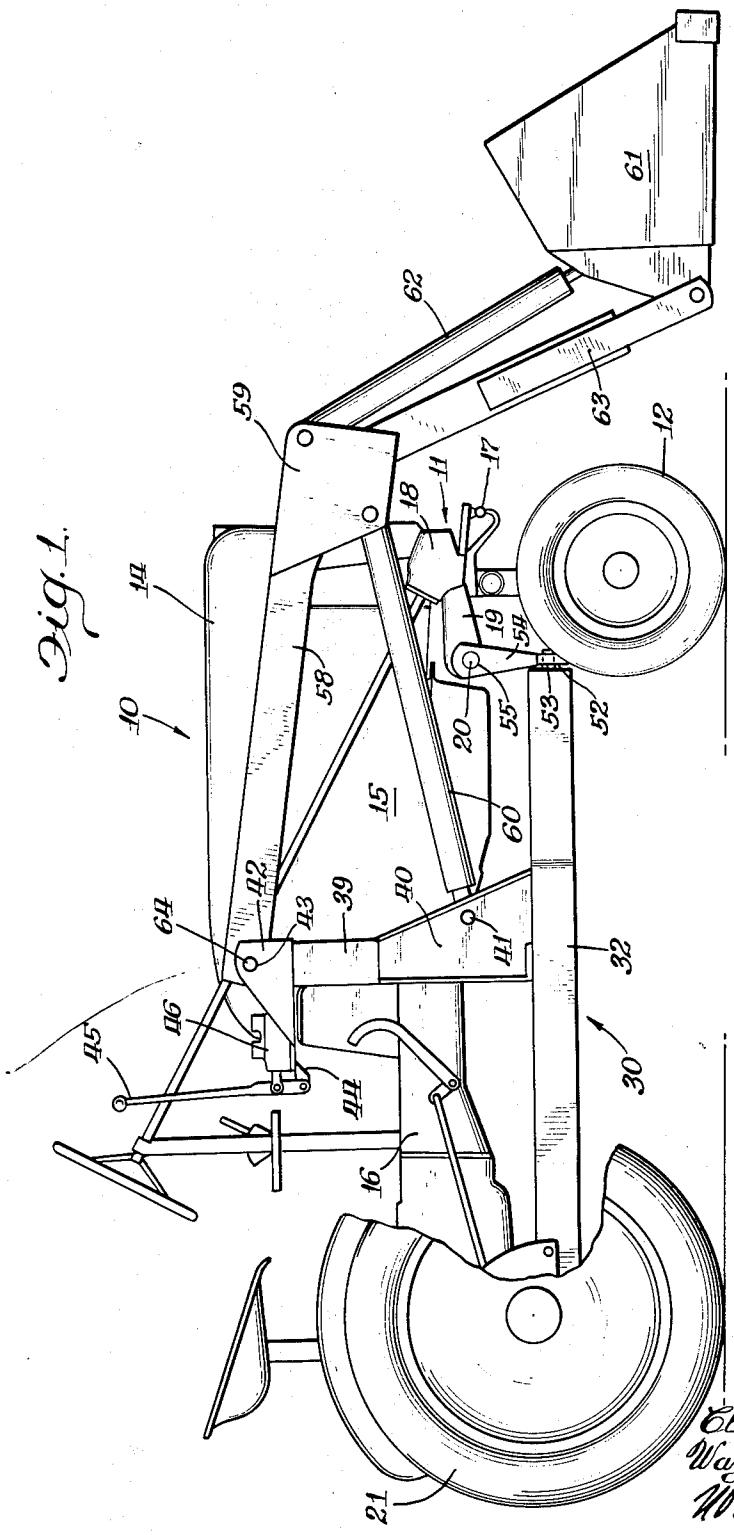
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LOADER

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Fig. 1.



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Fig. 2.

