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(54) PEDAL LIFT SYSTEM FOR LAWN TRACTOR MOWER DECK

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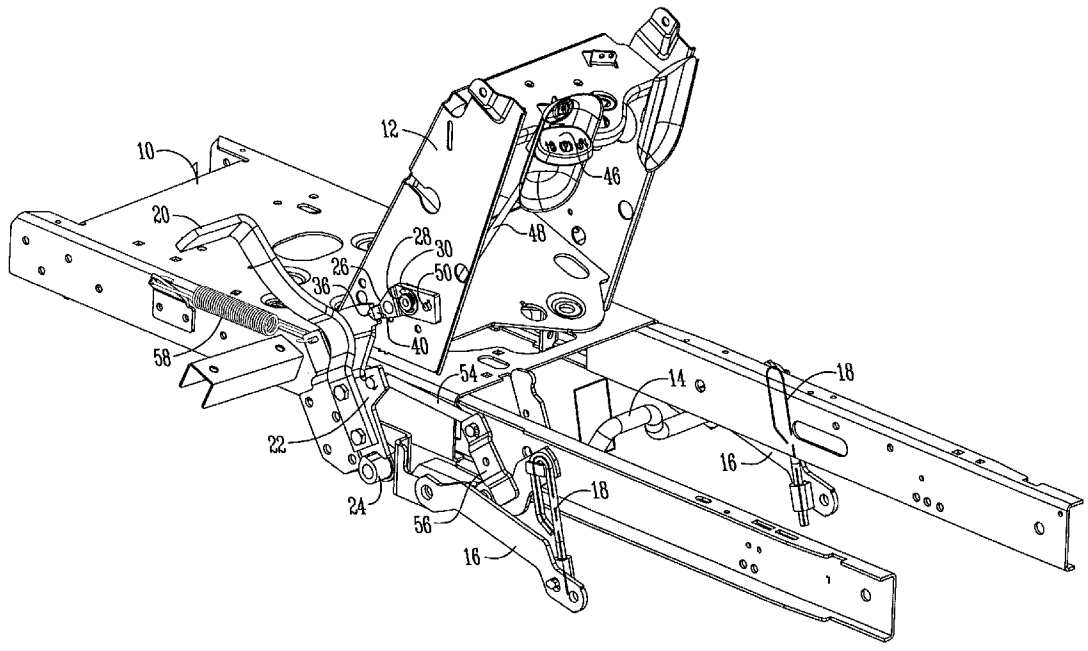
(57) **ABSTRACT**

A foot pedal lift system is provided for the mower deck of a lawn or garden tractor. The foot pedal is pivotally mounted to the frame of the tractor and is linked to the linkage arms which suspend the mower deck from the frame. The pedal is movable between a depressed forward position to raise the mower deck to a transport position and a retracted rearward position to move the mower deck to a lower removal position. The pedal can be locked in the depressed or retracted positions by a latch pivotally mounted on the exterior of the tractor console. Engagement and disengagement of the latch with the foot pedal is controlled by a handle mounted on the console connected to the latch by an elongated connecting rod. Pulling upwardly on the handle locks the latch into engagement with the foot pedal in both the depressed and retracted positions. Pushing downwardly on the handle disengages the latch from the foot pedal so that the mower deck is free to move upwardly or downwardly.



