Aug. 16, 1927. T. H. OPPENHEIM ET AL 1,638,953

FRONT AXLE CONSTRUCTION

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Fig. 1.

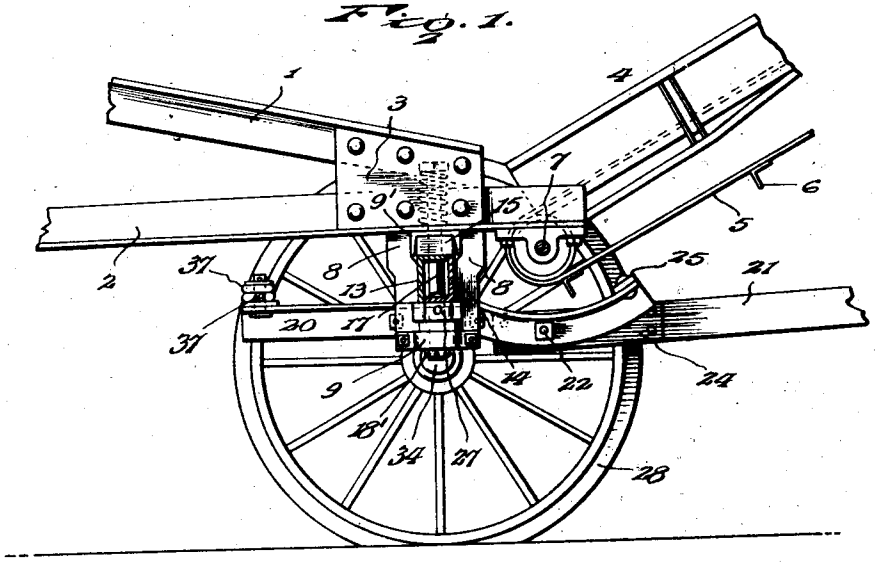


Fig. 4.

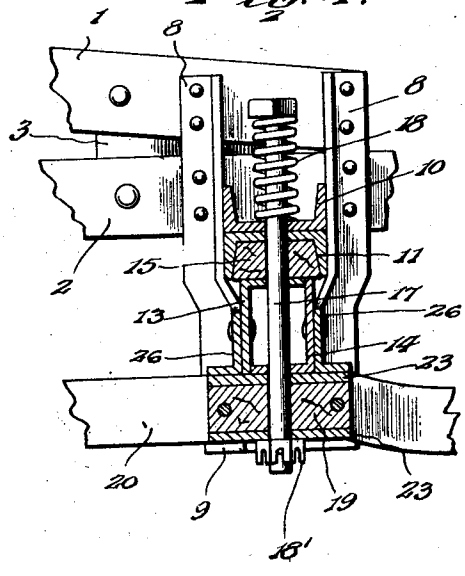
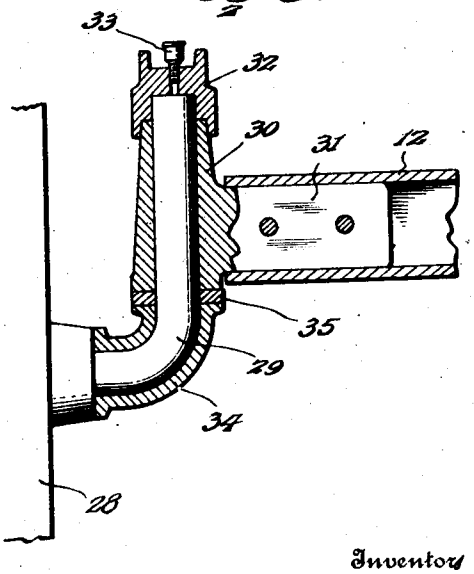


Fig. 5.



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Fig. 2.

