United States Patent

[11] 3,610,450

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Continuation-in-part of application Ser. No. 720,511, Apr. 11, 1968, now Patent No. 3,554,396.

[54] **FRONT END LOADER AND METHOD OF FORMING SAME**
16 Claims, 12 Drawing Figs.

[52] **U.S. Cl.** **214/140,** 214/515, 214/152
[51] **Int. Cl.** **B66f 9/00**
[50] **Field of Search** ..... 214/140, 86 A, 145, 515

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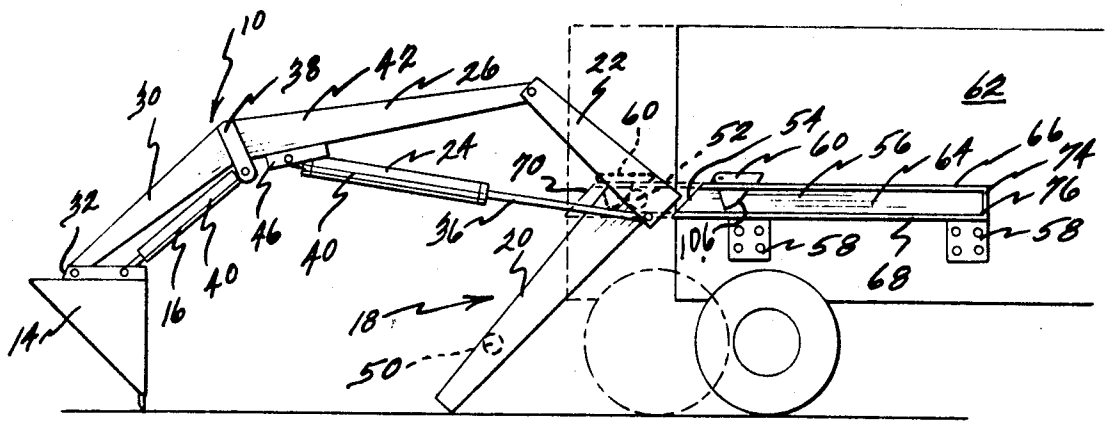
ABSTRACT: This invention relates to an improved front end loader of the hydraulically operated free-standing "tilt-on" type wherein a pair of transversely spaced side frame elements of a subframe are raised hydraulically from a downwardly tilted ground-engaging position upwardly into an essentially horizontal position along opposite sides of a tractor to which they are detachably connected while supporting the front end of the loader by means of the bucket resting upon the ground.



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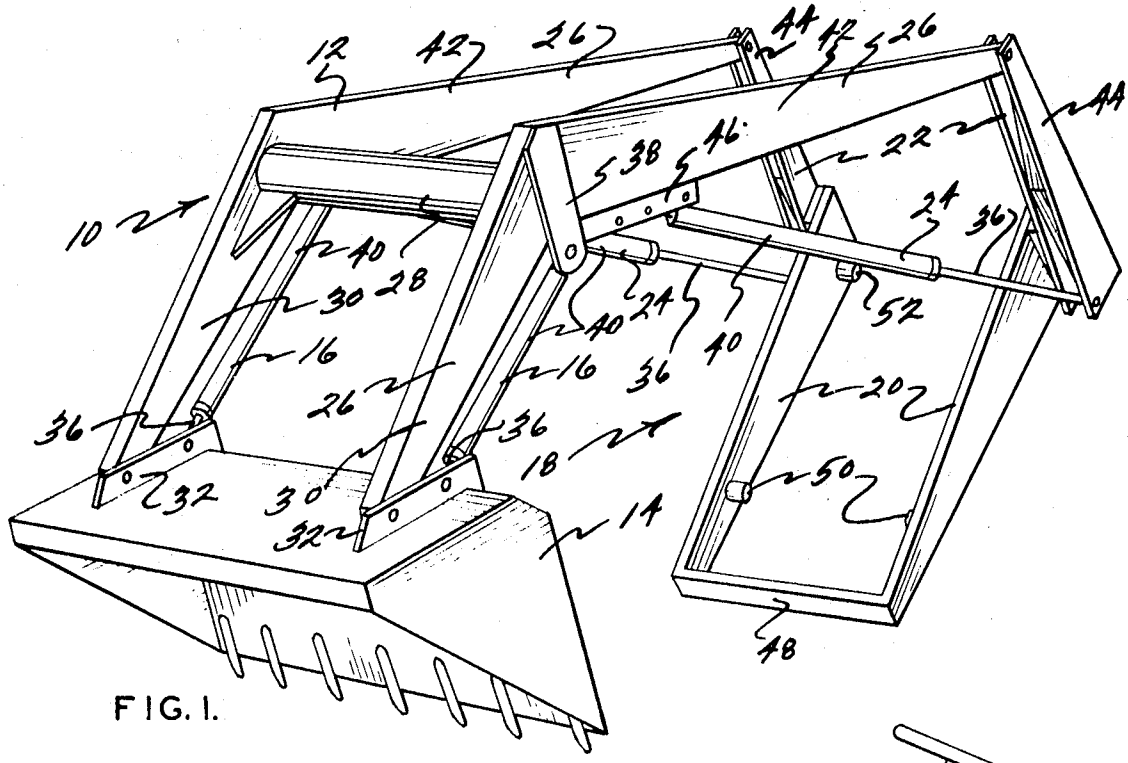

FIG. 1.

