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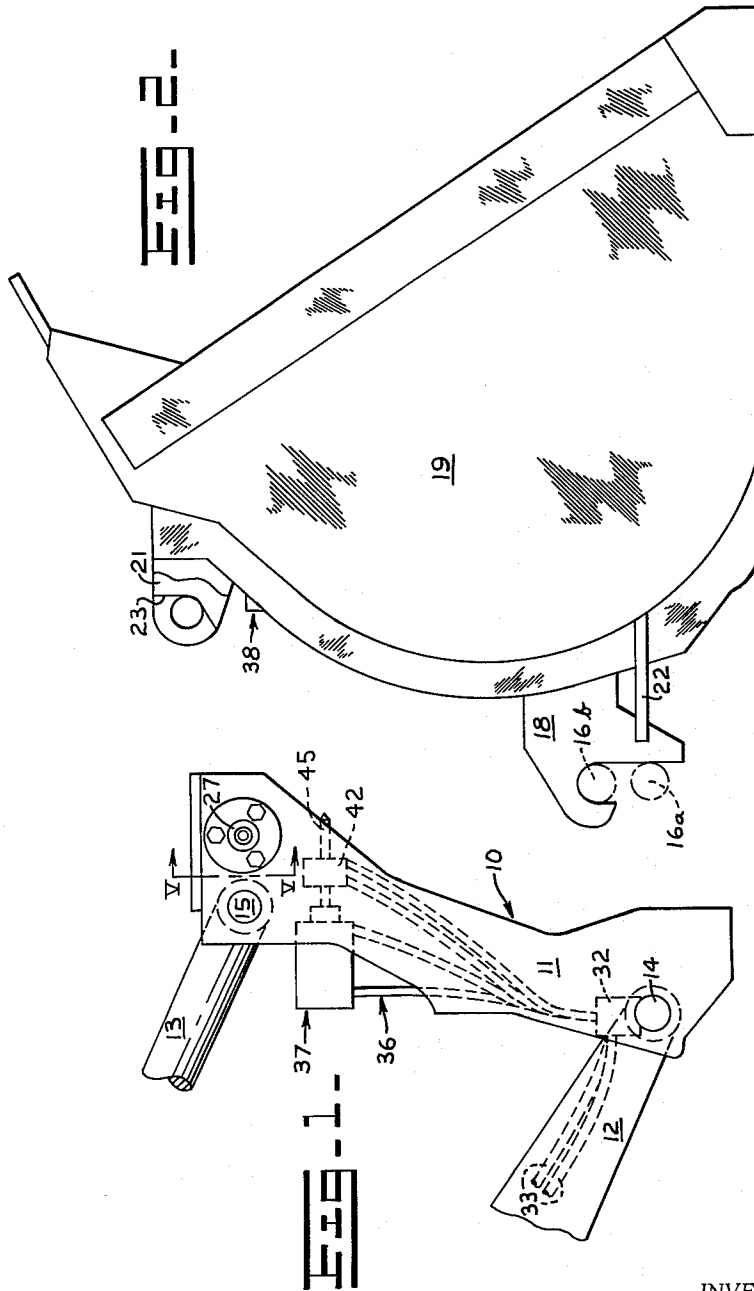
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3,243,066

