June 11, 1963 E. L. BENNO 3,092,920

TRACTOR LOADERS

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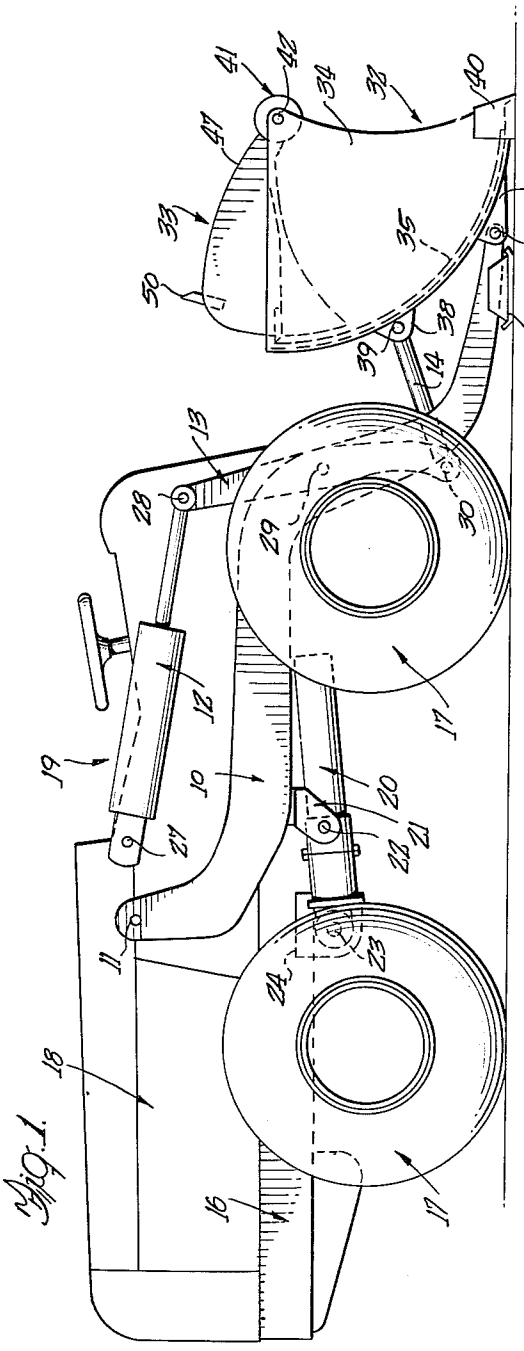


Fig. 1.

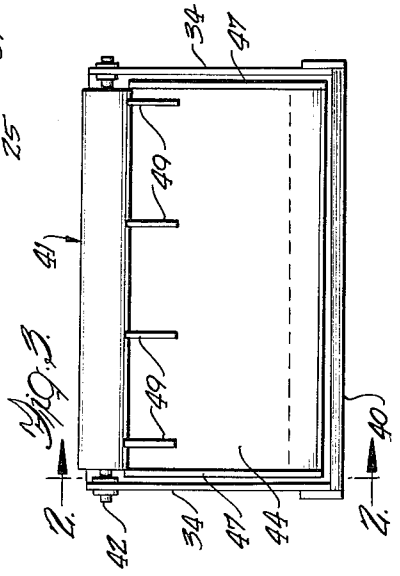


Fig. 3.

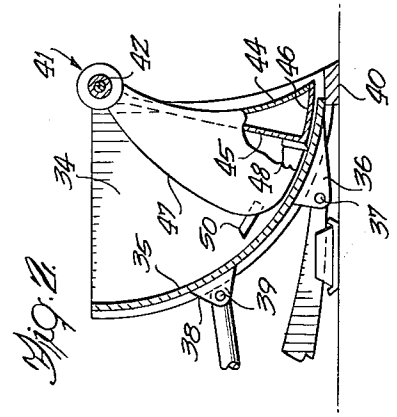


Fig. 2.

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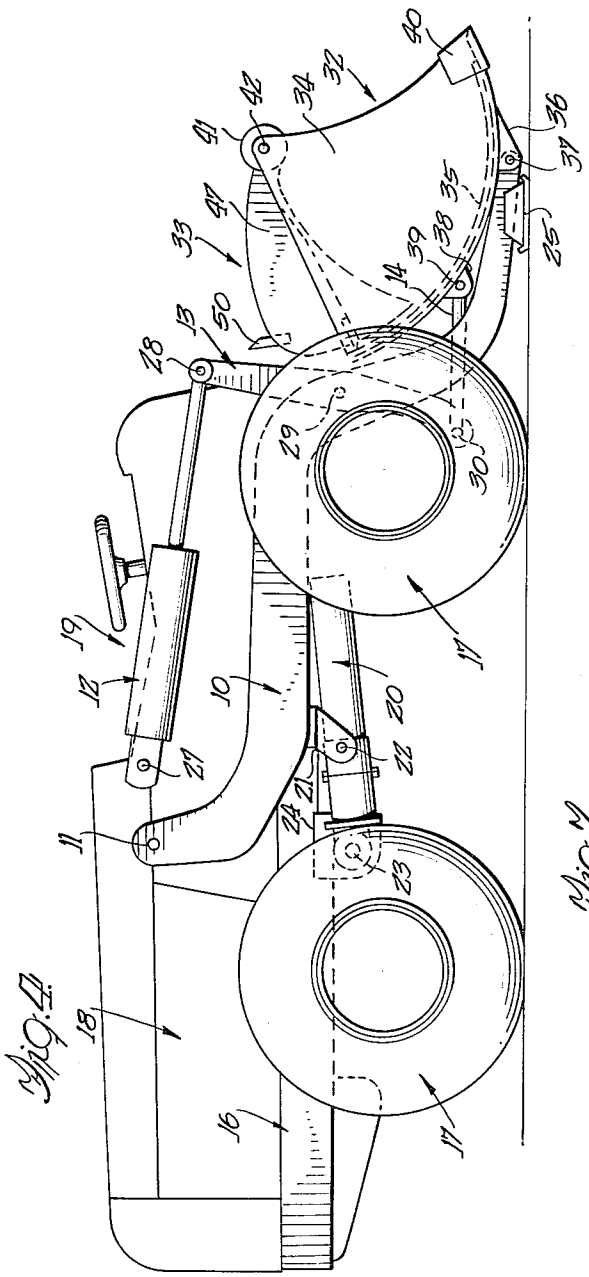


