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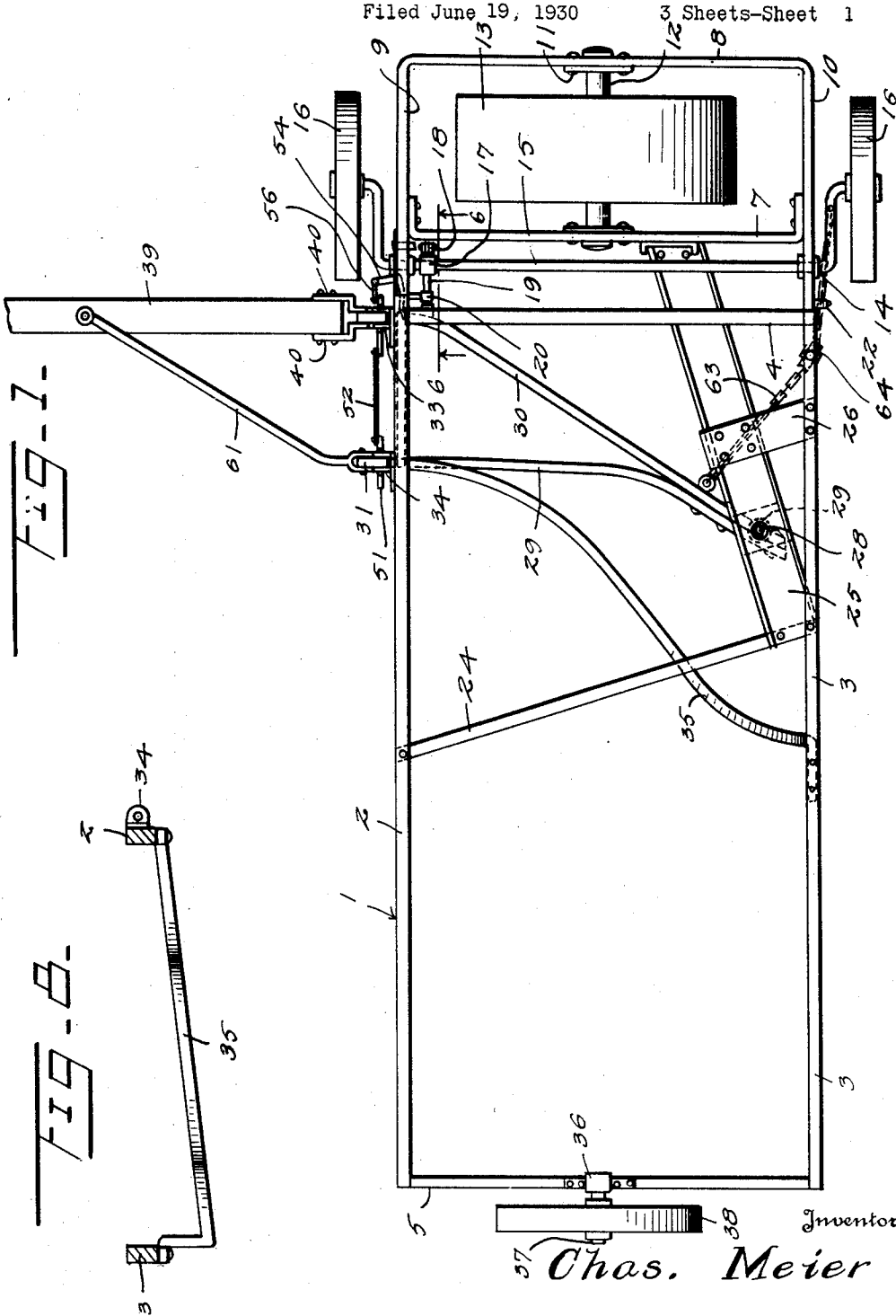
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1,837,056