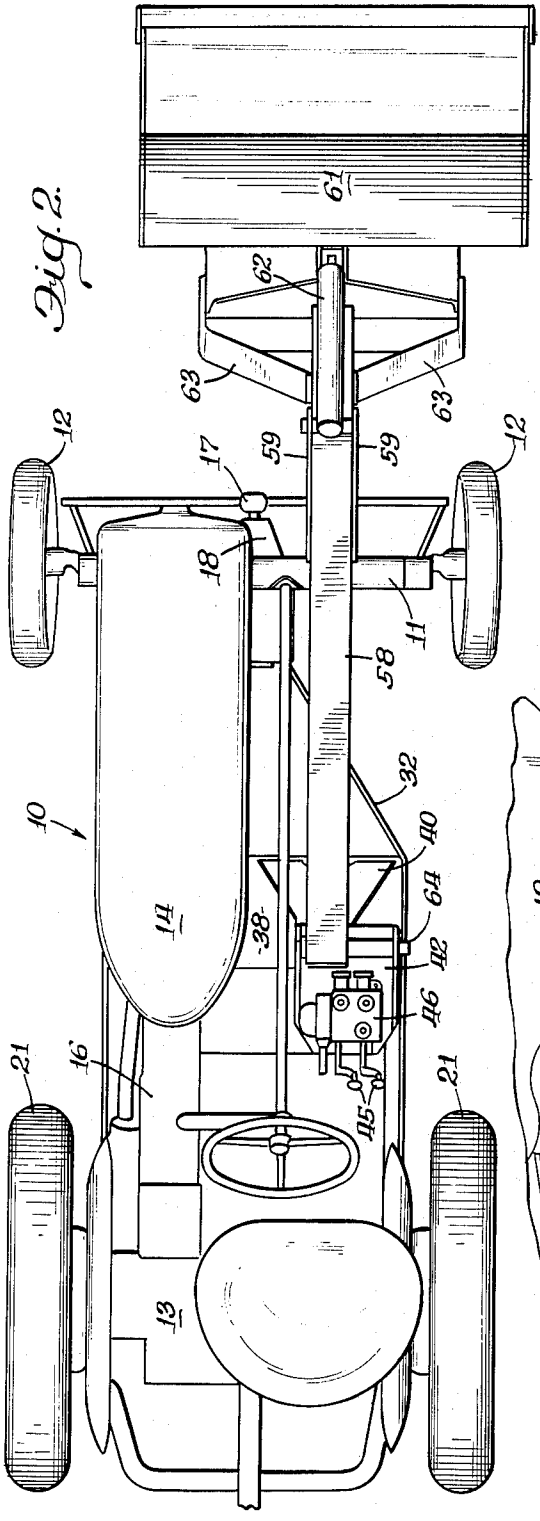
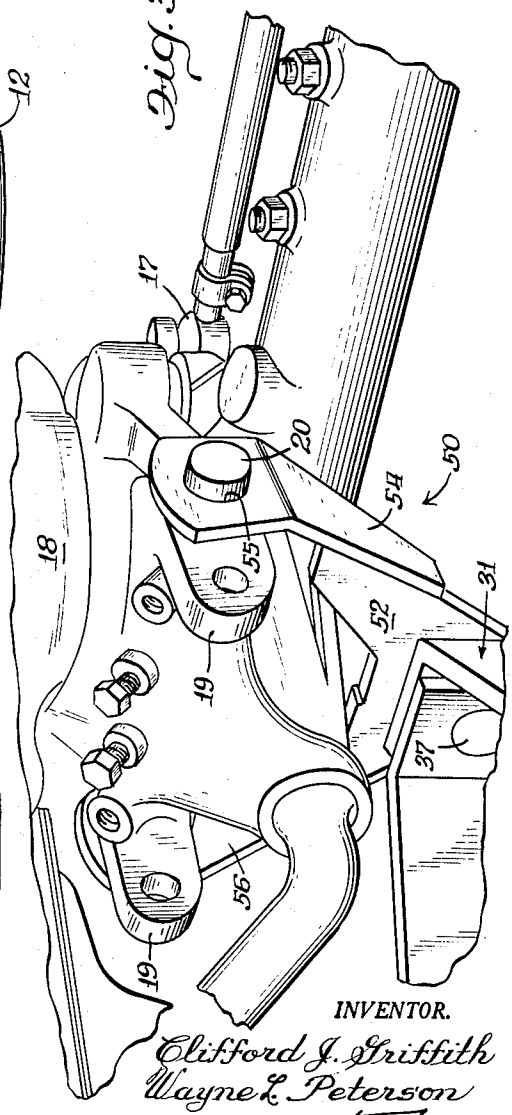


Fig. 3.



