

[54] **DUAL LEVER CONTROL**

[75] Inventor: **Trevor G. Campbell**, Peoria, Ill.
[73] Assignee: **Caterpillar Tractor Co.**, Peoria, Ill.

[22] Filed: **Aug. 17, 1972**
[21] Appl. No.: **281,515**

[52] U.S. Cl. **74/471 R, 70/200**
[51] Int. Cl. **G05g 13/02**
[58] Field of Search... **74/471 R, 471 XY, 473 R,**
74/491, 504; 137/636.4; 188/67; 70/200,
203

[56] **References Cited**
UNITED STATES PATENTS

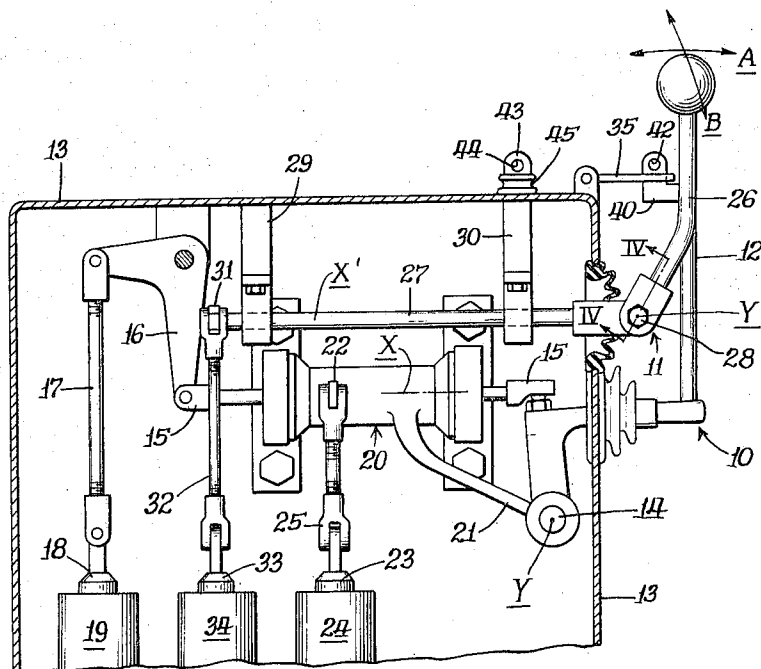
1,454,238	5/1923	Kaufman.....	188/67 X
1,536,645	5/1925	Youngblood	137/636.4 X
1,556,179	10/1925	Titman.....	137/636.4 X
2,359,392	10/1944	Shoemaker	74/491 X
2,900,148	8/1959	Nickels	188/67 X

