MULTIPURPOSE LOADER BUCKET
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This invention relates to loader buckets and particularly to a bucket made of several articulately connected sections which make it possible to operate the bucket in many different positions for different types of operations.

It is an object of the present invention to provide a bucket adapted to be connected to the lift arm and tilt linkage of a conventional loader and, through articulated parts powered for relative movement, to be adjusted to positions which enable its efficient use for many different types of operations.

It is also an object of the present invention to provide a loader bucket which is readily adjustable to positions for use in ordinary loading operations as well as for many other operations such as bull clamping, bulldozing, back dragging, transporting logs, pipes and other similar articles, loading trash or loose materials and cutting banks.

Further and more specific objects and advantages are made apparent in the following specification wherein the invention is described in detail by reference to the accompanying drawings.

In the drawings:

FIG. 1 is a view in side elevation of a conventional loader with a bucket constructed in accordance with the present invention attached thereto;

FIG. 2 is an enlarged view of the bucket shown in FIG. 1 in loading position with its cover fully opened.

FIG. 3 is a view like FIG. 2 with parts in section with the cover removed and with the body of the bucket in raised position;

FIG. 4 is a similar view with the cover secured in place and the body and back of the bucket spread as for bull clamping operations;

FIG. 5 is an enlarged detail in section as taken on the line V—V of FIG. 4;

FIG. 6 is a fragmentary perspective view with parts in section illustrating portions of the operating mechanism of the bucket;

FIG. 7 is a perspective fragmentary detail showing the opposite side of the structure illustrated in FIG. 6;

FIG. 8 is a view illustrating the manner in which the bucket can be used in a modified bull clamping or loading operation where depth control is desirable;

FIG. 9 is a view illustrating the bucket in the operation of handling a log or pole; and

FIG. 10 is a view illustrating the bucket as it may be used in cutting a bank.

The loader bucket of the present invention is illustrated in FIG. 1 in association with a conventional wheel-type loader and conventional bucket handling mechanism which comprises a pair of lift arms 10 and tilt linkage, generally indicated at 11, both pivotally connected to the bucket and operable by hydraulic jacks, not shown, to raise and lower the bucket through the medium of the lift arms and to tilt the bucket between loading, carrying and dump positions in a well known manner.

The bucket of the present invention is constructed of three major articulately connected parts which, as shown in FIGS. 1 and 2, are a bowl 12 with a back member 14 and a cover 16. The back member is pivotally connected to the bowl as at 17 having forwardly extending wings at both ends through which pivot pins extend. The cover 16 is pivoted to the bowl as at 18 for swing movement between the closed position illustrated in FIG. 1 and the open position illustrated in full lines in FIG. 2. A hydraulic jack 20 is pivotally connected at one end with respect to the back member 14 by a pin 21 as is shown in FIG. 6 and as will be hereinafter more fully described. The rod of this jack is pivoted as by a pin 22 to the cover member so that retraction and extension of the rod will open and close the cover. A similar jack, not shown, is employed at the opposite side of the bucket to balance the forces and stresses to which the parts are subjected but a description of one jack will suffice for an understanding of the present invention.

These jacks are included in a conventional hydraulic circuit with control means disposed within reach of the operator of the tractor upon which the bucket is mounted.

Ordinary loading operations with the bucket may be accomplished with the structure illustrated in FIGS. 1 and 2 and in the usual manner of loading, carrying and dumping material either with the cover in its open position as shown in FIG. 2, or if desired, with the cover closed during the lifting and carrying operations to aid in retaining a load within the bucket.

The cover 16 may be removed for operations where it is not required and as shown in FIG. 3, the rods of the jacks 20 may then be connected as by pins 24 to the same pivot openings employed for connecting the cover with the bowl. With this arrangement, the bowl may be raised relative to the back 14 as shown in FIG. 3 and a cutting edge 25 is provided on the back 14 to enable the use of the back as an ordinary bulldozer. Material gathered by the bulldozing back 14 utilized in this position may be picked up and moved by manipulating the jacks 20 to lower the bowl to its closed position.

FIG. 4 illustrates an arrangement of the bucket where it is to be used for bull clamping operations with the cover 16 secured in place against the bowl 12 by locking means generally indicated at 27 and with the jack connected to the back 14 so that actuation of the jack functions to open and close the back 14 and the bowl 12 relative to each other.

FIG. 8 illustrates the use of the bucket in a sort of modified bull clamping or scraping operation wherein the depth of cut is controlled by lowering the bowl into engagement with the surface of the earth and making a controlled cut with the cutting edge on the back member with the spoil entering upwardly into the bowl and retained therein by closing the bowl against the back.

FIG. 9 shows the same combination of parts illustrated in FIG. 8 employed in the handling of a log or pole which may be gripped between the back and the bowl. To facilitate this operation, the forwardly extending side wings of the back are curved rearwardly above the cutting edge to enable secure gripping of the log or pole being handled.

