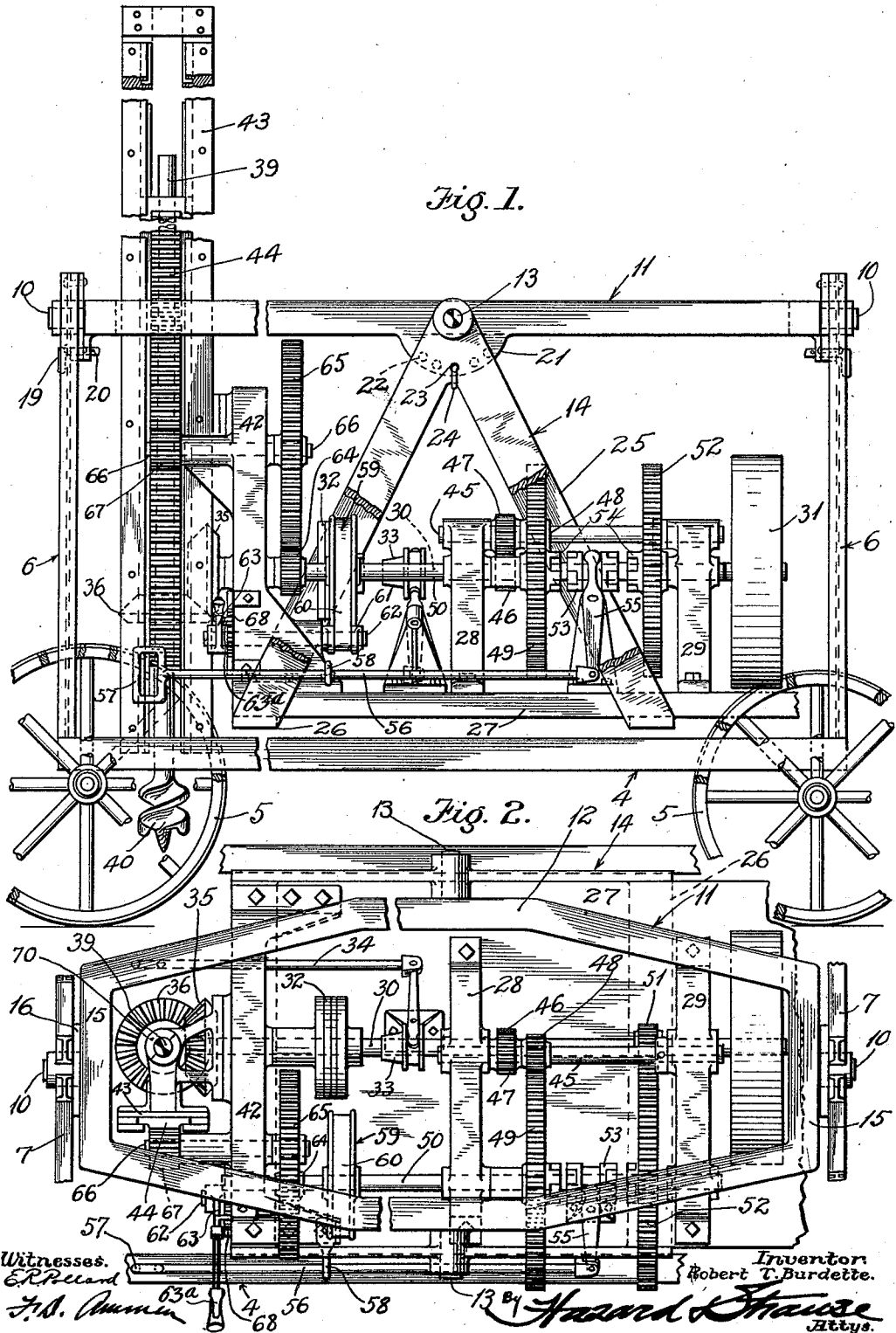


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APPLICATION FILED JAN. 12, 1910.

1,000,578.

Patented Aug. 15, 1911.

