

Aug. 12, 1924.

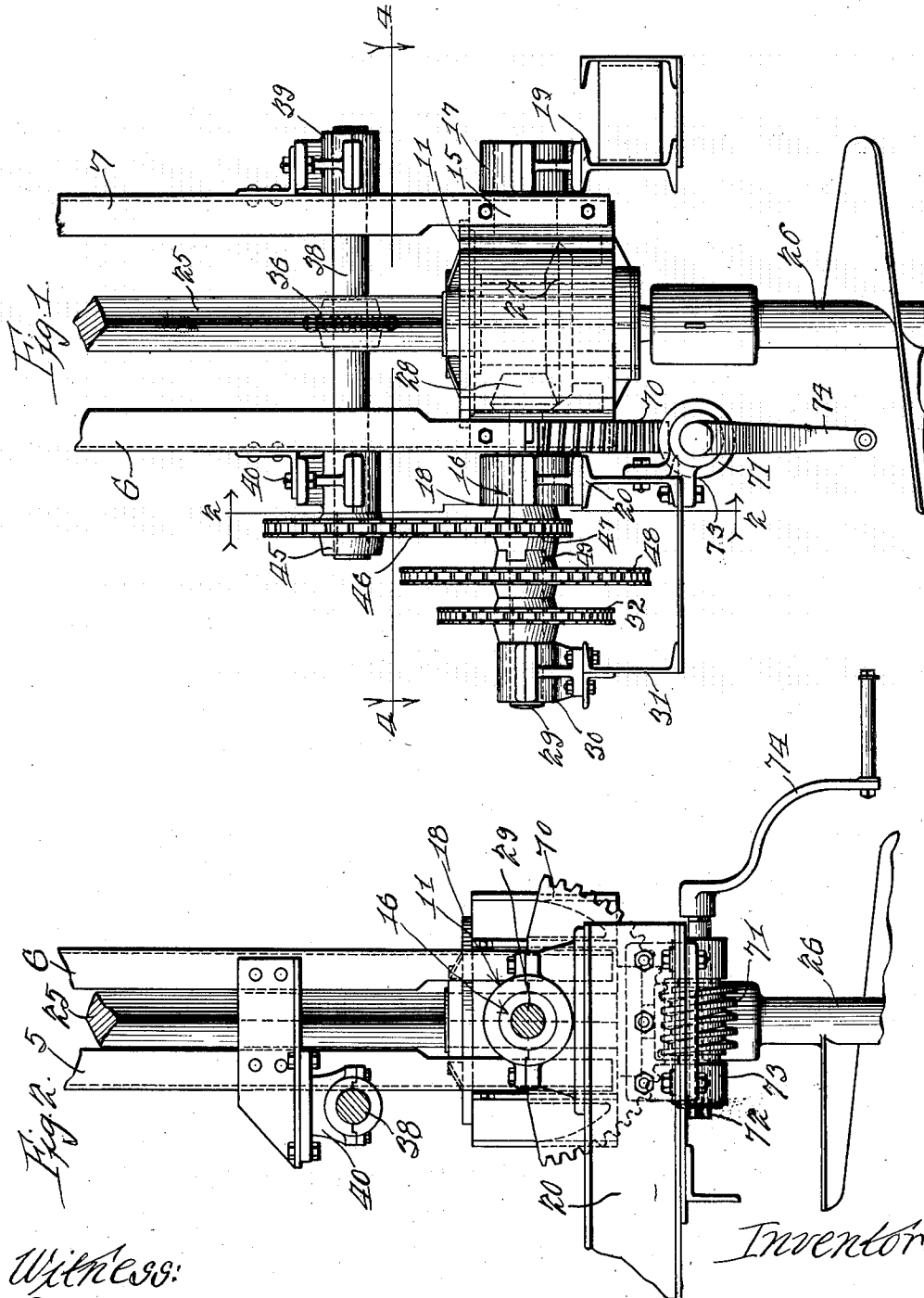
G. R. GEHRANDT

1,504,441

AUGER SUPPORTING MECHANISM FOR EARTH BORING MACHINES

Filed Oct. 6, 1919

2 Sheets-Sheet 1



Witness:

Carl S. Magnusson.