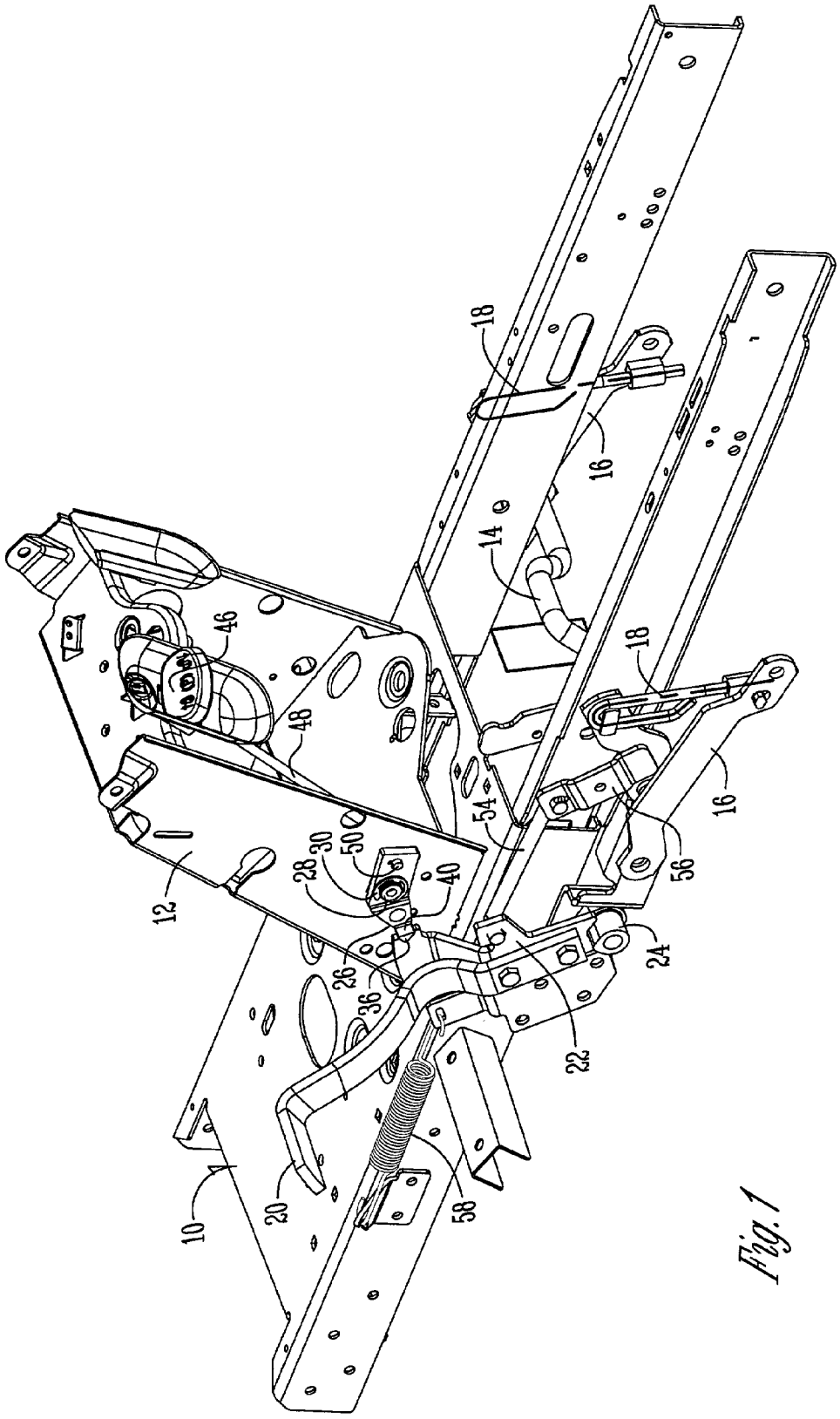


Fig. 1

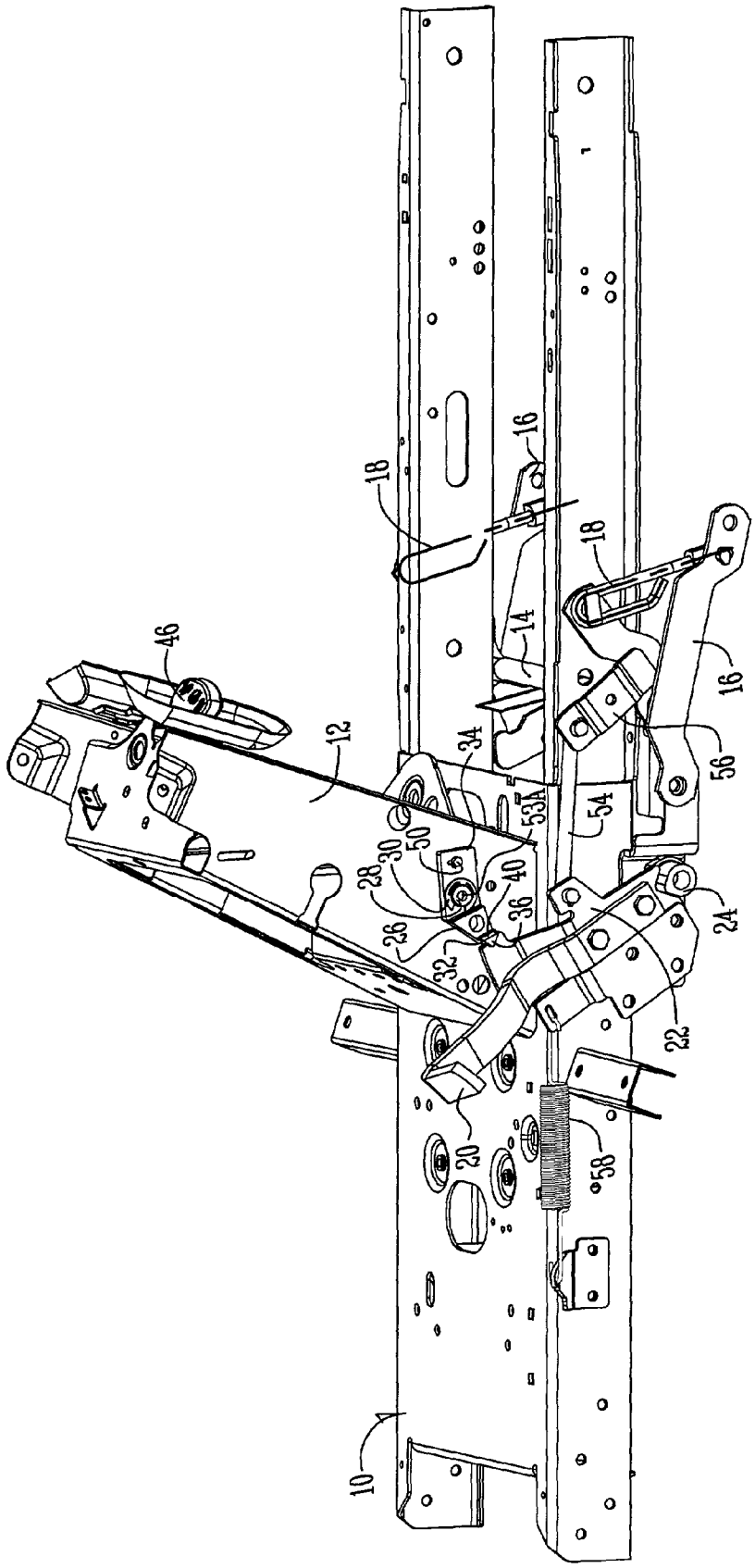


Fig. 2

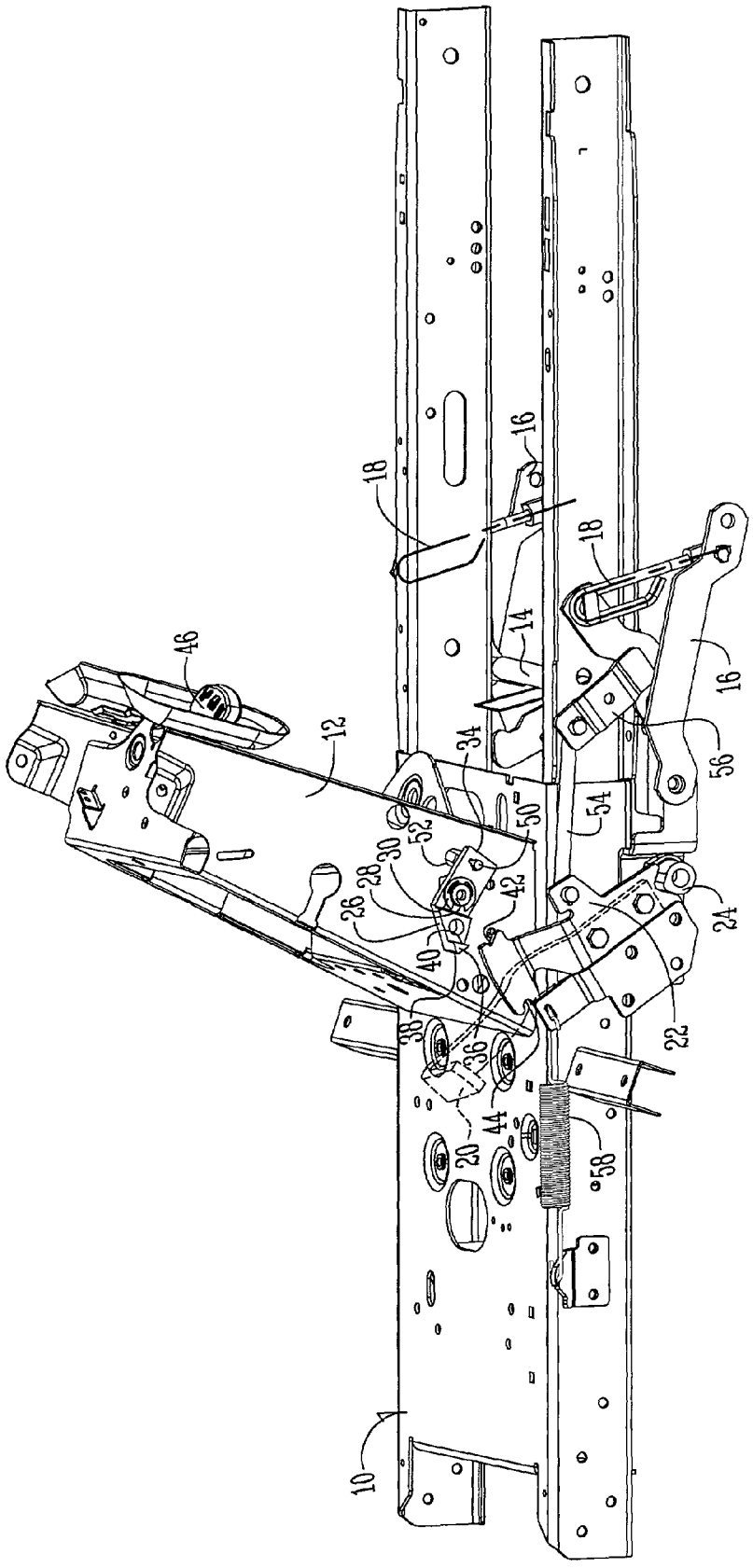


Fig. 3

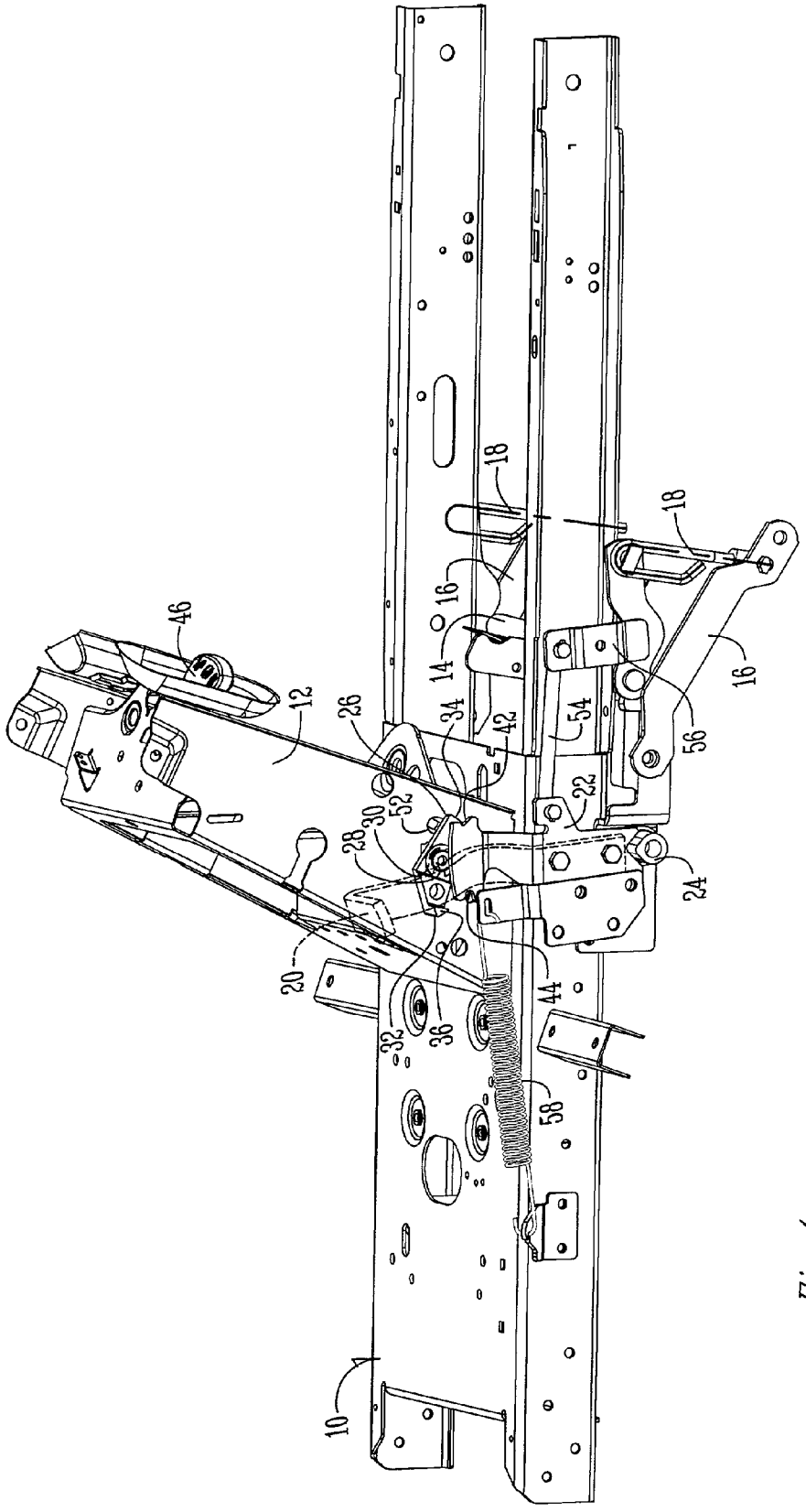


Fig. 4

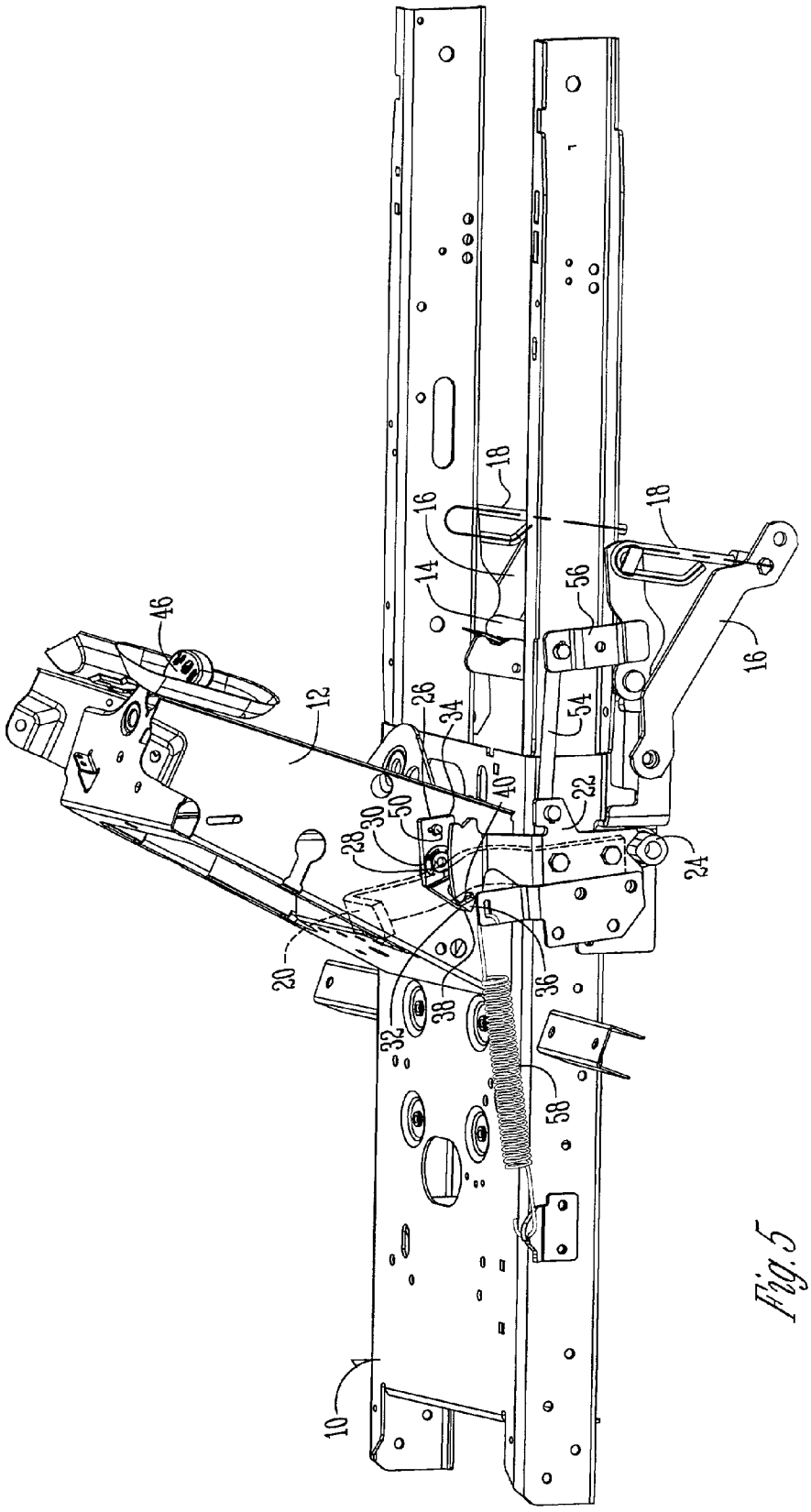


Fig. 5

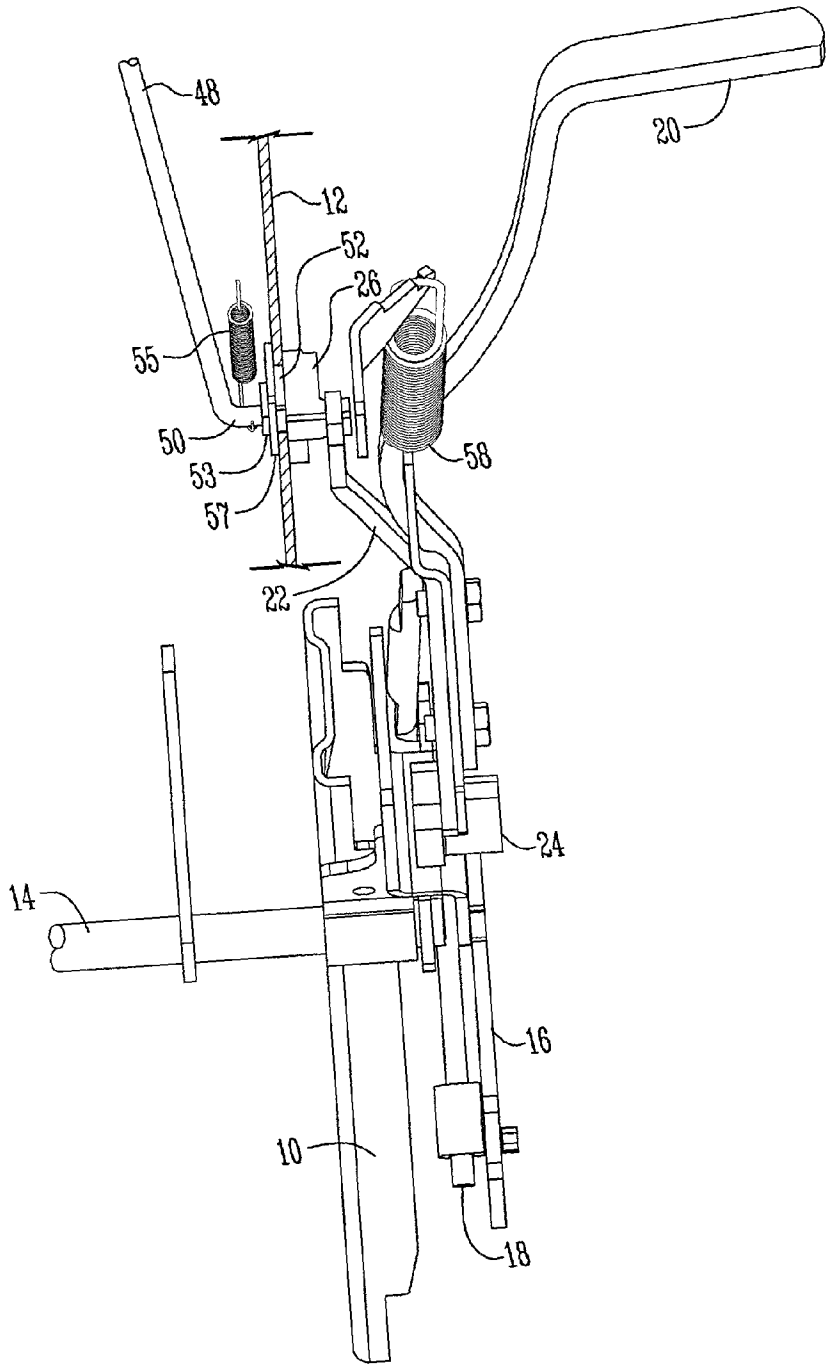