2 SHEETS—SHEET 1.

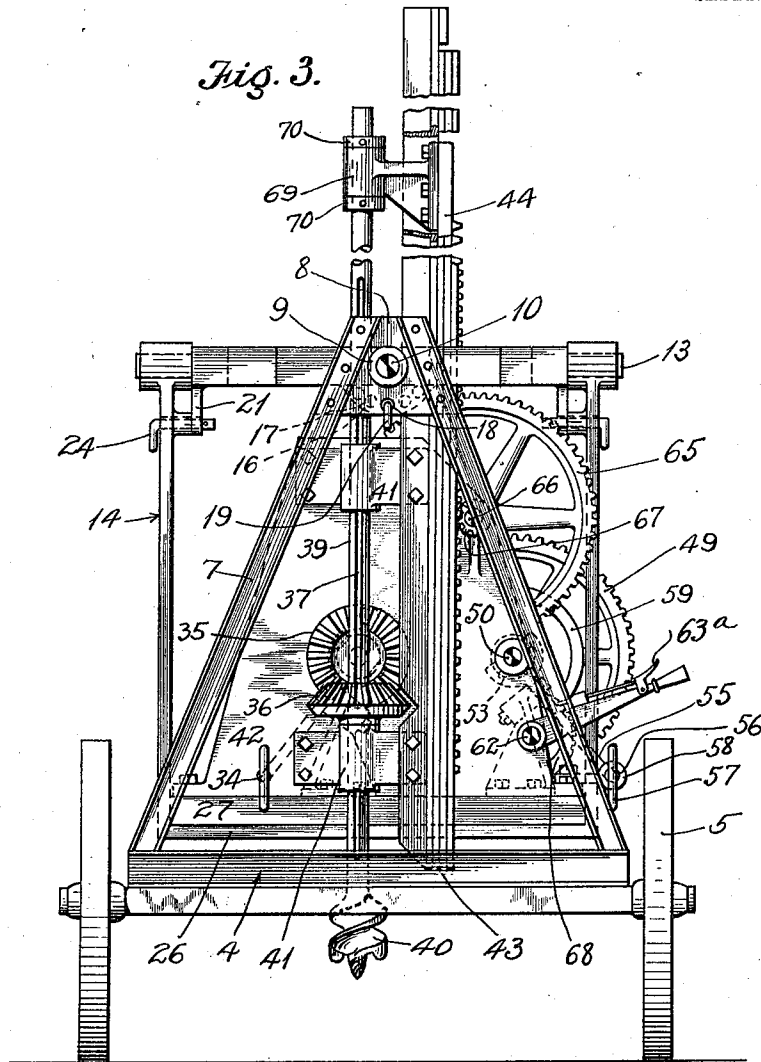


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Witnesses.
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UNITED STATES PATENT OFFICE.

ROBERT T. BURDETTE, OF LOS ANGELES, CALIFORNIA.

POWER-DRIVEN POST-HOLE EXCAVATOR.

1,000,578.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed January 12, 1910. Serial No. 537,657.

To all whom it may concern:

Be it known that I, ROBERT T. BURDETTE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Power-Driven Post-Hole Excavators, of which the following is a specification.

This invention relates to post hole diggers, and the object of the invention is to produce a machine for this purpose having mechanism for driving a vertically disposed auger and having means for mounting the mechanism so that the auger can be always adjusted into a vertical position on a hill-side or where there is an inclination of the ground line at the point where the hole is to be formed. The machine is mounted upon wheels so that it is portable.

In the annexed drawing which fully illustrates my invention, Figure 1 is a side elevation of a post hole digging machine constructed according to my invention, certain parts being broken away. Fig. 2 is a plan of the machine certain parts being broken away. Fig. 3 is an end elevation.

Referring more particularly to the parts, 4 represents the main frame of the machine which is of substantially rectangular form and supported upon wheels 5 as indicated. At the ends of the main frame 4, A-frames 6 are supported in a vertical position, formed of I bars 7 as indicated most clearly in Fig. 3. The upper ends of these channel-bars are connected by gusset-plates 8, the said gusset-plates being provided with bearings 9 to receive trunnions 10 formed on the ends of a tilting frame 11. This tilting frame 11 is of elongated diamond form and its side bars 12 are provided with laterally projecting trunnions 13 which support a centrally disposed hanger-frame or hanger 14. In order to enable the position of the tilting frame 11 to be adjusted, its end bars 15 are provided with adjusting segments 16 in the form of plates having a plurality of openings 17 therein and these openings 17 are adapted to aline with similar openings 18 formed in the gusset-plates 8. The tilting frame may be locked to the gusset-plates by means of removable pins 19 normally held in position by split pins 20 inserted in their inner ends.

In order to enable the hanger 14 to be adjusted on the axis of the trunnions 13, the side-bars 12 of the tilting-frame 11 are

formed with segments 21 and these segments are provided with a plurality of openings 22 which are adapted to aline with openings 23 formed in the hanger 14 at each side. In the openings 23 removable pins 24 are provided similar to the pins 19 which enable the hanger 14 to be locked to the frame 11 as will be readily understood.