Fig. 4

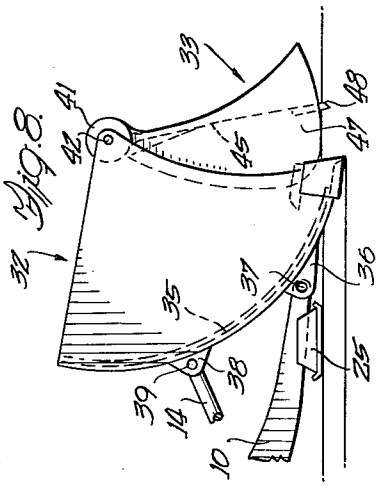


Fig. 3

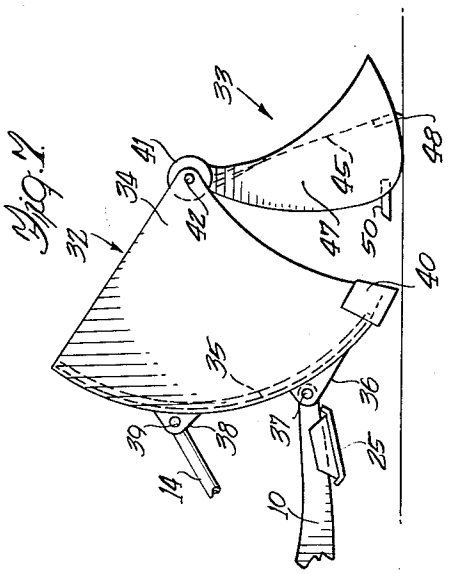


Fig. 2

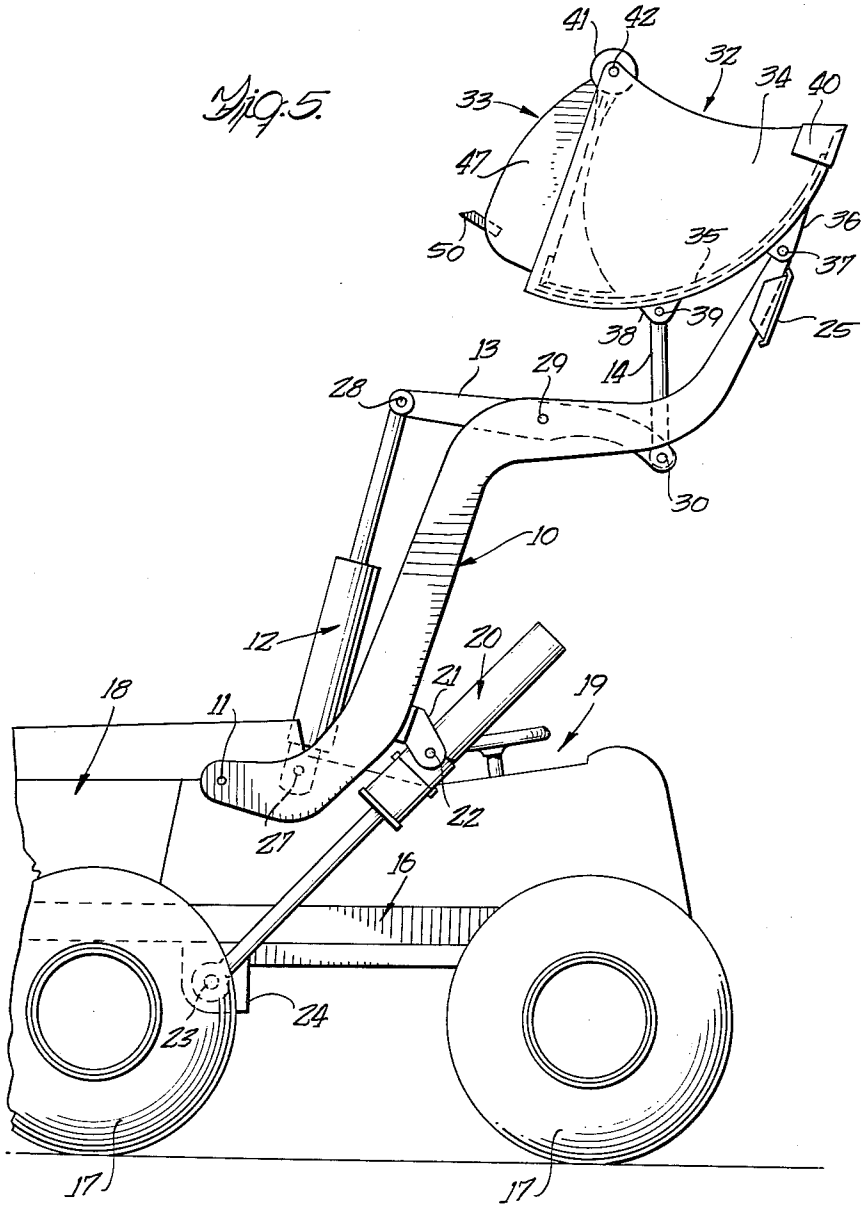
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Fig. 5.



