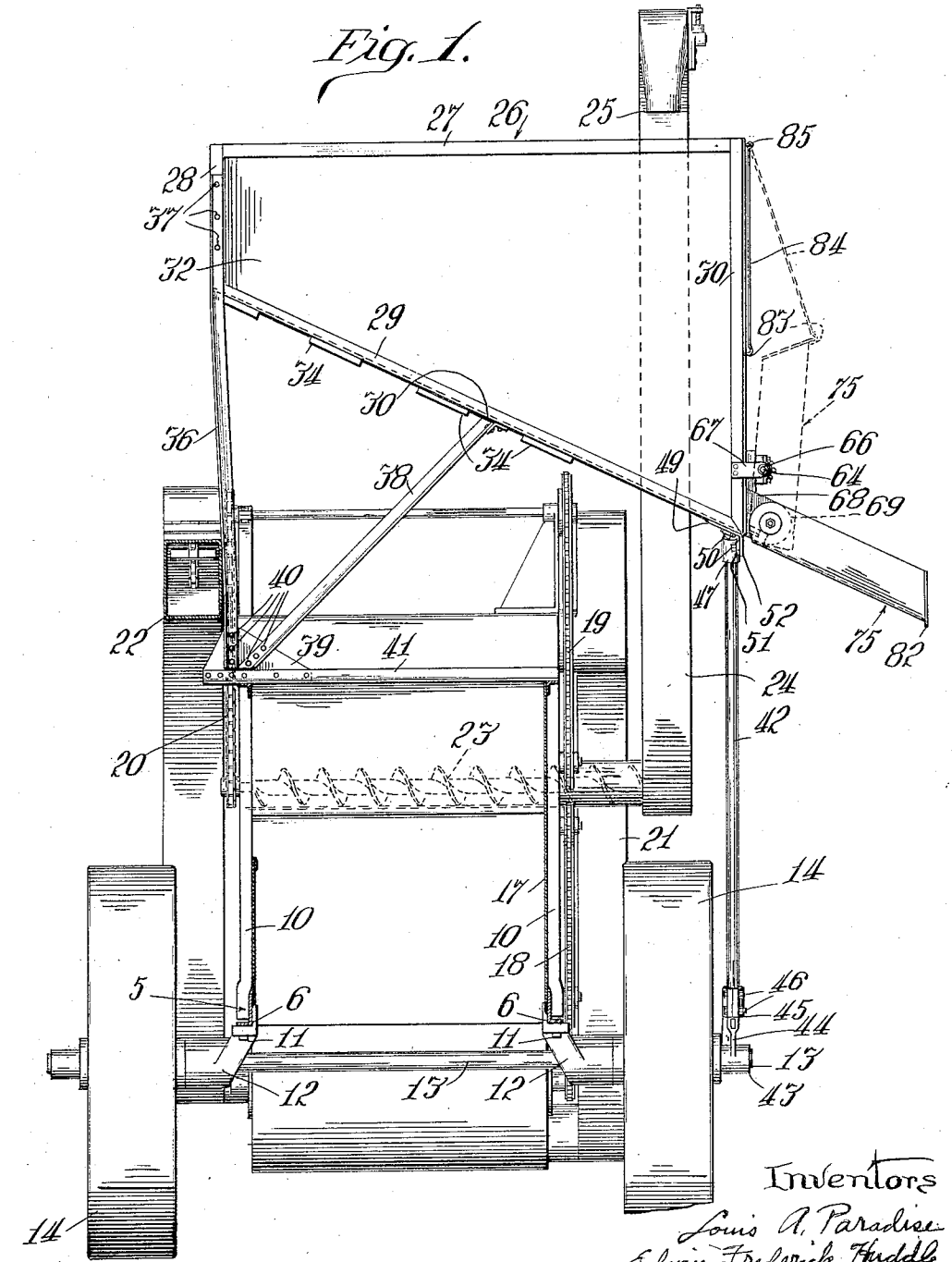
Aug. 2, 1932. L. A. PARADISE ET AL 1,869,581

GRAIN STORAGE TANK FOR THRESHERS

Filed May 9, 1928 3 Sheets-Sheet 1

Fig. 1.



