June 10, 1958 S. S. McINTYRE, SR 2,838,183

MOUNTING AND ROTATING MEANS FOR TURNTABLE STRUCTURE

Filed Dec. 12, 1955 3 Sheets-Sheet 1

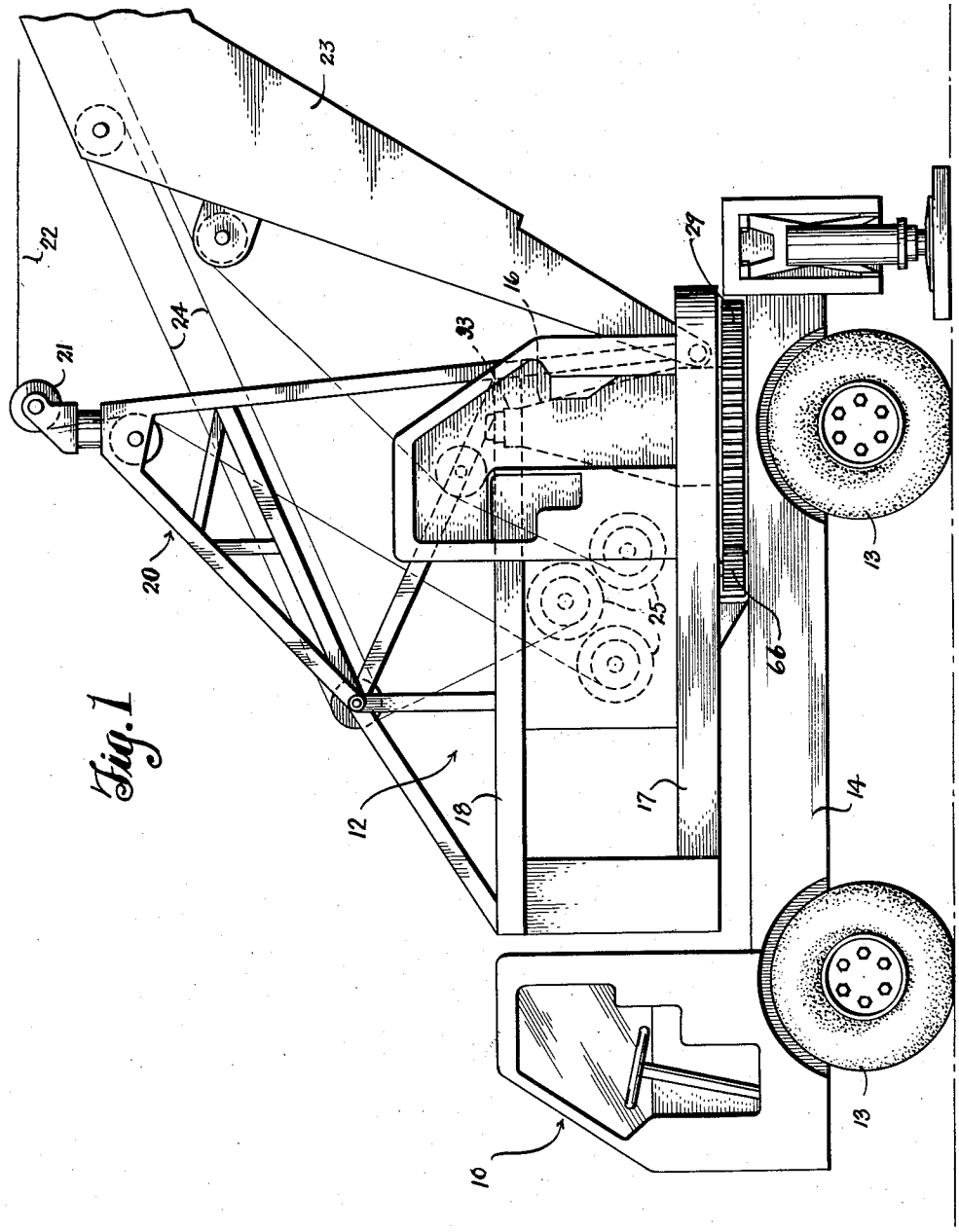


Fig. 1

INVENTOR.
SIDNEY S. McINTYRE SR.
BY
Cook & Robinson
ATTORNEYS

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Filed Dec. 12, 1955 3 Sheets-Sheet 2

