E. M. GOLDNER.

POSTHOLE BORING MACHINE.

APPLICATION FILED JAN. 23, 1919.

1,370,430.

Patented Mar. 1, 1921.

2 SHEETS—SHEET 1.

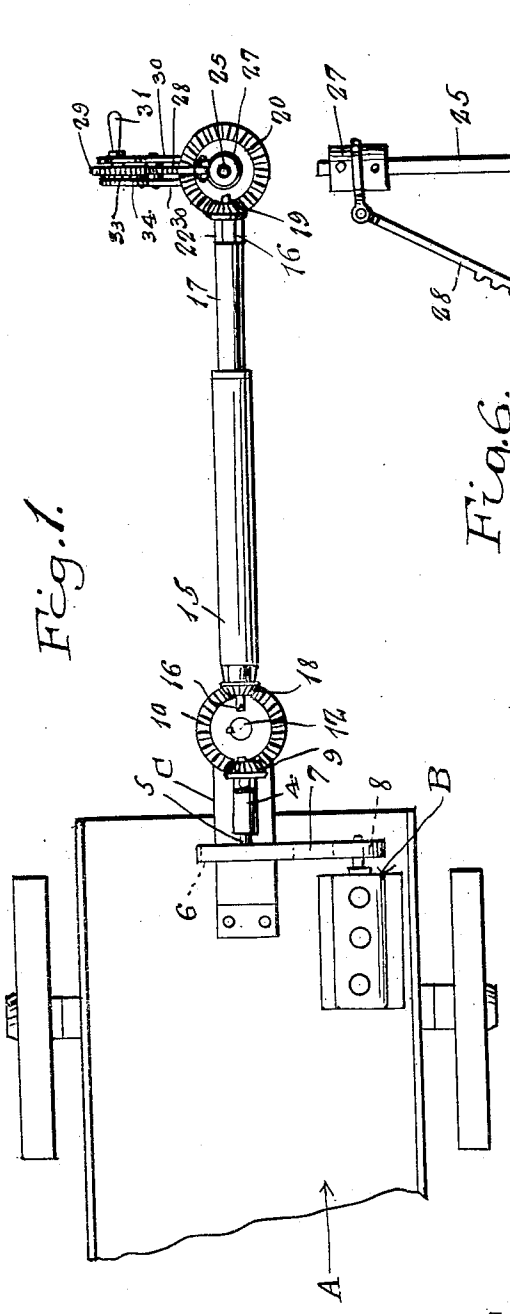


Fig. 1.

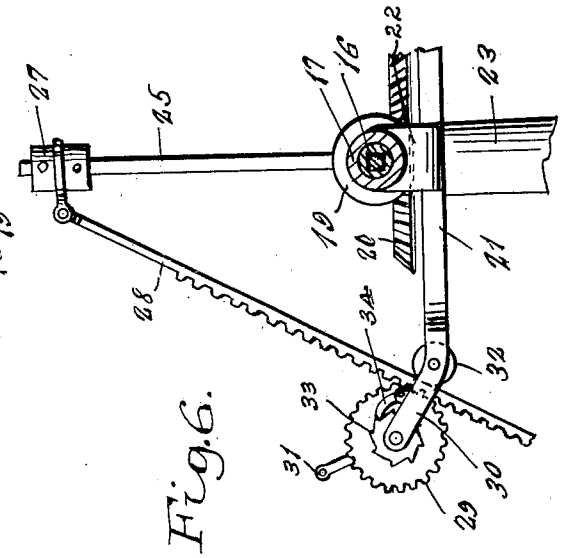


Fig. 6.

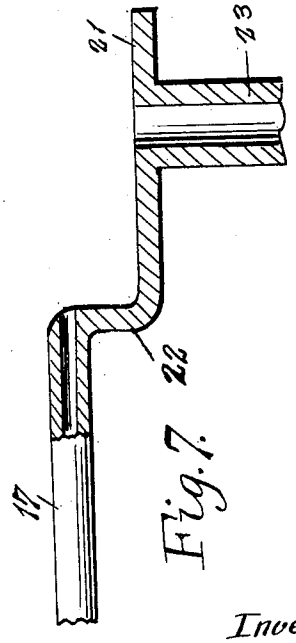


Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 2.

