Sept. 8, 1925.

1,552,929

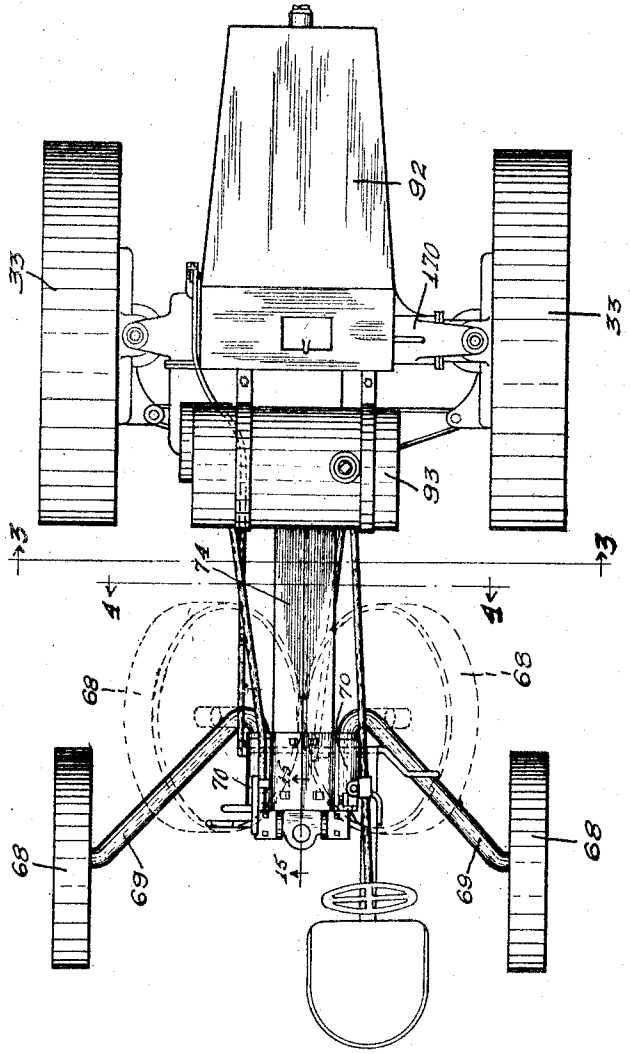
L. HOLLAND-LETZ

DRAFT MECHANISM

Filed Sept. 27, 1920

6 Sheets-Sheet 1

Fig. 1



Witnesses

Rudolph T. Berg.

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Inventor

Ludwig Holland Letz

By Charles W. Hills Atty

Sept. 8, 1925.