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Fig. 4.

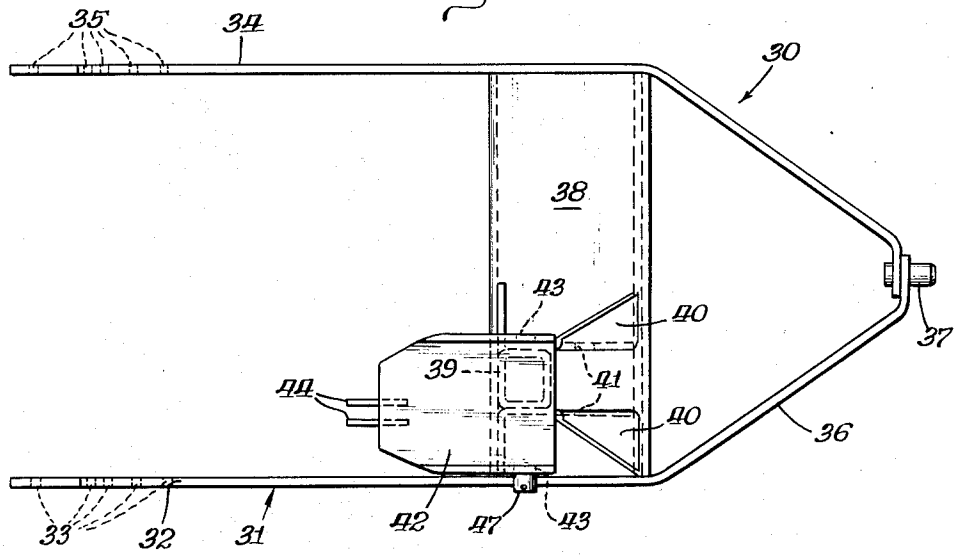
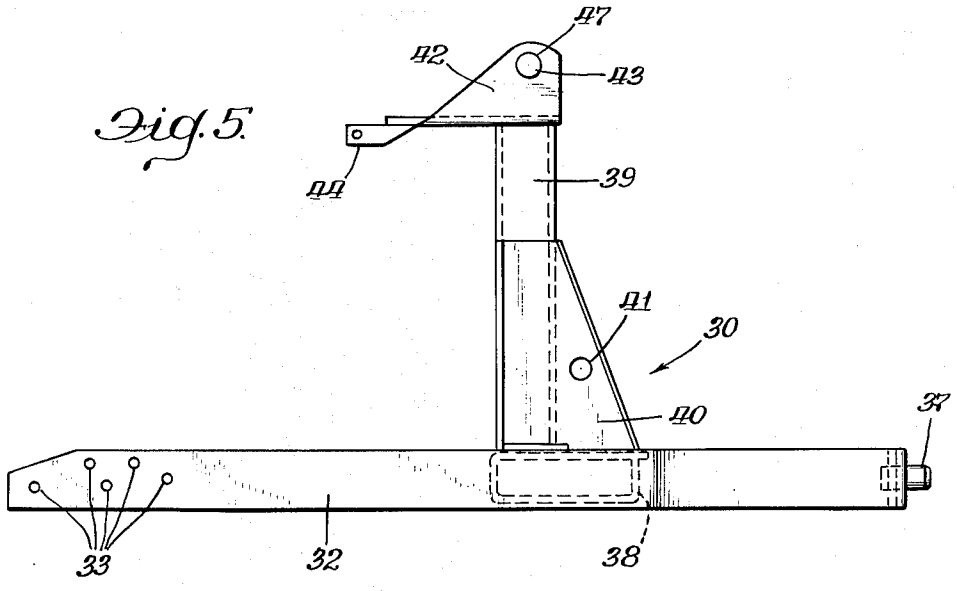


Fig. 5.



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3,207,341
LOADER

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4 Claims. (Cl. 214—140)

The present invention relates to a front-mounted loader and more particularly to the loader base and its mounting on the tractor.

