Sept. 8, 1931. L. H. THOEN 1,822,178

LAND VEHICLE

Filed Oct. 10, 1927

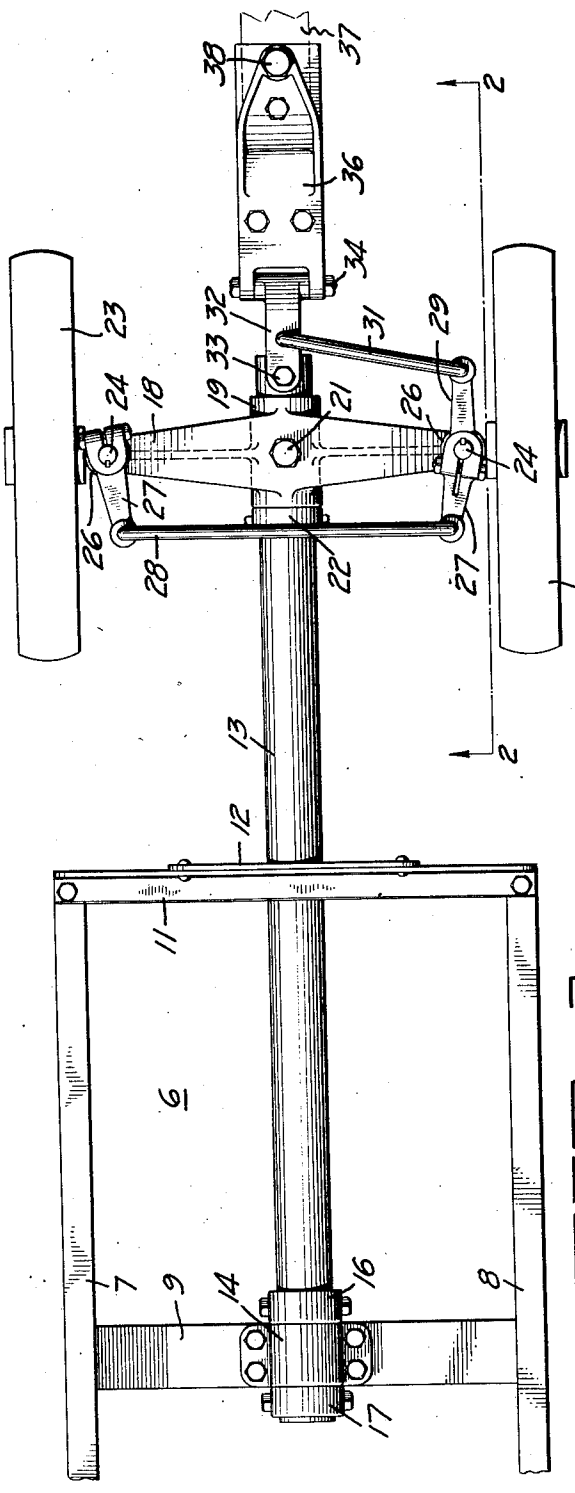


FIG. 1.