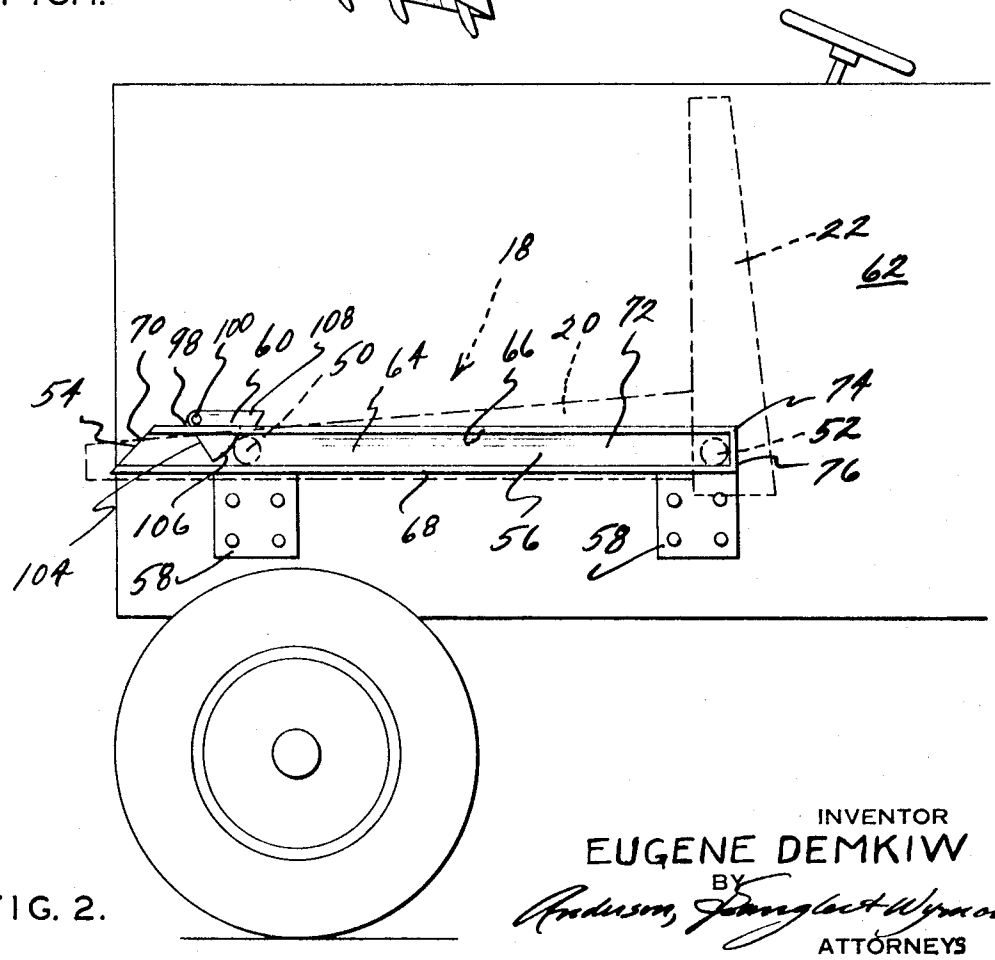

FIG. 2.

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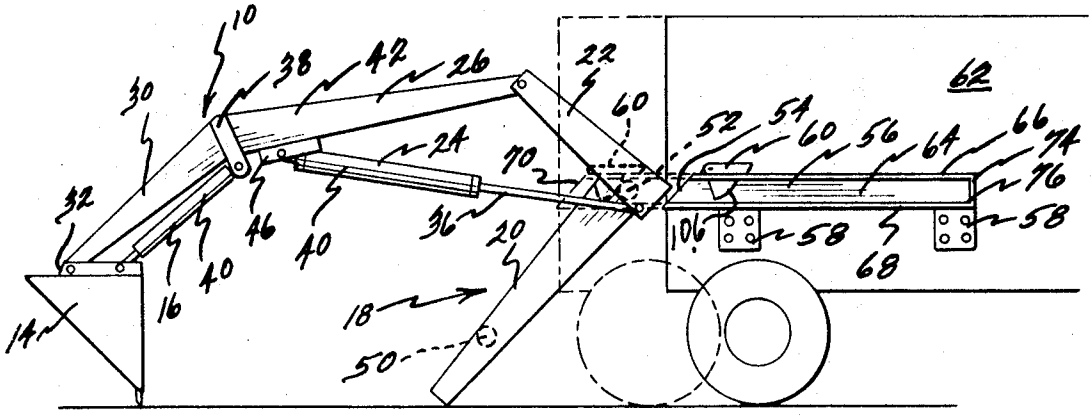

FIG. 3.

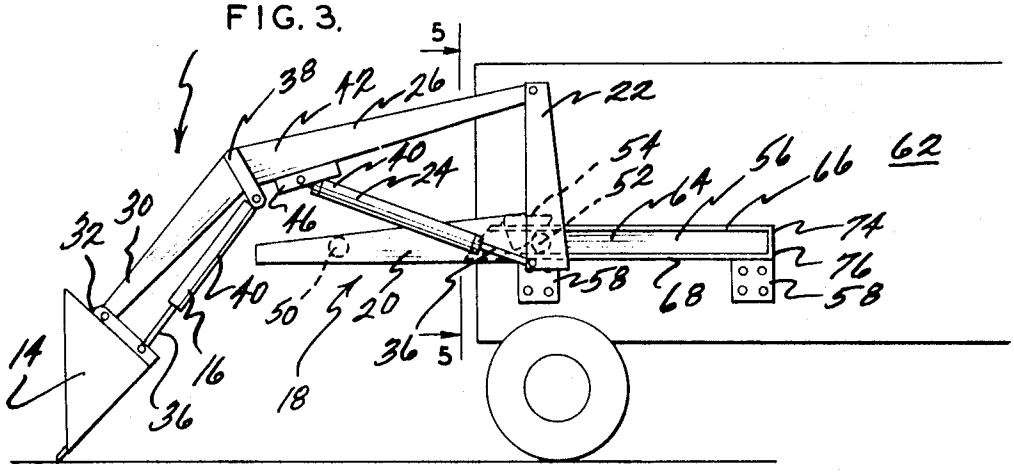

FIG. 4.

