May 16, 1967 J. L. JUHL ETAL 3,319,817

SELF-PROPELLED LOADER

Filed July 1, 1965 3 Sheets-Sheet 1

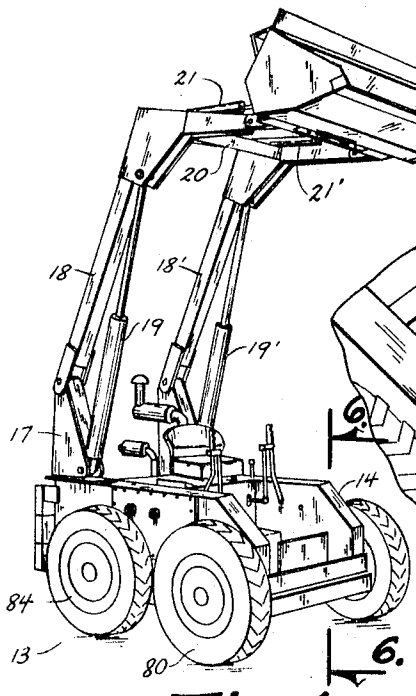

Fig. 1

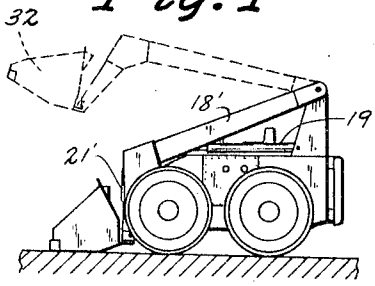

Fig. 2

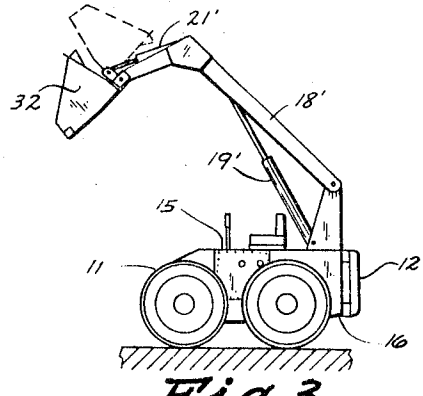

Fig. 3

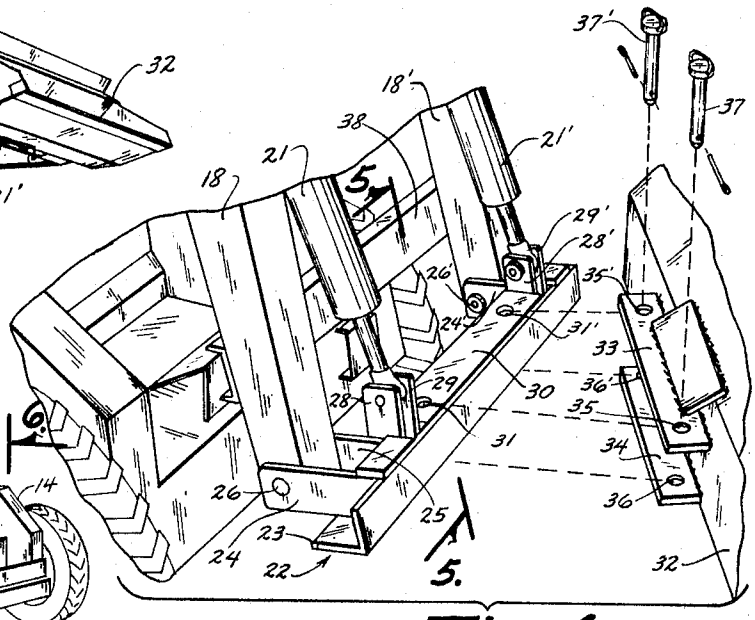

Fig. 4

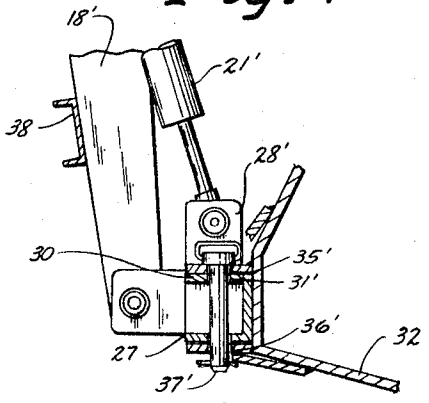

Fig. 5

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May 16, 1967 J. L. JUHL ETAL 3,319,817