QUICK CHANGE MEANS FOR LOADER ATTACHMENTS

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3 Sheets-Sheet 1



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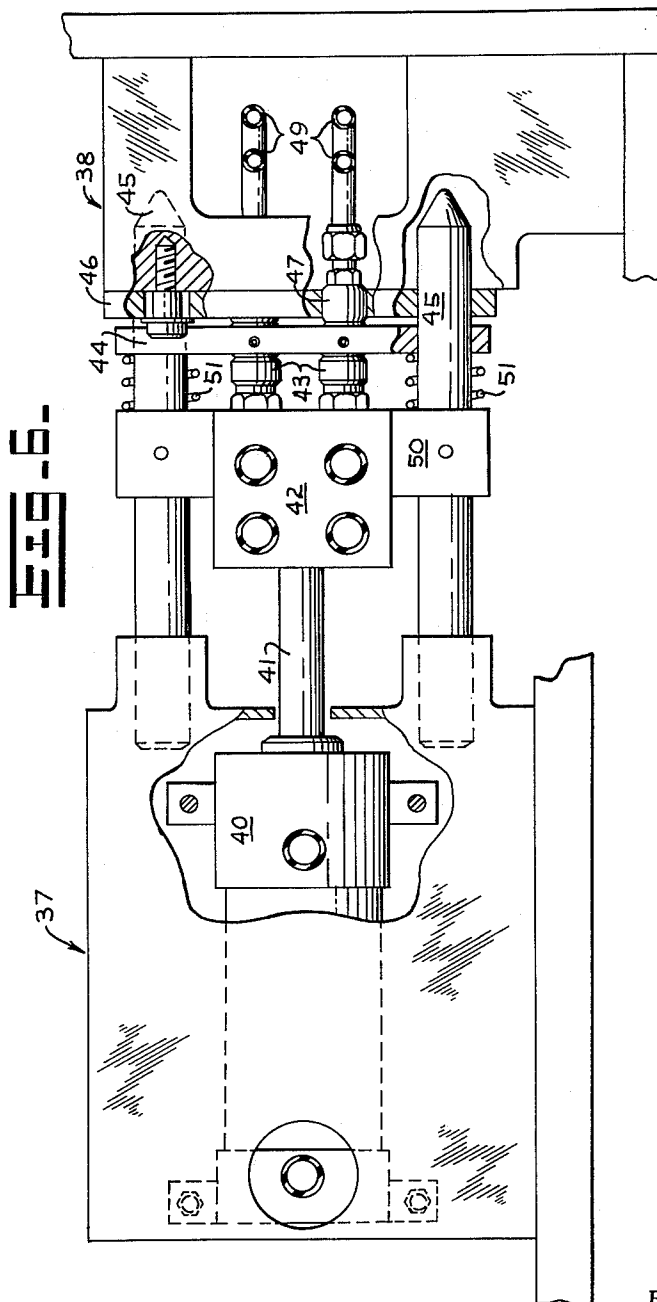
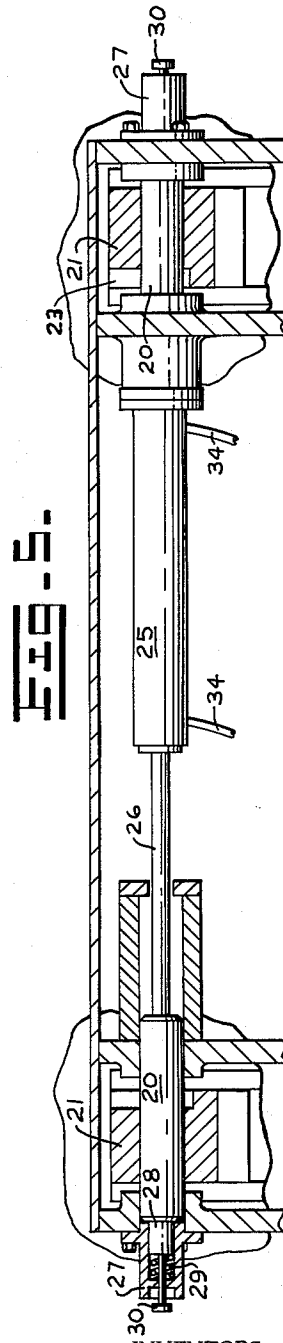
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QUICK CHANGE MEANS FOR LOADER ATTACHMENTS

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1 Claim. (Cl. 214-140)

This invention relates to tractor mounted loaders and particularly to means for facilitating changing implements on a loader such as changing from a bucket to a fork or other type of implement.

Loaders having lift and tilt mechanisms for manipulating a loader bucket are manufactured for use alternately with forks or other means which replace the bucket for different types of operation.

There are some commercial requirements for a loader where a bucket and fork are both needed but the volume of work does not justify the use of two separate machines. Means for changing implements on the same machine are time consuming so that they are not efficient for jobs which require several changes a day.

An object of the present invention is to provide means for supporting an implement on a tractor loader which may be readily disconnected and connected to another implement by the operator of the loader without the necessity of leaving the operator's station. Further and more specific objects and advantages of the invention are made apparent in the following specification wherein reference is made to the accompanying drawings.

In the drawings:

FIG. 1 is a view in side elevation of a carriage adapted to be supported by the lift and tilt mechanism of a loader and adapted to be connected with and disconnected from various implements actuated by the loader;

FIG. 2 is a view in side elevation of a loader bucket illustrating means thereon for connection of the bucket with the carriage shown in FIG. 1;

FIG. 3 is a view in rear elevation of the carriage and bucket shown in FIGS. 1 and 2;

FIG. 4 is an enlarged detail of connecting means on the carriage showing connecting pins which form a part thereof, retracted;

FIG. 5 is a view like FIG. 4 with the connecting pins extended; and,

FIG. 6 is an enlarged detail of a pneumatically actuated connecting block for providing hydraulic or pneumatic connections between the loader and the implement carried thereby.