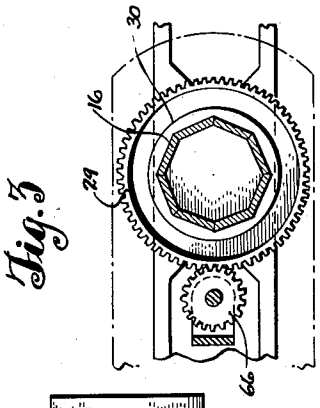


Fig. 3

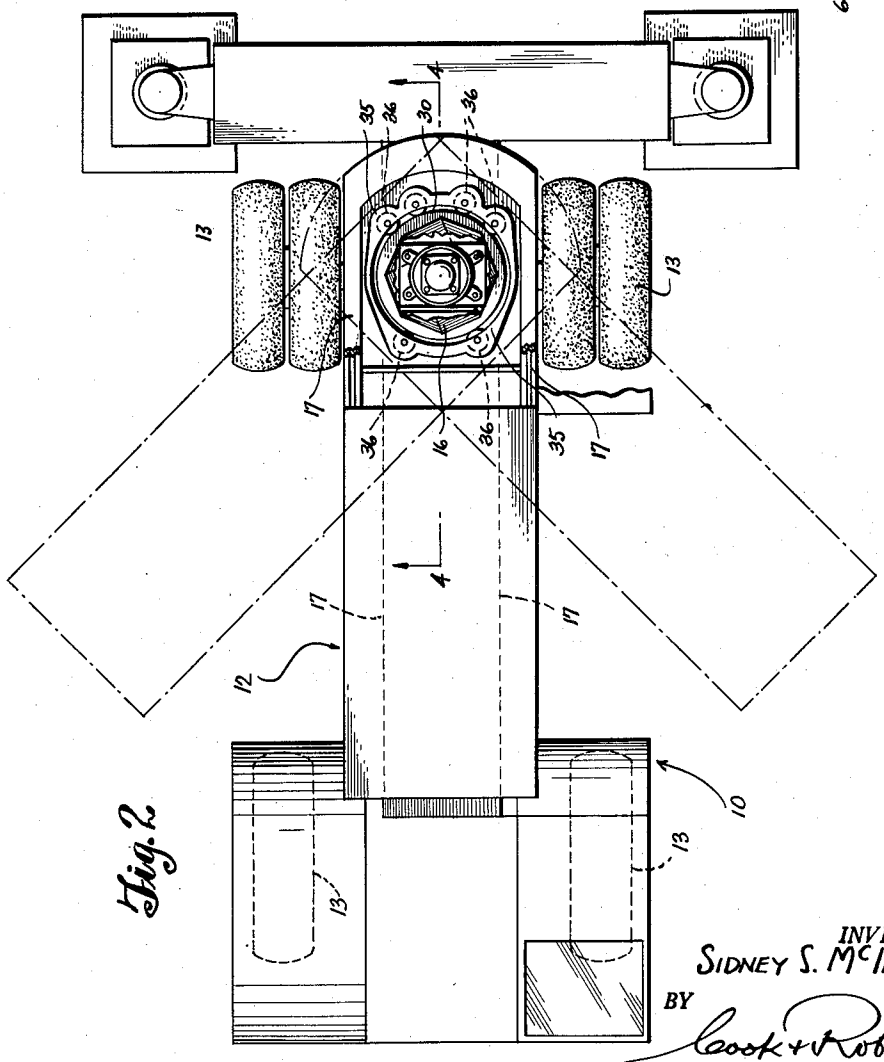


Fig. 2

INVENTOR.
SIDNEY S. McINTYRE
BY
Cook & Robinson
ATTORNEYS

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Fig. 4