TRANSPORTING STRUCTURE FOR GRAIN BINDERS

Filed June 19, 1930

3 Sheets-Sheet 1



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**Dec. 15, 1931.**

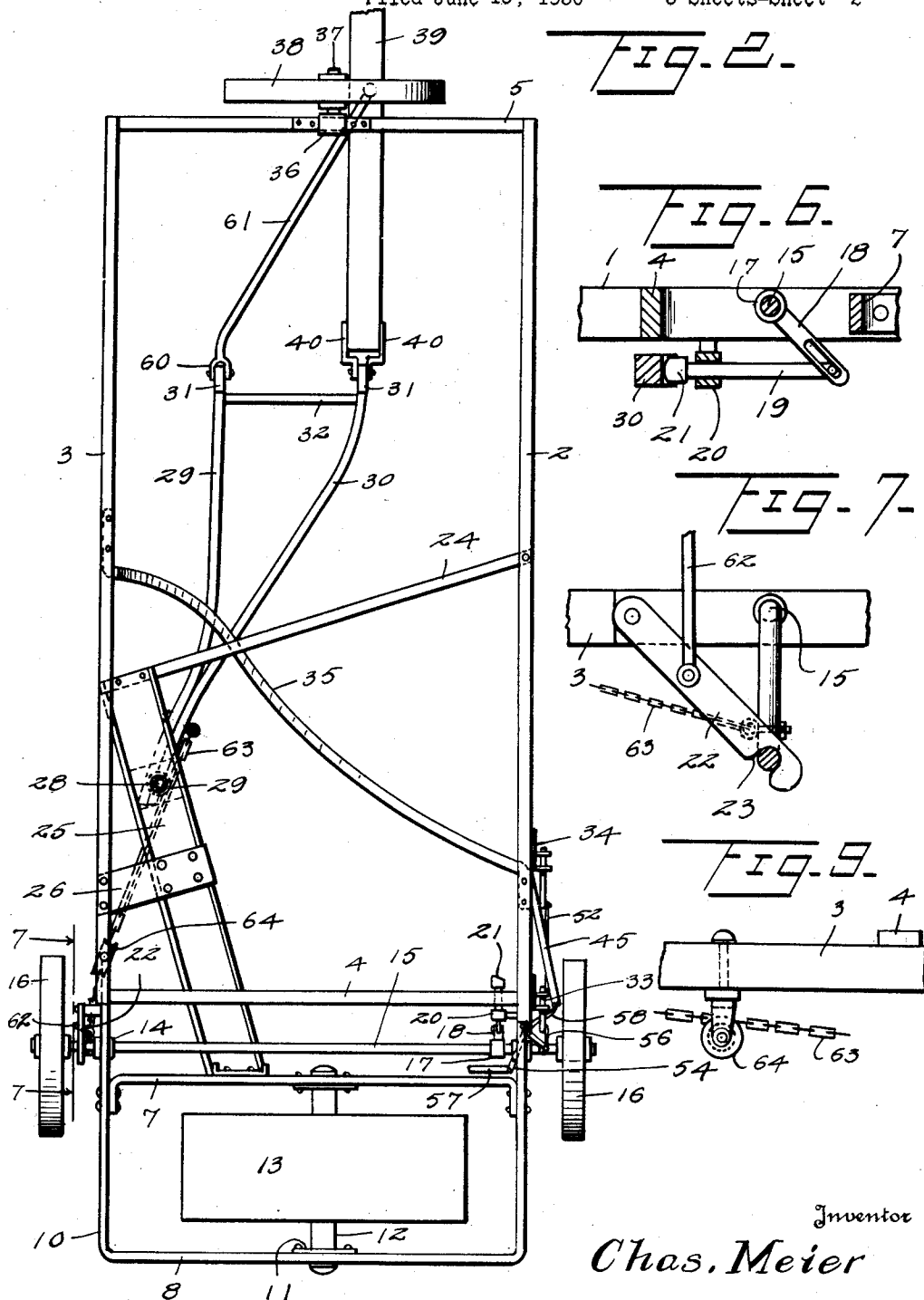
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## TRANSPORTING STRUCTURE FOR GRAIN BINDERS