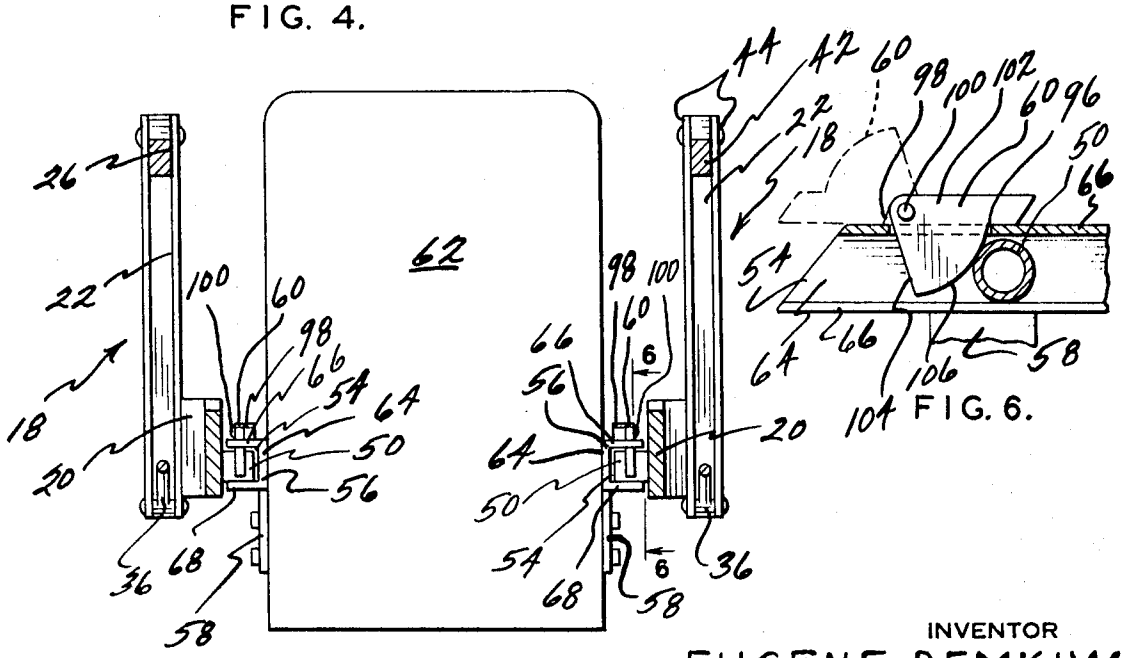

FIG. 6.

FIG. 5.

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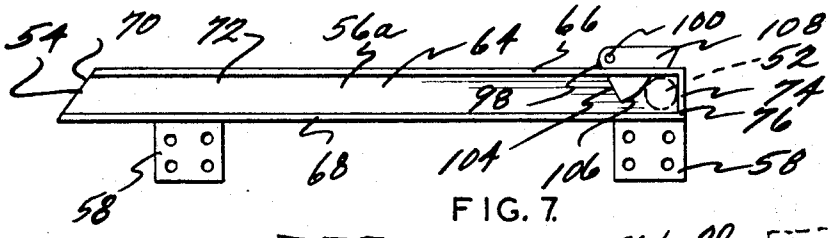

FIG. 7.

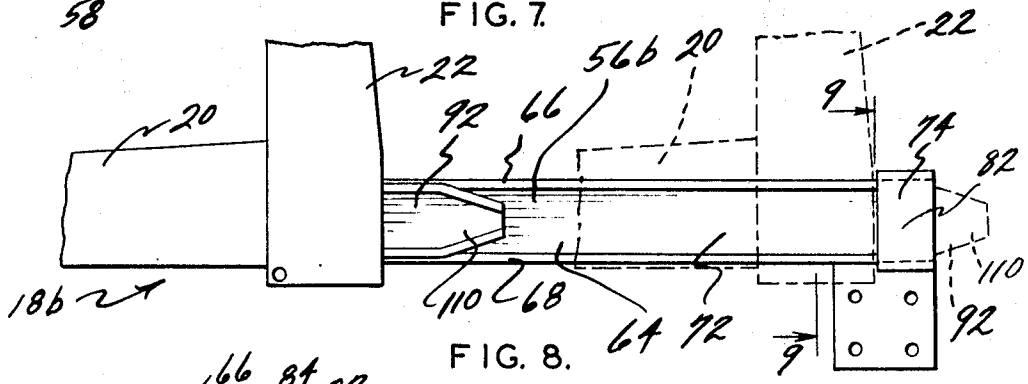

FIG. 8.

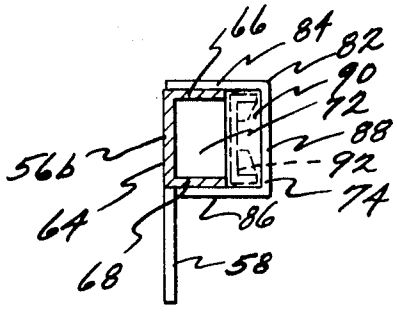

FIG. 9.

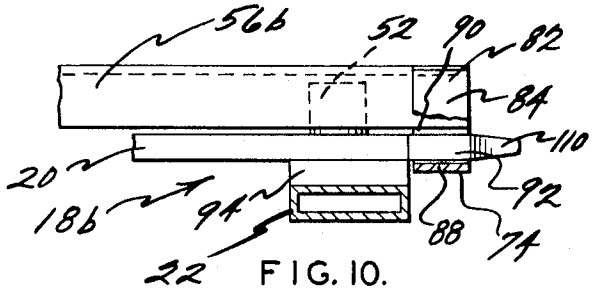

FIG. 10.

