(No Model.)

C. ALLEN.

MACHINE FOR BORING POST HOLES.

No. 459,262. Patented Sept. 8, 1891.

Fig. 1.

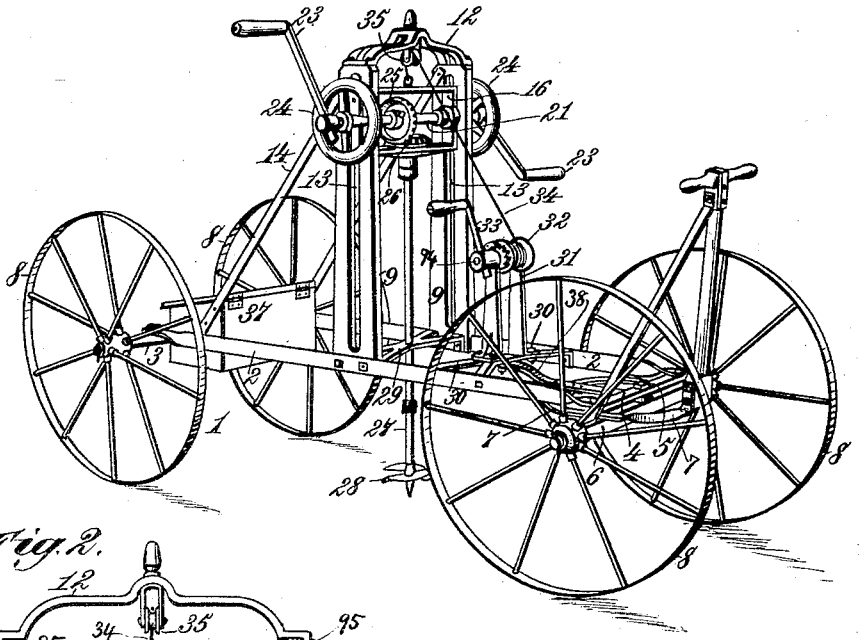


Fig. 2.

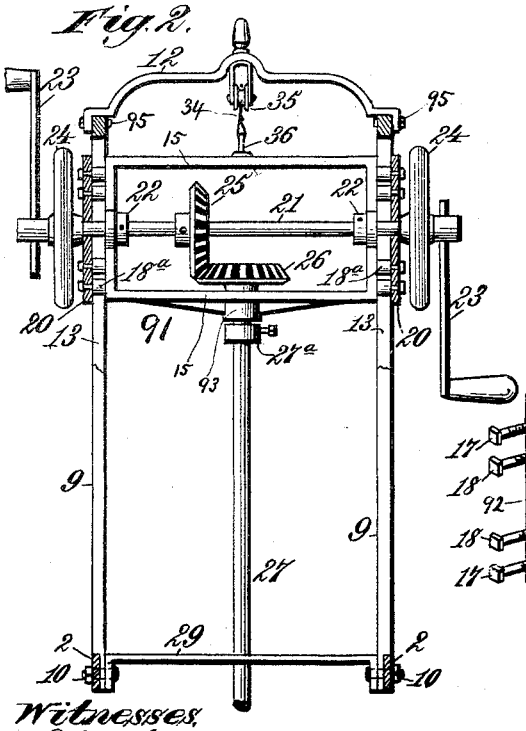
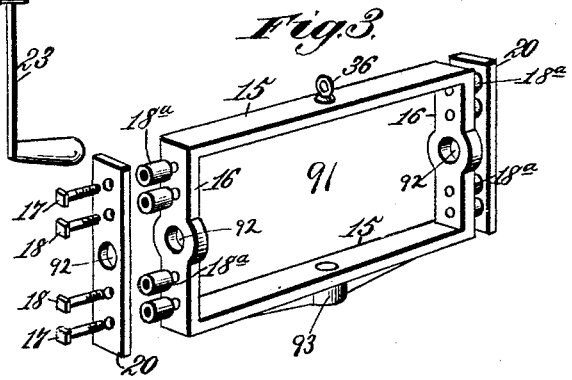


Fig. 3.



Witnesses.
Robt. Ewalt
J. A. Rutherford

Inventor.
Charles Allen.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

CHARLES ALLEN, OF ROCK ISLAND, ILLINOIS.

MACHINE FOR BORING POST-HOLES.

SPECIFICATION forming part of Letters Patent No. 459,262, dated September 8, 1891.

Application filed January 31, 1891. Serial No. 379,802. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ALLEN, a citizen of the United States, residing at Rock Island, in the county of Rock Island and State of Illinois, have invented new and useful Improvements in Machines for Boring Post-Holes, of which the following is a specification.

My invention relates to certain improvements in machines for digging post-holes.

It is my purpose to provide a simple and portable mechanism of this type whereby holes may be bored of any desired depth and the soil removed therefrom with a minimum expenditure of labor and time.