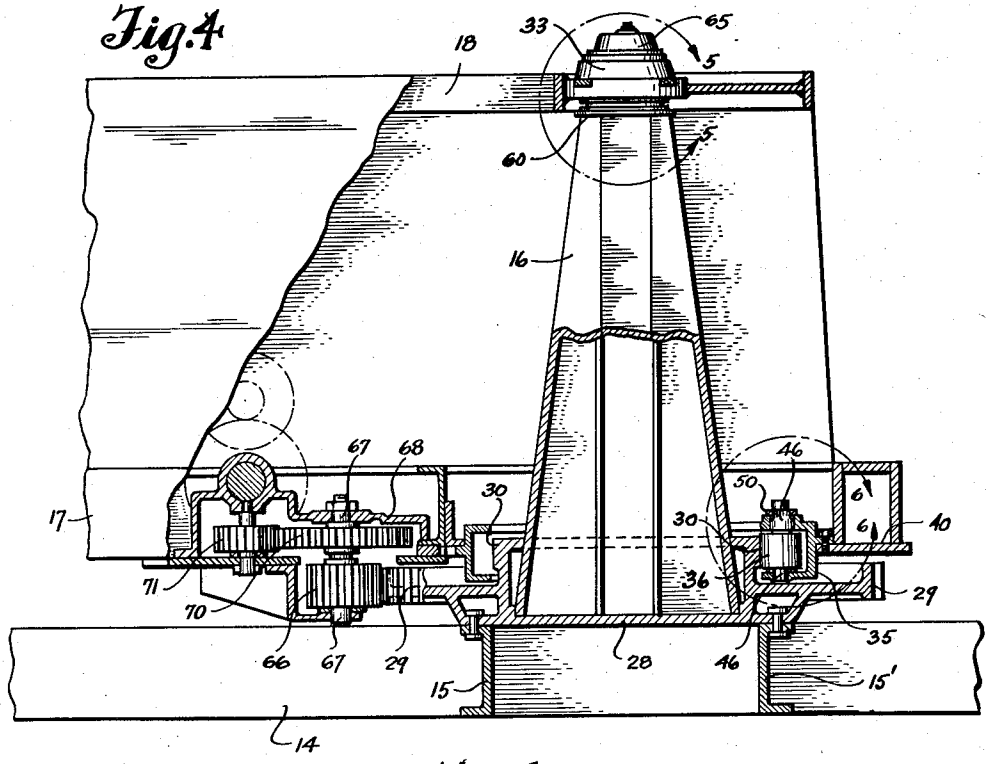


Fig. 5

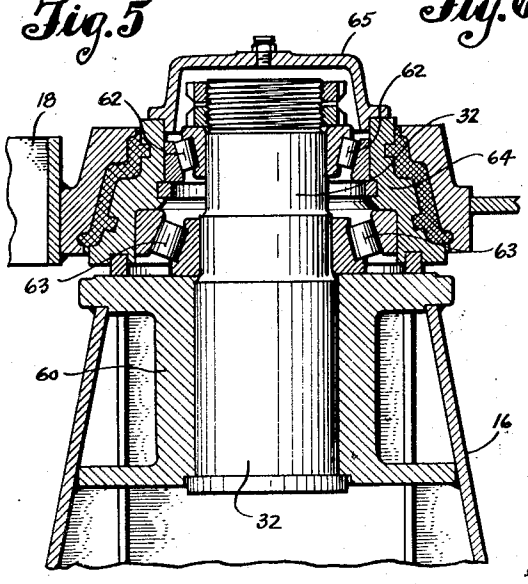


Fig. 6

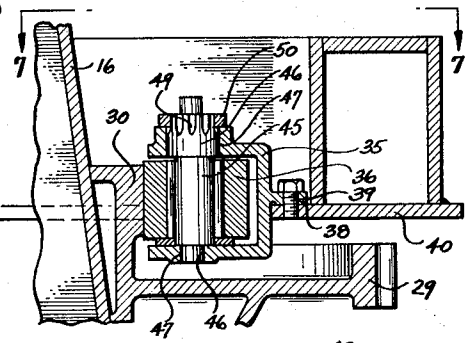
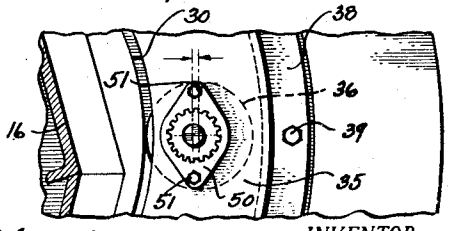