Referring first to FIGS. 1 and 3, a carriage generally indicated at 10 is illustrated as having spaced pairs of end plates 11 between which the lift arms 12 and tilt linkage 13 of a loader (not shown) are pivotally connected as by pins 14 and 15, respectively. A rigid bar 16 extends between the inner frame members 11 at the opposite sides of the carriage for cooperation with hook-shaped brackets 18 disposed on the back of an implement to be supported such as a bucket shown at 19 in FIG. 2. Adjacent its upper portion the carriage 10 has, as best illustrated in FIG. 5, a pair of pins 20 hereinafter described in greater detail for cooperation with perforated brackets 21 on the back of the implement or bucket 19 as shown in FIG. 2.

In order to connect the implement or bucket with the loader for manipulation in the usual manner by its lift and tilt mechanism, the loader is moved toward the bucket to bring the bar 16 of FIG. 3 to the position shown in dotted lines at 16a in FIG. 2. Raising of the carriage then causes the bar to engage within the hooks as illus-

trated at 16b. Beveled guide plates shown at 22 in FIGS. 2 and 3 aid the operator in centering the carriage with respect to the hooks on the back of the bucket. When the bar 16 is engaged with the hooks, forward tilting movement is imparted to the carriage until the pins 20 in the upper portion thereof align with the perforations in the brackets 21. The brackets are recessed on one face as indicated at 23 in FIGS. 2 and 4 for guiding the pins into perfect alignment with the perforations.

As best shown in FIGS. 4 and 5, the pins 20 are carried one by a jack 25 and the other by the end of an extensible rod 26 of the jack. Consequently, with the jack retracted as illustrated in FIG. 4, the pins are held in a retracted position. Extension of the jack by the introduction of fluid, from a suitable source of fluid under pressure not shown, causes extension of both of the pins 20 outwardly and through the perforations in the brackets 21 as shown in FIG. 5.

In order to indicate to the operator that the pins 20 have been extended through the brackets and are in position for safe manipulation of the implement, visible indicators are provided at opposite sides of the carriage and comprise cylinders 27 suitably secured to the carriage in alignment with the pins 20. These cylinders carry plungers 28 urged inwardly by springs 29 and having rods carrying externally positioned indicator buttons 30. These buttons are normally concealed in recesses as shown in FIG. 4 but, upon extension of the pins 20 through the brackets 21, engagement with plungers 28 moves the indicator buttons 30 to visible positions.

It is to be understood that the bucket shown in FIG. 2 is illustrative of any one of several types of implements which might be used in connection with a loader and any desired implement provided with the necessary hooks 18 and brackets 21 may be quickly connected and disconnected from the loader in the manner described. Many implements have movable parts, such as the clamping means on a bucket or adjustable means on a material handling fork, which are actuated hydraulically or pneumatically from a source of fluid derived from the loader. In order to communicate such fluid to the implement the present invention provides a common connecting means for several conduits actuated by fluid controls from the loader; for example, in FIGS. 1, 2 and 3 carriage 10 is shown as provided with a junction box 32 for a plurality of lines such as indicated at 33, which may lead from the tractor. Lines such as shown at 34 are connected between the junction box and the jack 25 previously described.

Other lines generally indicated at 36 lead from the junction box to connecting means generally shown at 37 in FIGS. 1 and 3 which cooperates with connecting means shown at 38 on the implement. Such connecting means are of a well-known type, one form of which is illustrated in FIG. 6 wherein a fluid actuated cylinder 40 has an extensible rod 41 carrying a junction box 42 which receives several conduits communicating with connectors 43 on a plate 44. This plate is slidable on guide pins 45 which are extended through openings in a plate 46 carrying fittings 47 for connection with the fittings 43 in plate 44. Suitable conduits as indicated at 49 lead from the fittings 47 to jacks or fluid motors on the implement. The piston rod 41 is connected with the guide pins 45 by cross member 50 to which the pins are secured and springs 51 surrounding the guide pins urge the plate 44 toward the plate 46 for insuring firm engagement between the companion parts of the fittings 43 and 47.

We claim:

The combination with a loader having lift arms and tilt mechanism for connection with an implement having spaced connecting elements of a carriage carried by said

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arms, movable connecting elements in the carriage, power actuated means for moving two connecting elements of the carriage away from each other and into engagement with implement connecting elements in which the connecting elements on the implement include spaced perforate brackets, and the carriage includes pins slidable through said brackets and a fluid actuated extensible member between said pins to cause engagement and disengagement of the pins with the brackets and means in the form of normally invisible plungers engaged by the pins sliding through the brackets and moved to posi-

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tions visible from the operator's station of the loader to indicate engagement of the pins in the brackets.

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