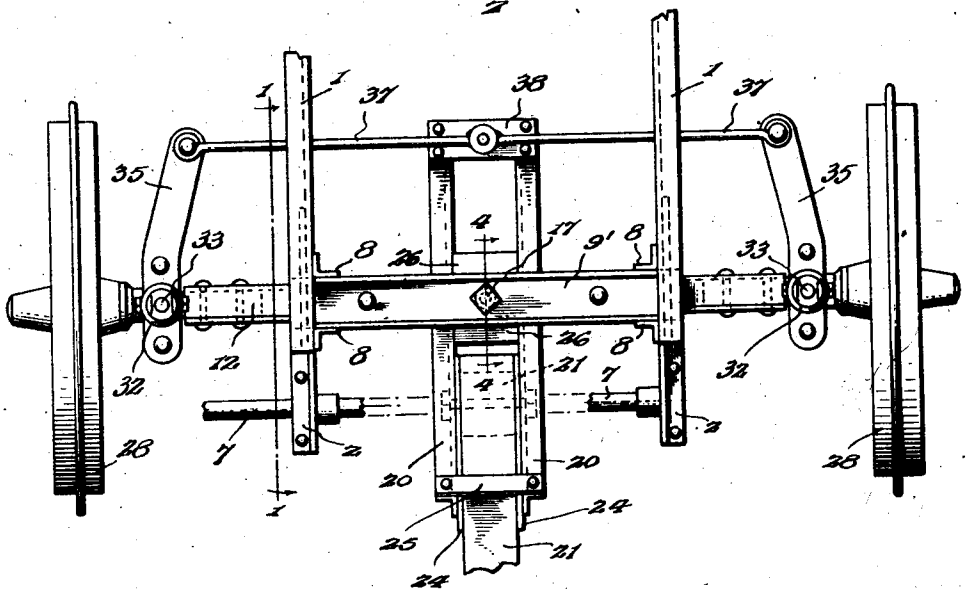
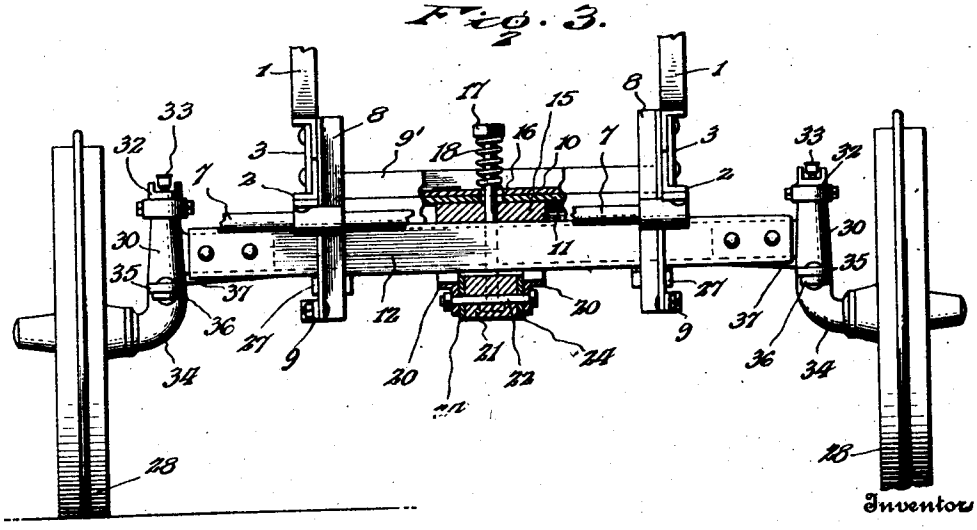


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FRONT-AXLE CONSTRUCTION.

Application filed June 15, 1926. Serial No. 116,188.

Our present invention relates to the front axles of corn huskers and shredders, ensilage cutters, corn shellers and other machines in which there is provided a conveyor at the front end of the machine to carry therefrom the product of the machine. One object of the invention is to provide an axle structure which will permit the machine to be turned about a short radius and will also permit the conveyor to be mounted at a low point of the machine frame without interfering in any way with the action of the draft pole or tongue in steering or pulling the machine. These stated objects, and other objects which will incidentally appear in the course of the following description, are attained in such a structure as is illustrated in the accompanying drawings, and the invention resides in certain novel features which will be particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a side elevation, partly in section, of a front axle structure embodying our improvements;

Fig. 2 is a plan view of the same, the line 1—1 in this figure indicating the plane of the section shown in Fig. 1;

Fig. 3 is a front elevation, with parts broken away and parts in section;

Fig. 4 is an enlarged detail section on the line 4—4 of Fig. 2;

Fig. 5 is a detail section of the wheel spindle and its mounting.

In the drawings, the reference numeral 1 indicates a portion of the frame bars of a machine which are disposed above longitudinal side sills 2 and are connected with the sills at their ends by gusset plates 3, the ends of the sills projecting forwardly beyond the frame bars and the gusset plates, as shown clearly in Figs. 1 and 2. A portion of a conveyor is shown at 4, the said conveyor including an endless belt or apron 5 having cleats or pushing devices 6 secured at intervals thereon. This conveyor is shown mounted upon a shaft 7 which is carried in suitable bearings provided therefor and secured upon the under sides of the front projecting ends of the sills 2, but it will be understood that the details whereby the conveyor is supported and driven are immaterial.