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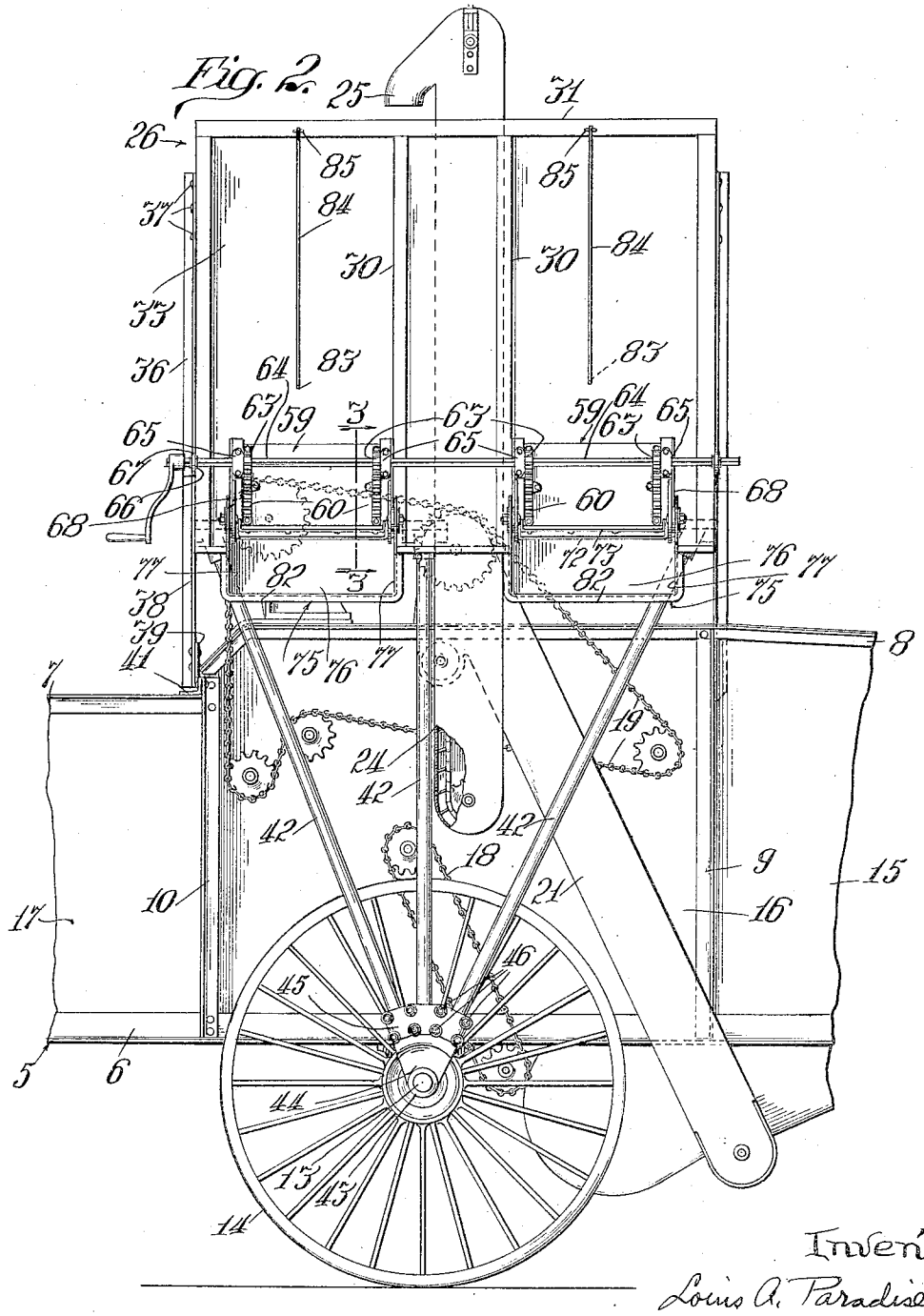
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GRAIN STORAGE TANK FOR THRESHERS

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Fig. 2.