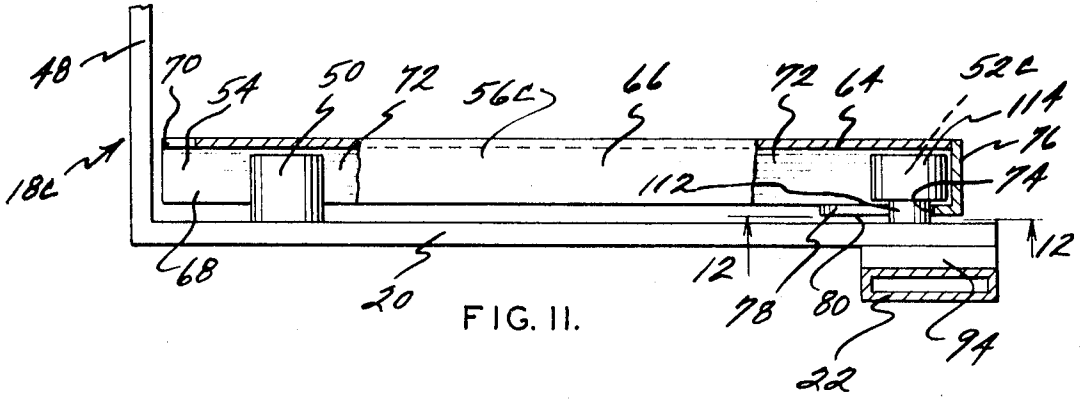

FIG. 11.

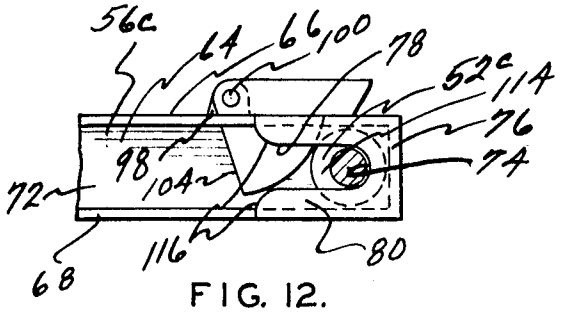

FIG. 12.

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FRONT END LOADER AND METHOD OF FORMING SAME

This application is a continuation-in-part of my copending application for Letters Patent of the United States, Ser. No. 720,511, now U.S. Pat. No. 3,554,396.

In the improved versions forming the subject matter thereof, a pair of longitudinally spaced pivot members mounted on the inside of each side frame element of the subframe adjacent the front and rear extremities thereof are slidably received within a pair of transversely spaced parallel forwardly opening channel members attached to opposite sides of the tractor. A one-way cam-operated self-opening latch is provided in each channel in position to pass at least one of the pivot members into latched position therebehind. In one embodiment, the latch is located adjacent the rear end of the channel member and, therefore, latches in front of only the rear pivot member, while in another version the latch is located near the front of the channel so as to pass both pivot members and drop into latched position ahead of the front one. In the latter version, the latch drops into latched position ahead of the rear pivot member to prevent it from moving forwardly out of the open front end of the channel while the side frame members are being raised into horizontal position. In still another version, an eye is provided in place of a blind end abutment at the rear end of each channel in position to receive a pin projecting rearwardly from the back end of the subframe. Yet another modification "boxes-in" the rear end of each channel by bridging the flanges thereof with a sideplate having a forwardly opening slot sized to pass the shank of the rear pivot member which is modified to provide a head adapted to slip behind the plate and be retained in the channel thereby. The improved method of mounting the loader comprises introducing the rear pivot members into the forwardly opening mouths of the channels, raising the front pivot members to the height of the rear pivot members while thus supported, moving the channels forward until the front pivots enter the mouths thereof, and releasably latching at least one of the pivots within at least one of the channels against forward movement.

In my copending application for Letters Patent of the United States, Ser. No. 720,511, now U.S. Pat. No. 3,554,396, of which this application is a continuation-in-part, I disclose a "tilt-on" hydraulically operated front end loader in which the sideframe elements of the subframe are each fitted with a forwardly opening hooklike member on the underside at the rear and a rearwardly opening hook on the underside at the front. A fixed pivot pin mounted on each side of the tractor near the front end thereof initially receives the hooks on the rear end of the subframe and supports the latter while the front end is raised free of the ground. Then, as the tractor is driven forward relative to the loader, these fixed pivots slide along the underside of the subframe and eventually into the rearwardly opening hooks on the front end thereof. Similar horizontally disposed latch pins are mounted behind these pivot pins on the sides of the tractor adjacent the driving compartment. Latches at the rear end of the subframe pass over these latch pins and drop into latched position therebehind.

In my improved loader, the only changes that concern us here are found in the subframe and mounting members carried by the tractor to receive the latter, all the remaining elements of the loader including the bucket, main frame and hydraulic system remaining essentially the same as that of my earlier loader forming the subject matter of the parent application already identified. To begin with, I have replaced the two pin-carrying brackets on each side of the tractor with a single forwardly opening channel that defines an essentially horizontal track adapted to slidably receive a pair of longitudinally spaced pivot elements on the inside of each sideframe element of the subframe. A single cam-actuated self-opening-opening latch is provided in at least one, and preferably both, of the channels in position to drop into latched position in front of, rather than behind, one or both of the pivot members depending upon whether it is located at the front or rear of the channel. When located at the front, it first drops into latched position ahead of the rear pivot member and prevents the subframe from becoming disengaged from the channel while said subframe is being raised free of the ground into horizontal position. Then, as the tractor is moved forwardly relative to the loader to move the front pivot member into the channel, the latch is, once again, actuated and moves into latched position ahead of both pivot members even though it remains operatively associated with only the front one. The disadvantage, if any, of locating the latch at the front of the channel is that one must leave the driver's compartment to release same so that the loader can be demounted.