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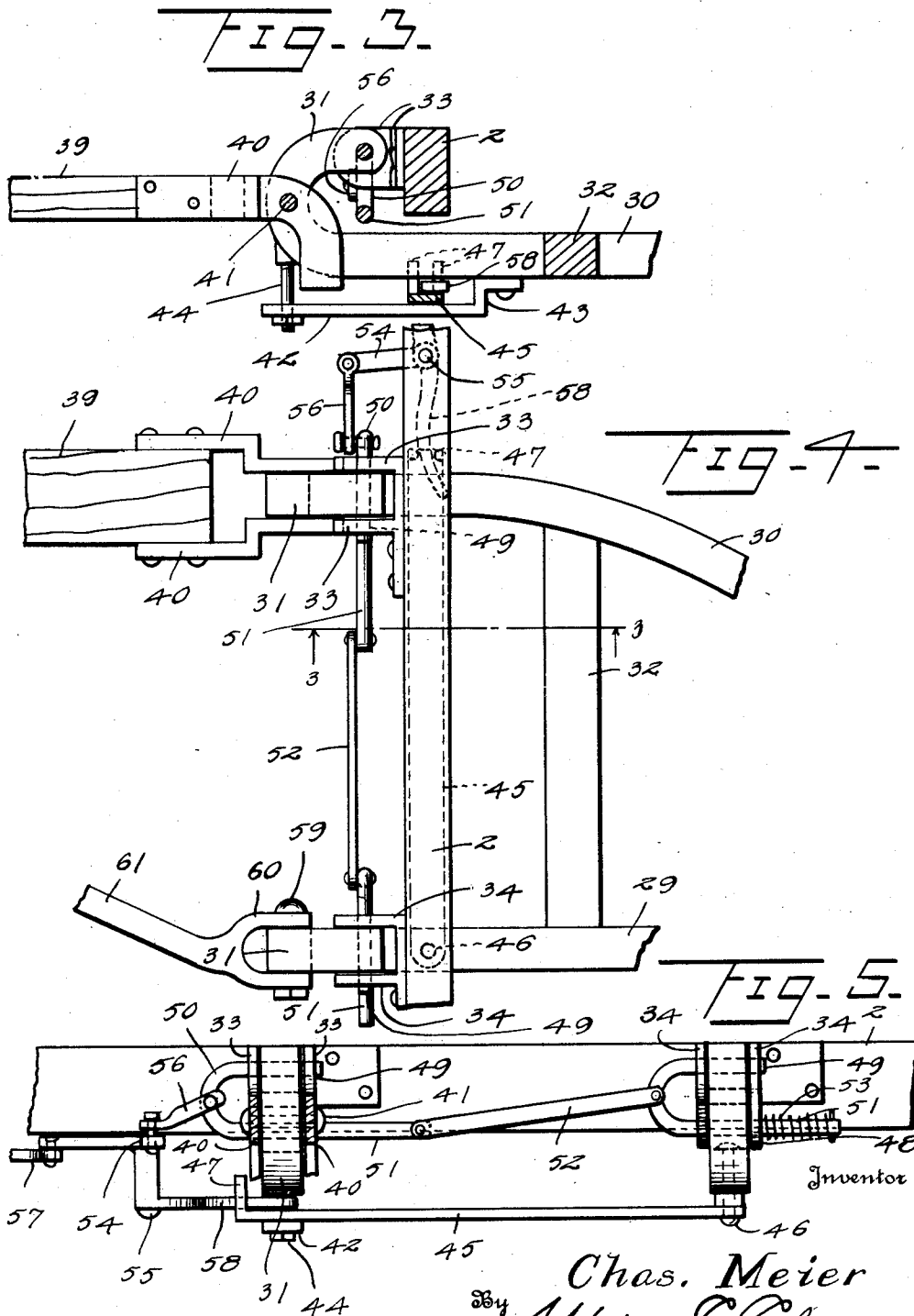
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## TRANSPORTING STRUCTURE FOR GRAIN BINDERS

Filed June 19, 1930

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## UNITED STATES PATENT OFFICE

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## TRANSPORTING STRUCTURE FOR GRAIN BINDERS

Application filed June 19, 1930. Serial No. 462,306.

This invention relates to improvements in grain binders and pertains particularly to an improved truck therefor.

The primary object of the present invention is to provide a binder truck which may be caused to rotate through approximately a quarter of a circle to shift the cutting and binding mechanism carried thereby to a position where the length of the machine will be disposed substantially parallel to the line of travel thereof instead of transversely thereto as it is when the machine is in operation.

Another object of the invention is to provide a novel means for lifting one end of the binder truck as the same is rotated so that one of the wheels thereof will be raised free from contact with the ground.

Still another object of the invention is to provide a means for lifting the main wheel of the binder from the ground after the truck and the mechanism carried thereon have been moved to the position where the machine may pass through gates and along roadways, and whereby upon swinging the truck back to the position which it must occupy with respect to the draft mechanism, when in operation, the main wheel will be automatically lowered to the ground.

Other objects and advantages of the present invention will become apparent as the description proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a view in top plan of the transporting structure embodying the present invention.

Figure 2 is a plan view of the structure showing the frame in shifted position with respect to the draft mechanism.

Figure 3 is a view in transverse section taken upon the line 3—3 of Figure 4.

Figure 4 is a view in top plan of the mechanism coupling the draft tongue and pull bars together and to the frame.

Figure 5 is a view in front elevation of the mechanism shown in Figure 4 with the draft tongue and brace bar therefor removed.

Figure 6 is a sectional view taken on the line 6—6 of Figure 1.