SELF-PROPELLED LOADER

Filed July 1, 1965 3 Sheets-Sheet 2

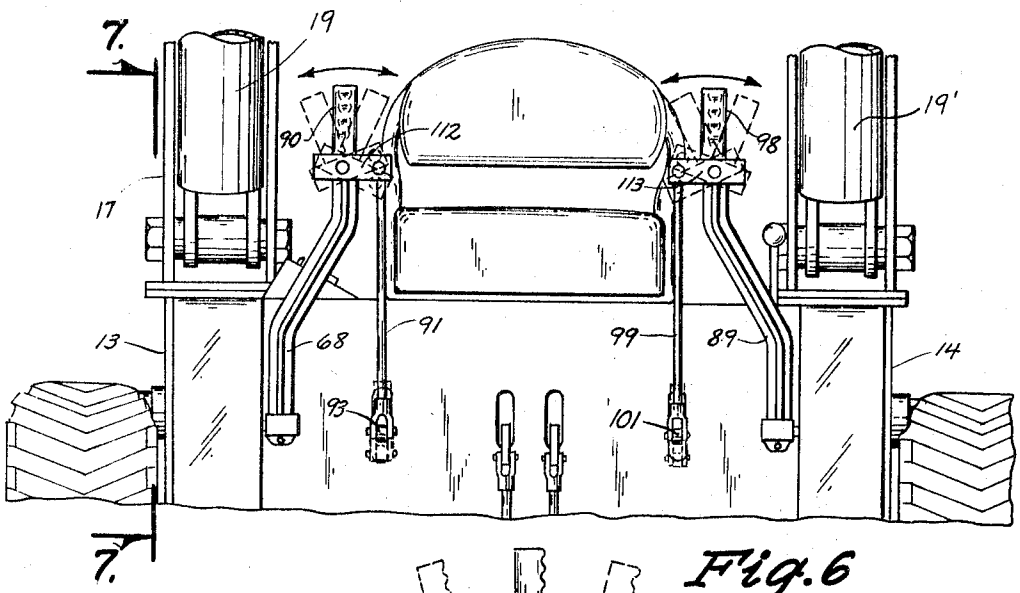

Fig. 6

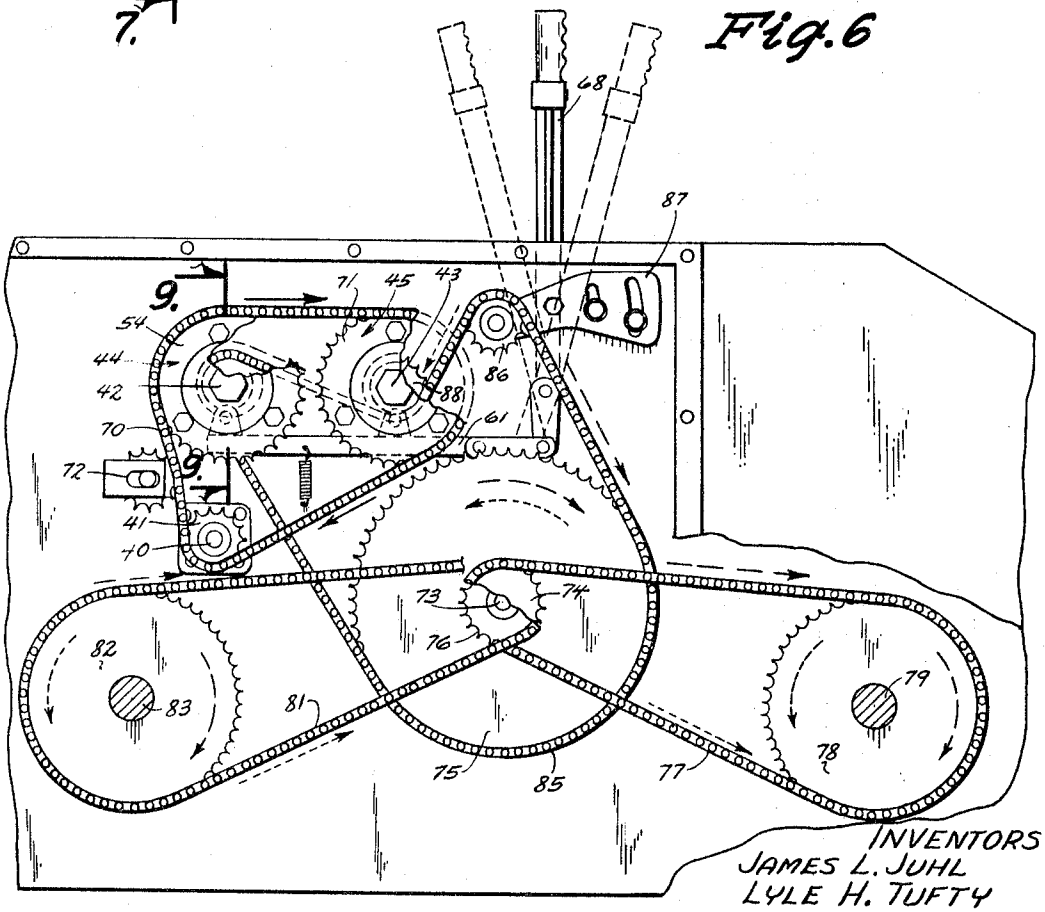

Fig. 7

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May 16, 1967 J. L. JUHL ETAL 3,319,817