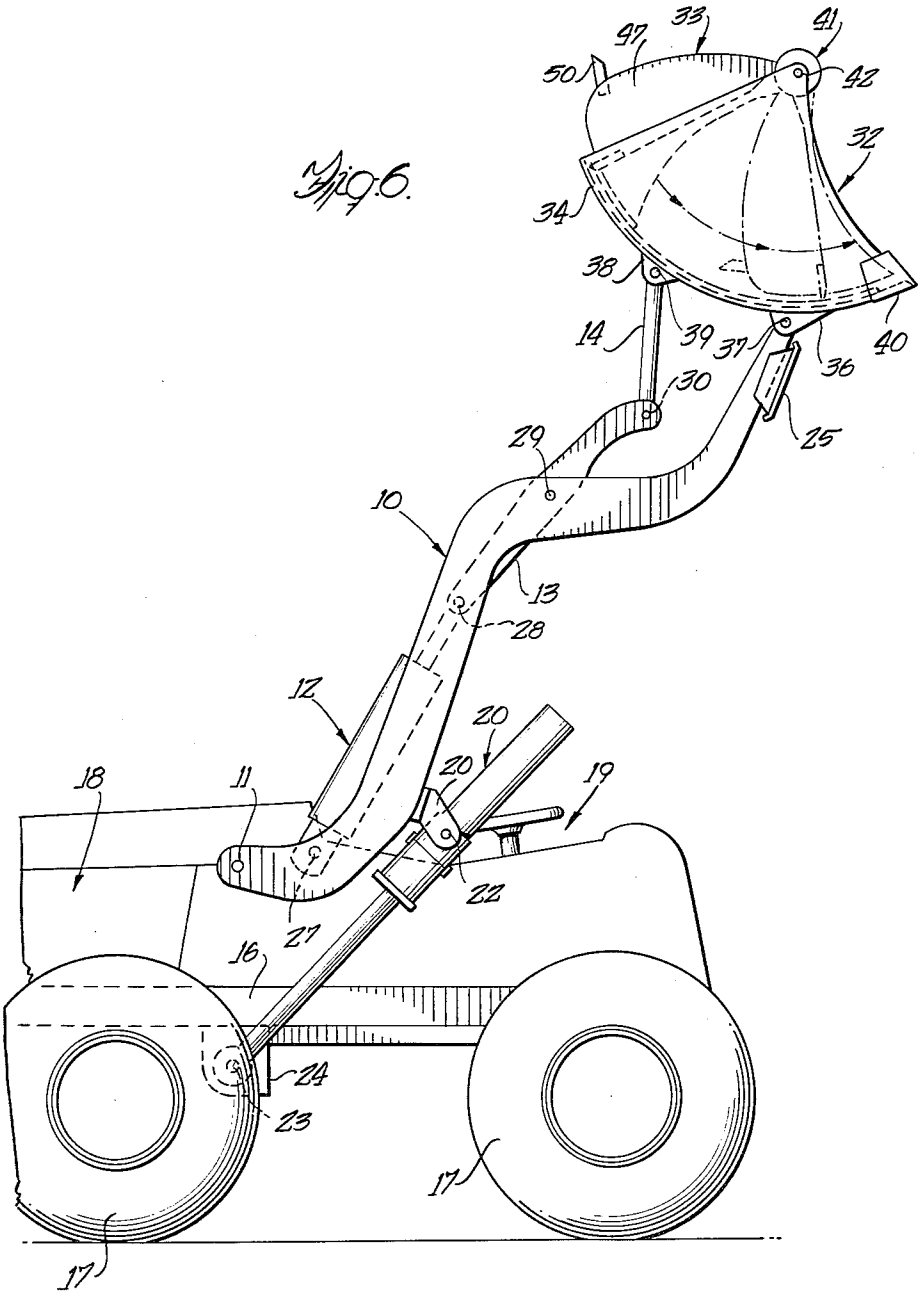
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Fig. 6.



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3,092,920

TRACTOR LOADERS

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Filed Nov. 23, 1960, Ser. No. 71,190
10 Claims. (Cl. 37—117.5)

This invention relates generally to front-end-type tractor loaders, and more specifically to an improved multiple function bucket arrangement from a front-end-type tractor loader.

In the art of front-end-type tractor loaders, it has become increasingly necessary to provide loader arrangements which will, in addition to the well-known digging function, perform other desirable functions to increase the versatility of the machine. In addition to the basic digging function, it is desirable to provide the functions of a bulldozer, a clam bucket, and a self-loading scraper. There are many ramifications of the basic functions to produce other functions, such as backfilling, spreading, carrying and dumping of various materials.

It is the object of the present invention to provide the basic functions of a digging bucket, a bulldozer, a clam bucket, and a self-loading scraper in a single compound bucket arrangement, wherein the relative efficiency of each of the structure arrangements is high in a front-end-type tractor loader arrangement.

It is a further object to provide a multiple function bucket arrangement for a front-end-type tractor loader wherein efficient handling of various materials is easily accomplished by the operator of the loader from the operator's compartment in the tractor thereof.

A feature of the present invention is the provision of a compound bucket arrangement as described above for a front-end-type tractor loader wherein the visibility of the operator in operating the machine is substantially increased over similar arrangements presently known in the art.