By locating the latch at the rear end of the channel, it can be manually released from the driver's compartment as it is positioned just below and forwardly thereof. Here, of course, the latch only moves into latched position ahead of the rear pivot element and then only when the loader is completely mounted. Since nothing holds the rear pivot element in the channel while the subframe is being lifted free of the ground into horizontal position, it becomes necessary to keep moving the tractor ahead slightly after the rear pivot member has seated in the channel in order to keep it there. This, of course, is no problem as the tractor is already running and must have been in motion in order to get the rear pivot member into the channel in the first place.

The transverse frame element or crosspiece of the subframe that interconnects the front ends of the subframe can function as a stop when it strikes the radiator of the tractor that will limit the excursion of the rear pivot members and keep them from moving on out through the rear end of the channels; however, this is not particularly practical considering the wide variety of sizes and shapes of tractors upon which the instant loader can be mounted and, therefore, the simpler solution is to provide a stop at the rear end of each channel. This stop may take any one of several forms, the simplest being some kind of an obstruction at the rear end of the channel. An eye adapted to receive a pin projecting rearwardly from the back end of the subframe will also act as a stop while providing the additional function of holding the sideframe elements of the subframe within the channel thus preventing them from spreading apart under load at their rear ends. These same functions can be performed by "boxing-in" the rear end of the channel with a plate having a forwardly opening slot adapted to pass the shank of the rear pivot member while providing the latter with a head sized to lock therebehind.

The method of mounting the improved version of the loader is, likewise, unique for several reasons, probably the most important of which is the fact that the operator no longer has to guide the rear end of the subframe into latched position. In other words, once the rear pivot members are seated in the channel, they are guided all the way back until they reach the abutment and are automatically latched into place. This, of course, is not the case with the prior art front end loaders including my own as each depends upon the rear end of the subframe being guided into a latch or connector of some sort. While not true of my earlier loader, most of the prior art loaders make this connection behind the operator and oftentimes at a point hidden from his view beneath the rear axle or behind the rear fender.

There are no latch pins to insert, remove or lose as the latches are cammed out of the way as one or both of the pivot members move therebeneath. To open same during the demounting of the loader, they need only be "flipped" forwardly into their open position.

It is, therefore, the principal object of the present invention to provide a novel and improved freestanding hydraulically operated front end loader for tractors together with a simplified method for mounting same.

A second objective of the invention herein disclosed and claimed is to provide the tractor with simple channel-type mounting rails that define a track adapted to receive a pair of longitudinally spaced pivot members carried by the parallel sideframe elements of the subframe.

Another object is to provide a device of the type aforementioned in which the rear end of the subframe, once seated within the channel track, is continuously guided into latched position.

Still another objective is the provision of a so-called "tilt-on" loader that eliminates all stationary pivot pins on the tractor and associated hooklike elements on the subframe in favor of a pair horizontally spaced support pins on each side of the subframe confined between the parallel flanges of a tractor-mounted channel.

An additional object is to provide a mounting method wherein it is only necessary to successively guide the rear and front pivot members of the subframe into the forwardly facing open mouth of the channel members to complete the connection.

Further objects of the invention herein disclosed and claimed are to provide a hydraulically operated tilt-on front end loader which is rugged, simple, easy to operate, extremely versatile, safe, relatively inexpensive, efficient and even decorative in appearance.

Other objects will be in part apparent and in part pointed out specifically hereinafter in connection with the description of the drawings that follows, and in which:

FIG. 1 is a perspective view looking down and to the right upon the front end of the loader in freestanding position;

FIG. 2 is a fragmentary side elevation showing the channel-shaped track secured to one side of the tractor with the mounted position of the loader subframe having been indicated in broken lines;

FIG. 3 is a side elevation to a reduced scale showing in full and broken lines the first step in the method of mounting the loader;

FIG. 4 is a side elevation similar to FIG. 3 and to the same scale showing the next step in the method wherein the hydraulic cylinders are actuated to lift the subframe free of the ground into horizontal position;

FIG. 5 is a section taken along line 5—5 of FIG. 4;

FIG. 6 is a fragmentary section to an enlarged scale taken along line 6—6 of FIG. 5;

FIG. 7 is a side elevation somewhat analogous to FIG. 1 showing a modified version of the channel in which the latch is relocated at the rear end;

FIG. 8 is a fragmentary side elevation showing another modification wherein the channel carries an eye at its rear end positioned to receive a pin projecting rearwardly from the back end of the subframe;

FIG. 9 is a fragmentary section taken along line 9—9 of FIG. 8;

FIG. 10 is a fragmentary top plan view of the modification of FIGS. 8 and 9, portions of the eye and upright member of the subframe having been broken away and shown in section;

FIG. 11 is a fragmentary top plan view of still another modification wherein the rear end of the channel is boxed in by a sideplate having a forwardly opening slot therein and the rear pivot element is modified to provide a head atop a shank adapted to move behind said slotted plate; portions of the channel and subframe having been broken away and shown in section; and,

FIG. 12 is a fragmentary section taken along line 12—12 of FIG. 11.