Inventor:

Gustav R. Gehrandt
By Force Bain & Hinkle
Attys.

Aug. 12, 1924.

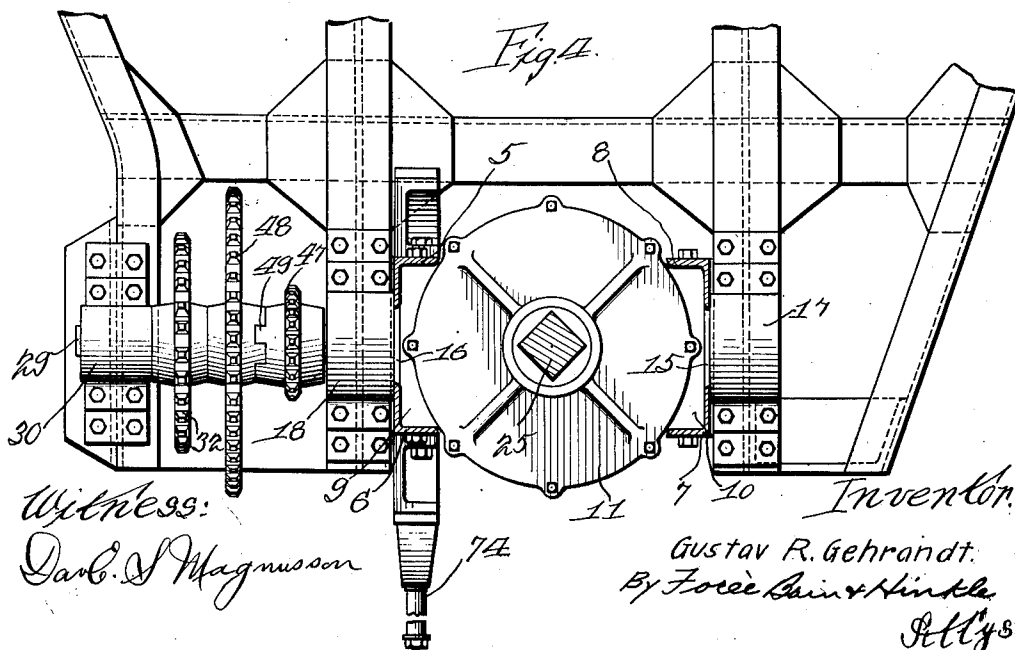
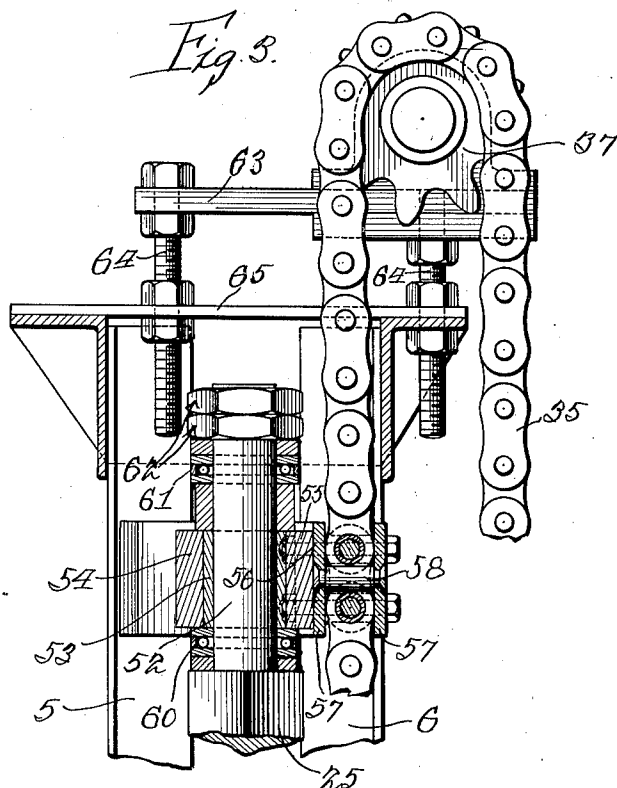
G. R. GEHRANDT

1,504,441

AUGER SUPPORTING MECHANISM FOR EARTH BORING MACHINES

Filed Oct. 6, 1919

2 Sheets-Sheet 2



Witness:
D. C. S. Magnusson

Inventor:
Gustav R. Gehrandt.
By F. C. Bain & Hinkle
Attys.