To catalog all of the various modified functions of the above-described four basic functions inherent in the present invention would make this specification unduly long, as many of those modified functions and further features of the present invention will be apparent upon a perusal of the following specification and drawings, of which:

FIGURE 1 is a side-elevational view of a tractor loader constructed according to the present invention;

FIGURE 2 is a partial view of the arrangement shown in FIGURE 1 with the bucket in another operated position and with portions thereof removed along the line, such as 2—2 of FIGURE 3;

FIGURE 3 is a front-elevational view of the complete bucket arrangement in the operated position of FIGURE 2;

FIGURE 4 is a side-elevational view of the structure shown in FIGURE 1 with the bucket operated to the breakout position;

FIGURE 5 is a partial side-elevational view of the structure shown in FIGURE 4 with the boom raised to the high lift position;

FIGURE 6 is a view similar to FIGURE 5 but with the bucket operated to the high-lift dump position;

FIGURE 7 is a partial view of the structure shown in FIGURE 1 with the bucket operated to the basic clam bucket position; and

FIGURE 8 is a partial view of the structure shown in FIGURE 1 with the bucket operated to the self-loading scraper position.

The present embodiment is the preferred embodiment, but it is to be understood that changes can be made in the present embodiment by one skilled in the art without departing from the spirit and scope of the present invention.

For a general description of the present invention, reference is made to the drawings. As may be seen therein, the tractor of the present embodiment is of the four-wheel rubber-tired type; however, it must be understood that the tractor may also be of the crawler type.

A boom 10 is pivotally carried by pin means 11 at one end thereof on the tractor and extends forwardly thereof. A linkage means comprising a hydraulic ram 12, a lever 13, and a link 14 is provided and pivotally connected between the tractor, the boom 10, and the bucket. The bucket is formed in two sections, one being a somewhat scoop-shaped section comprising a curved bottom and back wall and a pair of side walls. The other section is formed somewhat as a blade and carries a cutting edge on the rearward side thereof. The scoop section and the blade section are interconnected so that the blade section will sweep the bottom and side walls of the scoop section during the relative pivotal movement thereof. The housing of a rotary-type hydraulic motor carries the blade section, and the shaft of the motor is keyed to the upper forward portion of the side walls. Thus, operation of the rotary hydraulic motor will cause relative movement between the blade section and the scoop section. The scoop section is pivotally connected to the forward end of the boom 10 and the link 14 of the linkage means. FIGURE 1 shows the arrangement of the subject invention for the digging of materials as a conventional loader. In this position the blade section is substantially in alignment with the upper or rearward marginal edges of the side walls, the boom is in its lowermost position, and the linkage means is operated to position the scoop for digging at ground level. The tractor is then moved forwardly to project the cutting edge at the forward marginal edge of the bottom wall into the material to be dug. The linkage means may then be operated to pivot the scoop section rearwardly to a position, such as shown in FIGURE 4. This is the breakout position. From the breakout position of FIGURE 4, the boom can then be raised to an intermediate carrying position or to the high-lift position preparatory to dumping, such as shown in FIGURE 5. To dump the bucket, the linkage means may then be operated to pivot the bucket clockwise from the position shown in FIGURE 4 to that shown in FIGURE 6. The blade portion of the bucket may then be pivoted by operation of the rotary hydraulic motor from the solid to the dotted line position shown in FIGURE 6. This will cause dumping of the load from the bucket. From the dump position, the boom and linkage means may again be operated to repeat the digging, carrying, and dumping cycles. It should be noted that one real advantage of the present invention may be seen in FIGURE 6 wherein it is clearly shown that the dumping height and dumping reach is substantially ideal for high-lift and high-reach dumping applications. The bulldozing function is produced by operation of the rotary hydraulic motor until the forward side of the blade section is substantially in alignment with the forward marginal edges of the side walls and the cutting edge of the scoop section. In this arrangement, it should be noted that the cutting edge of the scoop section serves as the cutting edge for the bulldozing function and a conventional moldboard configuration is presented for bulldozing operations. It should be further noted that in this operated position of the present invention, the forward view of the operator is not obstructed by any raised portion of the bucket. When the subject invention is operated as a clam bucket, the boom is raised and the linkage means is operated for pivoting the scoop section of the bucket forwardly to a position, such as shown in FIGURE 7. The blade section is then operated from a position outwardly and forwardly of the scoop section toward the scoop section in a conventional clam bucket

movement. This operation permits mounds of material to be picked from an undisturbed surface, such as a paved roadway. The rearwardly extending side plates on each side of the blade section each carry a tooth so that logs or other objects, such as broken concrete, may easily be picked up in the clam bucket operation. The self-loading scraper operation of the present invention is shown in FIGURE 8. In this operation, the scoop section of the bucket is pivoted forwardly from a position, such as shown in FIGURE 1 to bring the cutting edge of the scoop downwardly below ground level, the desired scraping depth. The blade section is positioned so that the rearward marginal edges of the side plates of the blade section are slightly inwardly or over lapping of the forward marginal edges of the side walls of the scoop section. The underside of the blade section then skids on top of the ground to accurately maintain the adjusted scraping depth. The cutting edge of the scoop section will scrape the material projecting the same into the confines of the bucket between the cutting edge of the blade section and the cutting edge of the scoop section. Other functions known in the earthworking and the material-moving art may be performed by suitable combinations of the described operations and other adjustments of the scoop section and blade section of the present invention.

