July 12, 1927. 1,635,803

H. B. SPERRY

TONGUE SUPPORTING TRUCK

Filed June 12, 1924 2 Sheets-Sheet 1

Fig 1

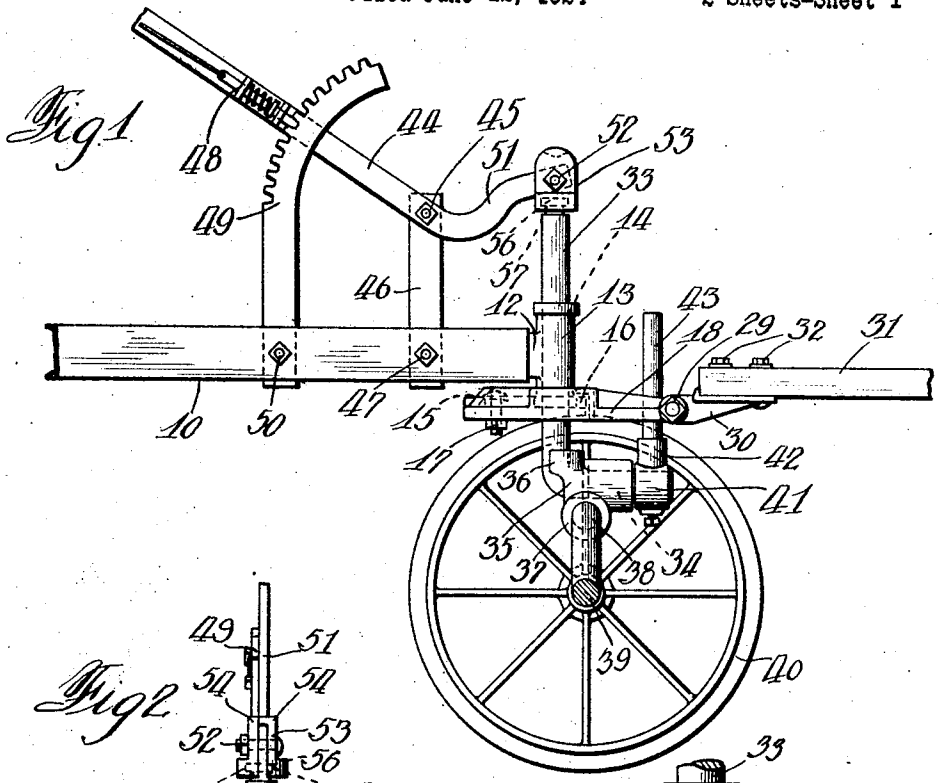


Fig 2

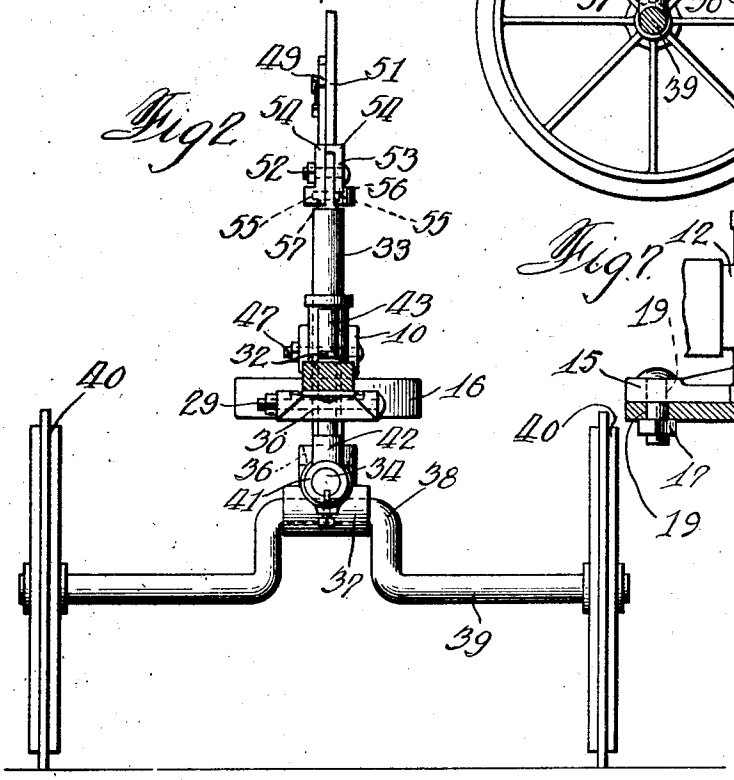
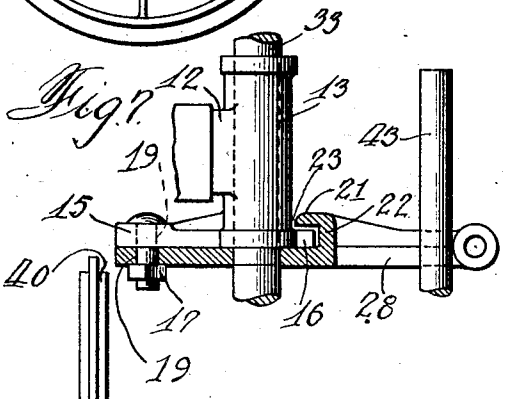