1,552,929

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DRAFT MECHANISM

Filed Sept. 27, 1920

6 Sheets-Sheet 2

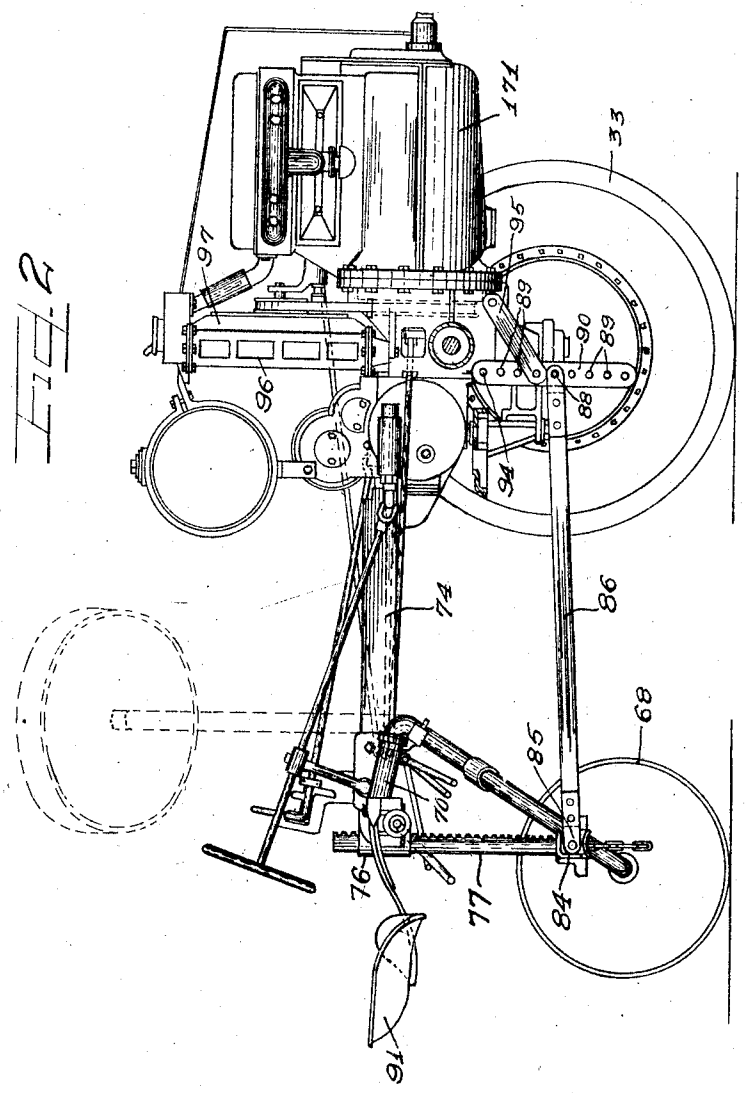


Fig. 2.

Witnesses
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Sept. 8, 1925.