Fig. 6

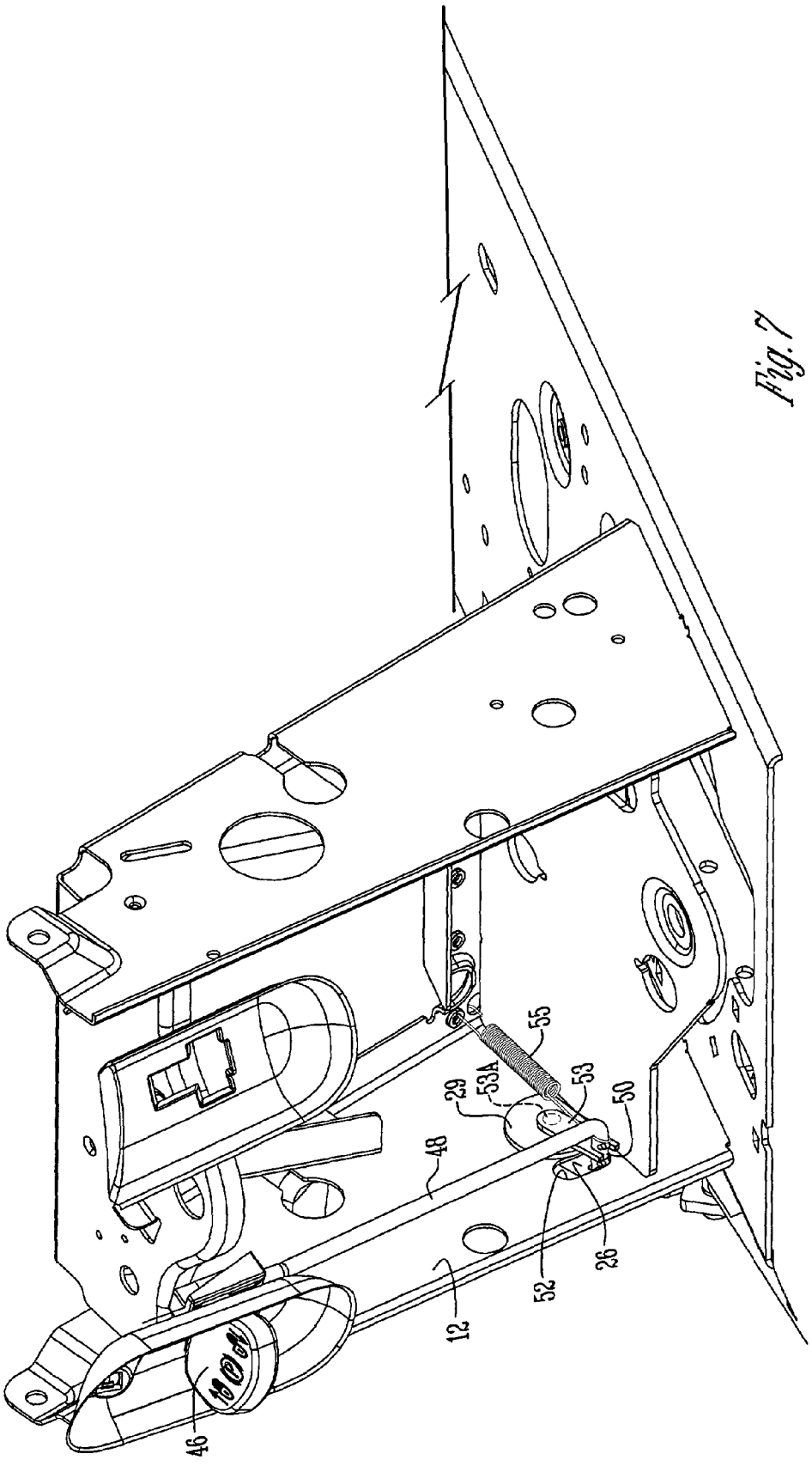


Fig. 7

PEDAL LIFT SYSTEM FOR LAWN TRACTOR MOWER DECK

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a Continuation-In-Part of pending application U.S. Ser. No. 09/638,991 filed on Aug. 15, 2000.

BACKGROUND OF THE INVENTION

[0002] 1) Field of the Invention

[0003] The present invention relates generally to lawn and garden tractors having a mowing deck, and more specifically, to a foot pedal system for raising and lowering the deck.

[0004] 2) Related Art

[0005] Lawn and garden tractors conventionally have a mower deck suspended from a frame, with the deck being raised and lowered by means of a hand-actuated lever. Such a hand lever necessarily requires strength in the operator's arm and back. Movement of the hand lever includes a risk of back strain to the operator, who normally is bending over or leaning forward from the tractor seat to operate the lever. Full raising of the deck is particularly desirable for transport of the tractor when the mower blades are not engaged for cutting. Complete lowering of the deck is necessary when the deck is to be removed from the tractor for maintenance or other purposes.