Turning next to a detailed description of the construction of the present invention, continued reference is made to the drawings. The tractor of the present embodiment comprises a frame **16** supported on wheels **17** and carrying a rearwardly disposed engine compartment **18** and a forwardly disposed operator's compartment **19**. The boom **10** is formed in duplicate portions, one on each side of the tractor, and the rearward end of each boom portion is pivotally mounted on the tractor by pin means **11**. The boom is shaped somewhat as a modified S and the forward end thereof extends forwardly of the tractor. The boom **10** is raised and lowered by a pair of hydraulic rams **20**, disposed one on each side of the tractor. The cylinder portion of each ram **20** is pivotally connected to a bracket **21** by pin means **22**. Each bracket **21** is secured to the underside of one of the boom portions intermediate the ends thereof. The rod end of each hydraulic ram **20** is pivotally connected by pin means **23** to a bracket **24**. Each of the brackets **24** is secured to the frame **16** of the tractor to depend therefrom. Thus it may be seen that when the hydraulic rams **20** are extended, the forward end of the boom is raised, and a retraction of the hydraulic rams **20** results in a lowering of the forward end of the boom. The forward end of each boom portion of the boom **10** carries a ground-engaging shoe **25** secured thereto to depend therefrom to aid in skidding a loaded bucket along the ground. The linkage means comprises a pair of hydraulic rams **12**, a pair of levers **13**, and a pair of links **14**, one member of each pair being disposed on each side of the tractor. The head end of each hydraulic ram **12** is pivotally connected to the tractor by pin means **27**. The rod end of each hydraulic ram **12** is pivotally connected by pin means **28** to one end of one of the levers **13**. Each lever **13** is pivotally connected intermediate its ends on the boom intermediate the ends thereof by pin means **29**. The other end of each lever **13** is pivotally connected to one end of one of the links **14** by pin means **30**.

The bucket of the present invention comprises a scoop section **32** and a blade section **33**. The scoop section **32** comprises a pair of side walls **34** secured in a spaced-apart relationship to each other by a curved plate **35** which forms the rear and bottom wall of the scoop section **32**. A pair of flanges **36** are secured to the underside of the bottom wall portion of the plate **35** in a spaced-apart relationship to each other transversely of the scoop section **33**, and each of the flanges **36** is pivotally connected to the forward end of one portion of the boom **10** by pin means **37**. A second pair of flanges **38** are also provided and are secured to the rearward side of the rear wall portion of the plate **35** in a spaced-apart relationship to each other transversely of the scoop section **32**, and each flange **38** is pivotally connected to the other end of one of the links **14** by pin means **39**. Thus it may be seen that when the boom **10** is raised, the scoop section **32** is carried therewith to a raised position and when the hydraulic rams **12** are extended and retracted, the levers **13** are pivoted about the axis of pin means **29** to, in turn through the links **14**, cause pivotal movement of the scoop section **32** of the bucket about the axis of pin means **37**. The forward marginal edge of the bottom wall portion of the curved plate **35** carries a cutting edge **40**, the ends of which are turned upwardly to extend a short distance upwardly of each side wall **34** of the scoop section **32**. The scoop section **32** and the blade section **33** are pivotally interconnected relative to each other through a rotary hydraulic motor **41**. The shaft **42** of the rotary hydraulic motor **41** extends outwardly from each end thereof and each end of the shaft **42** is keyed to one of the side walls **34** of the scoop section **32** in a position adjacent the upper forward corner of the side walls **34**. The curvature of the plate **35** of the scoop section **32** is substantially that of a portion of a circle traced with its center at the axis of shaft **42** of motor **41**. In the present embodiment, the side walls **34** are shaped somewhat as a quadrant of that circle.

The blade section **33** of the bucket comprises a forward plate **44**, a rearward plate **45**, a bottom plate **46**, and a pair of side plates **47**. The forward plate **44** has a width substantially equal or slightly less than the transverse distance between the side walls **34** of the scoop section **32**, and is concave when viewed from the front as a bulldozer moldboard. The upper end of the forward plate **44** is secured longitudinally of the cylinder of the rotary hydraulic motor **41** by some means, such as welding, and extends from the cylinder of the motor **41** toward the curved plate **35** of the scoop section **32** to a point just short of plate **35**, so that when the blade section **33** is positioned relative to the scoop section **32**, such as shown in FIGURE 2, a conventional bulldozer configuration is presented in combination with the side walls **34** and the cutting edge **40** of the scoop section **32**. The rearward plate **45** of the blade section **33** is rectangularly shaped and secured at the upper end thereof to and behind the plate **44** and to the cylinder of the motor **41** by some means, such as welding. Although the plate **45** is shown as substantially flat, it may be provided with a concave surface when viewed from the rearward side of the blade section **33**. The bottom wall **46** is secured between the lower edges of plates **44** and **45** by some means, such as welding, and has a curvature substantially equal to that of a circle concentric to plate **35** and of a slightly smaller diameter. A pair of side plates **47** are provided for the blade section **33**, and each of the side plates **47** are somewhat triangularly shaped with the apex of the triangle thereof secured to the cylinder of the motor **41** and with the forward marginal edge thereof secured to the end of the plate **44** by some means, such as welding. The trailing portion of each side plate **47** extends substantially rearwardly of the plate **45**. The forward and leading edges of the side plates **47** are provided with substantially the same curvature as the curved plate **44**. The bottom edge of each of the side plates **47** is provided with a curvature substantially equal to that of the plates **45** and **46**. The side plates **47** are also secured to the plates **45** and **46** by some means, such as welding, to form the rigid blade section **33**. A cutting edge **48** is provided for the blade section **33** and is secured to the lower edge of the plate **45** to sweep the plate **35** of the scoop section **32** as the blade section **33** is pivoted within the scoop section **32**. Reinforcing web sections **49** are secured to the plate **44** and the cylinder of the motor **41** to add further rigidity