1,552,929

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DRAFT MECHANISM

Filed Sept. 27, 1920

6 Sheets-Sheet 3

Fig. 13

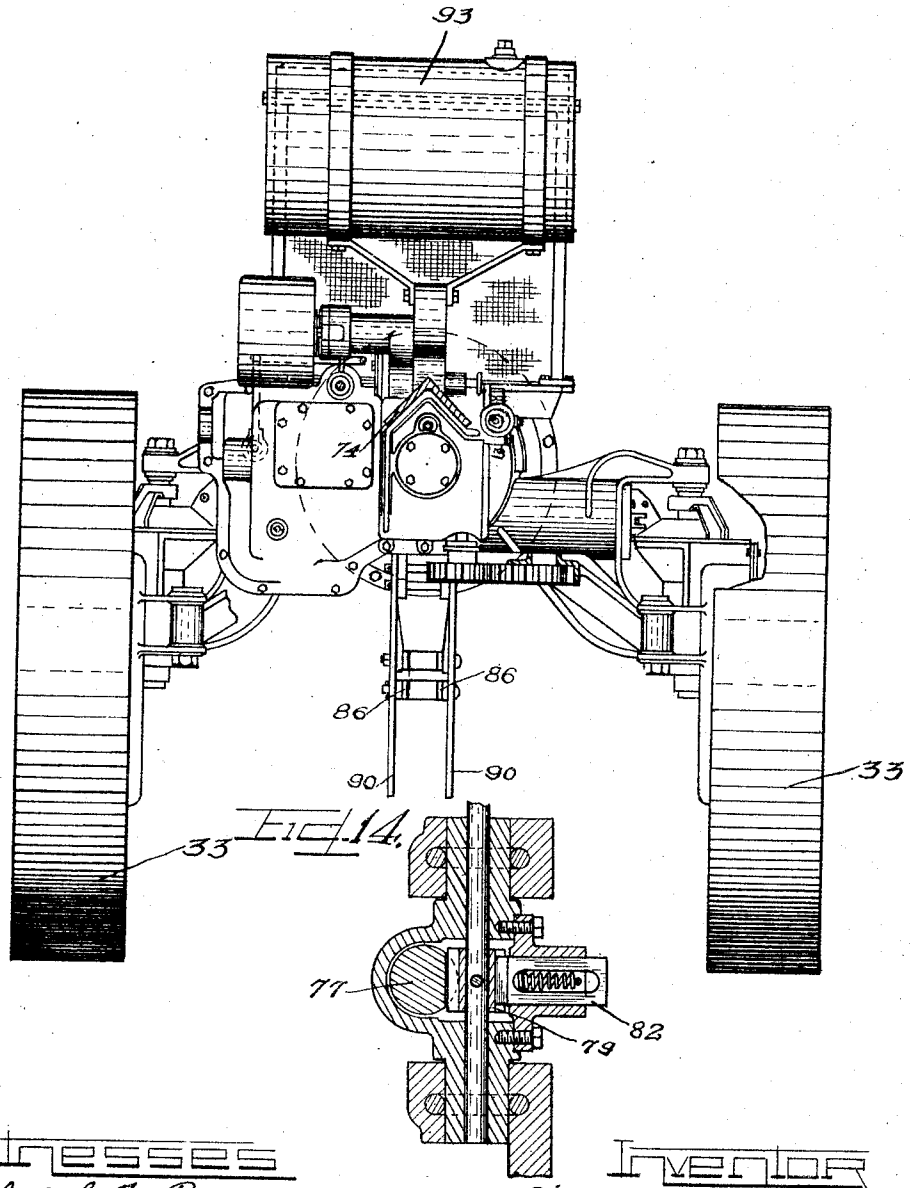


Fig. 14.

Witnesses

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Sept. 8, 1925. 1,552,929

L. HOLLAND-LETZ

DRAFT MECHANISM

Filed Sept. 27, 1920 6 Sheets-Sheet 4

Fig 4

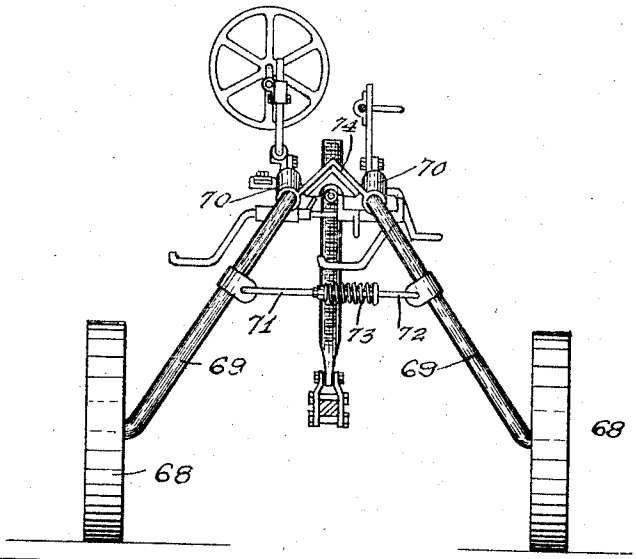
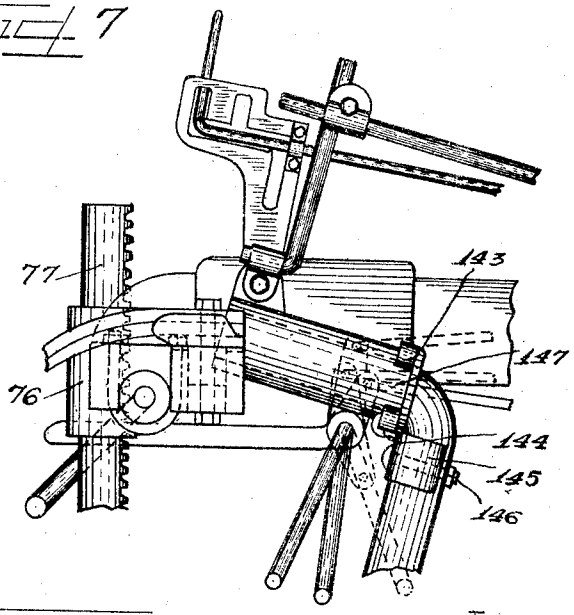


Fig 7



Witnesses

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Sept. 8, 1925. 1,552,929

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DRAFT MECHANISM

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Fig. 5

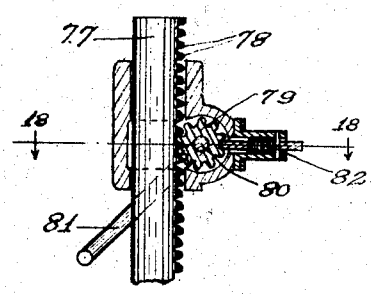


Fig. 8

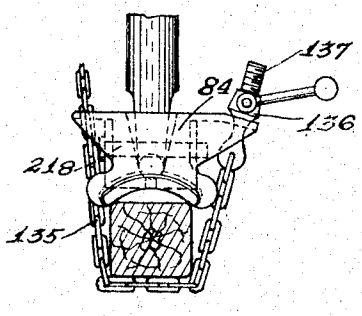


Fig. 9

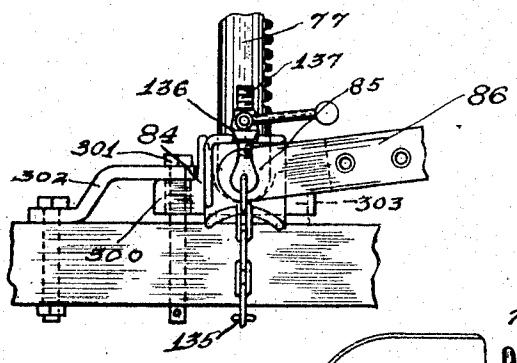


Fig. 13.