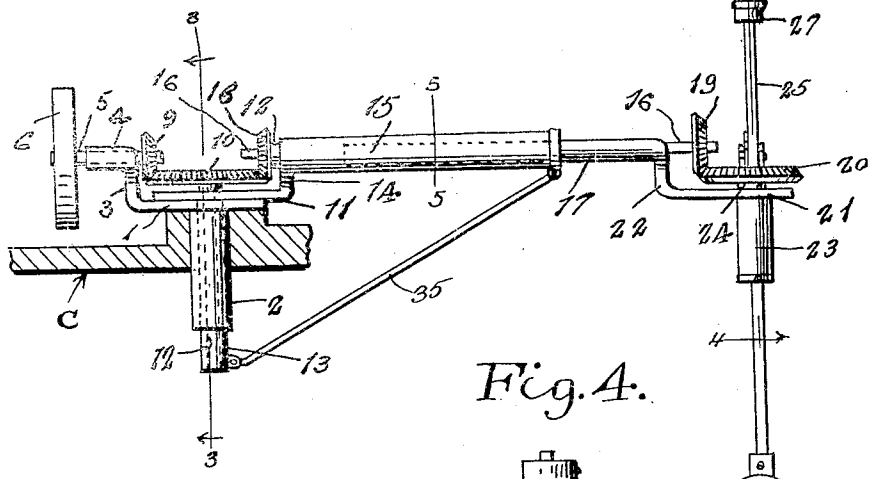


Fig. 4.

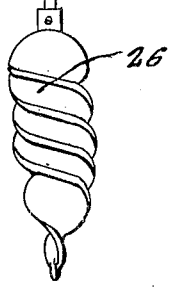
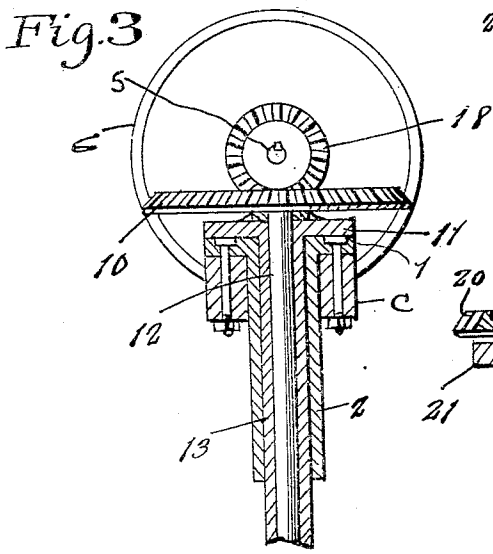


Fig. 3



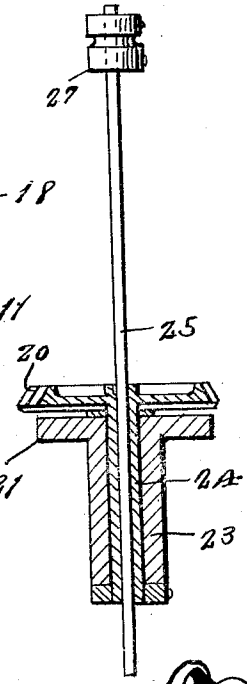
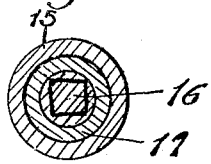


Fig. 5.



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UNITED STATES PATENT OFFICE.

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POSTHOLE-BORING MACHINE.

1,370,430. Specification of Letters Patent. Patented Mar. 1, 1921.

Application filed January 23, 1919. Serial No. 272,747.