to the blade section 33. The lower portion of the trailing edge of the side plates 47 are each provided with a tooth 50. Each tooth is secured to the inner surface of the plate 47 by some means, such as welding, and positioned to extend rearwardly of the blade section 32. Thus, it may be seen that when the motor 41 is operated to pivot the blade section 33 to a position, such as shown in FIGURE 1, wherein the plate 45 is somewhat in alignment with the upper edge of the side walls 34 of the scoop section 32, a conventional digging bucket is defined by the scoop section 32 and the plate 44 of the blade section 33. The side plates 47 of the blade section 32 then extend above the upper edge of the side walls 34 of the scoop section 32. With the motor 41 operated to move the blade section 33 from the described position of FIGURE 1 to the dotted line position of FIGURE 6, it may be seen that the lower edge of the plate 44 will sweep the plate 35 of the scoop section 32, and the side plates 47 of the blade section 33 will sweep the side walls 34 of the scoop section 32 in a dumping operation of any material from the bucket. It may be further seen that when the motor 41 is first operated to position the blade element 33 to a position, such as shown in FIGURE 7, the motor 41 may then be operated to move the blade section 33 toward the scoop section 32, and the plate 45 of the blade section 33 and its cutting edge 48 will sweep any material upon the ground into the scoop section 32 in the clam bucket operation. In the clam bucket position, logs may also be grasped by collecting a log between the scoop section 32 and the blade section 33, and operating the motor 41 to grasp the log between the teeth 50 and the forward marginal edges of the side walls 34 and the cutting edge 40 of the scoop section 32. Additionally, it should be noted that when the motor 41 is operated to position the blade section 33 in a position such as shown in FIGURE 8 with the trailing edge of the side plates 47 positioned immediately rearwardly of the forward marginal edges of the side walls 34 of the scoop section 32 a self-loading scraper is defined with the material being scraped admitted between the cutting edges 40 and 48. It should, of course, be understood that the opening for the self-loading scraper operation need not be that shown in FIGURE 8 to the exclusion of any others since a smaller opening may be provided or a large opening provided with some spilling of material between the side walls 34 of the scoop section 32.

Although the present embodiment discloses the use of a rotary hydraulic motor 41, it is intended that a rigid shaft may be substituted for the motor 41 to pivotally interconnect the scoop section 32 and the blade section 33 for relative rotation about the same axis as the axis of shaft 42, and that a reciprocating ram, lever and linkage arrangement connected between the scoop section 32 and the blade section 33 may be provided to operate the blade section 33 relative to the scoop section 32. It merely being necessary in such an instance to provide an arrangement which will enable the blade section 33 to be pivoted through an arc of 160–180° relative to the scoop section 32.

Although not shown, it is intended that any suitable hydraulic pump, valve and conduit means known in the art be provided for selective operation of the hydraulic rams 20 and 12 and the hydraulic motor 41 by the operator of the invention.

It is further intended that the subject invention may be used with other types of known boom and linkage arrangements, it merely being necessary that those arrangements permit the bucket to assume the various operated positions shown in the drawings and described herein. It is further intended that the teeth 50 and the trailing edge 47 may have different shapes for the working of certain materials.

Having described the invention, what is considered new and desired to be protected by Letters Patent is:

1. In a front-end-type tractor loader having a boom pivotally connected to said tractor and extending forwardly thereof, means for raising and lowering said boom, a multifunction bucket construction for selectively performing the earthworking functions of a digging bucket, a bulldozer, a clam bucket and a self-loading scraper, said bucket construction comprising two sections, the first of said two sections comprising a U-shaped scoop element having a pair of side walls connected in a spaced-apart relationship to each other by a curved bottom wall, each of said side walls converging from the forward and rearward marginal edges of said bottom wall upwardly substantially to a point, flange means formed on the underside of said bottom wall and pivotally connected to the forward end of said boom for pivotal movement of said first section about an axis disposed transversely of said tractor loader, linkage means pivotally connected between said first section and said tractor for pivoting said first section relative to said boom, a cutting edge secured on the forward marginal edge of said bottom wall, said second section comprising a pair of rectangularly shaped plates and a bottom plate, one of said pair of plates being formed to be concave in the form of a moldboard and secured at its upper end to the upper end of the other of said pair of plates, means pivotally connecting the upper end of said pair of plates to the upper end of the side walls of said first section with said one plate positioned forwardly of said other plate, said bottom plate secured between the lower marginal edges of said pair of plates, a cutting edge secured to the lower marginal edge of said other of said pair of plates, said second section having a width and height respectively substantially equal to the distance between said side walls and the height of said side walls whereby said second section is selectively pivotal through said first section, the lower marginal edge of said cutting edge of said second section being disposed a smaller distance from the axis of pivoting of said second section on said first section than the forward marginal edge of said cutting edge of said first section, means connected between said first and second sections for pivoting said second section relative to said first section through the arc of said bottom wall of said first section and through a substantial arc forwardly of said first section.