Referring now to the drawings for a detailed description of the present invention and, initially, to FIG. 1 for this purpose, reference numeral 10 has been selected to designate the front end loader in its entirety and it will be seen to include a boom assembly 12 having an implement 14 pivotally secured to the forward end thereof, a pair of hydraulic servomotors 16 connected between the boom and implement operative upon actuation to tilt the latter relative to the former, subframe indicated in a general way by numeral 18 having spaced substantially parallel sideframe elements 20 with uprights 22 at the rear extremities thereof pivotally attached to the rear end of the boom assembly, and a second pair of hydraulic servomotors 24 connected between the boom and subframe operative upon actuation to raise and lower the implement by means of said boom. In the particular form illustrated, the implement 14 comprises a bucket or shovel but, of course, it is merely representative of many different hydraulically operated implements such as forks and the like that could be substituted therefor without interfering with the operation of the invention in any manner whatsoever. The boom 12 has a pair of forwardly extending dogleg arms 26 connected together intermediate their ends in transversely spaced substantially parallel relation by a crosspiece 28. The free ends of those portions 30 of the arms disposed forwardly of the crosspiece are pivotally connected to upstanding flanges 32 on the back of the bucket 14 as are the piston rods 36 of the servomotors 16. The mounting brackets 38 located at the bend in the dogleg pivotally mount the cylinders 40 of the servomotors.

The rearwardly extending arm portions 42 of the boom assembly connect pivotally between the bifurcated upper ends 44 of uprights 22 while the piston rods 36 of servomotors 24 pivotally connect at the base thereof. The cylinders 40 of rear servomotors 24 are pivotally attached in selected positions to apertured web 46 on the underside of the boom arms.

The sideframe elements 20 of the subframe 18 project forwardly from the inside of the uprights 22 adjacent the base thereof. A cross-frame element 48 is shown as a part of the subframe 18 connected transversely across between the forward free ends of the sideframe members. Cross-frame element 48 functions only as a base for the subframe to rest upon the ground and to lessen the tendency for the sideframe elements to spread apart under load. Obviously, the rear end of the loader could be supported by the sideframe elements alone and, since under certain applications there is little tendency for these sideframe elements to move apart, the cross-frame element could, conceivably, be eliminated altogether.

As above described, the loader is the same in all essential particulars to that disclosed in my copending application previously identified. As far as the loader itself is concerned, the only changes that concern us here have to do with the subframe 18. Still with reference to FIG. 1, it will be seen that the sideframe elements 20 are spaced apart transversely and lie in parallel relation to one another while carrying on the inside thereof front and rear pairs of pivot members 50 and 52, respectively, arranged in longitudinally spaced relation. In the particular form shown in FIG. 1, these pivot members 50 and 52 comprise nothing more than short cylindrical sections welded to the inside of the sideframe elements 20 with their axes perpendicular to the latter. The rear pair 52 must be transversely aligned so as to enter the mouth 54 of the channel-shaped rails 56 simultaneously and there is no particular reason for not doing likewise with the front pair 50 although it isn't essential. As seen in FIG. 6, these pivot members are cut from tubular stock although, of course, they may be solid or, if preferred, rollers can be substituted for the nonrotating pivots.

Next, reference will be made to FIGS. 2, 5 and 6 for a detailed description of the channel-shaped rail 56, the mounting brackets 58 therefor and the cam-actuated latch 60 that releasably latches the loader onto the tractor 62. The rails 56 comprise nothing more than ordinary channel irons having a web 64 bordered both top and bottom by parallel flanges 66 and 68, respectively. In the particular form shown, the front ends of the rails are cut on the bias as indicated by numeral 70 so that the bottom flange 68 extends forwardly beyond the top flange 66 and provides a platform at the channel mouth 54 upon which the rear pivot members 52 rest as they enter the track 72 defined by said rails.

The rails 56 each include a pair of mounting brackets 58 welded to the bottom flange thereof, both at the front and rear ends. These brackets bolt to the sides of the tractor forwardly of the driver's compartment so as to maintain the rails essentially horizontal and, of course, parallel to one another. The use of a single channel-shaped rail on each side of the tractor eliminates the need for aligning separate front and rear mounting brackets as is necessary with most, if not all, of the prior art tilt-on loaders including my own.

In each of the several modified versions of the channel-shaped rails illustrated herein, the rear ends thereof are shown provided with some sort of an abutment **74** capable of limiting the rearward excursion of the subframe **18** assuming crosspiece is not relied upon to perform this function.

In the modified form of the rail **56** shown in FIGS. **2, 3, 4** and **7**, this abutment comprises an end plate **76** interconnecting the upper and lower flanges **66** and **68** so as to close the rear end of track **72**. This same end plate **76** is shown in the modified rail **56***c* of FIGS. **11** and **12**, where it can be employed to perform the function of the abutment **74** or, alternatively, the rear end of slot **78** in side plate **80** can act as the stop as indicated in which event end plate **76** could be eliminated altogether. Modified rail **56***b* of FIGS. **8, 9** and **10** does away with end plate **76** and substitutes therefor a generally U-shaped piece **82** having upper and lower flanges **84** and **86** that are attached to the corresponding flanges **66** and **68** of the rail while the webs **64** and **88** of these elements cooperate therewith and with one another to define an eye **90** adapted to receive the pin **92** projecting rearwardly from the back end of the sideframe elements **20** of the modified subframe **18***b*. It thus becomes web **88** of the U-shaped piece **82** that engages the spacer **94** between the sideframe member **20** and mast or upright **22** of the subframe that functions as abutment **74** and it has been so indicated in FIGS. **8, 9** and **10**.

Before proceeding further with an explanation of the different rail and subframe modifications it would, perhaps, be side to explain the construction and operation of latch **60** as it remains the same in each of the modified versions of the rail and differs only in its location. For this purpose, reference will be made to FIG. **6** in particular although it is clearly shown in several other figures. The top flange **66** of the rail **56** is cut out to define a longitudinally extending slot **96** opening downwardly into the track **72**. Alongside this slot adjacent the front end thereof is an ear **98** welded to the top of the flange **66** and having a pin **100** projecting transversely in the direction of said slot. A generally sector-shaped latch element **102** is pivotally attached at its apex to the pin **100** for vertical movement into the track **72** through slot **96**. The leading edge **104** of latch element **102** defines a cam surface adapted to automatically lift and open the latch a sufficient distance to pass the pivot members **50** or **52** or both as they travel rearwardly along the track. The rearwardly facing arcuate surface **106**, on the other hand, projects down into the track **72** and defines a stop that prevents either of the pivot members **50** or **52** located therebehind from moving forwardly out the open mouth **54** of the channel. The top edge of the latch element, when in the closed position indicated by full lines in FIG. **6**, is extended beyond the rear end of slot **96** to define an ear **108** that functions both as a stop to limit the penetration of the latch member **102** down into the track and as a fingerhold to facilitate flipping the latch all the way forward into the fully open position shown in broken lines in FIG. **6**.