The hanger 14 presents downwardly diverging bars 25 which have horizontal extensions or cross-bars 26 at the lower ends thereof integral therewith, and on these cross-bars 26 a platform 27 is supported. On this platform 27 pillow-blocks 28 and 29 are provided which support a main shaft 30 carrying a belt-pulley 31 at one end thereof. The shaft 30 extends longitudinally throughout the length of the platform 27 and includes a friction clutch 32 which is adapted to be closed or opened by means of a sliding-collar 33 actuated by a pull-rod 34, said pull-rod extending longitudinally of the machine as indicated in Fig. 2. The end of the shaft 30 is provided with a bevel-gear 35 which meshes with a corresponding bevel-gear 36, the latter bevel-gear being provided with a feather running in a key-seat or groove 37 formed in a vertical spindle 39. On the lower end of the vertical spindle 39 an auger or bit 40 is formed which is adapted to penetrate the earth and form a post-hole. This spindle 39 is rotatably mounted in suitable bearings 41, and these bearings 41 are attached to a frame-bracket 42 at the end of the platform and these bearings also afford means for supporting a guide 43 for a vertically moving rack or slide 44, the purpose of which will appear more fully hereinafter.

Immediately above the shaft 30 I provide a counter-shaft 45 the ends of which are rotatably mounted in the pillow-blocks 28 and 29 as shown. The shaft 30 is provided at a suitable point with a pinion 46 meshing with a similar pinion 47 rigid on the counter-shaft, and the counter-shaft is also provided with a pinion 48 which meshes with a larger gear 49 carried loosely upon a feed-shaft 50, said feed-shaft being disposed parallel with the shaft 30 and rotatably mounted in the pillow-blocks 28 and 29. The shaft 30 is also provided with a pinion 51 which meshes with a large gear 52 which is also carried loosely by the shaft 50. Between the gear-wheels 49 and 52 a sliding clutch-collar 53 is mounted which is

adapted to clutch the hubs 54 of the two large gear-wheels so that the clutch-collar may be made to rotate with either of them. The clutch-collar has a feather connection with the shaft 50 so that it can slide upon the shaft but cannot rotate without rotating the shaft. This clutch-collar 53 may be operated by means of a lever 55, the end of which is connected with a draw-rod 56 which extends longitudinally of the frame having a handle 57 near the auger. As indicated in Figs. 2 and 3 the draw-rod 56 is supported in a suitable guide 58 at the side of the machine.

On the shaft 50 a brake-wheel 59 is rigidly attached around which passes a brake-band 60, said brake-band being connected with a short arm 61 carried by a brake-shaft 62. This brake-shaft 62 is disposed in a horizontal position and rotatably mounted in the frame-bearing 42. At one end it is provided with a lever 63 for rotating the shaft and applying the brake-band, as will be readily understood. Beyond the brake-wheel 59 the shaft 50 is provided with a pinion 64 and this pinion meshes with a large gear-wheel 65 carried upon a stub-shaft 66, said stub-shaft being rotatably mounted in the upper part of the frame-bracket 42, and having a pinion 67 at its opposite end which meshes with the aforesaid slide-rack or slide 44. Coöperating with the lever 63 I provide a quadrant 68 and a latch-bolt 63^a on the lever engaging the quadrant for locking the lever in any desired position, said quadrant being attached to the frame-bearing 42 as indicated in Fig. 1.

It should be noted that the axis of the trunnions 10 is disposed at rightangles to the axis of the trunnions 13 and this arrangement enables the tilting-frame and the hanger to be adjusted always so that the spindle 39 will be in a vertical position.

As indicated most clearly in Fig. 3, the upper end of the spindle 39 is rotatably mounted in a bearing 69, and collars 70 are attached to the spindle on each side of the bearing so that when the bearing moves up and down with the rack to which it is attached, the auger 40 will be raised or lowered.

The mode of operation of the machine will now be described.

The machine is wheeled into position so that the auger 40 is substantially over the point where the post-hole is to be formed. Supposing that the ground at this point is very uneven, or that the ground level is not substantially horizontal; then I make use of the tilting-frame 11 and the hanger 14 to bring the spindle into a substantially vertical position. The adjustment of the tilting-frame 11 is effected by removing the pins 19 and apply-

ing them in another one of the holes 17. This gives an adjustment in one vertical plane and a similar adjustment can be made by means of the openings 22 and the pins 24, enabling the hanger-frame 14 to be adjusted. The tilting-frame and the hanger-frame being adjusted in this way, I bring the spindle into a substantially vertical plane directly over the position where the post-hole is to be formed. By driving the shaft 50 through the pinion 51 and the gear 52, the feed-slide 44 can be driven in one direction, and by driving the feed-shaft 50 through the pinions 47 and 48 its direction of rotation will be reversed. When the driving is taking place through the gears 51 and 52 the clutch-collar 53 is in engagement with the hub of the gear 52, and on the other hand, when the drive is through the pinions 47, 48 and 49 the clutch-collar is in engagement with the hub of the gear wheel 49. The feed-slide 44 can be held up at any time by means of the brake-band 60 and it will be held up in this manner when the clutch-collar 53 is out of engagement with either of the gear wheels 49 and 52. When the clutch 32 is closed it will be evident that the spindle 39 will be rotated through the bevel gears 35 and 36. By throwing open the clutch 32 with the clutch-rod 34 the rotation of the spindle will cease. From the construction described, it will be evident that the power applied through the belt-pulley 31 will rotate the spindle, and in addition to this it will produce a feeding movement in the feed-slide. By means of the clutch-collar 53 the feeding movement can be reversed so as to withdraw the auger from the hole after it is bored.