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GRAIN STORAGE TANK FOR THRESHERS

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Fig. 3.

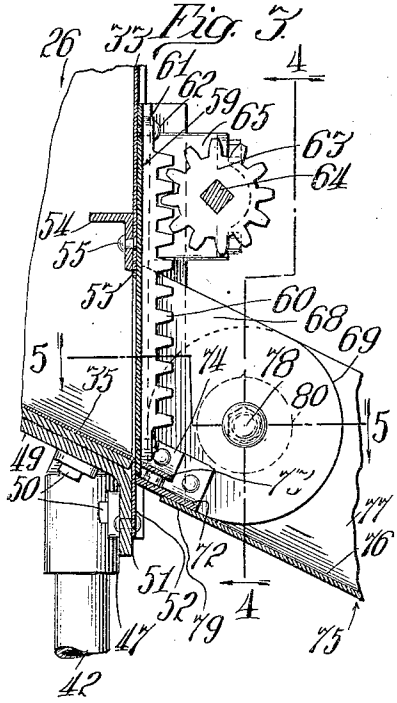


Fig. 4.

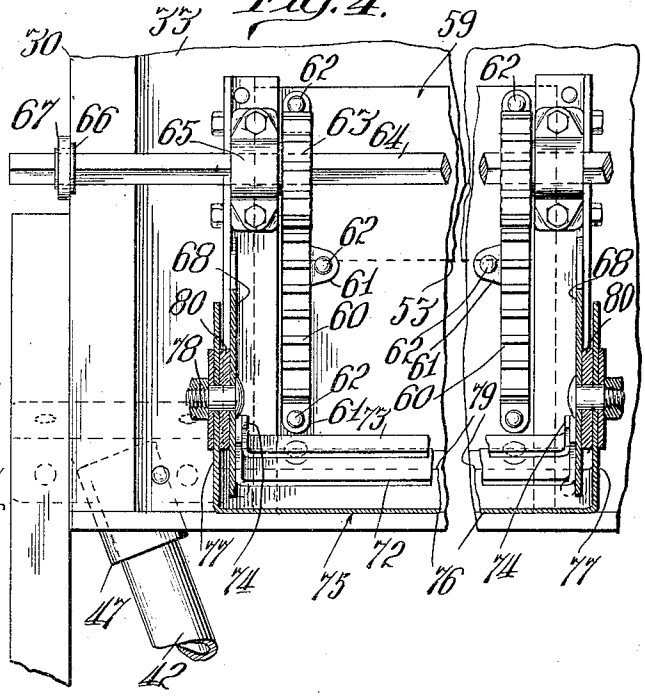
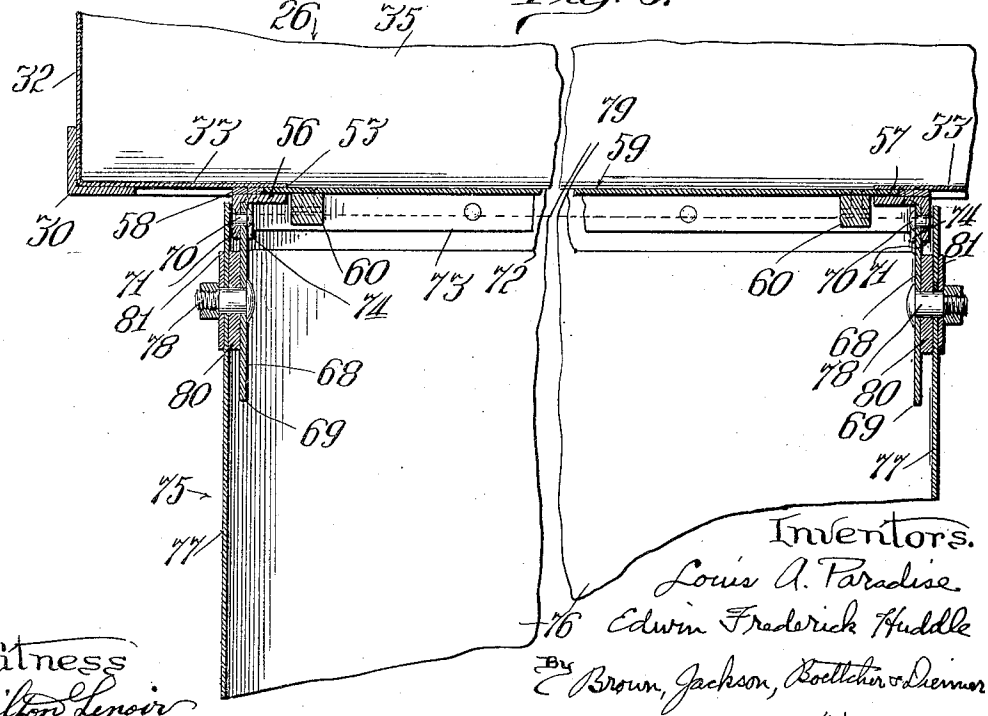