Fig 3



Inventor:
Herbert B. Sperry
By: Sprinkle & Smith
Attys

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H. B. SPERRY

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Fig 3.

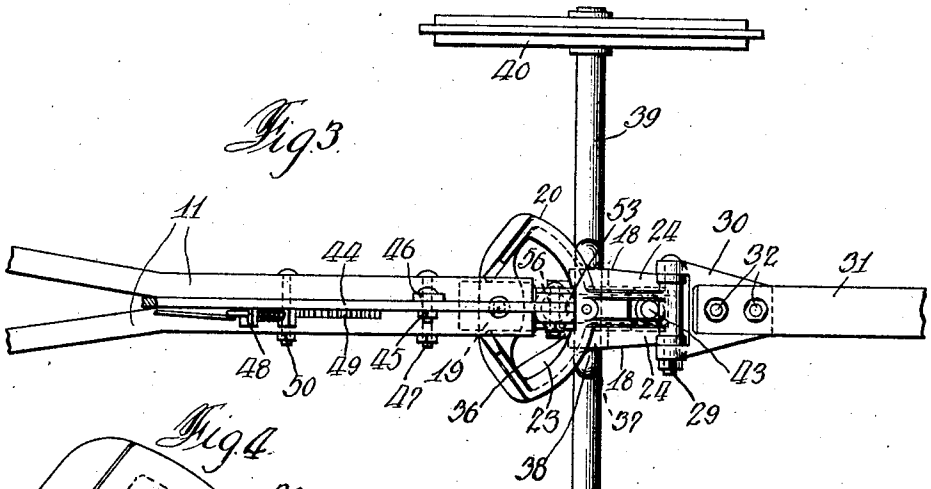


Fig 4.

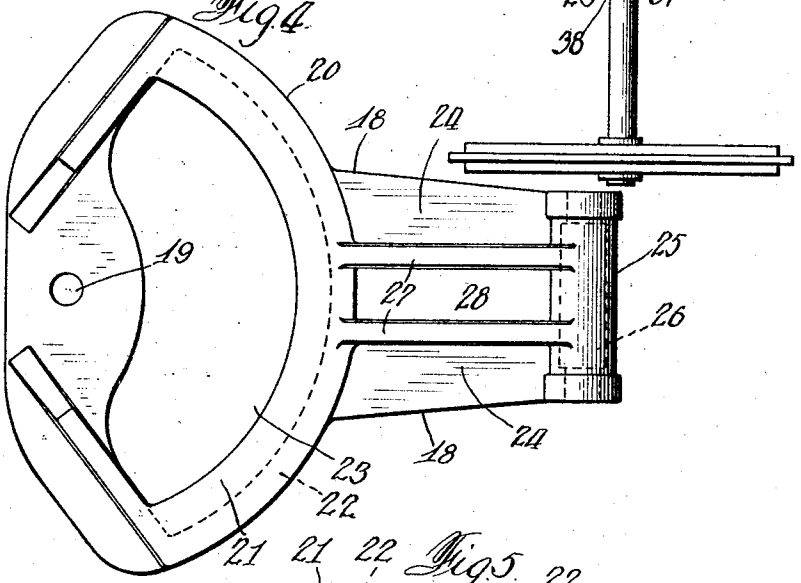


Fig 5.