UNITED STATES PATENT OFFICE.

GUSTAV R. GEHRANDT, OF EVANSTON, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INTERNATIONAL EARTH-BORING MACHINE CORPORATION, A CORPORATION OF DELAWARE.

AUGER-SUPPORTING MECHANISM FOR EARTH-BORING MACHINES.

Application filed October 6, 1919. Serial No. 328,834.

To all whom it may concern:

Be it known that I, GUSTAV R. GEHRANDT, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Auger-Supporting Mechanism for Earth-Boring Machines, of which the following is a specification.

This invention relates to auger supporting mechanism for earth-boring machines.

An object of the invention is to provide improved mechanism for supporting the auger tower of an earth-boring machine.

Another object is to provide improved mechanism for supporting the tower in various positions.

Another object is to provide an improved mechanism for inclining the tower to any desired position for operation or transportation.

Another object is to provide an improved inclining mechanism wherein the tower is held automatically at any desired inclination.

A further object is to provide tower inclining mechanism which is simple in construction, efficient in operation, and will not interfere with or interrupt the boring operation.

Other objects and advantages will appear from the specification and claims.

An embodiment of the invention is illustrated in the accompanying drawing, in which—

Fig. 1 is a side elevation of the mechanism.

Fig. 2 is an end elevation thereof.

Fig. 3 is a section of the top of the auger tower, and

Fig. 4 is a section on line 4—4 of Fig. 1.

The auger supporting and tower inclining mechanism illustrated is particularly adapted for use in earth-boring machines of the portable type wherein the tower is carried by a turn-table mounted upon the chassis of a vehicle, such as a tractor or motor truck. One form of such machine is shown in William E. Moore Patent No. 1,397,324 issued November 15, 1921.

The auger tower of the boring machine comprises a frame work, usually of steel bars and plates, having four supporting angle posts 5, 6, 7 and 8. These posts are spaced apart and rigidly held in place at

the bottom by being firmly secured to the corner walls of two substantially rectangular projections 9 and 10 extending from opposite sides of a gear box 11. The upper end of the posts may be spaced and held in proper relative position by any suitable means.

The gear box and consequently the tower is pivotally carried by the vehicle so that the auger or other boring machine may be applied to the work at various angles and the tower and auger can be inclined or tilted to a position in which it may be readily transported. Gear box 11 is provided with a pair of trunnions 15 and 16, housed respectively in bearings 17 and 18. Bearings 17 and 18 are rigidly supported respectively by beams 19 and 20 carried by a turn-table or other suitable means mounted upon the chassis of the vehicle.

Extending longitudinally of the tower and thru the gear box is an auger shaft 25 carrying, at its lower end, a boring tool or auger 26. Shaft 25 is rotated to turn the auger by being passed thru a square opening in a bevel gear wheel 27 within the gear box. Gear wheel 27 is suitably journaled within the gear box and is rotated by a beveled pinion 28 secured to a shaft 29. Shaft 29 is journaled at one end in trunnion 16 and at the other end in a bearing 30. Bearing 30 is supported from the turn-table by a beam 31. Shaft 29 is rotated from a suitable source of power (not shown) by a sprocket chain passing over a sprocket wheel 32 keyed to the shaft.

In order to feed the auger to and from the work, shaft 25 is raised and lowered within the tower and thru gear wheel 27. This is accomplished by an endless chain 35 passing over a sprocket wheel 36 located just above the gear box and a sprocket wheel 37 journaled on the top of the tower.