SELF-PROPELLED LOADER

Filed July 1, 1965 3 Sheets-Sheet 3

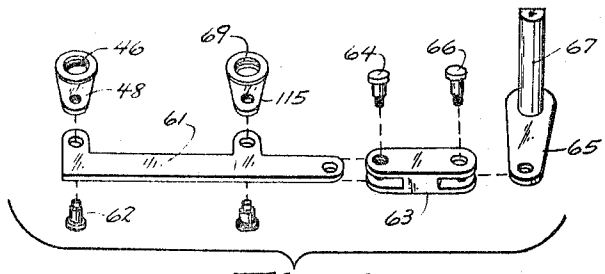

Fig. 8

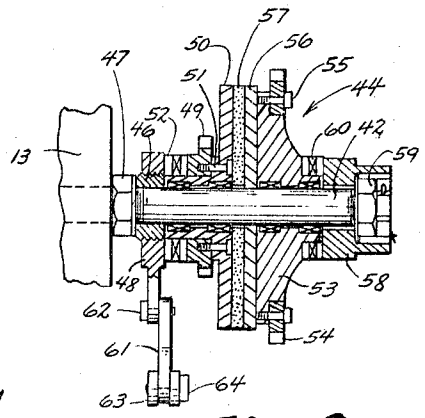

Fig. 9

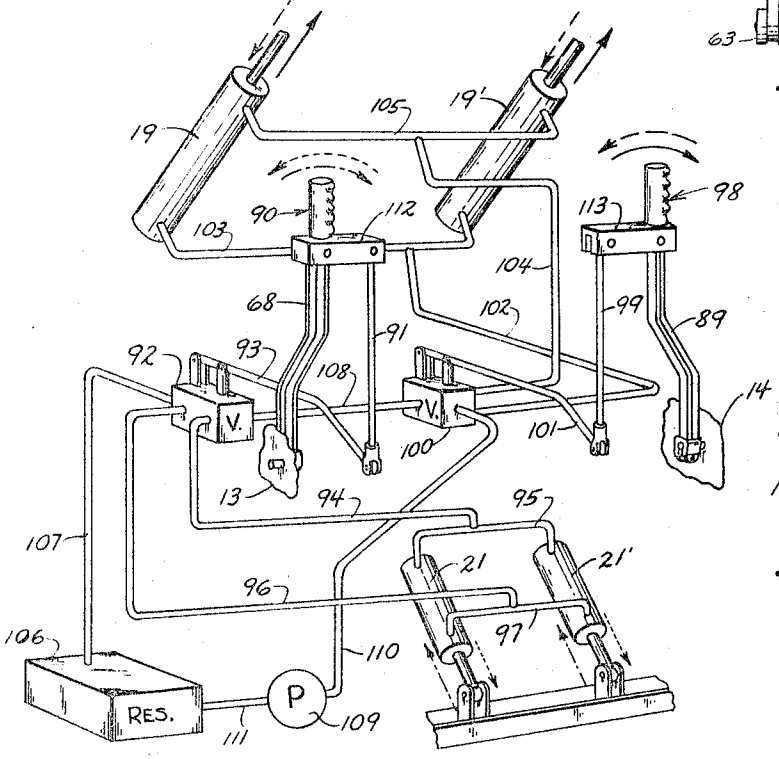

Fig. 10

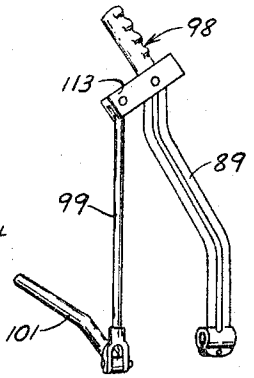

Fig. 11

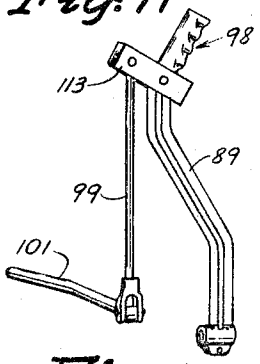

Fig. 12

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United States Patent Office 3,319,817 Patented May 16, 1967

3,319,817
SELF-PROPELLED LOADER

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Filed July 1, 1965, Ser. No. 468,684
16 Claims. (Cl. 214,778)

This invention relates to a loader device and more particularly to a self-propelled loader.

Conventional loaders of the "front-end" type are rather large and difficult to maneuver in small spaces. Additionally, the conventional loaders have a large number of controls such as levers, foot pedals, etc., which makes it difficult for the operator to efficiently operate the device.

Therefore, it is a principal object of this invention to provide a compact, self-propelled loader which can be maneuvered in a minimum amount of space.

A further object of this invention is to provide a self-propelled loader wherein the movement of the loader boom, the operation of the tool on the loader boom and the steering of the loader is accomplished by the utilization of two control levers.

A further object of this invention is to provide a loader which includes a tool quick change assembly to permit rapid attachment and detachment of various tools to the loader boom.

A further object of this invention is to provide a loader which is adapted to quickly detachably receive various tools, such as, buckets of various sizes, forks, dozer blades and the like.