BRIEF SUMMARY OF THE INVENTION

[0006] Therefore, a primary objective of the present invention is the provision of a pedal lift system for raising and lowering the mower deck of a lawn or garden tractor.

[0007] Another objective of the present invention is the provision of a foot pedal for use by a person sitting on the seat of a lawn or garden tractor to raise and lower the mower deck.

[0008] A further objective of the present invention is the provision of foot pedal lift system for a lawn tractor mower deck which can be quickly and easily actuated for raising and lowering the mower deck.

[0009] Another objective of the present invention is the provision of a foot pedal for raising and lowering the mower deck of a lawn or garden tractor which can be latched to retain the deck in a raised or lowered position.

[0010] In accordance with the above objectives, the lawn tractor of the present invention has a foot pedal pivotally mounted to the frame and linked to the deck to move the deck between a raised transport position and a lowered deck-removal position. A latch is pivotally mounted to an exterior portion of the tractor console, and is adapted to engage the foot pedal to retain the pedal in a forward depressed position wherein the deck is raised and a rearward retracted position wherein the deck is lowered. A manually operated handle mounted on the console is connected to the latch so as to manually actuate the latch for engagement with or disengagement from the foot pedal. A spring extends between the frame and the foot pedal to bias the pedal toward the forward position.

[0011] The objectives, features and advantages of the present invention will become apparent to one skilled in the art upon reading the following detailed description in view of the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] **FIG. 1** is a rear perspective view of the lawn tractor frame with the foot pedal of the present invention latched in a forward position.

[0013] **FIG. 2** is another perspective view of the tractor frame with the foot pedal latched in the forward position.

[0014] **FIG. 3** is a view similar to **FIG. 2** showing the foot pedal in an unlatched rearward position.

[0015] **FIG. 4** is a view similar to **FIG. 3** showing the foot pedal in an unlatched rearward position.

[0016] **FIG. 5** is a view similar to **FIG. 2** showing the foot pedal latched in the rearward retracted position.

[0017] **FIG. 6** is a partial front elevation view showing the foot pedal and latch assembly.

[0018] **FIG. 7** is a perspective view showing an internal portion of the tractor console with the latch and connecting rod.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] The improved lawn or garden tractor of the present invention includes a frame **10** with a console **12** mounted thereon. The frame **10** is supported by wheels (not shown), and a motor (not shown) is mounted on the frame for driving the wheels. A seat (not shown) is also provided upon which an operator can sit. The console **12** includes the ignition and steering wheel, as well as other controls (not shown). A mower deck (not shown) is suspended from the frame **10** on a rock shaft **14** and linkages, including lift links **16** and lost motion links **18**. The rock shaft **14** is connected to an adjustment assembly, including a stepped wheel (not shown), to adjust the height of the mower deck.

[0020] The above described structure of the tractor is conventional, and does not constitute a part of the present invention.

[0021] The present invention is directed towards a pedal lift system for moving the mower deck between a raised transport position and a lowered deck-removal position. More particularly, the pedal lift system of the present invention includes a foot pedal **20** connected to a plate **22**. The plate **22** is mounted on a collar or shaft **24** which is pivotally mounted on the frame **10**, such that the foot pedal **20** and plate **22** are pivotal about the horizontal axis of the collar **24**. The foot pedal is movable between a depressed forward position, shown in **FIGS. 1 and 2**, and a retracted rearward position, shown in **FIGS. 3, 4** and **5**.

[0022] A latch **26** is pivotally mounted to an external portion of the console **12**. The latch is adapted to engage the plate **22** so as to retain the foot pedal **20** in the forward and retracted positions.

[0023] More particularly, the latch **26** is mounted on a hollow shaft **28** and retained by a clip **30**. The shaft **28** extends through a hole in the console, and has an enlarged

flange **29** on the backside which is welded to the inner surface of the console **12**, as seen in **FIG. 7**.

[**0024**] The latch **26** includes opposite first and second ends **32**, **34**. The first end **32** of the latch **26** includes an outwardly extending projection **36** having opposing forward and rearward sides **38**, **40**, respectively. The forward surface **38** of the projection **36** is adapted to engage a rear notch **42** on the plate **22** so as to retain the foot pedal **20** in the forward position, as seen in **FIGS. 1 and 2**. The rearward surface **40** of the projection **36** is adapted to engage a front notch **44** on the plate **22** to retain the foot pedal **20** in the rearward position, as seen in **FIG. 5**.

[**0025**] Movement of the latch **26** is accomplished by a control member including a handle **46** projecting from the console **12** and a connecting rod **48** extending between the handle **46** and the latch **26**. The lower end **50** of the connecting rod **48** extends through a slot **52** in the sidewall of the console **12** and is secured to the second end **34** of the latch **26** by a pin or any other convenient means. The latch includes an inner yoke **53** extending along the inner wall of the console **12**, as seen in **FIG. 7**. The yoke **53** has a stub shaft **53A**, as seen in **FIG. 2**, extending into the hollow shaft **28**. The end **50** of the connecting rod **48** is retained in the yoke **53** by a spring **55** hooked around the rod **48** and a portion of the console **12**. The spring **55** serves as an over-center spring holding the rod **48** and yoke **53** in the raised or lowered position within the slot **52**.