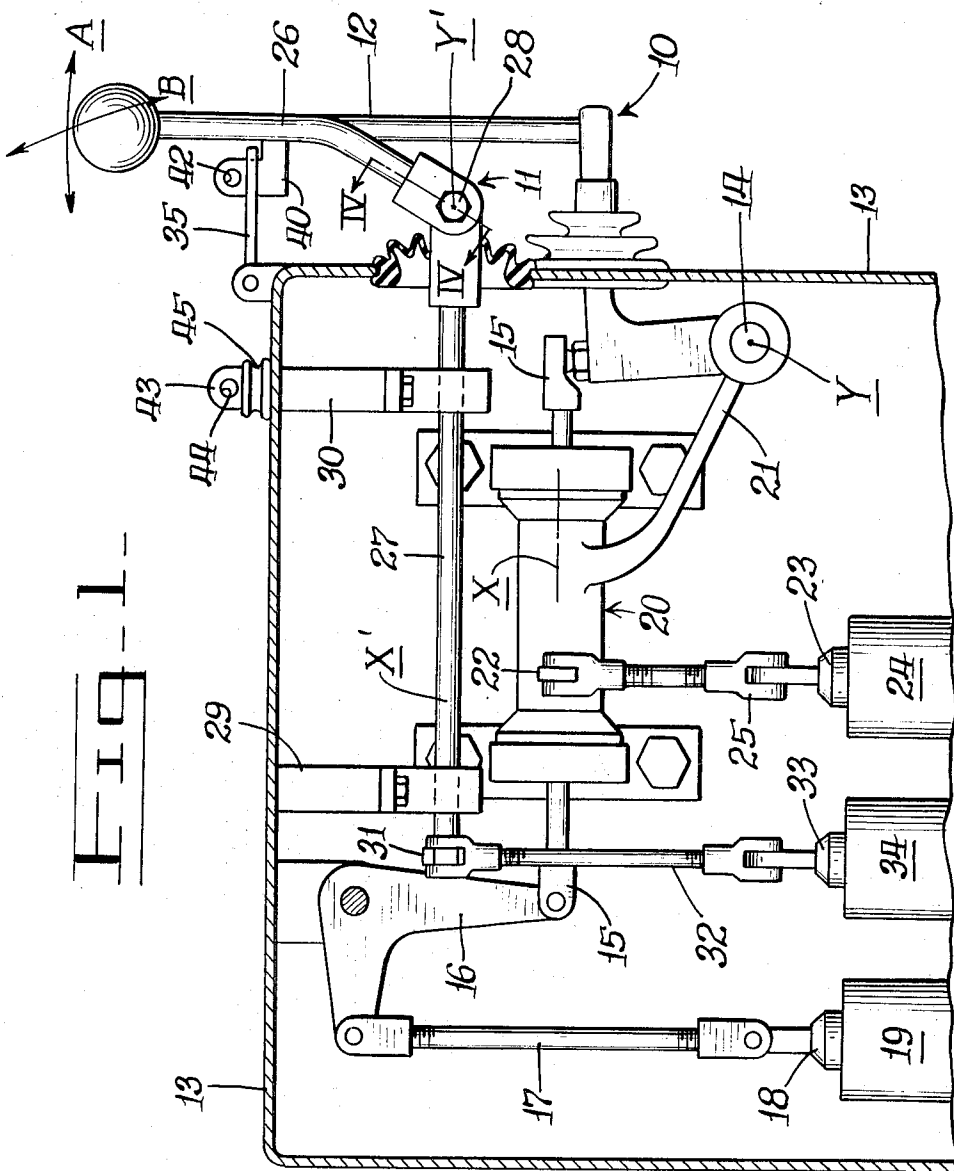
Primary Examiner—Benjamin W. Wyche
Assistant Examiner—F. D. Shoemaker
Attorney, Agent, or Firm—Fryer, Tjensvold, Phillips & Lempio