FIG. 10 illustrates a further use of the bucket in cutting or trimming a bank where the cover is raised while the cutting edge at the front of the bowl engages and moves upwardly against the wall of the bank being formed. Light finishing or trimming of the bank may also be accomplished by manipulation of the jack 20 to swing the cover downwardly with its leading edge in scraping contact with the surface of the bank whereby soil removed will be received in the bowl.

Referring back to FIG. 4, the locking or securing means generally indicated at 27 comprises an eye bolt 29 with its eye embracing a hook 30 welded to the side of the bowl and its opposite end which is threaded disposed between a pair of lugs 31 on the cover so that a nut on the threaded end secures the cover against movement relative to the bowl. An identical locking member is employed on the opposite side of the bucket. The bucket is also provided with a second hook 32 and the back 14
has spaced lugs 33 so that the same eye bolt may be employed for securing the bowl and the back against relative movement as for example in the arrangement illustrated in Fig. 2 where the locking device is again generally indicated at 27.

It is desirable to provide means for guiding the cover into proper registry when the bowl is moved towards its closed position and this is accomplished by means illustrated in Figs. 4 and 5 in the form of guide members 38. The members 35 are welded to the opposite edges of the cover in a position to embrace the edges of the bowl as the cover moves to its closed position.

The manner in which the jacks 20 are mounted is best shown in Figs. 6 and 7 wherein the back member 14 is shown as formed with a separate end wall 37 spaced inwardly from its extreme end and connected therewith by a forwardly curved plate 39 forming a protective pocket for reception of the jacks and their pivot pins as shown in Fig. 6. A bearing bracket 39 receives both of the pins 17 and 18 to lend rigidity to the operating linkage.

Stop means to limit the upward swinging movement of the bowl with respect to the back may also be disposed within the recess which houses the jack as shown in Fig. 3 wherein a plate 40 supports a stop member 41 engageable by the bearing bracket 39 to prevent further raising of the bowl 12.

1. A loader bucket of the kind described which comprises a body member having a bottom with upstanding end walls, a back member pivoted to the end walls upwardly thereof to swing between open and closed positions relative thereto, a cover similarly pivoted for opening and closing the front of the body member, said cover having a portion overlying the back member, and power means between the back member and said portion for selectively swinging the cover and back member relative to the body member.

2. A loader bucket of the kind described which comprises a body member having a bottom with upstanding end walls, a back member pivoted to the end walls upwardly thereof to swing between open and closed positions relative thereto, and a cover similarly pivoted for opening and closing the front of the body member, power means between the back member and cover to swing the cover relative to the body member, and latch means to secure the back member and body member against relative pivotal movement.

3. A loader bucket of the kind described which comprises a body member having a bottom with upstanding end walls, a back member pivoted to the end walls upwardly thereof to swing between open and closed positions relative thereto, and a cover similarly pivoted for opening and closing the front of the body member, power means between the back member and cover to swing the cover relative to the body member, and means to secure the cover and body member against relative pivotal movement whereby said power means becomes effective to swing the body member relative to the back member.

4. A loader bucket of the kind described which comprises a body member having a bottom with upstanding end walls, a back member pivoted to the end walls upwardly thereof to swing between open and closed positions relative thereto, and a cover similarly removable pivoted for opening and closing the front of the body member, power actuated extensible means pivoted at one end to the back member and at the other end to the cover, and arranged, upon removal of the cover, to be pivotally connected at said other end to the body member to swing the body member relative to the back member.

5. A loader bucket of the kind described which comprises a body member having a bottom with upstanding end walls, a back member pivoted to the end walls upwardly thereof to swing between open and closed positions relative thereto, and a cover similarly removable pivoted for opening and closing the front of the body member, power actuated extensible means pivoted at one end to the back member and at the other end to the cover, the cover, and arranged, upon removal of the cover, to be pivotally connected at said other end to the body member on the same axis of the pivotal connection between the cover and body member.

References Cited in the file of this patent

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Invented By</th>
<th>Date of Patent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,291,858</td>
<td>Allin</td>
<td>Aug. 4, 1942</td>
</tr>
<tr>
<td>2,529,208</td>
<td>Andersen</td>
<td>Nov. 7, 1950</td>
</tr>
<tr>
<td>2,812,959</td>
<td>Drott</td>
<td>Nov. 12, 1957</td>
</tr>
<tr>
<td>2,816,676</td>
<td>Avery et al.</td>
<td>Dec. 17, 1957</td>
</tr>
<tr>
<td>2,883,772</td>
<td>Dodge</td>
<td>Apr. 28, 1959</td>
</tr>
<tr>
<td>2,930,550</td>
<td>French</td>
<td>Aug. 30, 1960</td>
</tr>
</tbody>
</table>