Rigidly secured to the frame bars 1 and the sills 2 at or adjacent the front extremities thereof are hangers or pedestals consisting of vertically disposed angle bars 8 spaced apart and connected at their lower ends by a bridging bracket 9, and extending between these hangers and secured rigidly thereto is a bolster or cross beam 9′ which, as shown most clearly in Figs. 3 and 4, is preferably composed of two channel bars 10 and 11 secured together with their intermediate webs in abutment and their flanges extending, respectively, upwardly and downwardly. The upper channel bar is disposed so that its intermediate web will lie flush with the under side of the sills 2 and the lower channel bar may have its ends projected under the sills so to be riveted or otherwise rigidly secured thereto. The axle 12 is shown as consisting of angle bars 13 and 14 placed together to form a flat-sided tube disposed below the bolster 9′ and fitting closely between the lower portions of the hanger members 8, the ends of the axle extending laterally beyond the said hanger members, as clearly shown in Figs. 2 and 3. A filler block 15 is fitted between the flanges of the lower channel bar 11 at the center thereof and is provided with a central opening 16 through which the bolt 17 extends, a spring 18 being shown coiled around the bolt between the upper channel bar 10 and the head of the bolt. The filler block 15 bears at its under side upon the axle, as clearly shown in Figs. 3 and 4, and thereby aids in guiding the bolt into position and preventing bending of the same. The bolt extends downwardly through the axle, as shown most clearly in Fig. 4, and through the head block 19 which is disposed below the axle and is held up against the same by the spring 18, which may be disposed between the block and the nut 18′ on the lower end of the bolt, if preferred. The head block 19 is bolted or otherwise secured between the longitudinal draft bars 20, the draft tongue 21 being pivotally mounted, as at 22, between the forward portions of the draft bars. The head block 19 may have its upper and lower faces reinforced by metal wear plates 23 and similar metal wear plates 24 are preferably provided at the sides of the draft tongue between the same and the forwardly protecting portions of the draft bars 20. It will be noted that the draft bars 20 extend both forwardly and rearwardly from the axle and the forward portions thereof are preferably dished or slightly arcuate, as

shown most clearly in Fig. 1, whereby the pivotal connection of the draft tongue will be somewhat lowered and additional clearance for the conveyer 4 thus obtained. The front extremities of the draft bars are connected by a metal strap or bridge piece 25 which extends over the draft tongue and thereby limits the possible upward swinging movement of the same so that it cannot interfere with the operation of the conveyer. This strap also serves as a reinforcing member to impart rigidity to the front extremities of the draft bars and prevent spreading of the same. The connection of the draft bars with the axle may be reinforced so that the bending strain upon the bolt 17 will be overcome, by providing coupling brackets 26 secured to the front and rear sides of the axle and to the top of the head block 19, as will be understood upon reference to Fig. 4 It will be readily noted that the axle may move downwardly between the hangers 8 at one end and upwardly at the other end between the flanges of the channel 11 to accommodate unevennesses in the surface over which the machine is drawn, and the spring 18 will prevent the chattering usually incidental to vibration. A slight lateral movement of the axle is permitted but is limited by the bolt 17, and may be additionally limited by stop blocks 27, if desired, secured to the under side of the axle and having their front and rear ends or edges notched so as to engage loosely around the hanger members 8. The openings 16 through the bolster members 10 and 11 are a trifle elongated and this formation, with a little side slipping of the filler blocks 15 accommodates the oscillation, the sidewise movement being very slight, when it occurs at all. The vertical movement, however, will be ample to accommodate the irregularities in the surface of the ground and the tie members 9 are bowed outwardly so that they will not interfere with vertical movement of the stop blocks 27.