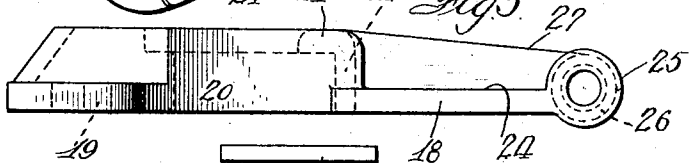
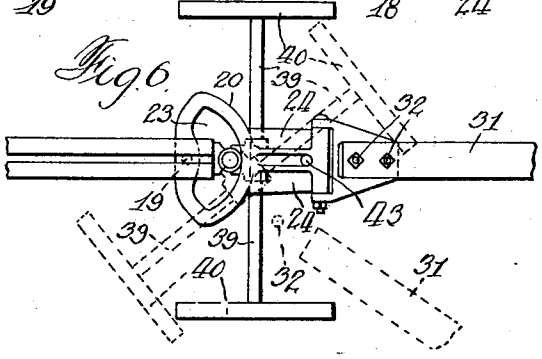


Fig 6.



Inventor:
Herbert B. Sperry.
By Sprinkle & Smith.
Attys.

Patented July 12, 1927. 1,635,803

UNITED STATES PATENT OFFICE.

HERBERT B. SPERRY, OF CHICAGO, ILLINOIS, ASSIGNOR TO APPLETON MANUFACTURING COMPANY, A CORPORATION OF ILLINOIS.

TONGUE-SUPPORTING TRUCK.

Application filed June 12, 1924. Serial No. 719,496.

This invention relates to a tongue supporting truck which is more particularly adapted for use with agricultural machines.

One of the objects of the present invention is to provide a simplified and generally improved form of fore truck.

Another object of the invention is to provide a combination of a vertically adjustable stub tongue with a swinging guide tongue providing differential steering by reason of the fact that the connections between the stub tongue and the guide tongue and the foretruck axle are so arranged that when the angle between the guide tongue and the stub tongue is varied in turning or due to deflections on account of side draft the angle of the foretruck axle will have a differential movement with respect to variations in the angle between the stub tongue and the guide tongue. In other words, considering the swinging guide tongue as a movable member of the pivoted combination the foretruck axle connected therewith will not move in unison with the swinging guide tongue according to my improved construction, but there will be a differential movement imparted to the foretruck axle in relation to the swinging movement of the guide tongue and this movement of the foretruck axle will take place at a differential and accelerated speed as the angle between the guide tongue and the stub tongue changes when the guide tongue is moved or deflected from its normal or right line position in relation to the stub tongue and as the relation of the guide and stub tongues is varied to restore them to the right line normal position or relation the foretruck axle will move in the reverse direction also at a differential speed.

A further object of the invention is to provide an improved form of fore truck by means of which the relative adjustment of the machine with respect to the truck is accomplished in combination with the truck itself.

A still further object of the invention is to provide an improved form of truck having a pivotal connection with the stub tongue of the machine and through which the stub tongue may be relatively adjusted with respect to the truck.

A still further object of the invention is to provide an improved form of tongue truck operatively related to the tongue in such a manner that the angling of the tongue with respect to the stub tongue of the machine, angles the truck at a greater angle with respect to the stub tongue than the angle of the tongue proper with respect to the stub tongue, thereby permitting the machine to be easily steered and overcoming to a considerable extent the tendency of the side draft of the machine to impart a turning or side lashing movement or strain to draft animals or other means pulling the machine.

These and other objects are accomplished by providing a construction and arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claims.

Referring to the drawings, Fig. 1 is a side elevational view of my improved form of fore truck.

Fig. 2 is a front elevational view of the same.

Fig. 3 is a top plan view of the fore truck shown in Figs. 1 and 2.

Figs. 4 and 5 are top plan and side elevational views, respectively, of the swinging bracket to which the tongue is pivotally connected.

Fig. 6 is a diagrammatical view showing the manner in which the tongue truck is swung at a greater angle with respect to the stub tongue than the tongue proper is swung with respect to the stub tongue, and

Fig. 7 is an enlarged fragmentary view partly in section showing the pivotal connection of the truck and stub tongue.