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

1. In a machine of the class described, in combination, a main frame, wheels supporting the same and constantly resting upon the ground, a tilting frame mounted on said main frame to swing on a horizontal axis, means for locking said tilting frame, a hanger supported on said tilting frame on a horizontal axis transversely disposed to said first axis, a guide supported on said hanger, a spindle having an auger and adapted to penetrate the earth, means for advancing said spindle on said guide, and means for rotating said spindle, said last two means being mounted on said hanger.

2. In a machine of the class described, in combination, a frame, a guide supported on said frame, a slide moving in said guide and forming a rack, a spindle rotatably mounted in said slide, a pinion meshing with said rack and adapted to be rotated to raise or lower said slide, a shaft adapted to be rotated, a clutch-collar mounted on said shaft adapted to rotate said shaft, gear wheels loose on

said shaft, means for driving said gear wheels in opposite directions, clutches in connection with said gear wheels adapted to coöperate with said clutch-collar to drive
5 said pinion in either direction to raise or lower said slide, and means for supporting said slide when said clutch-collar is in an intermediate position and disconnected from both of said gear wheels.

10 3. In a machine of the class described, in combination, a frame, and wheels for supporting the same, a guide supported on said frame, a slide moving in said guide having a rack formed thereon, a spindle rotatably
15 connected with said slide, a main driving shaft adapted to rotate said spindle, a counter-shaft geared thereto, a pinion meshing with said rack, said pinion being driven by said counter-shaft, a clutch mechanism
20 mounted on said counter shaft for reversing the rotation of said pinion when the slide reaches the extreme limits of its travel in an upward or downward direction, and brake means for supporting said slide rack in any
25 predetermined position.

4. In a machine of the class described, in combination, a main frame, a tilting frame mounted to swing on a horizontal axis on said main frame, means for locking said
30 tilting frame to said main frame in a plurality of different positions, a hanger rotatably mounted on said tilting frame on a horizontal axis at right angles to said first axis, means for locking said hanger in a
35 plurality of different positions, a guide supported on said hanger, an auger movable on said guide, and means mounted on said hanger for driving said auger.

5. In a machine of the class described, in combination, a main frame, supporting frames carried thereby, a tilting frame rotatably mounted at the upper ends of said supporting frames, means for locking said
40 tilting frame fixed with respect to said main frame, a hanger pivotally suspended from said tilting frame and disposed over said main frame, a platform carried by said hanger, an auger supported by said hanger, and means mounted on said platform for
50 driving said auger.

6. In a machine of the class described, in combination, a main frame having standards, a tilting frame mounted on a horizontal axis between said standards at an elevated point, means for locking said tilting
55 frame with respect to said standards, a hanger suspended from said tilting frame on a second horizontal axis transverse to said first axis, means for locking said hanger on said tilting frame, a guide supported by
60 said hanger, an auger mounted on said guide, and a mechanism for driving said auger supported on said hanger.

7. In a machine of the class described, in combination, an elongated main frame having
65 standards at the ends thereof, an elongated tilting frame having its ends rotatably mounted at an elevated point on said standards and having side bars, a hanger pivotally mounted on said side bars at an intermediate point on the length thereof and supported between said tilting frame and said
70 main frame, a shaft disposed longitudinally of said tilting frame and supported on said hanger, mechanism in connection with said shaft for driving the same and an auger supported on said hanger and adapted to be driven by said shaft.

8. In a machine of the class described, in combination, a main frame, a tilting frame
80 supported at the ends of said main frame to swing on a horizontal axis, means for locking said tilting frame to said main frame in a plurality of different positions, a hanger supported on said tilting frame at an intermediate point on a horizontal axis at right
85 angles to said first axis, means for locking said hanger in a plurality of different positions on said tilting frame, an auger supported at one end of said hanger, a shaft
90 extending longitudinally of said main frame and mounted on said hanger and means for driving said auger from said shaft.

In witness that I claim the foregoing I have hereunto subscribed my name this 6th
95 day of January, 1910.

R. T. BURDETTE.

Witnesses:

F. D. ALLEMAN,
EDMUND A. STRAUSE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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