Fig. 7



INVENTOR.
SIDNEY S. McINTYRE
BY
Cook & Robinson
ATTORNEYS

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2,838,183

MOUNTING AND ROTATING MEANS FOR TURNTABLE STRUCTURE

Sidney S. McIntyre, Sr., Sedro Woolley, Wash., assignor to The Humboldt Company, Seattle, Wash., a corporation of Washington

Application December 12, 1955, Serial No. 552,374

6 Claims. (Cl. 212—68)

This invention relates to mounting and rotating means for turntable structures. More particularly, it has reference to an improved mounting post and bull-gear combination for use on a mobilized log yarding and loading apparatus wherein a mast or tower and log loading boom, together with cable winding drums, cables, and drum driving means are mounted on a frame structure which has turntable action about said post and gear.

It is the principal object of this invention to provide a turntable mounting that is especially adapted for structures of the above type or similar structures, in that it is adequate to withstand the exceedingly heavy loads to which the mounting is subjected and provides for easy turning of the structure without binding strains or stresses.

It is a further object of the invention to provide roller bearings in association with the table mounting post that have adjustable mountings to accommodate them to the parts with which they are associated and to compensate for wear or inaccuracies of construction.

Yet another object of the invention resides in the provision of an easily assembled combination, of exceedingly sturdy construction and characterized by a unitary pivot post, bull-gear, bearing ring and base or bed plate that can be bolted in functional position in the vehicle frame structure.

Still further objects of the invention reside in the details of construction and combination of its parts and in their mode of use, as will hereinafter be fully described.

In accomplishing the above mentioned and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a side view of a log yarding and loading vehicle equipped with a turntable mounting and turning means embodied by the present invention.

Fig. 2 is a plan view of the same, with parts of the tower structure and log loading boom removed for better showing of the turntable mounting means.

Fig. 3 is a horizontal section, taken through the turntable mounting post just above the bull gear, and showing the table turning pinion meshing with the bull gear.

Fig. 4 is a somewhat enlarged sectional detail, taken on the vertical plane of line 4—4 in Fig. 2, showing the pivot post as fixed to the bed plate, bull-gear, roller bearings and table turning gearing.

Fig. 5 is an enlarged cross-sectional view of the upper end bearing and adjacent parts which are encircled in Fig. 4 by the double pointed arrow 5—5.

Fig. 6 is a sectional detail of the roller bearing and its mounting means encircled in Fig. 4 by the double ended arrow 6.

Fig. 7 is a top view of parts shown in Fig. 6.

It is not the intention that the present turntable mounting and table turning means be confined to any specific machine or mechanism. However, the subject matter of this specification is at present being used in the manufacture of certain mobilized vehicles, designed for heavy

logging operations, and it is in connection with one of these vehicles that it has been illustrated, the illustrated machine being substantially like that described and illustrated in my co-pending application filed on July 14, 1955, under Serial No. 522,091.

Referring more in detail to the drawings: In Fig. 1, 10 designates, in its entirety, a type of heavy duty automotive truck on which log handling mechanism is supported on a turntable structure which is designated in its entirety by reference number 12. The truck is equipped with suitable ground wheels 13 for moving the equipment from one logging location to another. Also, the vehicle has its own power plant, not herein shown, for its propulsion.

The frame structure of the vehicle comprises longitudinal opposite side beams 14—14 that are joined by cross-bracings members, such as the two beams 15—15′ shown in Fig. 4.

The turntable structure 12 is mounted on the vehicle chassis for turning about a vertical pivot post which has been designated in its entirety by numeral 16; this post being shown in dotted lines in Fig. 1 and in full lines and partly in section in Fig. 4.