One of the features of my improved form of tongue supporting truck is the provision of a simplified structure in which the adjustment of the frame of the machine is accomplished through the medium of the fore truck and at the same time providing a construction in which the angling of the truck at a greater angle with respect to the stub tongue than the angling of the tongue proper is accomplished without interfering with the vertical adjustment of the stub tongue on the tongue truck.

In carrying out my invention I have shown the same in connection with a stub tongue 10, which, it will be understood, may be connected to any type of agricultural machine which requires the adjustment of

the tongue vertically to accomplish the adjustment of the operative parts of the machine with respect to the ground. This stub tongue as illustrated in the drawings comprises two channel members 11, which have secured at their forward ends, in any well known manner, a bearing member 12. The bearing member 12 has a vertically extending barrel portion 13 with a bore 14 extending vertically therethrough. Formed integrally with the bearing member 12 and extending rearwardly therefrom adjacent the bottom thereof and underneath the forward end of the stub tongue 10 is an arm 15. Formed integrally with the bearing member 12 adjacent its forward lower end is a horizontally projecting flange 16. Pivotally mounted on the arm 15 of the bearing member 12, by means of a bolt 17, which extends through registering apertures 19 and 19′ in the bracket and arm respectively, is a swinging bracket 18. The bracket 18 has one end substantially in the form of a semi-circular track 20 having a horizontal arcuate flange 21 and a vertical flange 22. Formed between the semi-circular portion 20 and the rearward portion of the bracket, is a substantially semi-circular or arcuate opening 23 for the purpose hereinafter set forth. The forward end of the bracket 18 is provided with two oppositely disposed and forwardly extending arms 24 which have formed integrally therewith at their forward ends a horizontally extending barrel portion 25 having a longitudinal bore 26 extending therethrough. The arms 24 are provided with reinforcing ribs 27. Formed between the ribs 27 of the bracket 18 is a longitudinally extending slot or aperture 28 for the purpose hereinafter set forth.

When the pivoted bracket 18 is operatively mounted on the bearing member 12 by means of the bolt 17 the horizontally arcuate flange 21 of the bracket 18 rests on the forwardly extending flange 16 of the bearing member 12 and prevents the displacement of the bracket 18 from the bearing member 12. But it will be noted that by reason of the circular construction of the flange 21, the bracket 18 may oscillate from side to side about its pivot on the bolt 17. The circular flange 21 and the horizontal flange 16 of the pivoted bracket 18 and the bearing member 12, respectively, will permit the oscillatory movement of the bracket 18 with respect to the bracket 12 within the limits of the arcuate flange 21 and thereby limit the pivotal movement of the tongue proper with respect to the stub tongue. Pivotally secured to the pivoted bracket 18 in the bearing portion 25 by means of a bolt 29, is a tongue bracket 30 which has its forward end secured to the guide tongue proper 31 by means of bolts 32. Adjustably mounted in the bearing member 12 is an L-shaped shaft 33 which extends downwardly through the bore 14 of the bearing portion 13 and through the semi-circular or arcuate opening 23 of the bracket 18. The horizontal portion 34 of the shaft 33 extends forwardly and has pivotally secured thereto adjacent the vertical portion of the shaft an axle bracket 35. This axle bracket is provided with spaced apart lugs 36 which permit a limited rocking movement of the truck on the horizontal portion 34 of the shaft 33 in such a manner that the truck will follow irregularities in the ground. The axle bracket is provided with a horizontally disposed barrel portion 37 which is arranged at right angles with respect to the portion of the bracket for receiving the horizontal portion 34 of the shaft 33. The barrel portion 37 has secured therein in any well known manner an offset portion 38 of the axle 39. The axle 39 has mounted on its opposite ends the usual truck wheels 40 which are secured to the outer ends of the axle in any well known manner. Secured to the forward end of the horizontal portion 34 of the shaft 33, preferably by a key and a set screw is a member 41 which has an upwardly extending barrel portion 42 formed integrally therewith. Secured in the barrel portion 42 in any well known manner is a vertically disposed supplemental shaft 43. The shaft 43 extends upwardly through the longitudinal slot 28 of the bracket 18 as shown in Figs. 1 and 3.