Figure 7 is a sectional view taken on the line 7—7 of Figure 2.

Figure 8 is a transverse section of the frame looking toward the cam bar.

Figure 9 is a view in side elevation of a portion of the rear side of the frame structure showing a chain supporting pulley mounted thereon.

In the illustration of the present invention there has been shown only the truck structure upon which the grain binder may be mounted. In the drawings, wherein like numerals of reference indicate corresponding parts throughout the several views, the numeral 1 indicates generally the truck frame or binder platform. As shown this frame is of elongated rectangular design and comprises the elongated front and rear beams 2 and 3 and the inner and outer end cross beams 4 and 5 respectively. Adjacent the inner end cross beam 4 and in spaced parallel relation thereto there is positioned the main wheel frame for the binder which is indicated generally by the numeral 6. This frame, as shown, extends transversely of the inner end of the main frame 2 and may be considered a part thereof or supplement thereto. The main wheel frame 6 comprises the spaced parallel beams 7 and 8 which are disposed substantially parallel to the inner beam 4 of the frame 1 and are connected at their ends by the front and rear portions 9 and 10 which constitute extensions of the beam 8. Intermediate their ends the beams 7 and 8 are provided with axle bearings 11 between which is mounted an axle 12 which carries the usual broad main wheel 13 of the binder.

Extending transversely of the frame structure 1 between the beams 4 and 7 and mounted in suitable bearings 14 is a crank axle 15 each end of which carries outside of the frame, a wheel 16. Adjacent the forward beam 2 of the binder truck frame the axle 15 has secured thereto a collar 17 to which is attached an arm 18. This arm at its lower end has pivotally attached thereto a link 19 which is held for movement in a line substantially parallel with the adjacent beam 2 by a guide 20. The other end of this bar or link 19 carries a head 21. Each of the beams 2 and 3 has pivotally attached thereto adjacent the axle 15, a latch bar 22, the free end of which is provided with a notch 23 which engages over the lower laterally directed portion of the axle on which the adjacent wheel 16 is mounted, when the axle 15 is oscillated so as to swing the wheels 16 to the position where the adjacent end of the frame 1 will be raised. These latch bars 22 will then maintain the axle against further oscillatory movement and will keep the adjacent end of the frame in raised position.

The frame 1 has connected transversely thereof between the bars 2 and 3 an intermediate brace bar 24 and to this brace bar 24 at the rear end of the frame there is attached one end of a channel iron beam 25 which is disposed at an acute angle with respect to the longitudinal center of the truck frame and has its other end attached to the beam 7 as shown. A brace bar 26 connects the beam 25 at a point intermediate its ends with the adjacent rear beam 3 of the frame so that the channel beam will be held rigidly in position.

Mounted upon the channel beam 25 is a bearing 27 for a vertical pivot 28. As shown this pivot is positioned relatively close to the rear beam 3 of the frame and is also located between the transverse center and the inner end thereof. In referring to the pivot 28 being located between the transverse center of the frame and the inner end, the term frame is here used to include the main wheel supporting frame 6, that is when "the frame" is referred to this is intended to include the portion made up of the beams 2, 3 and 5 and the portion made up of the beams 8, 9 and 10.

Attached to the pivot 28 is a pair of pull bars, one of which is indicated by the numeral 29 while the other is indicated by the numeral 30. As shown the bars 29 and 30 are secured together at one end and it is at these secured ends that they are attached to the pivot 28. The other ends of the bars are in spaced relation but at the tips are substantially parallel. Since, as shown, the bar 30 is of greater length than the bar 29 it will be readily seen that the bar 30 at its outer end must be curved inwardly toward the bar 29 in order that the ends may lie in the same vertical plane and may be substantially

parallel. Each of the bars 29 and 30 terminates at its outer or free end in an upwardly and reversely curved hook 31 and at these outer ends the bars are connected by a cross brace bar 32.

The front beam 2 of the frame structure has secured to the face thereof adjacent the cross beam 4 two pair of ears, one of which pair is indicated by the numeral 33 while the other is indicated by the numeral 34.

These pairs of ears 33 and 34 are apertured as shown and are spaced apart the same distance as the outer ends of the bars 29 and 30 so that when these bars are swung to the position where they extend from the rear to the front of the frame the apertured up-turned ends thereof may each be located between a pair of the ears.

Extending from the front beam 2 to the rear beam 3 is a cam bar 35 which describes a double reverse curve. One end of this bar is secured to the beam 2 at a point between the pairs of ears 33 and 34 while the other end is secured to the rear beam 3 at a point beyond the transverse center of the frame from the pivot 28. In addition to being curved in the manner shown and described this cam bar 35 curves downwardly from the front to the rear beam. It will thus be seen that as the frame is swung around over the pull bars 29 and 30 the outer end thereof will be lifted.