To all whom it may concern:

Be it known that I, ELMER M. GOLDNER, a citizen of the United States, residing at Ellston, in the county of Ringgold and State of Iowa, have invented certain new and useful Improvements in Posthole-Boring Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to earth boring machines, and more particularly to a machine specially adapted for boring post holes.

One of the main objects of the invention is to provide a machine of the character stated of simple construction and operation which may be readily transported.

A further object is to provide a machine having a rotatable support for the boring member so that this member may be readily adjusted into the position desired.

Another object is to provide means whereby the boring member may be adjusted toward or away from the supporting structure, this means coöperating with the rotary adjustable supporting means to provide a universal adjustment for the boring member.

Further objects will appear from the detailed description.

In the drawings:

Figure 1 is a top plan view of a machine constructed in accordance with my invention as used.

Fig. 2 is a side view.

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Fig. 4 is a section taken on line 4—4 of Fig. 2.

Fig. 5 is a section taken on line 5—5 of Fig. 2.

Fig. 6 is a detail of the mounting of the gear and rack for raising and lowering the drill rod.

Fig. 7 is a detail of the supporting sleeve and plate for the drill operating gear.

The machine is intended more particularly to be used in connection with a wagon designated generally by A or other suitable easily transportable supporting structure, this wagon carrying an internal combustion engine B and a relatively heavy beam or plank C, or equivalent means, for supporting the frame of the machine proper, this beam being secured to the wagon bed.

A plate 1 is bolted or otherwise secured to the upper face of beam C and is provided with a central sleeve 2 depending therefrom. This plate is further provided with an integral bracket 3 which supports a horizontally disposed bearing sleeve 4 positioned above and radially of the plate. This bearing sleeve rotatably supports a stub shaft 5 on the outer end of which is secured a pulley 6 connected by a belt 7 to the pulley 8 secured on the drive shaft of engine B. A bevel-pinion 9 is secured on the inner end of shaft 5 and meshes with a drive bevel-gear 10 which is rotatably supported by a bearing plate 11 positioned on the upper face of plate 11. In this manner, the gear 10 may be readily rotated from the engine B, as will be understood.

Gear 10 is provided with a central depending stub shaft 12 which fits into a bearing sleeve 13 depending from plate 11 centrally thereof, this bearing sleeve being rotatable in the sleeve 2 of plate 1. The gear 10 is thus supported for free rotation in either direction, stub shaft 12 providing bracing means for this gear so as to insure proper centering thereof, and the bearing plate 11 may be freely turned in either direction about its axis and is held in centered position by the sleeve 13. This bearing plate is provided with an integral bracket 14 which supports an elongated bearing sleeve 15 above and radially of the plate. This bearing sleeve is so positioned that the plane of its axis is substantially coincident with the plane of the axis of sleeve 4 so as to obtain proper balancing of the machine.

A shaft 16 which is square in cross section is rotatably supported, by suitable bearings, in a sleeve 17 which is slidable in sleeve 15 from the outer end thereof. This shaft is provided, at its inner end portion, with a spur-pinion 18 mounted thereon and meshing with gear 10, this pinion being held against axial movement in either direction by the bracket 14 and the gear. The pinion 18 is provided with a central opening corre-