A further object of this invention is to provide a self-propelled loader which is simple in design, economical to manufacture and refined in appearance.

These and other objects will be apparent to those skilled in the art.

This invention consists in the construction, arrangements, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings in which:

FIG. 1 is a front perspective view of the loader;

FIG. 2 is a side view of the loader with broken lines indicating the position of the loader boom and bucket in a semi-raised position;

FIG. 3 is a side view of the device with broken lines illustrating the movement of the bucket on the loader boom;

FIG. 4 is a fragmentary exploded perspective view of the tool quick change assembly;

FIG. 5 is a sectional view of the tool quick change assembly as seen on line 5—5 of FIG. 4;

FIG. 6 is a fragmentary front view of the loader with broken lines indicating the positions to which the control levers may be moved;

FIG. 7 is a sectional view of the device as seen on line 7—7 of FIG. 6 with portions thereof cutaway to more fully illustrate the invention and with broken lines indicating the movement of the right-hand control lever;

FIG. 8 is an exploded perspective view of the clutch actuating bar and its associated mechanism;

FIG. 9 is a sectional view as seen on line 9—9 of FIG. 7 at an enlarged view;

FIG. 10 is a perspective schematic view of the hydraulic control system of the device;

FIG. 11 is a perspective view of the boom control lever illustrating the position to which it is moved when it is desired to lower the boom; and

FIG. 12 is a front perspective view of the boom control lever illustrating the position to which it is moved when it is desired to raise the boom.

The numeral 10 generally designates the loader of this invention including a front end 11, rear end 12, opposite sides 13 and 14, top 15 and bottom 16. Loader 10 is powered by a conventional power means having a variable speed control means (not shown) associated therewith.

Inasmuch as both sides of the loader 10 are substantially identical, only one side will be described with (') indicating identical structure on the other side.

Secured to the upper rearward end of loader 10 adjacent side 13 is a boom upright 17 having a boom 18 pivotally secured thereto as seen in the drawings. A hydraulic lift cylinder 19 is pivotally connected at its base end to the lower forward end of upright 17 and at its other end to boom 18 as seen in the drawings.

A cross member 20 is secured to and extends between booms 18 and 18' and has a pair of tilt cylinders 21 and 21' pivotally secured thereto. The forward end of tilt cylinders 21 and 21' are pivotally connected to a cross member means 22 which is pivotally secured to and extends between the forward ends of booms 18 and 18' (FIG. 4).

Cross member means 22 consists of an elongated angle 23 having spaced apart ear members 24, 25 and 24', 25' secured thereto which extend rearwardly therefrom (FIGS. 4 and 5). The forward end of boom 18 is pivotally secured between ear members 24 and 25 by means of pin 26 while the forward end of boom 18' is pivotally secured between ear members 24, and 25' by means of pin 26'. Secured to the horizontal portion 27 adjacent ear members 24 and 25 are a pair of spaced apart ear members 28 and 29 which extend upwardly therefrom and which pivotally receive therebetween the forward end of tilt cylinder 21. A horizontal reinforcing plate 30 is secured to the upper end of angle 23 which extends rearwardly therefrom and has a pair of openings 31 and 31' formed therein.

All of the tools which are adapted to be secured to cross member means 22 such as a bucket 32 will have a pair of spaced apart bar members 33 and 34 having openings 35, 35' and 36, 36' formed therein respectively. As best seen in FIG. 5, reinforcing plate members are secured to and extend between the bucket and the respective bar members. The various tools are secured to the device by simply causing bar members 33 and 34 to embrace cross member means 22 as seen in FIG. 5 and extend pins 37 and 37' through the registering openings. It can be appreciated that horizontal portion 27 of angle 23 must also be provided with openings which register with openings 31 and 31' to permit the insertion of pins 37 and 37' therethrough such as is illustrated in FIG. 5. As seen in FIGS. 4 and 5, a channel member 38 is secured to and extends between booms 18 and 18' adjacent their forward ends.

A drive assembly jack shaft 40 extends outwardly through side 13 of loader 10 and has its inner end operatively connected to the power means and has a sprocket 41 operatively mounted on its outer end. As viewed in FIG. 7, the power means will impart a clockwise rotation to jack shaft 40 and sprocket 41. Also secured to side 13 and extending outwardly therefrom are a pair of clutch pins 42 and 43. A rear clutch assembly 44 for controlling the forward movement of loader 10 is operatively mounted on clutch pin 42 and a front clutch assembly 45 is operatively mounted on clutch pin 43. Rear clutch assembly 44 includes a clutch actuating thread 46 which embraces clutch pin 42 outwardly of nut 47 and is operatively threadably embraced by a clutch actuating nut 48. Rotatably mounted on clutch pin 42 at a point outwardly of clutch actuating nut 48 is a sprocket assembly 49 having an inside clutch plate 50 secured thereto by means of bolts 51. A bearing assembly 52 embraces the hub portion of sprocket assembly 49 (FIG. 9) and is comprised of a

thrust bearing imposed between opposing thrust races. Also rotatably embracing clutch pin **42** at a point outwardly of sprocket assembly **49** is a casting **53** having a sprocket **54** operatively connected thereto by means of bolts **55**. Bolts **55** also secure an outside clutch plate **56** to casting **53**. A clutch lining **57** embraces clutch pin **42** at a point between inside clutch plate **50** and outside clutch plate **56**. A clutch nut **58** rotatably embraces the outer end of clutch pin **42** and is maintained thereon by a nut **59**. A bearing assembly **60** embraces the hub portion of casting **53** (FIG. 9) and is comprised of a thrust bearing imposed between opposing thrust races.