2. In a front-end-type tractor loader as claimed in claim 1, wherein said second section is provided with a pair of side plates, each of said side plates secured to the side marginal edges of said pair of plates and said bottom plate of said second section, the forward and bottom marginal edges respectively of said side plates being formed to substantially coincide with the side marginal edges of said one of said plates and said bottom plate of said second section, and the rearward marginal edges of said side plates being formed to extend rearwardly of said other of said pair of plates a distance so that when said second section is positioned forwardly of said first section to define a structure performing the functions of a self-loading scraper, said rearward marginal edges of said side plates overlap the forward marginal edges of said side walls of said first section.

3. In a front-end-type tractor loader having a boom pivotally connected to said tractor and extending forwardly thereof, means for raising and lowering said boom, a bucket construction comprising a scoop section and a blade section, said scoop section comprising a pair of side walls secured in a spaced-apart relationship to each other and having a curved bottom wall extending therebetween, flange means secured to said scoop section and pivotally connected to the forward end of said boom, linkage means pivotally connected between said scoop section and said tractor for pivoting said scoop section relative to said boom, said blade section comprising a forward plate, a rearward plate, and a bottom plate, said forward plate being formed to have a concave shape in

the manner of a moldboard, said forward and said rearward plates being substantially rectangularly shaped and secured together at the upper marginal edges thereof with the lower portions of said forward plate and said rearward plate diverging from each other, said bottom plate extending between and secured to the lower marginal edges of said forward plate and said rearward plate, means pivotally connecting said blade section at the upper marginal edge thereof to said scoop section for pivotal movement of said blade section between said side walls of said scoop section and substantially forwardly of said scoop section, said blade section having a width and height respectively substantially equal to the distance between said side walls of said scoop section and the height of said side walls of said scoop section, and power means connected between said scoop section and said blade section for selectively pivoting said blade section in both directions through and substantially forwardly of said scoop section.

4. In a front-end-type tractor loader as claimed in claim 3, wherein the forward marginal edge of said bottom wall of said scoop section is provided with a cutting edge and the lower marginal edge of said rearward plate of said blade section is provided with a cutting edge.

5. In a front-end-type tractor loader as claimed in claim 3, wherein said blade section is further provided with a pair of side plates, each of said side plates secured to one of the side marginal edges of said forward plate, said rearward plate, and said bottom plate of said blade section, said side plates being formed to substantially coincide with the marginal edges of said forward plate and said bottom plate and to extend substantially rearwardly of said rearward plate of said blade section so that when said bucket is positioned to function as a self-loading scraper, the rearward marginal edges of said side plates overlap the forward marginal edges of said side walls of said scoop section.

6. In a front end type tractor loader having a boom pivotally connected to said tractor and extending forwardly thereof, means for raising and lowering said boom; a multi-function bucket construction comprising two sections for performing the earthworking functions of a digging bucket, a bulldozer, a self-loading scraper and a clam bucket; the first of said two sections comprising a pair of spaced-apart side walls interconnected by a curved bottom wall, flange means on said bottom wall pivotally connected to the forward end of said boom for carrying said first section on said tractor loader for pivotal movement about an axis disposed transversely of said tractor loader with an open side of said first section disposed forwardly, linkage means pivotally connected between said first section and said tractor for pivoting said first section relative to said boom, the second of said two sections being substantially rectangularly plate shaped with the width and height thereof respectively substantially equal to the inner width and height of said first section, means pivotally connecting the upper end of said second section to the upper end of said first section with said second section positioned relative to the first section so that said second section is pivotable through said first section and substantially forwardly thereof, means connected between said two sections for selectively pivoting said second section relative to said first section through the arc of said bottom wall and a substantial arc forwardly of said first section, the forward marginal edge of said bottom wall of said first section being provided with a cutting edge for cutting material in the earthworking functions of the digging bucket, the bulldozer, the self-loading scraper and the clam bucket, and the lower marginal edge of the rear face of said second section being provided with a cutting edge for performing the earthworking function of the clam bucket.

7. In a front end type tractor loader having a boom pivotally connected to said tractor and extending forwardly thereof, means for raising and lowering said boom; a multi-function bucket construction comprising two sections for performing the earthworking functions of a digging bucket, a bulldozer, a self-loading scraper and a clam bucket; the first of said two sections comprising a pair of spaced-apart side walls interconnected by a curved bottom wall, flange means on said bottom wall pivotally connected to the forward end of said boom for carrying said first section on said tractor loader for pivotal movement about an axis disposed transversely of said tractor loader with an open side of said first section disposed forwardly, linkage means pivotally connected between said first section and said tractor for pivoting said first section relative to said boom, the second of said two sections being substantially rectangularly plate shaped with the width and height thereof respectively substantially equal to the inner width and height of said first section, means pivotally connecting the upper end of said second section to the upper end of said first section with said second section positioned relative to the first section so that said second section is pivotable through said first section and substantially forwardly thereof, means connected between said two sections for selectively pivoting said second section relative to said first section through the arc of said bottom wall and a substantial arc forwardly of said first section, the forward marginal edge of said bottom wall of said first section being provided with a cutting edge for cutting material in the earthworking functions of the digging bucket, the bulldozer, the self-loading scraper and the clam bucket, and said second section including a cutting edge on the lower marginal edge thereof and transversely spaced-apart rearwardly projecting tooth means thereon above the lower marginal edge for performing the earthworking function of the clam bucket.