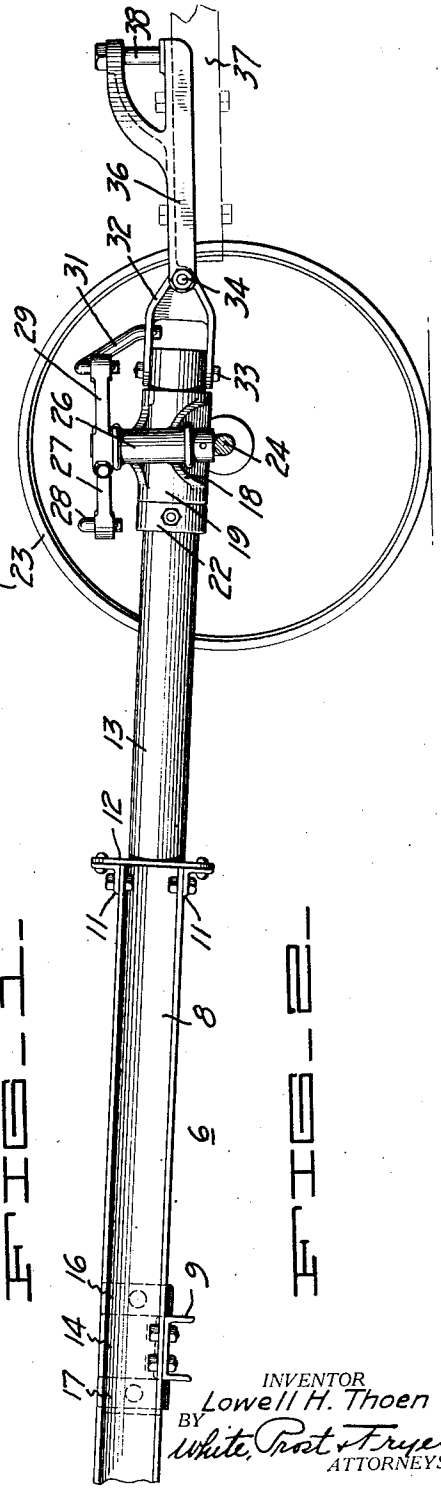


FIG. 2.

INVENTOR
Lowell H. Thoen
BY White, Frost & Fryer
ATTORNEYS

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UNITED STATES PATENT OFFICE

LOWELL H. THOEN, OF STOCKTON, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CATERPILLAR TRACTOR CO., OF SAN LEANDRO, CALIFORNIA, A CORPORATION OF CALIFORNIA

LAND VEHICLE

Application filed October 10, 1927. Serial No. 225,108.

My invention relates to a supporting and draft gear primarily adapted for use in harvesting machinery.

An object of my invention is to provide a front end construction which, while utilizing two front supporting wheels, has the effect of a single front wheel as regards flexibility.

Another object of my invention is to provide a front end construction utilizing two front wheels which are dirigible and which are steered by the draft mechanism.

A further object of my invention is to provide a front end construction which is simple and light but nevertheless is amply strong.

My invention possesses other advantageous features, some of which with the foregoing will be set forth at length in the following description where I shall outline in full that form of the front end construction of my invention, which I have selected for illustration in the drawings accompanying and forming part of the present specification. In said drawings I have shown one form of front end construction embodying my invention, but it is to be understood that I do not limit myself to such form since the invention, as set forth in the claim, may be embodied in a plurality of forms.

In the drawings:

Fig. 1 is a plan of the construction of my invention.

Fig. 2 is a section of my construction, the plane of section being indicated by line 2—2 of Fig. 1.

In its preferred form, the front end construction of my invention preferably comprises a frame having a beam projecting therefrom on which dirigible wheels are mounted, the wheels being arranged to oscillate about the axis of the beam and also being steered by movement of a draft mechanism attached to advance the frame.

Harvesting machines have in most instances to be propelled over rough ground and it is desirable to have a three point suspension for the major portion of the mechanism in order that it may accommodate itself to the unevenness of the ground and so that excessive strains and twisting stresses are obviated. To this end it is customary to employ a pair of rear wheels with a single front wheel on such machines but I have found it desirable in a number of instances to utilize more than one front wheel. My invention makes it possible to obtain the benefits of a three point suspension at the same time utilizing more than one front wheel.

As disclosed in the drawings, the mechanism that is to be propelled, of whatever kind, is preferably provided with a frame 6 which ordinarily is composed of a pair of channels 7 and 8 tied together at intervals by cross members 9 and usually at the forward end by a pair of cross angles 11 supporting a transverse plate 12. The width of the frame 6 is ordinarily made equal to the desired width of the supported mechanism. Along the central longitudinal axis of the frame I dispose a beam 13 which is conveniently a tube or pipe of relatively large diameter. This form of beam is quite strong for its weight, and aids in minimizing the total weight of the construction. The beam 13 is preferably at its rear end rotatably mounted in a journal box 14 secured to the cross member 9 and is constrained from axial translation by collars 16 and 17 secured to it and abutting the sides of the journal box. The plate 12 is apertured to permit the passage of the beam 13 and, if desired, a second journal can be provided at this point although it is not utilized in all cases.