Clutch actuating nut **48** is connected to the rearward end of a clutch actuating bar **61** by means of bolt **62** as best seen in FIGS. 8 and 9. A linkage bar **63** is pivotally connected at one of its ends to the forward end of clutch actuating bar **61** by means of bolt **64** and is pivotally connected at its forward end to linkage **65** by means of bolt **66**. Linkage **65** is operatively connected to a shaft **67** which is operatively connected to control lever **68**.

Front clutch assembly **45** is substantially identical to rear clutch assembly **44** with the only exception being in that the clutch actuating thread **69** of the front clutch assembly **45** has a left-hand thread while clutch actuating thread **46** of rear clutch assembly has a right-hand thread.

A chain **70** engages sprocket **41** on jack shaft **40**, sprocket **54** on rear clutch assembly **44**, sprocket **71** on front clutch assembly **45** (which is equivalent to the sprocket **54** on rear clutch assembly **44**) and extends therearound as seen in FIG. 7. The tension of chain **70** is adjustable by means of chain tightener assembly **72**.

A shaft **73** rotatably extends outwardly from side **13** and has a small outer sprocket **74**, large intermediate sprocket **75** and a small inner sprocket **76** operatively mounted thereon (FIG. 7). Sprocket **74** has a front axle drive chain **77** extending therearound which embraces a front axle drive sprocket **78** operatively mounted on front axle **79**. Front axle **79** has a wheel member **80** operatively mounted thereon. Sprocket **76** has a rear axle drive chain **81** extending therearound which also embraces a rear axle drive sprocket **82** mounted on rear axle **83**. A wheel member **84** is operatively mounted on rear axle **83**. As best seen in FIG. 7, a chain **85** extends around sprocket **75**, around sprocket **86** of chain tightener assembly **87**, around the lower end of sprocket **88** (which corresponds to sprocket **49** in rear clutch assembly **44**) and around the upper rearward ends of sprocket **49**.

Each side of loader **10** is provided with a front clutch assembly and rear clutch assembly and their associated mechanism and for that reason has not been shown. Control lever **89** is operatively connected to a rear clutch assembly and a front clutch assembly corresponding to rear clutch assembly **44** and front clutch assembly **45** respectively.

Pivotally secured to the upper end of control lever **68** is a handle means **90** having a link arm **91** connected thereto and extending downwardly therefrom. Link arm **91** is operatively connected to a valve **92** by means of arm member **93**. Valve **92** is fluidly connected to the rearward ends of tilt cylinders **21** and **21'** by means of conduits **94** and **95**. Valve **92** is also fluidly connected to the forward ends of tilt cylinders **21** and **21'** by means of conduits **96** and **97**. Control lever **89** has a handle means **98** pivotally connected to its upper end which has a link arm **99** pivotally connected to the outer end thereof which extends downwardly therefrom. Link arm **99** is operatively connected to a valve **100** by means of arm member **101**. Valve **100** is fluidly connected to the rearward end of lift cylinders **19** and **19'** by means of conduits **102** and **103**. Valve **100** is also fluidly connected to the forward end of lift cylinders **19** and **19'** by means of conduits **104** and **105**. Valve **92** is fluidly connected to a reservoir **106** by means of conduits **107** and fluidly connected to valve **100** by means of conduit **108**. Valve **100** is fluidly connected to a pump **109** by means of conduit **110** and pump **109** is fluidly connected to reservoir **106** by means of conduit **111**. It can be appreciated that the horizontal arm portion **112** of handle means **90** will cause link arm **91** to be raised or lowered as handle means **90** is pivoted about a horizontal axis. The same is true for horizontal portion **113** of handle means **98**.

The normal method of operation is as follows.