[**0026**] The handle **46** can be pulled upwardly by the operator, thereby pulling the rod **48** upwardly so as to pivot the latch **26** in a counterclockwise direction as seen in **FIG. 1** so as to engage one end or the other of the plate **22**. Conversely, when the handle **46** is pushed downwardly, the connecting rod **48** moves downwardly within the slot **52** to pivot the latch **26** in a clockwise direction, as seen in **FIG. 1**, so as to disengage the latch **26** from the plate **22**.

[**0027**] The pivotal movement of the foot pedal **20** is transferred to the mower deck by a rod or link **54** extending between the plate **22** and a linkage arm **56**. Thus, when the foot pedal **20** is depressed to pivot to the forward position, the plate **22** pulls the rod **54** and linkage arm **56** forwardly to thereby raise the mower deck to the transport position. The handle **46** is then pulled upwardly such that the forward side of the projection **36** of the latch **26** engages the rear notch **42** on the plate **22** so as to retain the mower deck in the transport position. An optional spring **58** extends between the frame **10** and the plate **22** so as to urge the plate **22** and the foot pedal **20** toward the depressed forward position, thereby facilitating movement of the mower deck to the raised position.

[**0028**] When it is desired to lower the mower deck from the transport position, the foot pedal **20** is depressed slightly further, and the handle **46** is pushed downwardly so as to pivot the latch **26** out of engagement with the rear notch **42** of the plate **22**. The foot pedal **20** can then be released, such that the mower deck will move downwardly by gravity, overcoming the bias of the spring **58**, if so equipped. The deck can be moved to a lower most removal position in engagement with the ground for removal in a conventional manner. When the deck is fully lowered, the foot pedal **20** and the plate **22** will be in the position shown in **FIG. 4**. The deck can be locked against movement away from the removal position by pulling the handle **46** upwardly so as to pivot the latch **26** such that the rear side **40** of the projection **36** engages the forward notch **44** of the plate **22**, as seen in **FIG. 5**.

[**0029**] Whereas the invention has been shown and described in connection with the preferred embodiment thereof, it will be understood that any modifications, substitutions, and additions may be made which are within the intended broad scope of the following claims. From the foregoing, it can be seen that the present invention accomplishes at least all of the stated objectives.

What is claimed is:

1. An improved lawn and garden tractor having a frame, a mower deck suspended beneath the frame, and a console with mowing controls, the improvement comprising:

a foot pedal operatively connected to the deck and pivotally mounted to the frame for movement between forward and rearward positions to move the deck between transport and removal positions, respectively;

a latch mounted on the console and movable between first and second positions to selectively retain the pedal in the forward and rearward positions; and

a control member connected to the latch for moving the latch between the first and second positions.

2. The tractor of claim 1 wherein the control member is a manually operated handle.

3. The tractor of claim 2 wherein the handle is mounted on the console.

4. The tractor of claim 1 wherein the foot pedal includes a plate having opposite forward and rearward ends adapted to be engaged by the latch when the latch moves to the first position from the second position.

5. The tractor of claim 1 wherein the latch is pivotally mounted to the console.

6. The tractor of claim 1 wherein the latch is mounted to an external surface of the console.

7. The tractor of claim 1 further comprising a spring extending between the frame and pedal to bias the pedal toward the forward position.

8. The tractor of claim 1 wherein the latch has first and second ends and is pivotally connected to the console between the first and second ends, and the control member is connected to the second end of the latch.

9. The tractor of claim 8 wherein the control member includes a handle mounted on the console and a connecting rod having a first end connected to the handle and a second end connected to the second end of the latch.

10. The tractor of claim 9 wherein the second end of the connecting rod extends through an elongated slot in the console and moves along the slot upon actuation of the handle.

11. A lawn mower, comprising:

a frame;

wheels mounted to the frame;

a deck adjustably mounted to the frame, and having at least one rotatable cutting blade;

a motor supported by the frame and being drivingly connected to the cutting blade and to the wheels;

a seat on the frame upon which a rider may sit;

a foot pedal pivotally mounted on the frame and linked to the deck to raise and lower the deck; and

a latch engageable with the foot pedal to limit movement of the deck.

12. The lawn mower of claim 11 further comprising a control member connected to the latch to control engagement and disengagement of the latch and the foot pedal.

13. The lawn mower of claim 12 wherein the control member is a handle for actuation by the rider.

14. The lawn mower of claim 11 further comprising a console on the frame for housing mower controls.

15. The lawn mower of claim 14 wherein the latch is pivotally mounted on an exterior portion of the console.

16. The lawn mower of claim 11 further comprising a spring extending between the frame and foot pedal to facilitate raising of the deck.

17. The lawn mower of claim 11 wherein the foot pedal is depressed by the rider to raise the deck and the latch engages the depressed pedal to retain the deck in a raised position.

18. The lawn mower of claim 17 wherein the latch is disengageable from the depressed pedal such that the deck will move by gravity to a lower position and thereby retract the foot pedal.

19. The lawn mower of claim 18 wherein the latch is engageable with the retracted pedal to retain the deck in the lower position.

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