It is my purpose, also, to simplify and improve the construction of machines of this type and to provide mounting for the gearing operating the auger and for the shaft of the latter which will not bind in its supporting-ways and which may be hoisted to remove the displaced earth with the least possible frictional or other resistance.

The invention consists, to these ends, in the several novel features of construction and new combinations of parts hereinafter fully described, and more particularly pointed out and defined in the claims following this specification.

To enable others skilled in the art to construct and use machines embodying my said invention, I will now proceed to decribe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a post-hole-digging machine embodying said invenvention, the operative parts being shown as mounted upon a light carriage to facilitate transportation. Fig. 2 is an edge elevation of the guiding-standards and frame supporting the gearing, the standards being partly in section to show more fully the construction of the parts. Fig. 3 is a detail view of the frame supporting the gearing removed from the uprights and partially dismembered.

In the said drawings the reference-numeral 1 denotes the carriage upon which the boring mechanism is mounted, said carriage consisting of parallel side bars 2, formed of metal, their rear ends connected to an axle 3 and their forward ends to a bolster 4, having a central pivotal connection 5 with the forward axle 6, a fifth-wheel 7 being combined therewith in any well-known manner. The side bars 2 are preferably formed of light iron rails arranged edgewise and having their ends twisted or turned to engage the loops connecting them to the axle and bolster. The axles are supported by light iron wheels 8, having staggered spokes, the whole structure being of the greatest possible strength and the least possible weight.

At a suitable point between the ends of the side bars 2 are arranged uprights 9, of metal, their lower ends being rabbeted to overlap the inner faces of the side bars 2 and at the same time to form flush exterior surfaces, the parts being connected by bolts or rivets 10. The uprights 9 are connected at their upper ends by a light skeleton frame 12, and in each upright 9 is formed a longitudinal slot 13, extending from a point a little below its upper extremity to the side bar of the carriage or thereabout. In order to brace and stiffen the structure, inclined braces 14 are extended from the rear portions of the side bars 2 to the upper ends of the standards 9 and may be fastened at both ends by bolts or rivets.

Between the uprights or standards 9 is arranged a rectangular frame 91, consisting of two parallel cross-bars 15, arranged horizontally, having their ends united by vertical bars 16, said frame being of such length that the end pieces or bars 16 will be close to the inner faces of the standards or uprights 9, but capable of free vertical movement between said uprights.

Upon the outer edges or surfaces of the end bars 16 of the rectangular frame 91, at or near the upper end thereof, are inserted bolts 17, one of said bolts being arranged very near the end of each end bar, its axis being parallel with the side bar 15, and at a short distance from the said bolt 17 is a second and similar bolt 18, parallel with the first. These bolts are preferably tapped into the end bars, as shown; but they may be attached in any suitable manner. The unthreaded portion of each bolt is so formed that it may serve as a bearing for a roll 18^a, having a length substantially equal to the thickness of the standards or uprights 9, the diameter of said roll being very slightly less than the width of the

slots or channels 13 in said standards. Two bolts having similar construction and arrangement and provided with rolls having bearing thereon are mounted at corresponding points upon the other ends of the vertical bars 16, and all of these bolts are provided with heads, and are of such length that a steel plate 20, having suitable openings to receive the bolts, may lie between the outer ends of the rolls 18ª and the heads of the bolts. Each plate 20 is of somewhat greater width than the slots 13 of the standards 9, so that when the frame or head is arranged between said standards with the rolls 18 lying in the slots 13 the plates 20 will lie outside the standards and extend beyond the sides of the slots, their edges lying and moving upon the outer faces of the standards. By turning the bolts 19 in one or the other direction the contact of the plate 20 may be adjusted with perfect accuracy.

Arranged at or about the center of the frame or head 91 is a shaft 21, parallel with the bars 15 and lying in suitable openings 92, formed in the vertical bars 16 and steel plates 20, beyond which the shaft projects at both ends. Upon said shaft 21, within the frame or head, are rigidly-mounted collars 22, which abut against the inner faces of the vertical bars 16 to prevent longitudinal displacement of the shaft. Upon the ends of the latter, which project beyond the exterior faces of the steel plates 20, are mounted working-cranks 23, to enable two operators to be employed should the nature of the work require it. Wheels 24 are also placed on the shaft between the steel plates 20 and the cranks 23; but these may be omitted, if preferred.

Upon the shaft 21 is mounted a miter-gear 25, having mesh with a similar gear 26, keyed upon the head of a vertical shaft 27. The end of this shaft passes up through a bearing 93 in the lower bar 15 of the vertically-movable head or frame 91, this bar being somewhat thickened at or near its middle portion to furnish the required support. The miter-gear 26 is keyed upon the end of the shaft 27 above the bar 15, upon which said gear rests, and below the bar the shaft is provided with a collar 27ª, rigidly secured thereto to prevent the upward movement of the shaft and the binding of the miter-gears. The shaft 27 extends downward to the point where the auger 28 is attached, passing through a metallic brace 29, the ends of which diverge and are provided at their ends with right-angled lugs, fastened to the inner faces of the uprights 9 by the bolts securing the latter. This brace affords a firm bearing for the shaft and stiffens and strengthens the entire structure.