sponding in cross section to shaft 16, this shaft being freely slidable through the pinion in either direction in accordance with movement of sleeve 17, and being rotated from gear 10 by means of the pinion. At its outer end shaft 16 is provided with a bevel-pinion 19 secured thereon which meshes with a bevel-gear 20 rotatably mounted on a horizontally disposed supporting plate 21 which is supported from the outer end of sleeve 17 by an integral bracket 22. This plate 21 is provided with a central depending sleeve 23 which receives a tubular stub shaft 24 depending from gear 20 centrally thereof. The bore of shaft 24 is of rectangular cross section and receives a correspondingly shaped drill rod 25 which is slidable therethrough, this drill rod being provided at its lower end with a suitable auger or boring instrument 26. Adjacent its upper end, drill rod 25 is provided with a collar 27 secured thereon provided with an annular groove which receives a suitable securing band to which is pivotally secured the upper end of an inclined rack bar 28. This bar meshes with an adjusting spur-gear 29 rotatably mounted between spaced supporting arms 30 projecting from plate 21, the shaft of this gear being extended and squared to receive an operating crank 31. The arms 30 also support an anti-friction roller 32 upon which the under face of rack bar 28 travels, this roller serving to maintain the rack bar in mesh with the adjusting gear. A ratchet wheel 33 is secured on the shaft of gear 29 adjacent the other end thereof, and is adapted to be engaged by a gravity pawl 34 for normally securing the gear against reverse rotation so as to hold the drill rod 25 raised. During the drilling operation, this pawl is moved into inoperative position, the weight of the drill rod and associated parts being such as to, under ordinary conditions, exert sufficient pressure upon the auger or drilling instrument 26 for drilling purposes. When it is desired to increase this pressure, the drill rod may be forced downwardly by means of the rack bar and associated parts. To prevent distortion or bending of the arm or sleeve 15, a suitable brace rod 35 is secured to this sleeve at its upper end, adjacent the outer end of the sleeve, the lower end of this brace rod being secured to sleeve 13 of plate 11 which projects below sleeve 2 of plate 1 for this purpose.

Due to the pivotal mounting of plate 11, and the telescopic connection between sleeves 15 and 17, the boring instrument 26 may be readily adjusted in any direction about, or toward or away from, the axis of the main drive gear 10. This renders it possible to quickly and easily bring the boring instrument into the desired position thus providing means whereby a post hole may be readily bored in places which it would be practically impossible to reach under ordinary conditions.

What I claim is:

1. In a machine of the character described, a supporting plate, a bearing plate mounted thereon for rotary adjustment about a vertical axis, a gear rotatably supported by the bearing plate and having its axis coincident with the axis of said plate, the plate being adjustable independently of said gear, a telescoping supporting member carried by said plate, a gear rotatably supported by said member at the outer end thereof, a drill rod connected to said gear for rotation therewith, and means carried by said supporting member for operatively connecting the first mentioned gear and the gear carried by the supporting member, said connecting means being adjustable in accordance with variations in the effective length of the telescoping supporting member.

2. In a machine of the character described, a supporting plate, a bearing plate mounted thereon, a gear supported by said bearing plate and being provided with a central depending stub shaft extending through the bearing plate and the supporting plate, an elongated sleeve carried by said plate and projecting substantially radially thereof, a second sleeve slidable therein and provided at its outer end with a supporting plate, a gear rotatably mounted on the supporting plate of the second mentioned sleeve and provided with a depending tubular stub shaft, a drill rod slidable through said shaft and connected thereto for rotation with the gear, means for rotating the gear mounted on said bearing plate, a pinion meshing with said gear, a shaft rotatably supported by said second mentioned sleeve and slidable through said pinion, the shaft being connected to the pinion for rotation therewith, and a pinion secured on the outer end of said shaft and meshing with the gear carried by the supporting plate of the second mentioned sleeve.

3. A post hole boring machine comprising the combination of a supporting plate carrying a depending hollow member and a supporting arm, driving mechanism mounted in said arm, a bearing plate mounted on said supporting plate and having a sleeve extending through the hollow depending member of said supporting plate, said bearing plate having a supporting sleeve extended from said supporting arm in a plane with the driving mechanism, an adjustable shaft mounted in said supporting sleeve, said bearing plate being adapted to be turned upon said supporting plate to move the supporting sleeve of the bearing plate

at various angles with respect to said driving mechanism, bracing connections between said supporting sleeve and the depending sleeve of the bearing plate, a drill shaft supported at a right angle to the bearing sleeve and adapted to be driven by the shaft mounted in the latter, and driving connections between said driving mechanism and said shaft mounted in said supporting sleeve.

In testimony whereof I affix my signature in presence of two witnesses.

ELMER M. GOLDNER.

Witnesses:
RAY M. OVERHOLTZER,
OLIVE J. OVERHOLTZER.