Fig. 5.



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UNITED STATES PATENT OFFICE

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GRAIN STORAGE TANK FOR THRESHERS

Application filed May 9, 1928. Serial No. 276,238.

Our invention relates to grain harvesters and more particularly to that type of harvester and thresher arrangement known as a combine and our invention has for its object the provision of an improved grain storage tank, provided with improved emptying mechanism.

Another object of our invention is to provide supporting means for the tank, so arranged that the main weight of the grain is transmitted directly to the axle of the supporting wheels, thereby relieving the machine frame from excess burdens and strains which might warp and bend some of the frame members out of shape or proper alignment, causing binding on the working parts and consequent loss of power.

Heretofore, the grain storage tanks have been so constructed and mounted that the weight of the tank and the contents thereof added strain on the machine frame and increased the weight of the frame bearings, such as to cause difficult operation of the machine over relatively uneven grain fields, where it is particularly important that the machine should operate with the least possible friction, in order that work may be properly performed.

In carrying into effect the objects of our invention, we propose to provide an auxiliary bearing on the main axle outside of the wheel on the stubbleward side of the machine and to the same we secure radially extending supporting rods engaging at various points along the lower edge of the deep side of the tank for supporting the same.

In order that the grain may be quickly discharged from the storage tank, we equip the same with a plurality of remotely controlled doors or gates which may be opened and closed rapidly. We have also provided a pivoted grain chute leading from the doors and cooperating means associated therewith for preventing bulging of the doors under the weight of the grain and means for preventing leakage of grain between the doors and the chute.

In order to acquaint those skilled in the art with the construction and operation of our invention, we have shown in the accompanying drawings, a specific illustration embodying the preferred form thereof.

Figure 1 is a front elevational view of a combine embodying our invention and showing parts thereof in section;

Figure 2 is an elevational view of the left side of the combine shown in Figure 1 and having end portions thereof broken away;

Figure 3 is an enlarged fragmentary sectional view, taken on the line 3—3 of Figure 2;

Figure 4 is a sectional view, taken on the line 4—4 of Figure 3; and

Figure 5 is a horizontal section, taken on the line 5—5 of Figure 3.

Several major functions must be performed by the modern combine, which is being very generally adopted for the harvesting of grain. The grain must be cut, threshed and cleaned and the cleaned grain must be stored, temporarily in a suitable receptacle from which it may be conveyed to wagons or other independent receptacles.

It is evident that the temporary accumulation of grain may exceed fifty or sixty bushels, weighing, perhaps, over three thousand pounds and it has been found that this weight imposes large stresses on the machine frame unless suitably mounted. In the drawings, we have shown only such portions of the machine as pertain particularly to the grain storage tank and the mounting means therefor.

The main machine frame 5 comprises horizontally disposed angle bars 6, 7 and 8, bent at points where necessary for connection with vertically extending bars 9 and 10. The angle bars 6 are secured by bolts or rivets 11 to main bearing members 12, fitted on the axle 13 supported by wheels 14, as illustrated in Figure 1.

Suitable threshing and conveying mechanism is housed and supported by the frame, and is substantially enclosed by suitable sheet metal partitions 15, 16 and 17.