At the forward end of beam 13, I preferably dispose an axle 18 which extends transversely and is parallel to the cross member 9 and the plate 12. This axle is of the usual I section and is centrally provided with a muff 19 surrounding the beam 13. In the illustrated construction, the muff and axle are secured to the beam by a through bolt 21 and also are confined by a collar 22. With this construction, any transverse oscillation of the axle 18 merely causes the beam 13 to rotate in its journal 14 so that any weaving or undulations of the axle due to the unevenness in the ground are not transmitted to the frame. In another construction I can

pin the beam to the journal box 14 so that it is not rotatable therein and omit the pin 21 so that the muff 19 can rotate about the beam 13. This scheme is in some respects equivalent to the first one since both constructions have the effect of permitting the axle to rotate about the axis of the beam.

At each end of the axle I preferably provide a dirigible wheel 23 so that the steering of the mechanism can be effected. The wheels are preferably mounted on cranked spindles 24 passing thru journals 26 preferably formed integrally with the axle 18. The upper ends of the spindles 24 carry steering arms 27 which are joined by a tie rod 28 in the customary fashion while on one of the arms 27 there is provided an extension 29 actuated by a drag link 31. Axial translation of the drag link causes the two wheels 23 to be steered in such amounts that the vehicle is properly directed.

The tread of the wheels is preferably about equal to or somewhat less than the selected width of the frame 6 so that the forward projection of beam 13 allows ample room for the wheels to turn in steering without interfering in any manner with the mechanism mounted upon the frame. It is of course possible to have the tread of the wheels greater than the width of the frame but in that event it is not necessary to have the beam 13 project very far forwardly.

Draft means are provided for advancing the frame 6 and are also utilized to direct the dirigible wheels. At the forward end of the beam 13 I preferably provide a tongue which comprises a yoke 32 attached by means of a pivot pin 33 and pierced to receive one end of the drag link 31 so that movement of the yoke about the pivot pin 33 is transmitted to the steering linkage. The forward end of the yoke carries a transverse pin 34 to which is connected a body 36 comprised in the tongue and to which the draft mechanism can be attached. The body 36 forms a draft connection which is applicable to a tractor or to draft animals. As indicated by the broken lines in the figures, a pole 37 can be bolted to the tongue 36, for alternatively the draft eye of a tractor can be secured by a bolt 38 passing thru the tongue. Since the axes of the bolts 33 and 34 are at right angles, the tongue is universally movable with respect to the frame 6 and its relative movement with respect to the beam is effective to steer the wheels 23.

With my construction, I obtain the same steering effect as with a single wheel and obtain the same three point suspension as far as flexibility is concerned due to the relative rotation between the axle 18 and the frame 6 but at the same time provide a two wheel front support which distributes the load of the mechanism over spaced points of the ground and permits shorter turns of the vehicle to be made without danger of upsetting.

I claim:

A land vehicle construction comprising a frame, a journal secured to said frame, a rotatable cylindrical beam mounted in said journal, collars secured to said beam and abutting said journal, a cylindrical muff mounted on said beam and spaced from the end thereof, an axle integral with said muff for supporting said beam, a yoke pivotally secured to said beam adjacent said muff, a tongue pivotally secured to said yoke, steering spindles at the extremities of said axle, dirigible wheels rotatably mounted on said spindles to pivot with respect to said axle, and steering linkage operated by relative movement between said tongue and said beam for pivoting said wheels relative to said axle; said steering linkage including steering arms on said spindles, a tie rod connecting said steering arms and a drag link connecting one of said arms and said yoke.

In testimony whereof, I have hereunto set my hand.

LOWELL H. THOEN.