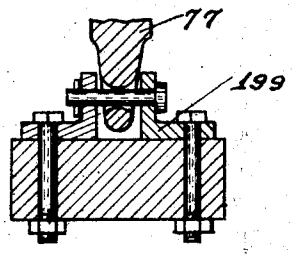
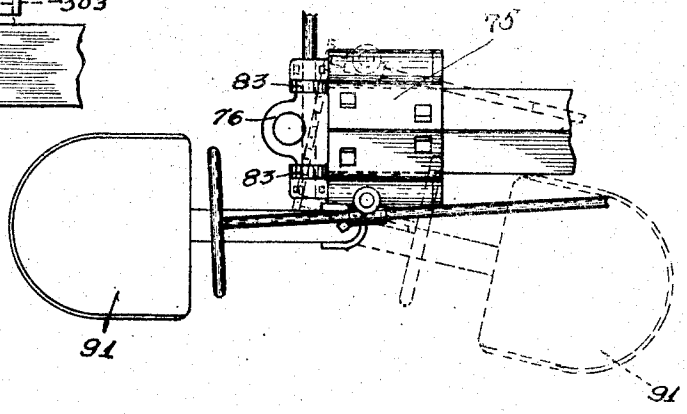


Fig. 6



Witnesses

Rudolph T. Berg.

Charles O. Fill Jr.

Inventor

Ludwig Holland Letz.

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Sept. 8, 1925.

1,552,929

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DRAFT MECHANISM

Filed Sept. 27, 1920

6 Sheets-Sheet 6

FIG. 11

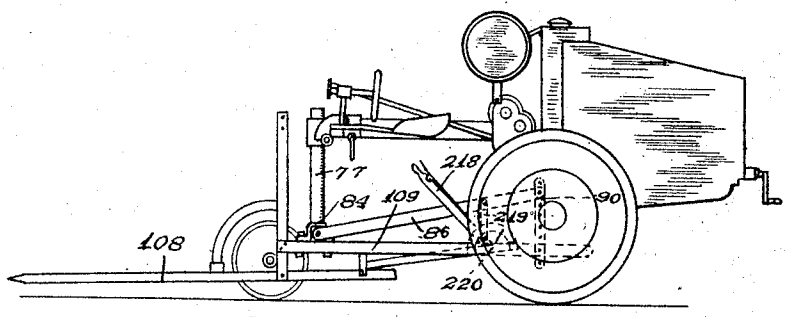


FIG. 10

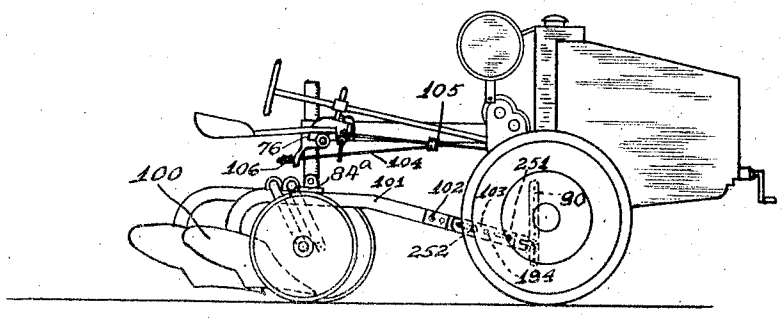
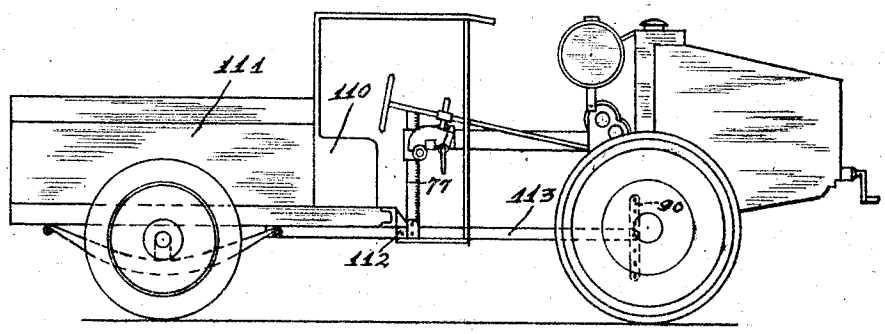