From the above description it will be noted that as the guide tongue 31 is oscillated or swung to the left or right from the position shown in Fig. 3 it will swing the pivoted bracket with it about its pivot 17 on the arm 15 of the bearing member 12, and when the bracket 18 is oscillated about this pivot it will, of course, oscillate the shaft 33 in the bearing member 12 by reason of the shaft 43 extending through the longitudinal slot 28 of the bracket. In this oscillatory movement of the bracket 18 it will be noted that by reason of the relative position of the shafts 33 and 43 with respect to each other that the oscillatory horizontal movement of the tongue 31 will cause the axle or fore truck to swing through a relatively greater angle with respect to the stub tongue 10 than the guide tongue 31 will swing with respect to the stub tongue 10. In other words, the movement of the guide tongue transmits a differential angular movement to the truck relative to the stub tongue.

In order to effect an adjustment of the machine through the medium of the stub tongue 10 or to effect an adjustment of the stub tongue 10 with respect to the truck I have provided a novel means which comprises a lever 44 pivotally mounted at 45 to a support 46 secured to the stub tongue by means of a bolt 47. The lever 44 is provided

with the usual detent mechanism 48, which is adapted to lock the lever in predetermined positions of adjustment by engaging a curved toothed sector 49 secured to the stub tongue by means of a bolt 50. The free or forward end of the lever 44 is curved upwardly, as shown at 51, and is pivotally connected by means of a bolt 52 to a swivelling bracket 53. The swivelling bracket is preferably made of two parts, as shown at 54 which are provided with semi-circular undercut recesses at their lower sides thereof, as shown at 55. These undercut recessed portions are adapted to engage a cap or head 56 formed on the upper end of the shaft 33. This cap or head 56 is formed in the upper end of the shaft 33 by forming a peripheral groove 57 adjacent the upper end of the shaft.

In the operation of the above described device, it will be understood that my improved form of truck may be used in connection with various types of machines, but is particularly adapted for agricultural machines wherein it is necessary to support the stub tongue or forward portion of the machine on a fore truck and in such types of machines where it is necessary to adjust the machine with respect to the ground in order to adapt the machine for varying conditions. If it is necessary to raise the stub tongue 10 of the machine, the lever 44 is swung upwardly about its pivot 45 on the supporting member 46, which, in turn, causes the bearing member 12 to be elevated on the shaft 33 through the connection of the free end 51 of the lever with the swivelling bracket 53, which is connected to the upper end of the shaft 33, as previously described. The swinging of the fore truck to a greater angle than that through which the tongue 31 is swung is accomplished by the relative position of the shafts 33 and 43 with respect to the pivot 17 of the bracket 18. In the embodiment of the invention I have shown and described it will readily be noted that I have provided an extremely simple and efficient fore truck in which I have combined the means for adjusting the stub tongue of the truck in combination with a tongue actuated fore truck.

While in the above specification I have described one embodiment which my invention may assume in practice, it will of course, be understood that various other forms or modifications may be made and still be within the contemplation of my invention.

What I claim as my invention and desire to secure by Letters Patent is:

1. In combination with an agricultural machine, of a stub-tongue therefor, a fore-truck pivotally mounted on a substantially vertical pivot on said tongue for supporting the forward end thereof, a guide tongue connected with the stub-tongue, means carried by said stub-tongue and engageable with the pivotal connection between said stub-tongue and truck for adjusting said stub-tongue on said foretruck, and means for transmitting angular movement to said truck in relation to said stub-tongue, at a differential rate of movement to relative movements of said tongues.

2. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertically disposed shaft secured to said axle for pivotally connecting said truck to said stub tongue, a guide tongue connected with said stub tongue, means mounted on said stub tongue and operatively related to said shaft for adjusting said stub tongue with respect to said truck and means for transmitting angular movement to said truck in relation to said stub-tongue, at a differential rate of movement to relative movements of said tongues.

3. In combination with an agricultural machine, of a stub tongue therefor, a fore-truck pivotally mounted on said tongue for supporting the forward end of said stub tongue, means mounted on said stub tongue and operatively related to the pivotal connection of said truck and tongue for adjusting said tongue on said foretruck, a guide tongue connected to said stub tongue, and means for transmitting angular movement to said truck in relation to said stub tongue at a differential rate of movement to relative movements of said tongues.

4. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertically disposed shaft secured to said axle for pivotally connecting said truck to said stub tongue, a guide tongue connected with said stub tongue, a lever mounted on said stub tongue and operatively related to said shaft for adjusting said stub tongue with respect to said truck, and means for transmitting angular movement to said truck in relation to said stub-tongue, at a differential rate of movement to relative movements of said tongues.

5. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertically disposed shaft secured to said axle for pivotally connecting said truck to said stub tongue, and a lever mounted on said stub tongue and pivotally connected to said shaft for vertically adjusting said stub tongue with respect to said truck, and means carried by said stub-tongue for controlling the lever in adjusted positions.

6. In combination with an agricultural

machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertical shaft operatively secured to said axle, and having a substantially horizontally extending integral lower end portion, a bearing bracket secured to the forward end of said stub tongue for receiving and pivotally securing said shaft to said stub tongue, a supplemental vertical shaft secured to a horizontal portion of said vertical shaft and spaced from the vertical portion thereof, and a tongue bracket pivoted to said stub tongue and operatively related with both of said shafts for controlling the angularity of said fore truck with respect to said stub tongue.

7. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertical shaft operatively secured to said axle, a bearing bracket secured to the forward end of said stub tongue for receiving and pivotally securing said shaft to said stub tongue, a supplemental vertical shaft secured at its lower end to said vertical shaft and spaced from it, and means including a tongue pivoted to said stub tongue at a point to the rear of said first mentioned shaft and operatively related to both of said shafts for controlling the angularity of said fore truck with respect to said stub tongue.

8. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertical shaft having a horizontal portion pivotally connected to said axle, a bearing bracket secured to the forward end of said stub tongue for receiving and pivotally securing said shaft to said stub tongue, a supplemental vertical shaft secured to the horizontal portion of said vertical shaft and spaced from it, and a tongue bracket pivoted to said stub tongue having an arcuate slot therein for the reception of said first named shaft and having a longitudinal slot therein for the reception of said supplemental shaft for controlling the angularity of said fore truck with respect to said stub tongue.

9. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertical shaft operatively secured to said axle, a bearing bracket secured to the forward end of said stub tongue for receiving and pivotally securing said shaft to said stub tongue, a supplemental vertical shaft having its lower end secured to said vertical shaft and spaced from it, a tongue bracket pivoted to said stub tongue having an arcuate slot therein for the reception of said first named shaft and having a longitudinal slot therein for the reception of said supplemental shaft for controlling the angularity of said fore truck with respect to said stub tongue, and a lever pivotally mounted on said stub tongue and swivellingly connected to the upper end of said first named shaft for adjusting said stub tongue with respect to said truck.

10. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertical shaft operatively secured to said axle, a bearing bracket secured to the forward end of said stub tongue for receiving and pivotally securing said shaft to said stub tongue, a supplemental vertical shaft secured to said first mentioned shaft and spaced from it, means including a tongue pivoted to said stub tongue at a point to the rear of said first mentioned shaft and operatively related to both of said shafts for controlling the angularity of said fore truck with respect to said stub tongue, and a lever pivotally mounted on said stub tongue and swivellingly connected to the upper end of said first named shaft for adjusting said stub tongue with respect to said truck.

11. In combination with an agricultural machine, of a stub tongue therefor, a fore truck for supporting the forward end of said stub tongue comprising a pair of wheels and an axle, a vertical shaft pivotally secured to said axle, a bearing bracket secured to the forward end of said stub tongue for receiving and pivotally securing said shaft to said stub tongue, a supplemental vertical shaft secured to said first mentioned shaft and spaced from it, a tongue bracket pivoted to said stub tongue and operatively related with both of said shafts for controlling the angularity of said fore truck with respect to said stub tongue, and means formed as an integral part of said bracket for limiting the angular movement of said fore truck with respect to said stub tongue.

In testimony whereof I have signed my name to this specification on this 9th day of June, A. D. 1924.

HERBERT B. SPERRY.