The wheels 28 are mounted upon the horizontal portions of spindles 29 which have their vertical portions inserted upwardly through sleeves 30 provided with lateral arms 31 which are fitted in the respectively adjacent ends of the axle and are secured rigidly therein by bolts or rivets, as shown and as will be understood. A cap 32 is provided on the upper end of each sleeve 30, and this cap carries an oil cup 33 whereby lubricant may be supplied to the spindle. The elbow of the spindle is fitted in a casing 34 which has its ends in abutting relation to the inner end of the respectively adjacent hub and to the forward end of a spindle arm 35 which is interposed between the casing and the superposed sleeve 30. Each casing 34 is provided at its upper end with forwardly and rearwardly projecting lugs or flanges 36 which are riveted or bolted to the respectively superposed spindle arm 35 so that, if movement be imparted to the arm, the casing will be likewise turned and the spindle caused to rotate about the axis of its vertical portion thereby disposing the wheels in angular relation to the axle and effecting steering of the machine. The spindle arms 35 extend rearwardly from the spindles and to the rear end of each arm is pivoted the outer end of a link 37, the inner ends of the links being disposed in overlapping relation and pivoted to a strap or bridge member 38 which is rigidly secured to and connects the rear extremities of the draft bars 20. If the draft tongue 21 be swung to either side, the rear ends of the draft bars 20 will be swung to the opposite side of the machine and this movement will be imparted through the links 37 to the spindle arms 35 and thence to the spindles so that the wheels will be set in proper angular relation to the machine to steer the machine in the desired direction. It will be noted that the connections between the draft bars and the wheels are all in rear of the axle where they are out of the way and they cannot possibly interfere with the operation or the adjustment of the conveyer. The construction and arrangement of the several parts of our axle mounting permits the pivot or driving shaft of the conveyer to be disposed at a relatively low point of the machine frame, and in the case of a corn husker, for instance, the lower end of the conveyer is brought into such relation to the machine frame and the husking rolls that the lower ends of the rolls and the lower end of the conveyer will constitute a hopper whereby the ears of corn will pass easily and positively into the conveyer to be carried away by the latter. Our construction is especially adapted for low-down machines which are desirable inasmuch as such machines move over rough roads with minimum whipping of the draft tongue. Moreover, low-down machines are more easily accessible for feeding operations.

Having thus described the invention, we claim:

1. In apparatus for the purpose set forth, the combination of frame members, a conveyer-driving shaft mounted on the frame members, hanger members secured to and depending from the frame members, an axle extending between said hanger members, wheels mounted at the ends of the axle, a yieldable support for the axle between the hanger members, draft bars secured to the axle and projecting forwardly therefrom below the conveyer-driving shaft, and means for applying draft to the draft bars.

2. In an apparatus for the purpose set forth, the combination of frame bars, a conveyer having a driving shaft mounted on

the frame bars, an axle mounted below and supported from the frame bars, draft bars secured to the axle and projecting forwardly from the axle below the conveyer, a draft ongue connected to the forwardly projecting portions of the draft bars, and supporting wheels carried by the ends of the axle.

3. In an apparatus for the purpose set forth, the combination of frame bars, a bolster secured to and extending between the frame bars, hanger guides depending from the frame bars at the ends of the bolster, an axle yieldably held to the bolster and extending through the hanger guides, wheels carried by the ends of the axle, a conveyer having a driving shaft mounted in front of the bolster and the axle, and draft bars connected to the axle and extending rearwardly therefrom and also forwardly therefrom below the conveyer driving shaft, means in rear of the axle connecting the draft bars with the wheels for angularly shifting the wheels.

4. In apparatus for the purpose set forth, the combination of frame bars, a bolster secured to and extending between the frame bars, an axle below the bolster, a bolt passing through the axle and the bolster, means cooperating with the bolt to yieldably hold the axle to the bolster, wheels carried by the ends of the axle, and means for angularly setting the wheels.

5. In apparatus for the purpose set forth, the combination of frame bars, hanger guides depending from the frame bars, a bolster including a channel secured to and extending between the frame bars, an axle extending through the guides below the bolster, draft bars disposed below and connected with the axle at the center thereof, a king bolt disposed between the draft bars and passing upwardly through the axle and the bolster, a filler block around the king bolt within the channel of the bolster, a spring carried by the bolt and holding the axle to the bolster, wheels carried by the ends of the axle, and connections between the rear ends of the draft bars and the wheels whereby to effect steering.

6. In apparatus for the purpose set forth, the combination of frame bars, an axle supported from and disposed below the frame bars, a conveyer having a driving shaft mounted on the frame bars in front of the axle, a draft element connected to the axle and projecting forwardly therefrom below the conveyer driving shaft, wheels mounted on the ends of the axle for pivotal steering movement, and connections between the draft element and the wheels whereby to angularly set the wheels.

7. In apparatus for the purpose set forth, the combination of frame bars, a bolster secured to and extending between said members and provided centrally with an opening elongated in a direction transverse to the frame members, an axle disposed below the bolster, means for retaining the axle in the same vertical plane with the bolster, a bolt inserted vertically through the axle and the central elongated opening in the bolster, and means cooperating with the bolt for yieldably holding the axle against the bolster.

In testimony whereof we affix our signatures.

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BERNARD SELHORST. [L. S.]