In the version of the loader shown in FIGS. **1–6**, inclusive, the latch **60** is located near the front of the rail **56** in position to latch ahead of front pivot member **52** when the rear one is seated against the abutment **74** at the rear thereof. Also, with the latch in this location, it latches ahead of the rear pivot member **50** as shown in FIGS. **3** and **4** during the initial steps of the mounting sequence when the subframe **18** is being elevated from its downwardly tilted ground-contacting position up into the horizontal position where the front pivot members **50** are aligned to enter the mouth of the channel. Once the tractor **62** is moved ahead from the full line into the broken line position of FIG. **3** to move the rear pivot members **52** into latched position behind the latch, the subframe cannot become disengaged from the rails until the latch is manually actuated into the fully open position shown in broken lines in FIG. **6**. As is evident from a comparison of FIGS. **3** and **4**, however, the tractor should be moved forwardly even after the rear pivot elements are latched into the track while the subframe is being raised free of the ground and the implement lifted relative to the boom because, otherwise, the implement will have to be dragged rearwardly along the ground toward the tractor. Accordingly, since the better practice is to have the implement in the same position and move the tractor forward toward it as the subframe is being elevated, there is no particular problem associated with keeping the rear pivot members from moving forwardly out through the mouth **54** of the channel even through they are not latched within the track.

Since the foregoing is no great problem, there are certain advantages derived from relocating the latch **60** at the rear of the rail rather than at the front and such a modification has been shown in FIG. **7**. The rail **56***a*, of course, must be modified slightly to place slot **96** (FIG. **6**) at the rear instead of the front. In this position, latch **60** only latches ahead of rear pivot members **52** and then only when the subframe is all the way to the rear in fully mounted position. On the positive side, however, the latches then become readily accessible to the operator without leaving the driver's compartment and he can flip them open to demount the loader more easily and readily than if they are located at the front of the rails.

Now, in the embodiments of the invention shown in FIGS. **1–7**, inclusive, no provision is made for preventing the rear end of the subframe **18** from spreading apart and leaving the tracks under certain types of loading conditions. While under ordinary conditions the rigidity of the sideframe elements **20**, crosspiece **48** and upright masts **22** as they connect to the boom are sufficient to retain the rear pivot members **52** within their tracks, it is sometimes preferable to provide some positive additional restraint against this spreading tendency. FIGS. **8, 9** and **10**, to which specific reference will now be made even though much of the modified structure shown therein has already been set forth in connection with the description of the abutment **74**, reveal the eye **90** defined by U-shaped member **82** at the rear extremity of modified rail **56***b*. The rail is only slightly different from those previously described in that it eliminates the end plate **76** in favor of combination eye and abutment member **82**. The latch **60** is hidden behind the subframe in FIG. **8** but it, of course, could be located either at the front end as in FIGS. **2–6** or at the rear end as in FIG. **7**.

As clearly revealed in FIG. **9**, the eye projects laterally beyond the rail flanges in position to receive the rearwardly extending pin **92** that projects back beyond uprights **22** in the plane of the sideframe elements **20** so as to form a continuation thereof. In the particular form shown, this pin **92** is tapered both top and bottom as well as front and back to define a blunt point **110** adapted to guide itself into the eye. Actually, the taper on the outside of the pin serves the useful function of engaging the corresponding surface of the eye and camming the sideframe elements inwardly snug against the sides of the tractor in case they have spread apart slightly as the tractor moves therebetween. Obviously, a vehicle as big as a tractor is difficult to guide into position between the sideframe elements without one rail or the other contacting same and tending to spread the subframe apart slightly. Thus, the only change in the subframe **18***b* over that previously described in to provide same with the blunted pin **92**.

The last of the modified forms is that shown in FIGS. **11** and **12** to which detailed reference will now be made and which reveal another construction for keeping the free rear ends of the subframe **18***c* from spreading apart and leaving the racks. In this instance, the subframe **18***c* has no pin **92** like that of FIGS. **8–10**, but, instead, substitutes therefor a modified rear pivot member **52***c* that has a shank portion **112** of reduced diameter adapted to move freely into the forwardly opening slot **78** in sideplate **80** and an enlarged head portion **114** of a diameter substantially greater than the width of the slot so as to be retained therebehind while still small enough to slide or roll easily along the track of rail **56***c*. As previously mentioned, rear pivot member **52***c* could have the shank portion **112** take the form of a shaft and the head **114** a roller journaled for rotation thereon or alternatively, a simple collar welded nonrotatably on the shaft.

Plate **80** has the front corners **116** thereof rounded adjacent the entry to the slot so as to guide the shank **112** therein. Modified pivot member **52***c* can obviously be used to replace any of the pivot members **50** or **52** in any of the other modifications without adversely effecting operation of the unit.

Finally with grief reference once again to FIGS. **3** and **4**, it can be seen that with the subframe raised free of the ground into the horizontal position approximately depicted in FIG. **4**, it is only necessary to drive the tractor on forward to complete the attachment without any further actuation of the loader's servomotors **16** and **24** or any actuation of a manually operated latch. The hydraulic servomotors are, of course, connected to the hydraulic system of the tractor by means of fluid lines (not shown) to provide power for both the mounting and demounting procedures. The only manual operations other than driving the tractor to and fro are connecting and disconnecting the hydraulic lines to the tractor's hydraulic system and opening latch **60** preparatory to demounting the loader.