The turntable structure comprises a horizontal base frame, preferably a metal beam fabrication, including opposite side beams 17—17 that are joined by suitable cross-members at forward and rearward ends and also at points intermediate their ends as may be required or desired. Erected upon the horizontal base frame structure is an upper structure designated in its entirety in Fig. 1 by numeral 18, and upon this is erected the tower, which is designated generally by numeral 20; this tower being equipped at its upper end with a swivel jib 21 for the support, paying out and hauling in of a cable 22 as used in log yarding. Also, mounted on the base frame of the turntable structure for vertical oscillation is a log loading boom 23 which swings horizontally with the swinging of the turntable about the pivot post 16, and which is adapted to be raised or lowered by the paying out or winding in of a cable connection designated at 24 in Fig. 1. Mounted on the turntable base structure are cable winding drums, indicated in Fig. 1 by numeral 25, which handle the several cables as used in the various logging operations and these cables are wound on the drums 25 and have their own source of power, not shown, but also mounted on the turntable.

The pivot post 16 is shown in Figs. 3 and 4 to be fabricated from a number of metal plates, and to be octagonal in cross-section, with an upward taper. At its lower end, the post is welded or otherwise suitably fixed to a bed plate structure 28, best shown in Fig. 4, which in turn is fixed rigidly and securely to the longitudinal beams 14—14 and to those certain cross-beams 15—15′ of the frame structure of the vehicle shown in Fig. 4. The bed plate preferably is a metal casting but may be fabricated if so desired.

Formed integrally with the bed plate structure 28 is a horizontally disposed bull-gear 29 of substantial diameter, and a horizontally disposed, annular, roller bearing track 30; this track being about one-half the diameter of the bull gear and at a slightly higher level. It is also to be observed by reference to Figs. 3 and 4, that the pivot post 16, bull-gear 29 and annular track 30 are in coaxial concidence.

At its upper end, the post 16 is equipped with a coaxial pivot pin 32, the upper end portion of which is contained in a bearing assembly designated in its entirety in Fig. 4 by reference numeral 33; this bearing being fixed in the turntable structure 18. Mounted in the horizontal lower frame structure 17 of the turntable is a ring 35, of channel form in cross-section and inwardly facing. Mounted in this ring to rotate on vertical axes

that extend through the ring flanges, is a plurality of rollers 36 disposed for rolling contact with the cylindrical surface of the circular track 30. This bearing and roller arrangement mounts the turntable 12 for easy rotation, under control of driving gearing as shown in Fig. 4, which will presently be described in detail.

It is further shown in Figs. 4, 6 and 7 that the ring 35 which mounts the rollers 36 therein is formed with an encircling, horizontally extending flange 38 through which bolts 39 are extended to rigidly secure the ring to a horizontal plate 40 that is welded or otherwise rigidly fixed to the under surface of the turntable base frame structure 17; this plate 40 being formed with a cut-away central portion for the passage of the post 16 upwardly therethrough and containing the ring 35 therein as has been shown best in Figs. 4 and 6. In the present showing, six rollers, 36, are employed and they are arranged in the ring 35 about the post 17 preferably in the unevenly spaced relationship shown in Fig. 2 so that they will be most advantageously located to sustain the pressure of the boom load. Each roller is revoluble on a vertical pin or axle 45, and each pin has eccentric mountings 46 at its opposite ends, in coaxial alignment, which mountings are rotatably fitted in circular openings 47 provided therefor in the upper and lower horizontal flanges of the mounting ring 35 as best shown in Fig. 6. Thus, by rotative adjustment of the pin 45, the rollers may be shifted radially of the post 16 to best suit the track ring 30. The eccentric hub portions 46 are notched, as at 49 in Fig. 6, to receive a locking plate 50 which is interfitted with the notches and then secured by bolts 51 to the ring flange to retain the adjustment.

It is shown in Fig. 5 that the pin 32 is mounted in a metal block 60 that is fixed in the upper end of the post 16, with the upper end portion of the pin revolubly contained in the bearing 33. The bearing 33 contains upper and lower sets of taper roller bearings 62 and 63, operable in raceways fitted to the pin and within a machined casting 64 that is fixed in the frame structure 17. These bearings sustain the table structure against upward or downward movement on the post. A cap 65 applied to the upper end of the bearing protects the same from weather and foreign material.