Chains 18, 19 and 20 are arranged over sprockets for operating such moving parts and compartments 21 and 22 house conveyors employed in the operation of the machine. A grain augur 23 forces cleaned grain into

the housing 24, in which is mounted a suitably operated conveyor arranged to discharge grain from the outlet 25 into the storage tank 26.

The storage tank 26 comprises a frame constructed of angle bars 27, 28, 29, 30 and 31, suitably secured together and having the ends 32 and sides 33 composed of sheet metal members, as shown in Figure 5. Reenforcing plates 34 are secured to the bars 29 and pass beneath the tank bottom plate 35 for preventing bulging of the same. Supporting bars 36 are secured by bolts or rivets 37 to the bars 28 for holding the one side of the tank well above the frame of the machine. Similar bars or braces 38 engage and are riveted to the bars 29 at an intermediate point 29′ for reenforcing the same. Bars 36 and 38 are secured at their lower ends to a plurality of webs or plates 39, by means of rivets 40, and the plates 39 are similarly secured to the frame cross bars 41, as shown in Figure 1.

The storage tank 26 is shallow at one side and deep at the other side, the bottom plate 35 sloping in the manner shown, so that grain, as it comes from the outlet 25, above the deep portion, falls into the deep side of the tank and by this arrangement, it will be noted that nearly the entire weight thereof is carried by the tubular supporting bars 42.

A journal or bearing member 43 is positioned on the outer end of the axle 13 and it is provided with an integral upwardly extending flange 44, divided at the upper edge and formed into a plurality of radially disposed split sockets 45, which receive the lower ends of the bars 42 and are held in clamping engagement therewith by means of bolts 46. The rods 42 extend radially from the sockets 45 and are provided with caps 47 arranged to engage on the under side of an angle plate 49 and are, preferably, secured thereto by bolts 50 in the lugs 48, as shown in Figure 3. The angle plate 49 engages beneath the deep end of the tank, as shown, and the downwardly extending edge 51 is riveted to the downwardly extending portion 52 of the tank bottom plate 35.

The side plate 33 of the tank is cut away adjacent the lower edge, providing an opening 53, the edge of which is reenforced along the top by an angle bar 54 secured to the plate 33 by rivets 55. Vertically extending angle bars 56 are secured to the side plate 33 of the tank by suitable means and spaced therefrom by reenforcing bars 58 for providing space for the edges 57 of the door 59 to slide between the bar 56 and the plate 33. The vertically sliding doors 59 have racks 60 on the outer faces thereof and secured thereto by a lug 61 and rivets 62 and the same are arranged to operate vertically by means of pinions 63 mounted on and rotatable by the shaft 64 mounted in the bearings 65. The shaft 64 is prevented from movement in a longitudinal direction by means of collars 66 secured thereto and rotatable in bearings 67 in the manner illustrated.

A plate 68, having a rounded end portion 69 is suitably secured, as by rivets 70, to the outwardly extending flange 71 of the angle bars 56. The ledge plate 72 engages the flange 52 and the ends thereof are rigidly secured to the plate 68 in a manner to prevent leakage of grain between the opening of the door and the pivotally mounted grain chute. A second ledge plate 73, similar to 72, is mounted above the frame and spaced therefrom by cylindrical blocks 73*a*. The ends 74 of the plate 73 are secured to the ends of the plate 72, thus rigidly positioning the ledge 73 in front of the lower edge of the door 59 and leaving sufficient clearance to allow free sliding of the door, but, at the same time, preventing bulging of the door when the tank is filled with grain.

The grain chute 75 comprises a scoop like member of sheet metal having a relatively wide, flat bottom 76 and vertical sides 77, the rear end of which is secured to the plate 68, by means of bolts 78, which so position the chute that the rear edge 79 of the bottom portion engages beneath the lower ledge plate 72, which acts as a stop therefor and prevents leakage of grain therebetween. Washers 80 and 81 are positioned on the bolts 78 for suitably spacing the chute 75 therefrom and for permitting pivotal movement relative thereto.