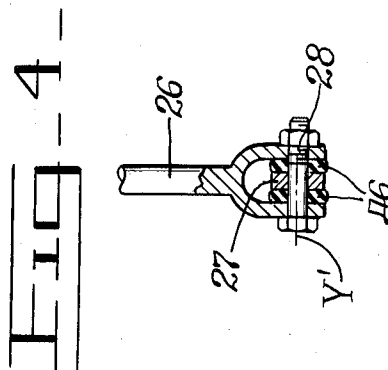
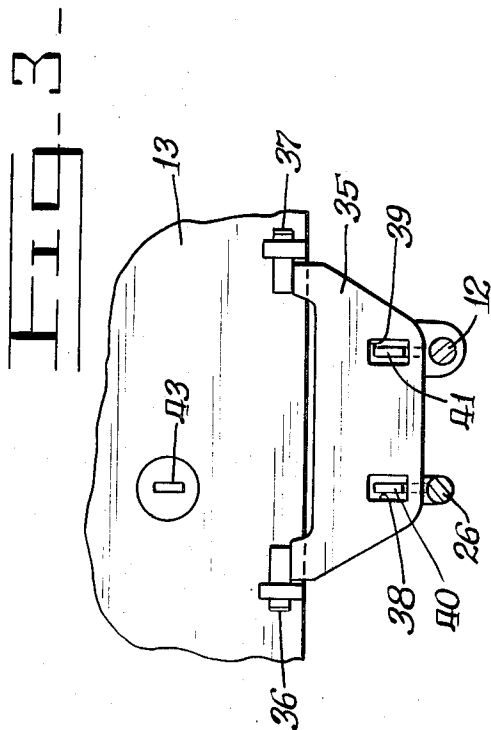
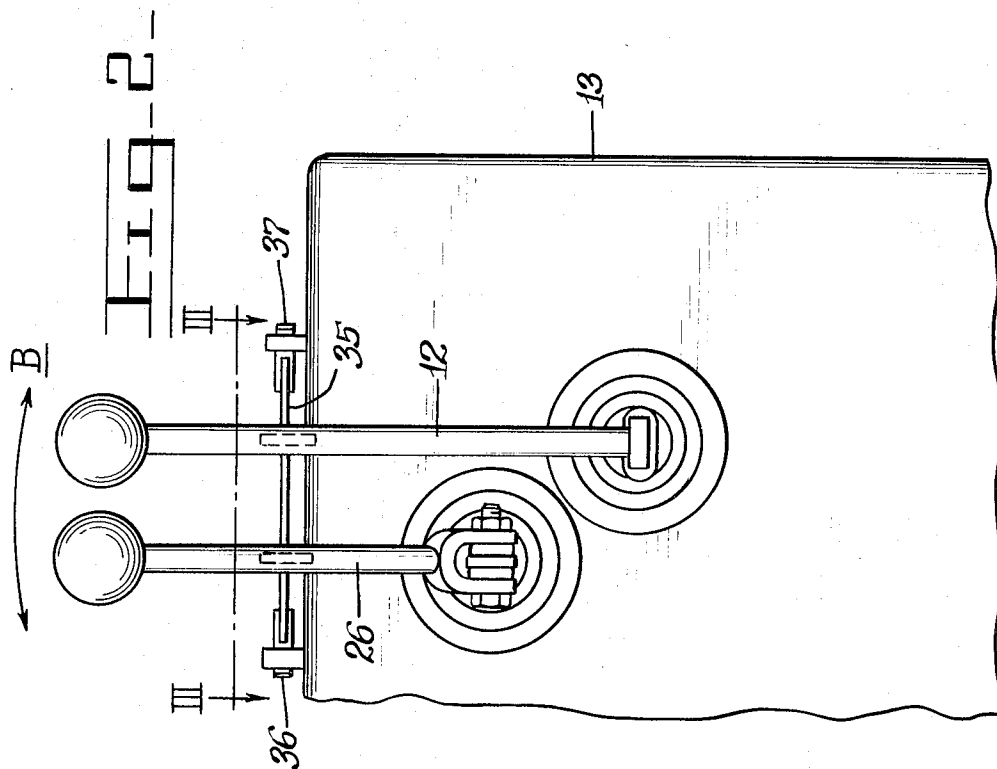
[57] **ABSTRACT**

First and second handles are movably mounted on a stationary support. The first handle is connected to the control elements of first and second control valves whereas the second handle is connected to the control element of a third control valve. Movement of the first handle in a first direction will reciprocate the first control element whereas movement of the second handle in such direction is non-functional. Movement of the first and second handles in the second, transverse direction will simultaneously reciprocate the second and third elements, respectively. A pivoted latch selectively locks the two handles in their neutral conditions of operation and the second handle is frictionally held in a selected position by a pair of rubber bushings.

12 Claims, 4 Drawing Figures







DUAL LEVER CONTROL

BACKGROUND OF THE INVENTION

This invention relates to a dual lever control for simultaneously actuating a plurality of control valves.

Wheel loaders normally employ a single lever control for independently or simultaneously controlling movements of its lift arms and bucket tilt linkage. When a multi-purpose bucket or the like is substituted in lieu of a conventional loader bucket, an additional lever control is normally required for controlling the opening and closing movements of such multi-purpose bucket. Under certain operating conditions, it is desirable to effect the three bucket functions simultaneously. However, since the conventional handle of the added lever control pivots in a single plane, the operator is unable to manipulate both lever controls simultaneously with one hand thus lowering the operator's working efficiency.