Tractors with loaders attached thereon are universally used and various methods have been utilized to mount the loaders on the tractors. The loader and loader base of this application are especially adapted to be mounted on a tractor of the type having the motor positioned laterally to one side of the center line between the wheels of the tractor. A tractor of this type is disclosed in U.S. Patent No. 2,327,850 to Baker et al. that issued on August 24, 1943. Tractors of this type are generally designed such that the motor and transmission case constitutes the longitudinal frame of the tractor which presents a problem when mounting a loader base to the tractor frame. There is an unequal distribution of weight on the tractor wheels as a result of the motor and transmission being offset, and if the loader base is mounted directly to either the motor or the transmission casting the unequal distribution of weight will be increased. Applicant has provided a loader base that is not directly connected to either the motor or transmission casting but is rather arranged such that the unequal weight distribution present in the tractor will be offset by the loader. This is accomplished by securing the loader base to opposite sides of the rear axle structure and to the front axle structure through a universal joint.

An object of this invention is to provide a loader base to be mounted on a tractor that would transmit all of the torsional forces encountered by the loader to the tractor wheel axle structure.

Another object is to provide a loader base for a tractor that is connected to the tractor's front axle structure through a universal joint.

A further object of the invention is the provision of a loader base for a tractor of the type having its longitudinal body positioned laterally to one side of the center line between the wheels that would tend to balance the weight distribution between the rear wheels of the tractor.

These and other objects of the invention will become more apparent from the specification and drawings, wherein:

FIGURE 1 is a side view of a loader mounted on a tractor having a portion of the rear wheels cut away;

FIGURE 2 is a plan view of the loader mounted upon a tractor;

FIGURE 3 is a prespective view of the connection between the loader base and the front axle structure;

FIGURE 4 is a plan view of the loader base; and

FIGURE 5 is a side view of the loader base.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in FIGURE 1 a tractor **10** of the type disclosed in the above-referred-to patent, No. 2,327,850, having a front axle structure **11**, front wheels **12**, a bolster structure **18** having rearwardly disposed supports **19** carrying pins **20**, steering mechanism **17**, a longitudinal body **14** that includes the motor **15** and a rearward portion **16**, a rear axle structure **13** and wheels **21**.

The loader base generally designated **30** and shown

detached from the tractor in FIGURE 4 includes a U-shaped support **31** having a first arm **32** and a second arm **34** and a bite portion **36**. The terminal ends of arms **32** and **34** have apertures formed therein designated respectively **33** and **35**. The load base is secured to the rear axle structure of the tractor by bolts or the like through these apertures. A stud shaft **37** extends outwardly from the foremost portion of the bite portion of said U-shaped support. The load base is connected to the front axle structure of the tractor through the stud shaft. A brace member **38** connects arms **32** and **34** adding rigidity to the U-shaped support and providing a base upon which is mounted an upright post **39**. A pair of plates **40** are secured to both the brace member **38** and the upright post **39** providing a more stable connection between said brace and post. Plates **40** extend forwardly of post **39** and have aligned apertures **41** formed therein, the purpose of which will be discussed subsequently; a second horizontal plate **42** is secured to the top of post **39**. The edges of plate **42** are bent upwardly and have aligned apertures **43** formed therein. Tubes such as **47** may be secured to the plate around the periphery of apertures **43** to provide a wider bearing surface. Control mounts **44** are secured to plate **42**. As best seen in FIGURE 1, the control valve **46** is mounted on the horizontal surface of plate **42** and the loader controls are pivotally secured to the control mounts such that their movement actuates valve **46**.

A universal joint or link designated **50** has been provided for connecting the forward portion of the loader base **30** to the front axial structure **11**. As can be best seen in FIGURES 1 and 3, the universal joint or link **50** comprises a plate **52** having an aperture **53** formed therein, a pair of arms **54** and **56** having apertures, designated respectively **55** and **57**, formed therein. The stud shaft **37** of the loader base **30** extends through the aperture **53** formed in plate **52**. Shaft **37** is free to pivot with respect to plate **52** and is secured in place by the use of a cotter key or the like. The universal joint or link **50** is pivotally secured to the front axle structure by mounting on the pins **20** that extend outwardly from the rearwardly disposed supports **19** of the bolster structure **18**.

