ABSTRACT OF THE DISCLOSURE

An improvement in tractor loaders having an ejector type bucket, lift arms for raising and lowering the bucket, and tilt linkage for controlling forward and rearward tilting of the bucket. An ejector link extends from the bucket ejector plate to a pivotal connection with the tilt linkage by means of a tilt linkage lever and an ejector lever. The tilt linkage and ejector levers each have contacting surfaces which radially extend from their common pivot connection and pivot into positive contacting relation to subsequently pivot the ejector plate forwardly according to operation of the tilt linkage.

Background of the invention

The present invention relates generally to bucket loaders and more particularly to a tractor loader having an ejector type bucket wherein the ejector plate is controlled by the tilt linkage associated with the bucket. Typical tractor loaders of a type having an ejector with the primary purpose of positively unloading material from the bucket, commonly have a pair of lift arms and a tilt linkage for controlling the bucket while the ejector is controlled by a separate hydraulic jack within the bucket assembly. Such a separate hydraulic jack for controlling the ejector undesirably increases the weight of the bucket assembly and further places additional manipulative duties on the loader operator. It has thus been found desirable to automate the operation of the ejector plate while reducing the weight of components within the bucket assembly. One such solution is to provide a pair of cam surfaces on the rear of the ejector plate with members of the tilt linkage being in sliding contact with those cam surfaces. The cam surfaces are so shaped that the ejector plate is pivoted forwardly in desired relation to the tilt position of the bucket. However, such a cam arrangement for controlling the ejector has generally been found to have an unsatisfactory mechanical advantage causing undue wear in the tilt linkage members acting against the cam surfaces.

Summary of the invention

The present invention provides an improved ejector control in tractor loaders having an ejector type bucket, lift arms for raising and lowering the bucket, and a tilt linkage for controlling forward and rearward tilting of the bucket. The bucket includes a pivotal ejector plate which forms the rear wall of the bucket. A link element is connected to the ejector plate and extends from the ejector plate toward a link actuating portion of the tilt linkage. The ejector plate is moved forwardly in the bucket by the ejector link according to being positive actuating contact in the link actuating portion of the tilt linkage only after an initial portion of the forward tilting of the bucket by the tilt linkage.

Brief description of the drawings

FIG. 1 is a partial side view in elevation of a tractor loader with its bucket in a loading position;

FIG. 2 is a partial side view similar to FIG. 1, but with the bucket in a racked back position assumed immediately after it is loaded;

FIG. 3 is a side view similar to FIG. 2, but with the ejector bucket raised and assuming a typical carry position;

FIG. 4 is a side view similar to FIG. 3 and shows the ejector bucket in a position just subsequent to dumping.

Description of a preferred embodiment

Referring now to FIG. 1, a typical tractor loader has a tractor 11 and a bucket assembly 12 which is pivotally connected to the tractor by a pair of lift arms, one of which is indicated at 13, for raising and lowering the bucket. The attitude of the bucket on the lift arm is controlled by a tilt linkage on either side of the tractor, one such tilt linkage being indicated at 14.

The bucket assembly has a floor portion 16 with a cutting blade 17 along its forward edge and an adequate interior floor surface 18. The bucket floor and a pair of bucket sidewalls, one of which is indicated at 19, are connected to a pair of generally vertical bucket support members located at the rear and to either side of the bucket, one such support member being indicated at 21. A cross beam 22 is connected across the tops of the support members. Each of the lift arms 13 is pivotally connected to one of the bucket support members at a pivot connection 23 and extends rearwardly to a pivot connection 24 with the tractor. A hydraulic jack 26 is pivotally connected between the tractor and each of the lift arms for operating the lift arms to raise and lower the bucket. The tilt linkage on either side of the tractor comprises a first member 27 which is pivotally connected to one of the bucket support members at a pivot connection 28 and extends rearwardly therefrom. A second elongated member 29 is connected to a hydraulic jack 31 by means of a bellcrank member 32 and extends forwardly therefrom. The bellcrank member 32 has a central pivot point 33 which is connected to the hydraulic jack rod and two end pivot points 34 and 36 which are respectively connected to the tractor adjacent its pivot connection 24 with one of the lift arms and the rearward end of the second element 29 to provide for some automatic tilting of the bucket according to the movement of the lift arms to raise and lower the bucket. The rearward end of the first tilt linkage element 27 and the forward end of the second tilt linkage element 29 are pivotally connected at respective points 37 and 38 to a tilt linkage lever 39 which is also pivotally connected to the lift arm 13 generally midway along its length at pivot point 41.

The bucket 12 has an ejector plate 42 which is arcuate shaped, forms the rear wall of the bucket assembly 12 and is pivotally connected to the bucket support members at the top of the bucket assembly by pivot connections 43. Thus, the ejector plate may pivot forwardly from its position at the rear of the bucket with its lower edge sweeping along the arcuate floor surface 18 toward the cutting edge 17.

