, a standard secured to and extending upward from each main plate, a telescoping bar in each standard and top load-engaging means carried by said telescoping bars.

SAMUEL WEISS.

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