The gearing for rotating the table about the post and bull-gear as shown in Fig. 4, comprises a pinion gear 66 fixed on a short vertical shaft 67 that is revolubly mounted in upper and lower walls of a gear case 68 that is fixed in the base structure 18 of the turntable. Fixed on the shaft 67 above the gear 66, is a relatively large shaft driving gear 70. Gear 70 is in mesh with and is driven by a smaller driven gear 71 which is in a gear train having a driving connection with an engine or source of power carried on the turntable, but not herein shown. Rotation of the pinion 66 in opposite directions under control of the operator, causes the table to be rotated about post 16 in opposite directions accordingly, as will be readily understood.

The table mounting and driving means above described provides a substantial support for the turntable structure, which gives added stability by reason of the relatively wide vertical spacing between the roller track way 30 and the upper end bearing 33. The track ring 30 being of substantial diameter adds increased stability through the arcuate arrangement of the engaging rollers 36 as mounted in ring 35.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. A mounting and rotating means for a turntable structure comprising a base, a vertical pivot post fixed rigidly thereon, an annular track fixed relative to said base concentrically about the lower end portion of said pivot post, a bull gear fixed to said base coaxial of the annular track, a pivot pin fixed in and extending upward from the upper end of the pivot post in coaxial alignment with the annular track and bull gear, a turntable structure revoluble about said post and having a supporting bearing fixed therein, mounted on and revoluble about said pivot pin, a plurality of rollers mounted in circular arrangement in the lower portion of said structure, on vertical axes and in rolling contact with said annular track, and a drive gear mounted in the turntable structure in mesh with the bull gear.

2. A mounting and rotating means for a turntable structure comprising a base, a casting fixed on said base constituting a horizontal bull gear and an annular track of lesser diameter than said bull gear located in a plane that is immediately above the plane of said bull gear, a vertical pivot post fixed at its lower end to said casting coaxial of said bull gear and track, and extending upwardly therefrom to a substantial height, a turntable structure revoluble about said pivot post, having a supporting bearing fixed therein that is mounted on and is revoluble about the upper end of said pivot post, a plurality of rollers mounted in circular alignment in the lower portion of said turntable structure, in rolling contact with said annular track, a pinion gear mounted in the turntable structure in mesh with the bull gear, and power means for driving the pinion gear.

3. The combination recited in claim 2 wherein said pivot post is conically tapered in an upward direction, and comprises a bearing block fixed therein at its upper end and a pivot pin extended upwardly from the block coaxially of the post, and wherein said supporting bearing for said turntable structure engages, for its support, against said block and is revoluble about said pin.

4. A mounting and rotating means for a turntable structure, comprising a horizontal base structure, a casting fixed thereto comprising a horizontal bull gear of substantial diameter and an annular track that is coaxial of the bull gear, and of lesser diameter, an upwardly tapered pivot post fixed to said casting coaxially of the bull gear and track and within the latter, and extended vertically to substantial height, a pivot pin mounted in said post at its upper end and extended upwardly therefrom, a turntable structure revoluble about said pivot post having a bearing fixed therein and revolubly supporting the structure from said pivot pin for rotation thereon and about said post, a ring fixedly mounted in the turntable structure, about the lower end portion of said post, a plurality of rollers mounted in said ring on vertical axes for rolling contact with said track, a pinion gear rotatably mounted in said frame structure in driving mesh with the bull gear and powered means in the structure for driving said pinion gear.

5. Apparatus as in claim 4 wherein said bearing as mounted on said pin is locked against upward or downward movement on said pivot pin.

6. The structure of claim 4 wherein said ring comprises an inwardly facing channel member and wherein the roller mounting axles have integral mounting hubs at their opposite ends rotatably fitted in bearing portions formed in upper and lower flanges of said ring; said hubs being eccentric of the intermediate roller mounting portions of the axles, and said axles are rotatably adjustable in said bearing portions to adjust the rollers radially of the track, one of the hub portions of each axle being formed with peripheral notches, and there being a nut interlocked with the notches and removably secured to the ring to hold the adjustment.

References Cited in the file of this patent

UNITED STATES PATENTS

745,137	Beard	Nov. 24, 1903
1,610,502	Fairbanks et al.	Dec. 14, 1926
2,381,731	Erdahl	Aug. 7, 1945

FOREIGN PATENTS

385,882	Great Britain	Jan. 3, 1933
748,224	Germany	Oct. 30, 1944