FIG. 12



Witnesses

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Ludwig Holland Letz

By Charles W. Hills Atty

Patented Sept. 8, 1925. 1,552,929

UNITED STATES PATENT OFFICE.

LUDWIG HOLLAND-LETZ, OF OAK PARK, ILLINOIS.

DRAFT MECHANISM.

Application filed September 27, 1920. Serial No. 413,002.

To all whom it may concern:

Be it known that I, LUDWIG HOLLAND-LETZ, a citizen of United States, and a resident of the village of Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Draft Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to a draft mechanism and particularly to a draft mechanism which is adapted to be used for connecting various implements and vehicles to an automotive drawing mechanism.

The present application comprises a continuation in part of my application for patent for a "tractor", filed February 6th, 1920, Serial No. 356,691.

Tractors are coming to be universally used for hauling purposes and in the operation of various agricultural implements, and it is desirable that an efficient draft mechanism be provided which may be conveniently attached to various vehicles and implements without modification thereof.

It is therefore one of the objects of this invention to provide a draft mechanism for conveniently connecting a drawing mechanism to different implements and vehicles.

It is also an object of this invention to provide a draft mechanism which is particularly adapted to be used for connecting various implements and vehicles to a front wheel drive tractor of the high clearance type.

It is another object of this invention to provide a draft mechanism which is adapted to compensate for the engine torque of the drawing mechanism.

It is an important object of this invention to provide a universal draft mechanism which is adapted to connect a drawing mechanism to a plurality of implements and vehicles without changing the construction thereof.

Other and further important objects of the invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in a preferred form) is shown on the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a plan view of a tractor equipped with the draft mechanism of this invention.

Figure 2 is a side view with parts broken away.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a section on the line 4—4 of Figure 1.

Figure 5 is a section on the line 15—15 of Figure 1.

Figure 6 is a plan view on an enlarged scale of the rear end of the tractor frame and the draft device mounted thereon.

Figure 7 is a side elevation on an enlarged scale of the rear end of the tractor frame showing parts of the draft mechanism of this invention.

Figure 8 is a rear elevation of the clamp to which the draw-bar or the like is attached.

Figure 9 is a side view of the same.

Figure 10 is a side elevation of the draft mechanism of this invention, showing the method of connecting a plow to the tractor thereby.

Figure 11 is a side elevation showing the draft mechanism connecting the tractor to a sweep rake.

Figure 12 is a side elevation showing the connection to a truck body.

Figure 13 is a detail view in elevation of a connecting fork or eyelet to which the draft mechanism may be connected.

Figure 14 is a fragmentary section on the line 18—18 of Figure 5.

As shown on the drawings:

The draft device of this invention is shown and described in connection with a particular form of tractor which is shown and described fully in my co-pending application for patent for a "tractor", Serial No. 356,691, and since this invention relates particularly to a draft mechanism which is adaptable to various drawing mechanisms, said tractor will only be described in general terms herein.

The tractor comprises a pair of traction wheels 33, adjacent one end, and a pair of

supporting wheels 68 adjacent its other end. Between the driving wheels is arranged an internal combustion engine 92, which is set forward of the center line of the wheels 33, not only to throw as much of the weight of the engine as possible onto the latter, but also to facilitate the transmission of power from the engine to the wheels 33. In the rear of the engine is mounted the gasoline tank 93, and between the tank and the engine is located the radiator 96, the fan casing 97, and also the water circulating pump.