Loader **10** is moved forwardly by moving one or both of control levers **68** and **89** forwardly from their neutral position. FIG. 7 illustrates the forward and rearward movement of lever **68** with respect to its neutral position shown in full lines. The forward movement of control lever **68** from its neutral position causes clutch actuating bar to be moved rearwardly due to its linked connection with control lever **68**. The power means will be rotating jack shaft **40** in a clockwise direction as viewed in FIG. 7. The rearward movement of clutch actuating bar **61** causes clutch actuating nut **48** to threadably move outwardly on clutch actuating thread **46** and against bearing assembly **52** which in turn forces sprocket assembly **49** outwardly against inside clutch plate **50** and against clutch lining **57**. Chain **70** imparts a clockwise rotation to sprocket **54** and when inside clutch plate **50** is moved into frictional engagement with clutch lining **57** and outside clutch plate **56**, a clockwise rotation is imparted to sprocket **49** thereby causing clockwise rotation of chain **85**. The clockwise rotation of chain **85** causes clockwise movement of chains **77** and **81** thereby causing axles **79** and **83** and hence wheels **80** and **84** to be rotated clockwise. The clockwise movement of wheels **80** and **84** causes the loader to be propelled forwardly. When control lever **68** is moved to its forward position and clutch actuating nut **48** is moved outwardly, the clutch actuating nut on front clutch **45** is moved inwardly thereby preventing any frictional engagement between the clutch plates therein. Therefore, it can be seen that when control lever **68** is in its forward position, sprocket **88** is freely rotating about clutch pin **43**.

When control lever **68** is in its neutral position, neither of sprockets **49** or **88** will be rotating due to the fact that the respective clutch plates in the front and rear clutch assemblies are not being forced towards each other and there is no frictional engagement therebetween.

When control lever **68** is moved rearwardly, clutch actuating nut **115** (which embraces clutch actuating thread **69**) clutch actuating nut **115** is moved outwardly on clutch pin **43** while clutch actuating nut **48** is moved inwardly on clutch pin **42**. The outward movement of clutch actuating nut **115** causes sprocket **88** and the inside clutch plate to be moved towards the outside clutch plate thereby causing frictional engagement between the inside and outside clutch plates. The frictional engagement between the clutch plates in the front clutch assembly causes a clockwise rotation to be imparted to sprocket **88** and thereby imparts a counter-clock-wise rotation to chain **85**, axles **79** and **83** and thereby causes wheels **80** and **84** to be rotated in a counter-clock-wise direction or moved rearwardly. Counter-clock-wise rotation of chain **85** is permitted due to the fact that sprocket **49** can freely rotate in a direction opposite to the direction of rotation of sprocket **54** due to the lack of fricional engagement between clutch plates **50** and **56**. Rear clutch assembly **44** may be adjusted to compensate for the wear thereof by means of nut **59**. It is obvious that the front clutch assembly could also be so adjusted. It should be noted that a front and rear clutch assembly is provided at each side of the loader.

When both levers **68** and **89** are moved forwardly, the four wheels on the loader will cause the loader to be moved forwardly. When control levers **68** and **89** are both moved rearwardly, the four wheels on the loader will cause the loader to be moved rearwardly. When one control lever is moved forwardly and the other control lever is moved rearwardly, the wheels at one side of the loader will be rotating in one direction while the wheels at

the other side of the loader will be rotating in an opposite direction which causes the tractor to "scrub" around in its own tracks thereby requiring a minimum amount of turning space.

The tool on the forward end of booms 18 and 18' may also be raised or lowered by means of handle means 98 on control lever 89. As viewed in FIG. 10, the clockwise rotation of handle means 98 causes valve 100 to be actuated and thereby supply fluid to the rearward end of lift cylinders 19 and 19' to extend the piston rods thereof to cause the tool to be raised. The counter-clockwise movement of handle means 98 on boom control lever 89 causes valve means 100 to supply hydraulic fluid to the forward ends of lift cylinders 19 and 19' to cause the piston rods therein to be withdrawn thereby causing the tool to be lowered. The tool on the forward end of booms 18 and 18' such as bucket 32 can be tilted with respect thereto by means of handle means 90 on bucket control lever 68. As viewed in FIG. 10, the clockwise rotation of handle means 90 causes valve 92 to supply fluid to the forward ends of tilt cylinders 21 and 21' which causes the forward end of the bucket to be moved upwardly. The counter-clock-wise movement of handle means 90 causes valve 92 to supply fluid to the rearward ends of tilt cylinders 21 and 21' to cause the extension of the piston rods thereof to tilt the forward end of bucket 32 downwardly.

Thus it can be seen that a compact self-propelled loader has been provided wherein all of the controls for operating the device are incorporated into two levers. The fact that only two levers are utlized makes the loader extremely efficient and time saving as well as being simple to operate.

It can also be seen that the structure described for attaching a tool such as bucket 32 to cross member means 22 provides a fast means for detaching and attaching various tools to the loader. It is only necessary to aline the respective holes in cross member means 22 with the holes in bars 33 and 34 and insert pins 37 and 37' therethrough. All of the tools which would be used on the loader would have structure on the rearward ends which corresponded to bars 33 and 34.

Thus it can be seen that the device accomplishes at least all of its stated objectives.