8. In a front end type tractor loader having a boom pivotally connected to said tractor and extending forwardly thereof, means for raising and lowering said boom, a bucket construction comprising a scoop section and a blade section, said scoop section comprising a pair of side walls secured in a spaced-apart relationship to each other and having a curved bottom wall extending therebetween, flange means carried on said scoop section pivotally connected to the forward end of said boom, linkage means pivotally connected between said scoop section and said tractor for pivoting said scoop section relative to said boom, said blade section being formed to have a substantially rectangular shape and curved to be concave about a transverse axis as a moldboard, means pivotally connecting the upper marginal edge of said blade section to the upper portion of said scoop section for pivotal movement of said blade section between said side walls of said scoop section and substantially forwardly of said scoop section, said blade section having a width and height respectively substantially equal to the distance between said side walls and the height of said side walls, the forward marginal edge of said scoop section bottom wall being provided with a cutting edge, the lower rear marginal edge of said blade section being provided with a cutting edge, said blade section lower marginal edge being disposed a smaller distance from the axis of pivoting of said blade section on said scoop section than said bottom wall forward marginal edge; such that said blade section is positionable adjacent the rear marginal edges of said side walls and said bottom wall to define a digging bucket, positionable substantially in alignment with the forward marginal edges of said side wall and said bottom wall to define a bulldozer, positionable forwardly of said scoop section forward marginal edge to define a clam bucket, and positionable forwardly of said scoop section forward marginal edge to permit said forward marginal edge of said bottom wall to be aligned in a horizontal cutting relationship to define a self-loading scraper; so that said cutting edge on said scoop section operates to cut material when said bucket defines the bulldozer, the self-loading scraper and the digging bucket; and said cutting edges on said scoop and blade sections operate to cut material when said

bucket defines the clam bucket; and power means connected between said blade section and said scoop section for selectively pivoting said blade sections in both directions through and substantially forwardly of said scoop section.

9. In a front-end-type tractor loader having a boom pivotally connected to said tractor and extending forwardly thereof, means for raising and lowering said boom, a multi-function bucket construction for selectively performing the earthworking functions of a digging bucket, a bulldozer, a clam bucket and a self-loading scraper, said bucket construction comprising two sections, the first of said two sections comprising a U-shaped scoop element having a pair of side walls connected in a spaced-apart relationship to each other by a curved bottom wall, each of said side walls converging from the forward and rearward marginal edges of said bottom wall upwardly substantially to a point, flange means formed on the underside of said bottom wall and pivotally connected to the forward end of said boom for pivotal movement of said first section about an axis disposed transversely of said tractor loader, linkage means pivotally connected between said first section and said tractor for pivoting said first section relative to said boom, a cutting edge secured on the forward marginal edge of said bottom wall, said second section comprising a pair of rectangularly shaped plates and a bottom plate, one of said pair of plates being formed to be concave in the form of a moldboard and secured at its upper end to the upper end of the other of said pair of plates, means pivotally connecting the upper end of said pair of plates to the upper end of the side walls of said first section with said one plate positioned forwardly of said other plate, said bottom plate secured between the lower marginal edges of said pair of plates, each of the side marginal edges formed by said pair of plates and said bottom plate having secured thereto a side plate, said secured side plates being somewhat triangularly shaped to project rearwardly of said pair of plates, said secured side plates along two side marginal edges of said triangular shape being formed to correspond to said moldboard shape of said one of said pair of plates and said bottom plate, said secured side plates of said second section including rearwardly projecting tooth means secured thereon, a cutting edge secured to the lower marginal edge of said other of said pair of plates, said second section having a width and height respectively substantially equal to the distance between said side walls and the height of said side walls whereby said second section is selectively pivotal through said first section, means connected between said first and second sections for pivoting said second section relative to said first section through the arc of said bottom wall of said first section and through a substantial arc forwardly of said first section; said cutting edge of said first section bottom wall for performing the earthworking functions of the bulldozer, the digging bucket, the clam bucket, and the self-loading scraper; and said cutting edge and said tooth means of said second section performing the earthworking function of the clam bucket.

10. In a front-end-type tractor loader having a boom pivotally connected to said tractor and extending forwardly thereof, means for raising and lowering said boom, a multi-function bucket construction for selectively performing the earthworking functions of a digging bucket, a bulldozer, a clam bucket and a self-loading scraper, said bucket construction comprising two sections, the first of said two sections comprising a U-shaped scoop element having a pair of side walls connected in a spaced-apart relationship to each other by a curved bottom wall, each of said side walls converging from the forward and rearward marginal edges of said bottom wall upwardly substantially to a point, flange means formed on the underside of said bottom wall and pivotally connected to the forward end of said boom for pivotal movement of said first section about an axis disposed transversely of said tractor loader, linkage means pivotally connected between said first section and said tractor for pivoting said first section relative to said boom, a cutting edge secured on the forward marginal edge of said bottom wall, said second section comprising a rectangularly shaped plate and a pair of substantial side plates, said rectangularly shaped plate being formed to be concave in the form of a moldboard, each of said side plates secured to the side marginal edges of said moldboard along an edge corresponding in shape to said moldboard, said secured side plates having projecting rearward portions extending from said moldboard, a tooth means projecting rearwardly from the rearward portion of said secured side plates, said second section having a width and height respectively substantially equal to the distance between said side walls and the height of said side walls such that said second section is pivotal through said first section, the lower marginal edge of said side plates and said moldboard plate of said second section being disposed a smaller distance from the axis of pivoting of said second section on said first section than the forward marginal edge of said cutting edge of said first section, means connected between said first and second sections for selectively pivoting said second section relative to said first section through the arc of said bottom wall of said first section and through a substantial arc forwardly of said first section; said cutting edge of said first section bottom wall for performing the earthworking functions of the bulldozer, the digging bucket, the self-loading scraper and the clam bucket; and said side plates and said tooth means for performing the earthworking function of the clam bucket.

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