The outer beam 5 carries a bearing 36 in which is mounted a stub shaft 37 which carries a wheel 38. This wheel 38 cooperates with the wheel 13 to support the binder truck and the binder structure mounted thereon when the binder is in operation.

For the transportation of the truck there is attached to the pull bar 30 a draft tongue 39, the connection being made through the medium of a pair of downwardly directed curved elongated plates 40. These plates 40 are spaced apart as shown and receive the curved portion 31 of the bar 30 therebetween and are secured thereto by a pin 41. As shown the terminal lower ends of these attaching plates 40 project below the pull bar 30.

Attached to the under face of the pull bar 30 is a bracket 42 which extends longitudinally thereof to a point beneath the ends of the plates 40 and is held in spaced relation to the pull bar 30 by the up-turned portion of one end as indicated at 43 and by a supporting bolt 44 extended through the other end and through the overlying pull bar. This bracket 42 supports for oscillating movement thereacross an elongated bar 45 one end of which is pivotally attached as at 46 to the pull bar 29. The other or free end of the bar 45 has a pair of up-turned ears 47, the purpose for which will be hereinafter described.

The pair of ears 34 between which the up-turned end of the pull bar 29 positions is extended downwardly as shown and indicated

by the numeral 48. The lower ends of these ears are also provided with transverse apertures.

Extending through the apertures 49 of each pair of ears 33 and 34 is one leg 50 of a substantially U-shaped latch member, the other leg 51 of each latch member being of greater length than the leg 50 and extending through the hook of the adjacent pull bar in the manner shown. These U-shaped latch members are directed in the same direction and the leg 51 of one is connected to the other by a link 52. The long leg 51 of the latch member connecting the bar 29 with the ears 34 extends through the apertures formed through the extended portions 48 of these ears and carries thereon between the ear extensions a spring 53. This spring as will be readily seen will be compressed when the latch members are shifted to disconnect the legs 50 with their respective ear members 33 and 34 so that after the release of the pull bars 29 and 30 the latches will be returned to the position which they occupy while connecting the pull bars to the frame.

Mounted upon the frame structure at a point convenient to the latches is a bell crank 54 which is pivoted to swing in a substantially horizontal plane about the vertical pivot 55. One arm of this bell crank is connected by the link 56 with the adjacent latch member while the other arm is connected by a suitable pull bar 57, with a control or operating lever (not shown) mounted upon the binder at a point convenient to the operator riding thereon.

Extending from the arm of the bell crank 54 to which the pull rod 57 is attached is an arm 58, the end of which lies upon the surface of the bar 45 and oscillates in a horizontal plane between the ears 47 so that when the bell crank 54 is actuated for the purpose of pulling the latch members to disconnect the bars 29 and 30 from the frame this arm 58 will shift the free end of the bar 45 forwardly on the bracket 42 to position between the bracket and the down-turned ends of the plates 40 which connect the draft tongue 39 with the bar 30. This bar 45, when shifted to the position described, fills the area between the plates 40 and the bracket 42 so that vertical movement of the draft tongue cannot take place.

The pull bar 29 has pivotally attached thereto through the medium of the bolt 59 the bifurcated end 60 of a brace bar 61. The other end of this bar 61 is bolted as shown to the draft tongue 39.

In operation when the binder is working in a field the draft tongue 39 will be connected to the ears 33 through the medium of the bar 30 and the brace bar 61 attached to the draft tongue will be attached to the ears 34 through the medium of the bar 29.

The draft tongue will thus extend at right

angles to the length of the frame upon which the binder is mounted and as the binder may be moved about in the field it will move upon the wheels 13 and 38. The wheels 16 will be maintained in raised position through contact of the pull bar 30 with the head of the bar 19. This forces the bar 19 over and oscillates the link 18 so that the shaft 15 will be turned to raise the wheels 16 from the ground.