The frame comprises a casting 170 forming the lower part of the gear case, and carrying the bearings for the traction wheels 33. To the front of the casting is bolted the crank case 171 of the engine 92 by which the latter is supported. To the rear portion of the casting is bolted a beam 74 of the inverted V-shape section. The rear supporting wheels 68, driver's seat 91, and other parts are attached to the rear end of this beam. Said rear wheels 68 are each rotatably mounted on the outer ends of round steel bars 69 bent upwardly and then rearwardly with their upper ends journalled in bearings 70 on the tractor frame (Fig. 2). These two bars or bent axles 69 are resiliently connected by links 71 and 72 normally held in closed overlapping relation as shown in Figure 4, by a spring 73, but are adapted to operate to separate somewhat under the weight of the tractor and also jars and bumps on the wheels 68. Each bearing 70 is provided with a flange 143 at its forward end which is engaged by hook 144 on a mantle 145 clamped to the axle 69 by bolt 146 so that the axle may swing in the bearings 70 without becoming disengaged. In order, however, that the axles and wheels may be removed when desired, a portion of the flange 143 is cut away as at 147 so that after the rods 71 and 72 which normally hold the axle in the position shown in Figure 4 have been disconnected from each other, the axles may be moved upwardly to bring the hook 144 into register with the cutaway portion 147 on the flanges 143 when the axles may be withdrawn from the bearings 70.

If it is desired to elevate the rear wheels off the ground without detaching them as for example when the tractor is hitched to a machine in the field, and no means are available for carrying the wheel, the wheels may be swung upwardly beyond the position in which they may be detached and then connected together by means of the links 71 and 72. The wheels will then be in the position shown in dotted lines in Figure 1. The raising of the rear end of the tractor so that the wheels 68 are clear of the ground may be accomplished by means of a rack bar 77 passing through a block 76 journalled between rearwardly extending lugs 83 on the saddle 75. With the teeth 78 of this rack bar, meshes a pinion 79. Said pinion 79 is mounted on the shaft 80 provided with a crank arm 81 by which it may be rotated. A spring impelled latch 82 releasably holds the pinion in adjusted position thereon as clearly shown in Figure 5. In this connection it is to be noted that this invention contemplates the use of any suitable adjusting post such as a threaded post to accomplish the function of the rack bar 77. On the lower end of the rack bar 77 is arranged a hitch clamp 84 connected to the ends 85 of a pair of links 86 as clearly shown in Figures 2 and 9. The other ends of these links are connected to a pair of draft brackets or links 90 having a series of holes 89 therealong, through any one of which a pin 88 may be passed to secure the links thereto. The draft brackets 90 are secured at 94 to the frame of the tractor and braced by a pair of links 95. The draw bar of the implement or vehicle which is to be hauled by the tractor is connected to these draft brackets 90. The clamp 84 is attached by a pin 218 to the lower end of the rack bar 77 to allow it to rock relatively to a vehicle or implement connected thereto. With this arrangement, the rack bar may swing backward and forward while the lower surface of the hitch clamp maintains the position parallel to the draw bar to which it is secured. Further the aperture in the lower part of the rack bar 77 is flared at each end (see Fig. 8) to allow the clamp to rock laterally through a small angle. The clamp is slotted both laterally and longitudinally on one side to engage one or the other of a pair of adjacent links of a chain 135, and on the other side to receive a block 136 threaded on to the extension 137 of one of the links of the chain. By rotating the block 136, the chain may be tightened around the drawbar 138 of the agricultural or other machine connected to the tractor. With this arrangement, the chain may be used to secure a beam or other parts of the clamp either longitudinally or transversely thereto. In order that the clamp may hold either a longitudinal or transverse beam against lateral movement, the other side of the clamp is cupped or curved in both directions. The clamp 84 is provided with a rearward extension 300 which is apertured to receive a pin 301 therethrough whereby a hammer strap 302 on a wagon tongue or the like may be connected thereto. When the chain is secured transversely, the aperture in the extension 300 receives the block 136 and the chain is engaged through a slot 303 in the clamp 84 adjacent the end of the wood of the link 86. It will be seen that the rack bar 77 and its clamp 84 serves a dual purpose of a jack for lifting the rear wheels 68 off the ground and also giving rigidity to the connection between the trac-

tor and the agricultural or other machine while the tractive force is obtained through the draft brackets 90.

With this construction it is apparent that the link 86 becomes a compression member as well as a tension member and is used as such when the machine is reversed.