What is claimed is:

1. In a hydraulically operated tilt-on loader for tractors having a forwardly extending boom carrying an implement on the front end thereof and subframe on the rear end cooperating with one another to define a base adapted to support said loader in freestanding position, said subframe being connected to the boom for pivotal movement about a transverse axis and having a pair of transversely spaced sideframe elements adapted to receive the front end of a tractor therebetween, and a hydraulic servomotor connectable to a source of fluid under pressure connected between the boom and subframe while the rear end of the boom is independently supported, the improvement which comprises:

a pair of channel-shaped rails mountable upon opposite sides of a tractor ahead of the rear axle so as to define transversely spaced parallel tracks having the mouths thereof opening forwardly;

front and rear pairs of pivots members carried by the subframe in longitudinally spaced relation to one another on the inside of the sideframe elements, said rear pair of pivot members being positioned and adapted to enter the mouths of the tracks upon forward movement if the tractor relative thereto and to support the rear end of the boom while the subframe is lifted free of the ground, said front air of pivot members also being positioned and adapted to enter the mouths of the tracks upon further forward movement of the tractor relative thereto with the subframe raised into longitudinal alignment with the rails, and said front and rear pairs of pivot members cooperating when located within the tracks to support the boom in cantilever fashion so that the implement can be raised free of the ground; and,

latch means carried by at least one rail in position to enter the track associated therewith and releasable engage a pivot member so as to prevent relative forward movement of the subframe.

2. The improvement as set forth in claim **1** in which: the rear pair of pivot members are transversely aligned.

3. The improvement as set forth in claim **1** in which: abutment means are carried by at least one of the rails positioned to engage some portion of the subframe and limit the rearward movement thereof.

4. The improvement as set forth in claim **1** in which: retaining means are carried by the rear ends of the rails positioned and adapted to receive the corresponding ends of the subframe and prevent the latter from spreading apart.

5. The improvement as set forth in claim **1** in which: the latch means is located adjacent the forward end of the rail in position to successively engage both the rear and front pivot members as the subframe moves into fully latched position.

6. The improvement as set forth in claim **1** in which: the latch means is located adjacent the rear end of the rail in position to engage the rear pivot member as the subframe moves into fully latched position.

7. The improvement as set forth in claim **1** in which: at least one channel-shaped rail is provided with a longitudinally extending slot in the upper flange thereof positioned and adapted to receive the latch means; and, in which the latch means comprises a plate pivotally attached atop the upper rail flange ahead of the slot with a substantial portion thereof projecting downwardly through the latter into the track in the path of at least one of the pivot members moving therethrough, the leading edge of said plate defining a cam surface adapted to lift said latch means to an elevated position where the pivot means will pass rearwardly therebeneath upon actuation by the latter, and the trailing edge of said plate defining a stop adapted to block the forward movement of a pivot member located therebehind.

8. The improvement as set forth in claim **3** in which: the abutment means comprises an end plate closing the rear end of the rail.

9. The improvement as set forth in claim **3** in which: the abutment means comprises a sideplate located at the rear end of the track connected between the flanges thereof.

10. The improvement as set forth in claim **4** in which: the retaining means comprises a U-shaped member attached to the rear end of each rail so as to cooperate with the web and flanges thereof to define a forwardly opening eye; and, in which pin means project rearwardly from the rear end of each sideframe element in position to enter the corresponding eye upon relative rearward movement of the subframe.

11. The improvement as set forth in claim **4** in which: each of the rear pair of pivot members includes a shank portion adjacent the sideframe element terminating in an enlarged head remote therefrom; and, in which the retaining means comprises a sideplate bridging the flanges of each rail so as to box-in the rear ends thereof, said plates each including a forwardly opening slot positioned and dimensioned to receive the shank portion of each rear pivot member while holding the head thereof within the track.

12. The improvement as set forth in claim **7** in which: the plate includes an ear projecting rearwardly beyond the rear end of the slot and along the top of the upper flange, said ear providing a stop adapted to limit the penetration of said plate into the track.

13. The improvement as set forth in claim **10** in which: both pins are provided with an inwardly and rearwardly inclined cam surface on the outside thereof at their rear ends adapted to engage the U-shaped member and force the sideframe elements in snug against the rails.

14. The improvement as set forth in claim **10** in which: both pins have the rear ends thereof tapered both top and bottom and on the outside so as to guide same into their corresponding eyes.

15. The improvement as set forth in claim **11** in which: each sideplate has the slot therein flared at the mouth thereof so as to guide the shank of the rear pivot member therein.

16. The method for mounting a tilt-on loader onto a tractor equipped with horizontally disposed forwardly opening transversely spaced parallel channels on opposite sides of its front end where said loader includes a forwardly extending boom having an implement attached to the front end thereof and a subframe pivotally attached to its rear end for movement about a transverse axis that cooperate with one another to define base adapted to support said boom in freestanding position, and wherein said subframe includes a pair of transversely spaced coplanar sideframe elements adapted to receive the front end of the tractor therebetween that carry longitudinally spaced pairs of pivot members projecting inwardly therefrom in position to enter said tractor-mounted channels, which comprises: guiding the tractor forward between the sideframe elements with the loader in freestanding position until the rear pair of pivots enter the mouth of the channels, raising the subframe into position where the front pair of pivots are longitudinally aligned with the mouths of the channels while supporting the rear end of said loader with the tractor by means of the rear pivots within the channels thereof, and moving the tractor forward until both pairs of pivots are confined within the channels whereby the boom can be actuated to lift the implement free of the ground.