Some changes may be made in the construction and arrangement of our self-propelled loader without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim:

1. In a loader device,
a frame means having opposite sides and rearward and forward ends,
a first pair of wheels on one side of said frame means,
a second pair of wheels on the opposite side of said frame means,
a first power means for rotating at least one of the wheels of said first pair of wheels in a forwardly or rearwardly direction at times and for rotating at least one of the wheels of said second pair of wheels in a forwardly or rearwardly direction at times,
a lifting means including second and third power means,
a first control means operatively secured to said first power means to control the direction of rotation of at least one of the wheels of said first pair of wheels and to control the operation of said second power means, said first control means including a first control lever operatively pivotally secured to said frame means and being movable rearwardly and forwardly with respect to said frame means and being operatively connected to said first power means, said first control means also including a first handle member pivotally secured to said first control lever and being movable transversely with respect thereto, said first handle member being operatively connected to said second power means to control the operation of said second power means,
a second control means operatively secured to said first power means to control the direction of rotation of at least one of the wheels of said second pair of wheels and to control the operation of said third power means, said second control means including a second control lever operatively pivotally secured to said frame means and being movable rearwardly and forwardly with respect to said frame means and being operatively connected to said first power means, said second control means also including a second handle member pivotally secured to said second control lever and being movable transversely with respect thereto, said second handle member being operatively connected to said third power means to control the operation of said third power means.

2. The device of claim 1 wherein said second power means including a hydraulic cylinder means for raising and lowering said lifting means.

3. The device of claim 1 wherein said third power means includes a hydraulic cylinder means for operating a tool means on said lifting means.

4. In a loader having opposite sides,
a first power means on said loader,
first and second clutch means on one side of said loader and being operatively connected to a first pair of wheels on said one side,
third and fourth clutch means on the other side of said loader and being operatively connected to a second pair of wheels on said other side,
said first and third clutch means being operatively connected to said first power means and adapted to cause rotation of said first and second pair of wheels in one direction at times,
said second and fourth clutch means being operatively connected to said first power means and adapted to cause rotation of said first and second pair of wheels in a second direction at times,
a boom means pivotally connected at one of its ends to said loader,
a tool means pivotally connected to the other end of said boom means,
a second power means adapted to raise or lower said boom means with respect to said loader at times,
a third power means adapted to pivot said tool means with respect to said boom means at times,
a first control means operatively connected to said first and second clutch means to selectively cause rotation of said first pair of wheels in said one direction at times and to cause rotation of said first pair of wheels in said second direction at times and operatively connected to said third power means to permit selective simultaneous pivotal movement of said tool means,
and a second control means operatively connected to said third and fourth clutch means to selectively cause rotation of said second pair of wheels in said one direction at times and to cause rotation of said second pair of wheels in said second direction at times and operatively connected to said second power means to permit simultaneous movement of said boom means.

5. The device of claim 4 wherein said second power means includes a first hydraulic cylinder means.

6. The device of claim 4 wherein said third power means includes a second hydraulic cylinder means.

7. The device of claim 5 wherein said first control means is operatively connected to a first valve means which is fluidly connected to said second hydraulic cylinder means.

8. The device of claim 6 wherein said second control means is operatively connected to a second valve means

which is fluidly connected to said first hydraulic cylinder means.

9. In combination,

a frame means,

a lifting means including first and second spaced apart arm members having opposite ends,

said first and second arm members being pivotally secured at one of their ends to said frame means,

a cross member means pivotally secured to and extending between said first and second arm members adjacent their other ends, and

a power means operatively secured to and extending between said lifting means and said cross member means for pivoting said cross member means with respect to said lifting means at times,

said cross member means adapted to detachably receive a tool means thereon said cross member means including an elongated angle having first and second flange portions; a first pair of spaced apart ear members secured to and extending from said elongated angle adjacent one end thereof transversely to the longitudinal axis of said angle; a second pair of spaced apart ear members secured to and extending from said elongated angle adjacent the other end thereof transversely to the longitudinal axis of said angle; a third pair of spaced apart ear members secured to and extending from said elongated angle adjacent said first pair of ear members transversely to the longitudinal axis of said angle; a fourth pair of spaced apart ear members secured to and extending from said angle adjacent said second pair of ear members transversely to the longitudinal axis of said angle; said first and second pairs of spaced apart ear members being pivotally secured to said first and second arm members at their said other ends; said third and fourth ear members being pivotally secured to said power means including first and second hydraulic cylinder means, said tool means being received on said cross member between said third and fourth pair of ear members.

10. The device of claim 1 wherein said second power means includes a first hydraulic cylinder means on said lifting means for raising and lowering said lifting means with respect to said frame means at times; said second control means including a second control lever operatively connected to said first power means and movable in two directions to control the direction of rotation of at least one of the wheels of said second pair of wheels; said second control lever having a second handle member pivotally mounted thereon and movable in two directions with respect to said second control lever; said second handle member being operatively connected to said second power means to control the raising or lowering of said lifting means.

11. The device of claim 1 wherein said lifting means has a tool means operatively pivotally secured thereto; said third power means including a second hydraulic cylinder means on said lifting means and operatively connected to said tool means for pivoting said tool means with respect to said lifting means at times; said first control means including a first control lever operatively connected to said first power means and movable in two directions to control the direction of rotation of at least one of the wheels of said first pair of wheels; said first control lever having a first handle member pivotally mounted thereon and movable in two directions with respect to said first control lever; said first handle member being operatively connected to said third power means to control the pivoting of said tool means.