The application of the draft mechanism for connecting the tractor to various implements and vehicles is illustrated in Figures 10 to 16. In Figure 10, a gang plow 100 is attached to the tractor. In this case, the rear wheels 68 of the tractor are detached by removing their axles from the bearings 70 in which their upper ends are normally secured. The beam 101 of the plow is then attached to the underside of the bracket 84a, while its forward end 102 is connected to the depending brackets 90. The point of connection of the draw bar to the bar 90 is determined by the engine torque to be compensated for. The greater the torque, the lower the point of connection, and it is of course desirable to make this connection as low as conditions permit.

Means are preferably provided for disconnecting the engine clutch if the plow should meet a serious obstruction, such as a large rock. For this purpose the pin 194 which connects the portions 102 and 103 is made of wood or other frangible material so that it will break under any excessive strain. A diagonal rod 104 is also provided, extending through the clamp 84 through a lug 105 on the clutch rod to which it is connected. A spring 106 is arranged on the end of the rod 104 as shown in Figure 10, for absorbing shocks in the rod and allowing the latter to be drawn rearwardly without injury thereto or the parts connected therewith.

With this arrangement, as soon as the pin 194 is broken the plow draws the rod 104 rearwardly and releases the clutch between the engine and transmission shaft. In order that the plow may not be entirely disconnected pin and slot connections 251 and 252 are provided between the members 102 and 103, and said pin and slot connections allow sufficient relative movement of said members so that the engine clutch is disconnected, but prevent a complete disconnection of the plow from the draft brackets 90. This feature obviates difficulties in replacing the pin 194 which would arise if the tractor and plow were completely disconnected. The gang plow itself is of usual construction and need not be described in detail herein.

In Figure 11, the draft mechanism of this invention is shown as used for connecting a sweep rake 108 to the tractor. In this case also the wheels 68 are removed with the axles 69. One of the frame members 109 of the rake is clamped to the lower side of the shoe 84, while its forward end extends beyond the links or brackets 90 between which it is free to slide up and down. The rack bar 77 in this case, however, is rigidly held in place by the links 86, which are connected to the upper end of the brackets 90. The member 109 is provided with a lever 218 pivoted thereto and connected by a link 219, so that by turning the lever on its pivot, the sweep rake is caused to turn relatively to the tractor about the point of connection of the clamp 84 to the rack bar 77 as a pivot. A notch segment 220 is provided for retaining the lever in adjusted position in a well known manner. When the rake is attached, the tractor is driven backward, and hence, so that the driver may still face forward, the driving seat 91 is swung around and the position of the steering gear and various control mechanism reversed.

The tractor may also be employed to form a truck, as shown in Figure 12, by using the improved draft mechanism of this invention. In this case not only the wheels 68 and their axles 69 are removed, but also the seat, since the driver sits on a seat 110 at the front end of the truck body 111. The clamp 84 is also detached, and the lower end of the rack bar 77 is attached to a bracket 112 which is provided with a downwardly extending open portion, through which a drawbar 113 extends. Lateral braces extending from the sides of the truck diagonally inwards towards the brackets 90 may also be used if desired. The forward end of the draw bar is bolted or secured to the brackets 90.

Where the agricultural or other machines are to be designed especially for use with the draft mechanism of this invention, the chain hitch may be dispensed with, and an eye or fork 199 as shown in Figure 17 may be provided on the drawbar of such machine, and hingedly connected directly to the end of the rack bar 77 by means of a bolt, pin, or the like. In this construction the links 86 may be dispensed with where it is possible for the drawbar of the implement to become a compression member.

It is thus apparent that the draft mechanism of this invention provides means whereby a drawing mechanism may be conveniently connected to a plurality of implements and vehicles without material change in the construction of such implements or vehicles. On account of the universal hinged connections which are provided, the draft of the drawing mechanism is efficiently transferred to the drawn vehicle or implement.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles

of this invention, and I therefore do not purpose limiting the patent granted, otherwise than necessitated by the prior art.

I claim as my invention:

1. The combination with a drawing mechanism including a frame, of a bar adjustably mounted on the frame, a block swingingly attached to the lower end of the bar, flexible attaching means secured to the block, and means associated with the block for locking said flexible attaching means.