When the binder is to be transported through a gate or along a road which is too narrow to allow the binder to be run thereover in the position just described the operator of the machine will draw the bar 57 to shift the latch pins 50 and disengage the draft tongue 39 and the bar 61 from the front bar of the frame. By then driving the draft animals or the tractor, whichever may be hauling the machine, forwardly the outer end of the frame or the end to which the wheel 38 is attached will swing forwardly as a result of the offset relation of the line of pull to the point of connection between the draft tongue and the frame, which is the pivot 28. This releases the bar 19 and allows the shaft 15 to oscillate and the wheels carried thereon to come into contact with the ground. The inner ends of the pull bars 29 and 30 are connected as shown with the adjacent down-turned end of the crank axle 15 through the medium of a chain 63. This chain passes over a pulley 64 which is swivelly mounted upon the underside of the beam 3 of the main frame of the structure as shown in Figure 1. As the relative movement between the pull bars 29 and 30 and the frame 1 continues a pull will be exerted upon the chain 63 which will draw down the angularly disposed ends of the axle 15 and thus oscillate the axle to pull the wheels 16 to position under the frame thereby lifting the wheel 13 clear of the ground. The latch arm 22 may then be swung into position to engage the axle 15 in the manner shown in Figure 7 so that it will be firmly held in this position while the structure is being transported.

Continued pulling upon the draft tongue will cause the frame to swing around to a position where it will be substantially parallel with the draft tongue and as this action takes place the pull bars 29 and 30 will move under the arcuate cam track 35 and lift the outer end of the frame free from the ground so that in the new position which the frame occupies with respect to the draft tongue the wheel 38 will overlie the draft tongue and the entire structure may then be transported through a gateway or along a roadway, upon the wheels 16.

When the reverse of the foregoing operation is desired the operator of the binder will disconnect the latch bars 22 from the axle 15 by pulling the same up through the

medium of a suitable operating lever connected with the links 62, each of which is attached to a latch bar in the manner shown. This will allow the axle 15 to oscillate as the frame structure is drawn forwardly so that the main wheel 13 will be lowered into contact with the ground. This drag imposed upon the draft mechanism and the fact that the point of connection between the same and the frame is out of alignment therewith, will cause the frame to swing back to the position previously occupied, that is to the position where its length will be at right angles to the draft tongue. When the foregoing positions are resumed by the parts the pull bar 30 will be brought into contact with the head of the bar 19 which will cause the wheels 16 to be lifted from the ground through the oscillation of the axle and the up-turned apertured ends 31 of the pull bars 29 and 30 may then be replaced between the ears to which they are respectively connected and secured thereto by the bolts or pins 50.

From the foregoing description it will be readily seen that by the employment of a transport frame of the character herein described for a grain binder or other machine of extreme width, the machine may be readily shifted for passage through gateways or over roads without the necessity of performing the labor of disconnecting the draft apparatus at one point and connecting it at another point as is now the practice.

Having thus described my invention, what I claim is:

1. An agricultural implement transporting structure, comprising an elongated frame, a wheel mounted at each end of said frame upon a longitudinally extending axis, a pair of wheels mounted at one end of said frame upon a transversely extending axle, said last mentioned wheels being adapted for vertical swinging movement, a draft element for said structure and having pivotal connection with said frame, and means whereby upon the lowering of said last mentioned pair of wheels into contact with the ground and the application of a pull to said draft element, said frame may be caused to swing about said pivotal connection relative to the draft element.

2. A transporting structure for agricultural implements, comprising an elongated rectangular frame, a pair of supporting wheels one at each end of said frame and mounted upon a longitudinal axis, a pair of wheel mounted at one end of the frame one adjacent each longitudinal side thereof, said last mentioned pair of wheels being mounted upon a transverse axle and adapted to be shifted vertically to lift the adjacent end of the frame and the adjacent one of the first mentioned wheels clear of the ground, a draft element adapted to be connected to one lon-

gitudinal side of the frame adjacent said last mentioned pair of wheels, and a pair of elongated pull members connected at one end to said draft element and having their other ends offset with respect to said draft element and pivotally connected to said frame at a point adjacent the opposite longitudinal side thereof, whereby upon the application of a pull to said draft element after the raising of one end of the frame by the last mentioned pair of wheels, the frame will be caused to swing to a position with its longitudinal axis substantially parallel with the draft element.

3. A transporting structure for agricultural implements, comprising an elongated rectangular frame, a pair of supporting wheels one at each end of said frame and mounted upon a longitudinal axis, a pair of wheels mounted at one end of the frame one adjacent each longitudinal side thereof, said last mentioned pair of wheels being mounted upon a transverse axle and adapted to be shifted vertically to lift the adjacent end of the frame and the adjacent one of the first mentioned wheels clear of the ground, a draft element adapted to be connected to one longitudinal side of the frame adjacent said last mentioned pair of wheels, a pair of pull members connected at one end to said draft element and having their other ends offset with respect to said draft element and pivotally connected to said frame at a point adjacent the opposite longitudinal side thereof, whereby upon the application of a pull to said draft element after the raising of one end of the frame by the last mentioned pair of wheels, the frame will be caused to swing to a position with its longitudinal axis substantially parallel with the draft element, and means whereby upon the swinging of said frame the other end thereof will be lifted from the ground to assume a position over the draft element.