The loader comprises a single loader boom arm, designated **58**, that terminates in a pair of forked arms **63** that pivotally connect to the bucket **61**. The loader boom arm is bent downwardly and is provided with a pair of gusset plates **59** about the bend. A first hydraulic cylinder is pivotally secured at one end between said gusset plates and at the other end to the plates **40** about the apertures **41**. A second hydraulic cylinder **62** is pivotally mounted at one end between the gusset plates **59** and at the other end to the upper portion of the bucket **61**. The first hydraulic cylinder **60** pivots the loader boom arm **58** about the boom arm pivot shaft which is mounted in the apertures **43** formed in the plate **42**. The second hydraulic cylinder **62** controls the attitude of the bucket **61** and its actuation enables, for example, the bucket **61** to be dumped. The hydraulic cylinders **60** and **62** are, of course, actuated through the control valve **46** which, in turn, is controlled by the operator to the loader controls **45**.

Thus it is seen that the complete weight of the loader is transferred to the tractor body at three points. The purpose of the universal joint being to evenly divide the vertical forces between the front wheel and eliminate any longitudinal loading on the front bolster. Horizontal forces at right angles to the tractor center line are of little consequence in this application, the fixed rear mounts absorbing the greater part. The forces transmitted through arms **32** and **34** to the rear axle

structure are unequal since the major weight of the loader is carried by post **39** which is mounted on the right-hand side of brace **38**. This arrangement will obviously transmit a greater load through arm **32** than through arm **34**. Also, the unequal loading will cause a torsional force to be set up in loader base **30** tending to pivot the loader base **30** in a counterclockwise direction as seen from the front of the tractor. The front of the loader base **30** is permitted to pivot about stud shaft **37** and thus the torsional force is not transmitted through the universal joint **50**. Since arms **32** and **34** are rigidly secured to the rear axle structure they cannot pivot with respect to the rear axle structure and the torsional forces are thus transmitted to the rear axle structure through these arms. As pointed out above, in a tractor of this type having the motor and transmission offset to one side the tractor has an inherent unequal loading in its wheels. In the loader and loader base herein disclosed the inherent unequal distribution of weight of the tractor is offset by transmitting a majority of the forces created by the loader to the side of the tractor carrying the lesser load.

Obviously, many modifications and variations of the present invention are possible in the light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A tractor of the type having longitudinally spaced front and rear wheel axle structures each including transversely spaced wheels, the front wheels being steerable, a longitudinal body between said axle structures and positioned laterally to one side of the center line between the wheels, the improvement therein which comprises a loader base mounted on said longitudinal body comprising a pair of parallel arm portions connected at one end by a bite portion, the free ends of said arms being rigidly secured to said rear axle structure and said bite portion being secured to said front axle portion through a universal joint, said loader base including a brace member connecting said parallel arms, and an upright post carried by said brace member, laterally to the other side of said center line, upon which is mounted the boom arm, said longitudinal body and said loader boom being located on opposite sides of said center line between the wheels and tend to counterbalance each other to provide a balanced and stable device.

2. The invention as set forth in claim **1** wherein the loader boom arm is pivotally mounted to the upper end of said upright post and a hydraulic cylinder is interposed between the lower portion of said upright post and said loader boom arm.

3. A loader base comprising a U-shaped support adapted to be mounted on a tractor for supporting a loader frame, mounting means on each terminal end of said U-shaped support for rigidly securing said support to the rear axle housing of a tractor with the arms of said support substantially parallel to the longitudinal axis of the tractor and the bite section of said U-shaped support located beneath the front end of the tractor, a stud shaft extending from the bite section of said U-shaped support in parallel relationship to the arms of said U-shaped support, a link pivotally carried at one end by said stud shaft, said link adapted to be pivotally supported at its other end on the tractor about an axis normal to the axis of said stud shaft, and an upright post mounted on said U-shaped support intermediate said mounting means and said stud shaft for supporting the loader.

4. The invention as set forth in claim **3** wherein said loader base also includes brace means connecting the arms of said U-shaped support, and wherein said upright post is secured to said brace means.

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