SUMMARY OF THIS INVENTION

An object of this invention is to overcome the above, briefly described problem by providing a compact and economical dual lever control comprising first and second handles movably mounted on a stationary support with the first handle being operatively connected to first and second control valves and the second handle being operatively connected to a third control valve. Movement of the first handle in a first direction will actuate the first control valve whereas movement of the first handle in a second, transverse direction will actuate the second control valve. The second handle is preferably positioned closely adjacent to the first handle to be moved simultaneously therewith to actuate the third control valve when it is moved in the second direction, but to be non-functional when it is moved in the first direction. Other novel aspects of this invention comprise the utilization of a locking device to selectively lock the handles in a neutral position of operation and positioning means associated with the second handle for frictionally holding the second handle in a selected position of operation.

DESCRIPTION OF THE DRAWINGS

Other objects of this invention will become apparent from the following description and accompanying drawings wherein:

FIG. 1 is a side elevational view of a dual lever control embodying this invention;

FIG. 2 is an end elevational view of the dual lever control;

FIG. 3 is a top plan view of a locking means employed in the dual lever control, taken in the direction of arrows III-III in FIG. 2; and

FIG. 4 is a sectional view taken in the direction of arrows IV-IV in FIG. 1.

DETAILED DESCRIPTION

FIG. 1 illustrates a dual lever control comprising first and second single lever controls 10 and 11, respectively. Lever control 10 is fully disclosed in U.S. Pat. Application Ser. No. 242,307, filed on Apr. 10, 1972, by Trevor G. Campbell, for "Multi-Movement Single Lever Control, assigned to the assignee of this application.

In particular, lever control 10 comprises a first handle or control lever 12 pivotally mounted at a pin 14 for

pivotal movement about an axis Y. First linkage means, comprising a connecting rod 15 universally connected to handle 12, a bellcrank 16 and a link 17, interconnects the handle and a control element 18 of a first control valve 19 for reciprocating such control element in response to movement of the handle in a first direction A. The first linkage means further comprises a tubular bellcrank 20, pivotally mounted on stationary support 13 for oscillation about an axis X, having a first arm 21 attached to handle 12 and a second arm 22 pivotally connected to a second control element 23 of a second control valve 24 by a link 25. Thus, movement of handle 12 in a second direction B, transverse to direction A, will function to reciprocate valve element 23.

Second lever control 11 comprises a second handle or control lever 26 pivotally attached to a first end of a connecting rod 27 by an adjustable bolt 28 disposed on an axis Y' parallel to axis Y. The rod is pivotally mounted on spaced support brackets 29 and 30, secured to stationary support 13, for pivotal movement about an axis X' which is parallel to axis X. A lever arm 31, secured to a second end of the rod, is pivotally connected to a link 32. The link interconnects the lever arm with a third control element 33 of a third control valve 34. Thus, movement of handle 26 in the illustrated B direction will function to reciprocate control element 33 whereas movement of the handle in the A direction will perform no work function.

A locking means for locking handles 12 and 26 in their neutral and stored positions is illustrated in FIGS. 2 and 3. The locking means preferably comprises a plate 35 pivotally mounted on stationary support 13 by laterally spaced pivot pins 36 and 37. The plate has slots 38 and 39 formed therethrough which are respectively positioned to receive lugs 40 and 41 therein. The lugs are secured to handles 26 and 12, respectively, and lug 40 has an aperture 42 formed therethrough adapted to receive a padlock (not shown) to lock the plate and handles in their neutral positions (FIG. 1).

Referring to FIG. 1, the handles may be placed in their operative conditions of operation by removing the padlock and by swinging plate 35 counterclockwise so that slot 38 engages a post 43, secured to the upper surface of stationary support 13. The post has an aperture 44 formed therethrough adapted to receive the padlock which has been removed from aperture 42. A rubber bushing 45 may be positioned between the post and stationary enclosures to prevent the plate from rattling during storage. Referring to FIG. 4, a pair of resilient, rubber bushings 26 are preferably interposed between the first end of rod 27 and the bifurcated end of handle 26 to provide positioning means for frictionally holding the handle in a selected set position when it is pivoted about axis Y'.