4. In a machine transporting structure of the character described, an elongated frame, supporting wheels for and at the ends of the same, a pair of wheels mounted at one end upon a transverse axle and vertically shiftable to lift the adjacent end of the frame, a draft tongue, and means pivotally connecting the tongue with the frame whereby the frame may be shifted from a position at right angles to the tongue to a position substantially parallel therewith.

5. A transporting structure for agricultural implements, comprising an elongated frame, a supporting wheel at each end of said frame mounted upon a longitudinally extending axis, a pair of supporting wheels at one end of the frame mounted upon a transverse axle, said axle being crank shaped and oscillatable to contact the wheels with the ground for the lifting of the adjacent end of the frame, a draft pole, a pair of pull bars

connected to one end of said pole and having their other ends pivotally connected to the frame at a point rearwardly of the longitudinal center thereof, said pull bars at their pivoted ends being laterally offset with respect to said draft pole, and means for detachably coupling said pull bars to the forward longitudinal side of the frame.

6. A transporting structure for agricultural implements, comprising an elongated frame, a supporting wheel at each end of said frame mounted upon a longitudinally extending axis, a pair of supporting wheels at one end of the frame mounted upon a transverse axle, said axle being crank shaped and oscillatable to contact the wheels with the ground for the lifting of the adjacent end of the frame, a draft pole, a pair of pull bars connected to one end of said pole and having their other ends pivotally connected to the frame at a point rearwardly of the longitudinal center thereof, said pull bars at their pivoted ends being laterally offset with respect to said draft pole, means for detachably coupling said pull bars to the forward longitudinal side of the frame, and cam means carried by the frame and designed to ride over said pull bars upon the swinging of the frame about the pivotal connection between the same and the pull bars, to raise one end of the frame to a position in a plane above the draft pole.

7. A transport structure for agricultural implements, comprising an elongated frame, a wheel at each end of the frame mounted upon a longitudinally extending axis, a crank axle mounted transversely of the frame adjacent one end and carrying a wheel upon each end thereof, said axle when oscillated raising the adjacent end of the frame on the wheels carried thereby, a draft pole, a pair of pull bars connected at one end and having their other ends spaced apart, the said other ends of the pull bars being pivotally connected with said draft pole, said pull bars being curved to offset their connected ends with respect to said draft pole, means for detachably connecting the spaced ends of said pull bars with one longitudinal side of said frame and adjacent said transverse axle, a pivotal connection between the connected ends of the pull bars and the frame adjacent the other longitudinal side thereof and between the transverse center and the point of connection for said draft pole, and means for releasing the connection between the pull bars and the forward longitudinal side of the frame.

8. A transport structure for agricultural implements, comprising an elongated frame, a wheel at each end of the frame mounted upon a longitudinally extending axis, a crank axle mounted transversely of the frame adjacent one end and carrying a wheel upon each end thereof, said axle when oscillated raising the adjacent end of the frame on the wheels carried thereby, a draft pole, a

pair of pull bars connected at one end and having their other ends spaced apart, the said other ends of the pull bars being pivotally connected with said draft pole, said pull bars being curved to offset their connected ends with respect to said draft pole, means for detachably connecting the spaced ends of said pull bars with one longitudinal side of said frame and adjacent said transverse axle, a pivotal connection between the connected ends of the pull bars and the frame adjacent the other longitudinal side thereof and between the transverse center and the point of connection for said draft pole, means for releasing the connection between the pull bars and the forward longitudinal side of the frame, and a cam bar extending transversely of the frame and inclining downwardly from the front to the rear thereof and designed to ride over said pull bars upon the swinging of the frame about the pivotal connection of the pull bars therewith.

9. A transport structure for agricultural implements, comprising an elongated frame, a wheel at each end of the frame mounted upon a longitudinally extending axis, a crank axle mounted transversely of the frame adjacent one end and carrying a wheel upon each end thereof, said axle when oscillated raising the adjacent end of the frame on the wheels carried thereby, a draft pole, a pair of pull bars connected at one end and having their other ends spaced apart, the said other ends of the pull bars being pivotally connected with said draft pole, said pull bars being curved to offset their connected ends with respect to said draft pole, means for detachably connecting the spaced ends of said pull bars with one longitudinal side of said frame and adjacent said transverse axle, a pivotal connection between the connected ends of the pull bars and the frame adjacent the other longitudinal side thereof and between the transverse center and the point of connection for said draft pole, means for releasing the connection between the pull bars and the forward longitudinal side of the frame, and means carried by said crank axle for engagement by one of said pull bars whereby the crank axle will be oscillated to lower the adjacent end of the frame when the draft pole is positioned to extend at right angles from the forward longitudinal side thereof.