The outer edge of the chute 75 is provided with a reenforcing flange 82, which is arranged to be engaged by a hook member 83 when the chute is positioned in the manner indicated in dotted outline in Figure 1. The hook 83 is provided with a shank 84, pivotally secured at 85 for permitting the same to swing into the position shown in dotted outline for securing the chute 75 in place when not being used.

It will be understood by those skilled in the art that this is capable of certain variations and modifications without departing from the spirit of the invention and we do not wish to be limited to the exact details herein illustrated and described, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

We claim:

1. In a grain harvester of the class described, a main frame, a supporting axle and bearing for said frame, a storage tank mounted directly above said frame, an auxiliary bearing on the outer end of said axle, and radially disposed tubular members extending from said auxiliary bearing and engaging beneath the lower edge of said tank for supporting the same.

2. In a grain harvester and thresher of the class described, a main frame, a casing on said frame enclosing the threshing means, a supporting axle and bearing for said frame, a storage tank mounted directly above said casing, an auxiliary bearing on the outer end of said axle, radially disposed tubular members extending from said auxiliary bearing and engaging beneath the lower edge of said tank for supporting the same, and means for securing said members to said tank and to said auxiliary bearing.

3. In a grain harvester of the class described, a main frame, a supporting axle and bearing for said frame, a storage tank mounted directly above said frame, an auxiliary bearing on the outer end of said axle, a plate integral with said bearing, a plurality of radially disposed split sockets on said plate, means in said sockets extending to one edge of said tank for supporting the same, said means having caps thereon and means securing said caps to said tank.

4. In combination with a main frame and an axle with bearings thereon for supporting said frame, of a grain storage tank positioned above said frame, said tank being shallow at one side and deep at the other side, supporting bars for the shallow side of said tank secured to said frame and supporting the shallow side of the tank thereon, and means for supporting the deep side of said tank on said axle independently of said bearing.

5. In combination with a grain harvester having a main frame and an axle with bearings thereon for supporting said frame, of a grain storage tank positioned above said frame, said tank being shallow at one side and deep at the other, supporting bars for the shallow side of said tank secured to said frame, an auxiliary bearing on one end of said axle, a plurality of radially disposed split sockets on said bearing, tubular supporting members in said sockets extending to the lower edge of the deep side of said tank, cap members on said supporting members, and bolts through said cap members for securing them to said tank, and bolts securing said members in said split sockets.

6. In combination with a grain harvester, having a main frame and an axle with bearings thereon for supporting the main frame, of a grain storage tank positioned above the frame, said tank being shallow at one side and deep at the other, supporting bars for the shallow side of said tank secured to said frame, an auxiliary bearing on one end of said axle, a plurality of split sockets on said bearing, radially disposed tubular supporting members in said socket extending to the lower edge of the deep side of said tank and caps on said supporting members secured to said tank.

7. In a grain thresher, in combination, a main frame, a supporting axle therefor, bearings for the frame positioned on the supporting axle, a grain tank positioned vertically above said main frame, a sloping bottom for said tank and discharge means in the deep side of said tank, and means for supporting the discharge side of said tank directly on the axle, independently of said bearings.

8. In a grain thresher, in combination, a main frame, a supporting axle therefor, bearings for the frame positioned on the supporting axle, a grain tank positioned vertically above said main frame, a sloping bottom for said tank and discharge means in the deep side of said tank, means for supporting the discharge side of said tank directly on the axle, independently of said bearings said, means comprising an auxiliary bearing on one end of said axle, and radially disposed tubular supports leading from said auxiliary bearing to the lower edge of said tank.

9. In a grain harvester and thresher of the class described, a main frame for the thresher, a supporting axle for said frame, a storage tank adapted to receive the threshed grain and mounted directly above said thresher, means for supporting said tank on said frame, an auxiliary bearing on said axle, a plurality of radially disposed sockets on said auxiliary bearing, and radially extending supports in said sockets, extending to said tank.

In witness whereof, we hereunto subscribe our names this 3d day of May, 1928.

LOUIS A. PARADISE.
EDWIN FREDERICK HUDDLE.