Sprocket wheel 36 is keyed to a shaft 38. Shaft 38 is journaled in bearings 39 and 40 carried by suitable brackets carried by the tower posts. A sprocket wheel 45 is keyed to shaft 38 and is driven by a chain 46. Chain 46 passes over a sprocket wheel 47 journaled on shaft 29. Sprocket wheel 47 is rotated on shaft 29 by a sprocket wheel 48 over which passes a chain to a suitable source of reversible power (not shown). Sprocket wheels 47 and 48 are interconnect-

ed by suitable means, such as the interlocking teeth 49 so that when wheel 48 is driven wheel 47 also rotates to drive chain 35.

Referring to Fig. 3 the manner in which the chain raises and lowers the auger shaft will be explained. The top of shaft 25 has a cylindrical post 52 projecting from its upper end. This post is surrounded by a sleeve 53 having a groove carrying a collar 54. Collar 54 has a flat face portion 55 thru which pass four bolts 56. Bolts 56 carry and clamp toward each other a pair of plates 57 which bear on opposite sides of the chain links and support between them a stud 58. Stud 58 extends between two of the link rollers of the chain so as to be moved as the chain moves. Sleeve 53 is provided with a ball bearing 60 at its lower end and a ball bearing 61 at its upper end. The bearing and sleeve are held on the shaft by nuts 62. The movement of chain 35 therefore raises and lowers shaft 25, but because of the ball bearing support, the shaft may be rotated at any time.

In order to regulate the tension in the chain, the bearings for the shaft of sprocket wheel 37 are carried on a plate 63 which is adjustably supported on four bolts 64 passing thru a plate 65 carried by the upper ends of the auger tower posts.

In order to incline or tilt the tower a segmental gear or rack 70 is attached to one wall of the gear box. Segment 70 meshes with the teeth of a worm 71, keyed to a shaft 72. Shaft 72 is journaled stationary with respect to the tower, in a bracket 73 bolted to beam 20, and is rotatable by a crank 74.

The rotation of crank 74, operates, thru worm 71 and segment 70 to tilt the tower to any desired position. The tilting of the tower does not affect the rotation or the raising and lowering of the auger shaft. The pitch of the teeth of segment 70 and worm 71 are so related that the tower is locked in any position to which it is tilted by crank 74. Thus the unbalanced weight of the boring tool or the tower cannot cause the tower to tilt, tilting being possible only by rotation of the crank.

Having described my invention, what I claim is:—

1. An auger supporting mechanism for earth boring machines and the like, having in combination, a gear-box, gears located therein, a tower rigidly secured to and pivotally carried by said gear box, an auger shaft extending along said tower and rotatable by the gears within the gear box, a segmental gear supported from said gear box, and a manually operable worm meshing with said segmental gears for inclining said tower and auger shaft.

2. An auger supporting mechanism for earth boring machines and the like, having a gear box, a tower rigidly secured thereto and pivotally supported thereby, an auger shaft extending along said tower and thru said gear box, means for moving said shaft longitudinally of said tower, a gear within said box for rotating said shaft in any longitudinal position, and means for tilting said tower and positively retaining the same in any tilted position.

3. An auger supporting mechanism for earth-boring machines and the like, having a gear box, bearings upon which said gear box is pivotally mounted, a tower having its bottom rigidly secured to said gear box, an auger shaft extending along said tower and thru said gear box, a gear wheel within the gear box and thru which said shaft passes to rotate said gear in any position thereof, a pinion for rotating said gear wheel, a shaft upon which said pinion is mounted, means mounted on said shaft to rotate said pinion to cause rotation of said auger shaft, means carried by said tower to effect the longitudinal movement of said shaft, and power transmitting means mounted on said shaft for cooperating with said means to raise and lower the shaft in any position of the tower, a segmental rack carried by said gear box, and a manually operable worm cooperating with said segmental gears to tilt said tower and lock the same in any tilted position.

In testimony whereof I hereunto subscribed my name.

GUSTAV R. GEHRANDT.