10. A transporting structure for agricultural implements, comprising an elongated rectangular frame, a supporting wheel at each end of said frame mounted upon a longitudinally extending axis, vertically shiftable wheels disposed one adjacent each longitudinal side of the frame and adjacent one end thereof, said latter wheels being mounted to rotate about axes extending transversely of the frame, a pair of pull bars connected at one end and having their other ends spaced

apart, said pull bars being curved to dispose their connected ends at a point a substantial distance to one side of the forward ends thereof, and further having their forward ends turned back in vertical planes, a draft pole, a pivotal connection between the forward ends of said pull bars and said draft pole, means for connecting the turned back ends of said pull bars with the front longitudinal side of said frame, a pivotal connection between the connected ends of the pull bars and the frame adjacent the rear longitudinal side thereof and between the transverse center thereof and the point of connection of the turned back ends therewith, longitudinally extending latch pins connecting the turned back ends of said pull bars with the frame, and means for simultaneously disengaging said latch pins for the release of the pull bars, said pull bars having their spaced ends disposed in a plane below the frame.

11. A transporting structure for agricultural implements, comprising an elongated rectangular frame, a supporting wheel at each end of said frame mounted upon a longitudinally extending axis, vertically shiftable wheels disposed one adjacent each longitudinal side of the frame and adjacent one end thereof, said latter wheels being mounted to rotate about axes extending transversely of the frame, a pair of pull bars connected at one end and having their other ends spaced apart, said pull bars being curved to dispose their connected ends at a point a substantial distance to one side of the forward ends thereof, and further having their forward ends turned back in vertical planes, a draft pole, a pivotal connection between the forward ends of said pull bars and said draft pole, means for connecting the turned back ends of said pull bars with the front longitudinal side of said frame, a pivotal connection between the connected ends of the pull bars and the frame adjacent the rear longitudinal side thereof and between the transverse center thereof and the point of connection of the turned back ends therewith, longitudinally extending latch pins connecting the turned back ends of said pull bars with the frame, means for simultaneously disengaging said latch pins for the release of the pull bars, said pull bars having their spaced ends disposed in a plane below the frame, and means carried by the frame whereby upon oscillation of the same about the pivotal connection of the pull bars therewith the end of the frame remote from said vertically shiftable wheels will be raised to a plane above the draft pole.

12. A transporting structure for an agricultural implement, comprising an elongated frame, a supporting wheel at each end of said frame mounted to rotate about an axis extending longitudinally of the frame, a pair

of supporting wheels adjacent one end of the frame and mounted to rotate about axes extending transversely of the frame, a draft tongue, means for horizontally connecting the draft tongue to the under face of the frame at a point adjacent one longitudinal side thereof and at one side of the transverse center, said tongue when in non-operating position extending from the longitudinal side of the frame opposite the side adjacent said means and a cam rail disposed at an inclination from the horizontal, transversely of the frame and arranged to allow said tongue to ride therebeneath when moved to extend longitudinally of the frame, the frame being raised and entirely supported by the last mentioned wheels when the draft tongue is in the last mentioned position.

13. A transporting structure for an agricultural implement, comprising an elongated frame, a supporting wheel at each end of said frame mounted to rotate about an axis extending longitudinally of the frame, a pair of supporting wheels adjacent one end of the frame and mounted to rotate about axes extending transversely of the frame, a draft tongue, means for horizontally connecting the draft tongue to the under face of the frame at a point adjacent one longitudinal side thereof and at one side of the transverse center, said tongue when in non-operating position extending from the longitudinal side of the frame opposite the side adjacent said means, a cam rail disposed at an inclination from the horizontal, transversely of the frame and arranged to have said tongue ride therebeneath when moved to extend longitudinally of the frame, the frame being raised and entirely supported by the last mentioned wheels when the draft tongue is in the last mentioned position, said last mentioned wheels being oscillatable to lift the frame, and connecting means for the tongue and the last mentioned wheels whereby the same will be oscillated when the tongue is swung to the last mentioned position.

In testimony whereof I hereunto affix my signature.

CHARLES MEIER.