In operation and with plate 35 pivoted to its storage position on post 43, the operator may move handle 12 in direction A to reciprocate valve control element 18 and/or he may move the handle in direction B to reciprocate valve control element 23. Since handles 12 and 26 are positioned in close proximity with respect to each other, handle 26 may be simultaneously moved along with handle 12, if so desired. Pivoting of handle 26 in direction B will reciprocate valve control element 33 whereas movement thereof in direction A is non-functional. By permitting lever 26 to be moved in its non-functional direction, the operator may manipulate both of the handles with one hand to actuate control

valve 19 or obtain simultaneous actuation of control valves 24 and 34 or control valves 19, 24 and 34. Also, when the operator desires to manipulate only handle 12, handle 26 may be pivoted counterclockwise to a non-interfering position, adjacent to stationary support 13.

What is claimed is:

1. A dual lever control comprising
a stationary support,
a first lever control including
a first handle,
first and second control valves respectively having
first and second control elements movably
mounted therein, and
first linkage means interconnecting said first handle 15
with each of said first and second control elements
for moving said first control element in response to
movement of said first handle in a first direction
and for moving said second control element in re-
sponse to movement of said first handle in a second 20
direction transverse to said first direction, and
a second lever control including
a second handle,
a third control having a third control element mov-
ably mounted therein, and 25
second linkage means interconnecting said second
handle with said third control element for moving
said third control element in response to movement
of said second handle.
2. The invention of claim 1 wherein said first and sec- 30
ond handles are movably mounted on said support in
close proximity to each other whereby they can be
moved simultaneously.
3. The invention of claim 1 wherein said second han-
dle is solely connected to said third control element by 35
said second linkage means.
4. The invention of claim 3 wherein said second link-
age means comprises a rod, pivotally mounted on said
support, having its first end pivotally attached to said 40
second handle and its second end connected to said
third control element.
5. The invention of claim 1 further comprising lock-
ing means for selectively locking said first and second
handles in a fixed position.
6. The invention of claim 5 wherein said locking 45
means comprises a plate member pivotally mounted on
said support, means forming a pair of slots in said plate
member and a lug secured to each of said first and sec-
ond handles and positioned thereon to be received in
a respective one of said slots when said plate member 50
is pivoted thereon.
7. The invention of claim 1 further comprising posi-
tioning means frictionally engaging said second handle

for holding said second handle in a selected position.

8. The invention of claim 7 further comprising pivot
means pivotally connecting said second handle to said
second linkage means and wherein said positioning
means comprises at least one resilient bushing in said
pivot means frictionally engaged between said second
handle and said second linkage means.

9. A lever control comprising

a control valve having a control element movably
mounted therein, 10

a handle,

linkage means interconnecting said handle with said
control element for moving said control element
upon movement of said handle in a first direction,
means pivotally mounting said handle to said linkage
means, including at least one resilient bushing
therein for continuously frictionally engaging said
handle to hold it in a selected position of operation
upon manipulation thereof, for permitting said
handle to move said control element upon move-
ment of said handle in said first direction and for
permitting only said handle to move relative to said
linkage means upon movement of said handle in a
second direction, transverse to said first direction.

10. A lever control comprising

a stationary support

a control valve having a control element movably
mounted therein,

movable handle means operatively connected to said
control element for selectively moving same, and
locking means for selectively locking said handle to
said support comprising a plate member pivotally
mounted on said support, means forming at least
one slot in said plate member and a lug secured to
said handle and positioned thereon to be received
in said slot when said plate member is pivoted
thereon.

11. The invention of claim 10 further comprising a
lug secured to said support to be received in said slot
when said plate is pivoted to a storage position thereon.

12. A lever control comprising

a control valve having a control element movably
mounted therein,

movable handle means operatively connected to said
control element for selectively moving same,

positioning means frictionally engaging said handle
means for holding said handle means in a selected
position of operation and

pivot means pivotally mounting said handle means,
said positioning means comprising at least one re-
siliant bushing in said pivot means for continuously
frictionally engaging said handle means.

* * * * *