Between the uprights 9 and the bolster 4 is a brace 30, having diverging ends provided with right-angled lugs which lie against the inner faces of the parallel side bars 2, and are fastened by bolts like the brace 29. Upon this brace 30 is formed or mounted a frame having two uprights 31, upon which is journaled a shaft 94, carrying a drum 32, rotated by a crank 33. From the drum, to which one end thereof is fastened, a strong cord or small wire cable 34 is led over a pulley 35, suspended from the skeleton frame 12 and attached to an eye 36 upon the movable head 91. The function of this drum is to raise the movable head 91 and lift the shaft and auger from the post-hole to remove the soil displaced and lying upon the auger. This tool may consist of cutting-plates of suitable pitch mounted upon an axis having a sharp point; but as these features are all known no specific description is necessary. The auger is detachable from the shaft, and one or more augers, together with the other necessary tools, are carried in a tool-chest 37, supported upon the rear end of the wagon-frame.

In connecting the front axle to the bolster a strap 38, connected with the king-bolt 5, is extended backward and fastened to the brace 30, the ends of the fifth-wheel being projected beyond or forward of the axle and its ends being bent toward and bolted to the end of the tongue.

In Fig. 1 I show the skeleton frame 12 bolted to the tops of the standards 9; but its ends may be lapped over upon the outer faces of the said standards and fastened by bolts 95, passing through both horizontally, as shown in Fig. 2.

What I claim as my invention is—

1. In a machine for boring post-holes, the combination, with a frame provided with uprights or standards having longitudinal slots or channels, of a movable frame or head supporting the driving-shaft and auger and having end bars lying in close proximity to the inner faces of the uprights and provided with bearing-bolts near both ends of each of said end bars, said bearing-bolts having rolls lying in the slots or channels of the uprights and being provided with plates mounted on said bolts between their heads and the outer ends of the rolls and having their edges resting upon the outer faces of the uprights on both sides of the slots therein, substantially as described.

2. In a machine for boring post-holes, the combination, with a frame having slotted uprights or standards rising therefrom, of a rectangular movable frame or head arranged between said standards and having near the extremities of each end bar thereof bearings consisting of bolts tapped into said end bars and projecting through the slots in the uprights, rolls journaled on said bearings and lying in said slots, plates mounted on said bolts between the said rolls and the heads of the bolts, the edges of said plates resting on the outer faces of the uprights on both sides of the slots, a driving-shaft passing through the end bars of the movable frame or head and through the slots in the uprights and through openings in the plates, and an auger-shaft passing through the lower horizontal bar of the movable frame

and having a miter-gear keyed thereon meshing with a miter-gear of the driving-shaft, substantially as described.

3. In a machine for boring post-holes, the combination, with a supporting-frame having slotted standards, of a rectangular movable head or frame arranged between said uprights, its end bars lying close to the inner faces of said uprights, rolls lying in the slots of the uprights and mounted on bolts tapped into the end bars of the movable frame, two of said rolls being mounted near each end of each end bar of said frame, a plate mounted on said bolts between their heads and the rolls, the edges of said plates resting on the outer faces of the uprights on each side of the slots therein, a driving-shaft having support in the movable head or frame, its ends passing through the slots and through the plates and having cranks mounted thereon, an auger-shaft, one end of which has bearing in the lower bar of the movable frame and is geared to the driving-shaft, and a windlass mounted on the supporting-frame and having a cord attached to its drum and passing over a pulley to the movable head, substantially as described.

4. In a machine for boring post-holes, the combination, with a frame comprising metallic side bars and slotted uprights, the latter connected at their tops and bottoms, of a rectangular movable frame or head arranged between said uprights and having bolts tapped into its end bars near each end thereof, rolls mounted on said bolts and lying in the slots of the uprights, plates mounted on said bolts between their heads and the outer ends of the rolls and resting on the outer faces of the uprights on both sides of the slots, a driving-shaft passing through the end bars of the movable frame and through the plates and having cranks on its projecting ends, an auger-shaft having bearing in the lower horizontal member of said frame and in a cross-brace interposed between the lower ends of the uprights, a windlass mounted on the wheeled frame, and a cable connected with the windlass and with the movable frame, substantially as described.

5. In a machine for boring post-holes, the combination, with a supporting-frame having uprights provided with slots, of a movable frame or head having end bars provided with upper and lower stud-bolts carrying rollers which lie in the slots of the standards, plates arranged outside the bolts, secured to the stud-bolts and retaining the rollers in position thereupon, gearing carried by the movable frame, and an auger having one end supported by the latter, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

CHARLES ALLEN. [L. S.]

Witnesses:
F. BAHNSEN,
M. F. BAHNSEN.