12. The loader of claim 4 wherein said first control means includes a first control lever operatively connected to said first and second clutch means and movable in one direction to selectively cause rotation of said first pair of wheels in said one direction at times and movable in a second direction to selectively cause rotation of said first pair of wheels in said second direction at times; said first control lever having a first handle member pivotally secured thereto; said first handle member operatively connected to said third power means and movable in one direction to cause said tool means to pivot in one direction and movable in a second direction to cause said tool means to pivot in a second direction.

13. The loader of claim 4 wherein said second control means includes a second control lever operatively connected to said third and fourth clutch means and movable in one direction to selectively cause rotation of said second pair of wheels in said one direction at times and movable in a second direction to selectively cause rotation of said second pair of wheels in said second direction at times; said second control lever having a second handle member pivotally secured thereto; said second handle member operatively connected to said second power means and movable in one direction to raise said boom means and movable in a second direction to lower said boom means.

14. The loader of claim 4 wherein said first control means includes a first control lever operatively connected to said first and second clutch means and movable in one direction to selectively cause rotation of said first pair of wheels in said one direction at times and movable in a second direction to selectively cause rotation of said first pair of wheels in said second direction at times; said first control lever having a first handle member pivotally secured thereto; said first handle member operatively connected to said third power means and movable in one direction to cause said tool means to pivot in one direction and movable in a second direction to cause said tool means to pivot in a second direction; said second control means including a second control lever operatively connected to said third and fourth clutch means and movable in one direction to selectively cause rotation of said second pair of wheels in said one direction at times and movable in a second direction to selectively cause rotation of said second pair of wheels in said second direction at times; said second control lever having a second handle member pivotally secured thereto; said second handle member operatively connected to said second power means and movable in one direction to raise said boom means and movable in a second direction to lower said boom means.

15. In combination,

a frame means,

a lifting means including first and second spaced apart arm members having opposite ends,

said first and second arm members being pivotally secured at one of their ends to said frame means,

a cross member means pivotally secured to and extending between said first and second arm members adjacent their other ends, and

a power means operatively secured to and extending between said lifting means and said cross member means for pivoting said cross member means with respect to said lifting means at times,

said cross member means adapted to detachably receive a tool means thereon,

said cross member means including an elongated angle having first and second flange portions; a first pair of spaced apart ear members secured to and extending from said elongated angle adjacent one end thereof transversely to the longitudinal axis of said angle; a second pair of spaced apart ear members secured to and extending from said elongated angle adjacent the other end thereof transversely to the longitudinal axis of said angle; a third pair of spaced apart ear members secured to and extending from said elongated angle adjacent said first pair of ear members transversely to the longitudinal axis of said angle and transversely to said first pair of ear mem-

bers; a fourth pair of spaced apart ear members secured to and extending from said angle adjacent said second pair of ear members transversely to the longitudinal axis of said angle and transversely to said second pair of ear members; said first and second pairs of spaced apart ear members being pivotally secured to said first and second arm members at their said other ends; said third and fourth ear members being pivotally secured to said power means including first and second hydraulic cylinder means.

16. In combination,

a frame means,

a lifting means including first and second spaced apart arm members having opposite ends,

said first and second arm members being pivotally secured at one of their ends to said frame means,

a cross member means pivotally secured to and extending between said first and second arm members adjacent their other ends,

a power means operatively secured to and extending between said lifting means and said cross member means for pivoting said cross member means with respect to said lifting means at times,

said cross member means adapted to detachably receive a tool means thereon,

said cross member means including an elongated angle having first and second flange portions; a first pair of spaced apart ear members secured to and extending from said elongated angle adjacent one end thereof transversely to the longitudinal axis of said angle; a second pair of spaced apart ear members secured to and extending from said elongated angle adjacent the other end thereof transversely to the longitudinal axis of said angle; a third pair of spaced apart ear members secured to and extending from said elongated angle adjacent said first pair of ear members transversely to the longitudinal axis of said angle and transversely to said first pair of ear members; a fourth pair of spaced apart ear members secured

to and extending from said angle adjacent said second pair of of ear members transversely to the longitudinal axis of said angle and transversely to said second pair of ear members; said first and second pairs of spaced apart ear members being pivotally secured to said first and second arm members at their said other ends; said third and fourth ear members being pivotally secured to said power means including first and second hydraulic cylinder means,

said angle including transversely disposed first and second flange members,

a plate member secured to said second flange member and extending transversely therefrom in a parallel spaced relationship with respect to said first flange,

said first flange and said plate member having registering holes formed therein,

a tool means having spaced bar members secured to and extending therefrom and adapted to detachably embrace said first flange and said plate member,

said bar members having registering holes formed therein which register with the holes in said first flange and said plate member,

and a pin means extending through the registering holes in said first flange, said plate member and said bar members.

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