2. The combination with a drawing mechanism including a frame, of a drawbar connection adjacent one end of the frame, a bar depending from the other end of the frame, a clamp pivotally connected to the lower end of the bar adapted to swing relatively thereto longitudinally with respect to the frame, and means for connecting said clamp to the drawbar of a machine operated by the drawing mechanism.

3. The combination with a drawing mechanism including a frame, of a drawbar connection adjacent one end of the frame, a bar depending from the other end of the frame, a clamp pivotally connected to the lower end of the bar adapted to swing relatively thereto both longitudinally and transversely with respect to the frame, and means for connecting said clamp to the drawbar of a machine operated by the drawing mechanism.

4. The combination with a drawing mechanism including a frame, of a draft connection for a machine adapted to be operated by the drawing mechanism, and a vertical adjustable bar adapted to swing in a plane longitudinal with respect to the drawing mechanism for preventing lateral movement of the machine with respect to the drawing mechanism, and for adjusting the longitudinal slope of the frame of the drawing mechanism relatively to the ground and the said machine.

5. The combination with a drawing mechanism including a frame, of a draft connection adjacent one end for a drawbar of a machine to be operated by the drawing mechanism, of an adjustable bar carried by the frame and movable relative thereto and adapted to be connected at its lower end to the said drawbar and thereby lock the drawing mechanism and the machine together in the desired adjusted longitudinal vertical angular relation.

6. The combination with a drawing mechanism including a frame, of a draft connection for a machine to be operated by the drawing mechanism, and a vertically adjustable bar preventing lateral movement of the machine with respect to the drawing mechanism and for adjusting the longitudinal slope of the frame relative to the ground and to the said machine.

7. The combination with a drawing mechanism including a frame, of a draft connection adjacent one end for the drawbar of a machine to be operated by said mechanism, a vertically adjustable bar carried by the frame adapted to be connected at its lower end to said draw bar and thereby lock the drawing mechanism and the machine together in the desired adjusted longitudinal vertical angular relation, and means for locking said bar in adjusted position.

8. The combination with a drawing mechanism including a frame, of a draft connection adjacent one end of the frame for the draft connection of a device adapted to be operated by said mechanism, and a vertical bar carried by the frame adjacent its other end and movable relative thereto, said bar being adapted to be connected at its lower end to said second mentioned draft connection and thereby lock the drawing mechanism and machine together and prevent relative vertical angular movement.

9. The combination with a drawing mechanism including a frame, of a draft connection adjacent one end of the frame for the drawbar of a machine adapted to be operated by said mechanism, a rack bar slidable vertically relatively to the frame, a pinion for raising and lowering the rack bar, a latch adapted to engage releasably and lock the pinion in adjusted position on the rack bar, means for connecting the lower end of the rack bar to said drawbar, and thereby lock the drawing mechanism and machine together in the desired longitudinal, vertical, angular relation.

10. The combination with a drawing mechanism including a frame, of means for connecting a machine to be operated by the drawing mechanism at two points disposed longitudinally on the frame, and means carried by the machine and movable relative thereto for varying the effective height of one of the connections and thereby adjusting the relative longitudinal angular relation of the drawing mechanism and the machine.

11. The combination with a drawing mechanism including a frame, of a draft connection adjacent one end of the frame for the drawbar of a machine adapted to be operated by said mechanism, a rack bar slidable vertically relatively to the frame, a pinion for raising and lowering the rack bar, and a latch adapted to engage releasably and lock the pinion in adjusted position on the rack bar.

12. In a draft device the combination with flexible securing means, of means for adjusting the same, and means for locking said adjusting means in adjusting position, and vertically adjustable means associated with said securing means for affording a positive draft connection.

13. The combination with a drawing

mechanism including a frame, of a draft connection adjacent one end of the frame for the drawbar of a machine to be operated by said mechanism, an adjustable bar adapted to swing in a longitudinal plane, means for adjusting the bar to change the angular position of the drawing mechanism in a vertical plane, lateral bracing means preventing transverse movement of the bar, means for connecting the lower end of the bar to the drawbar whereby the drawing mechanism and the machine are held together in the desired adjusted longitudinal vertical angular relation, and means for locking the bar in adjusted position.

In testimony whereof I have hereunto subscribed my name.

LUD. HOLLAND-LETZ.