To provide for automatic control of the ejector plate according to the tilt linkage by apparatus which is of simple and reliable construction, an ejector link 46 is connected to the tractor by the ejector plate generally adjacent one of the bucket support members at a pivot connection 47. Each ejector link extends rearwardly to a pivot connection 48 with an ejector lever 49. A rearward portion of the ejector lever has a pivot connection 51 with a portion of the tilt linkage lever 39 which is remote from the pivot connection of the tilt linkage lever 39 with the lift arm 13. A generally upward facing contact surface is defined at the upper extremity 52 of the tilt link-
The function of the second stop 50 may also be seen from FIG. 4. As it comes in contact with the forward tilt linkage member 50 it prevents outward swinging of the eccentric plate from the bucket to prevent it from imping- ing or becoming entangled with a structure forward of the bucket during dumping.

I claim:

1. In a tractor mounted loader having a bucket, lift arms pivotally connected to the bucket for raising and lowering the bucket, tilt linkage connected to the bucket for tilting the bucket forwardly and rearwardly and an eccentric plate pivotally connected to the bucket to permit forward and rearward pivoting of the eccentric plate, the improvement comprising:

a link connected to the eccentric plate for controlling the forward and rearward positioning of the eccentric plate in the bucket and an eccentric lever joined to the link and pivotally to a lever portion of the tilt linkage, the eccentric lever pivotally connected to the bucket by an arcuate surface, said eccentric lever having a pivoting surface substantially level with the wall of the bucket and said pivot surface pivotally connected to said member with the tilt linkage lever being interconnected to the bucket by a recessed portion of the bucket.

2. The combination of claim 1 wherein said eccentric lever is pivotally connected to said eccentric plate, said eccentric lever pivotally connected to the bucket by a pivot surface, said pivot surface being pivotally connected to said member with the tilt linkage lever being interconnected to the bucket by a recessed portion of the bucket.

3. The combination of claim 2 wherein said eccentric lever is pivotally connected to said eccentric plate, said eccentric lever pivotally connected to the bucket by a pivot surface, said pivot surface being pivotally connected to said member with the tilt linkage lever being interconnected to the bucket by a recessed portion of the bucket.

4. The combination of claim 3 wherein said eccentric lever is pivotally connected to said eccentric plate, said eccentric lever pivotally connected to the bucket by a pivot surface, said pivot surface being pivotally connected to said member with the tilt linkage lever being interconnected to the bucket by a recessed portion of the bucket.

5. The combination of claim 4 wherein said eccentric lever is pivotally connected to said eccentric plate, said eccentric lever pivotally connected to the bucket by a pivot surface, said pivot surface being pivotally connected to said member with the tilt linkage lever being interconnected to the bucket by a recessed portion of the bucket.

6. The combination of claim 5 wherein said eccentric lever is pivotally connected to said eccentric plate, said eccentric lever pivotally connected to the bucket by a pivot surface, said pivot surface being pivotally connected to said member with the tilt linkage lever being interconnected to the bucket by a recessed portion of the bucket.

7. The combination of claim 6 wherein said eccentric lever is pivotally connected to said eccentric plate, said eccentric lever pivotally connected to the bucket by a pivot surface, said pivot surface being pivotally connected to said member with the tilt linkage lever being interconnected to the bucket by a recessed portion of the bucket.
and extending rearwardly to the tractor, said lift arms operable by hydraulic jacks for raising and lowering the bucket;

a tilt linkage operable by a pair of hydraulic jacks for forwardly and rearwardly tilting said bucket about its pivot connections with the lift arms, said tilt linkage having a first pair of members, each operably connected to one of the pair of jacks, each of said first members pivotally connected to a lever which is also pivotally connected to one of said lift arms and a second pair of members each pivotally connected between one of said tilt linkage levers and said bucket, each of said levers having an ejector lever pivot connection remotely disposed from its pivot connection with one of said lift arms and an upper contacting edge radially projecting generally rearwardly from said ejector lever pivot connection; and

a pair of ejector levers, each pivotally connected between one of the ejector lever pivot connections of said tilt linkage levers and said ejector plate, each of said ejector levers having a rearward contacting surface radially projecting from its pivot connection with one of said tilt linkage levers, said ejector lever contacting surfaces being contacted by said contacting surfaces of said tilt linkage levers after initial forward tilting of said bucket to result in subsequent forward pivoting of said ejector plate according to forward tilting operation of said pair of tilt linkage jacks, said ejector levers comprising stops for limiting pivotal separation of each adjacent pair of said contacting surfaces on one of said ejector levers and one of said tilt linkage levers.

References Cited

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