M. J. KEENAN.

BORING TOOL.

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1,099,379.

Patented June 9, 1914.

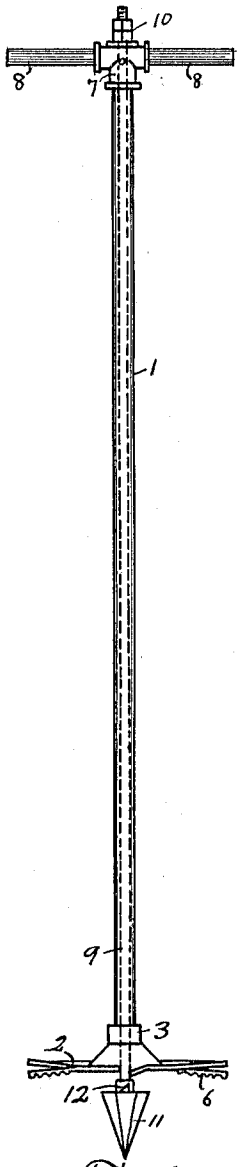


Fig. 1.

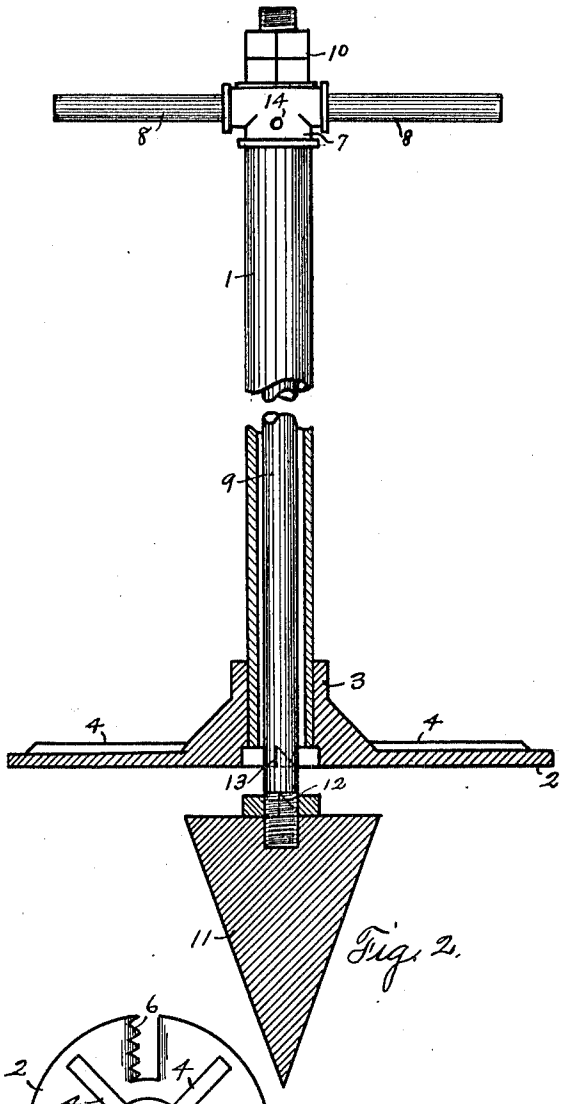


Fig. 2.

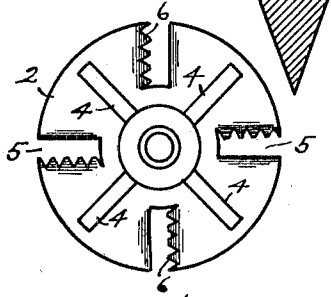


Fig. 3.

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BORING-TOOL.

1,099,379. Specification of Letters Patent. Patented June 9, 1914.

Application filed October 13, 1913. Serial No. 794,762.

To all whom it may concern:

Be it known that I, MICHAEL J. KEENAN, a citizen of the United States, residing at Brunner, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Boring-Tools, of which the following is a specification.

This invention relates to new and useful improvements in boring tools and has particular relation to such devices as are adapted to be used for digging post holes, boring shallow wells and for like purposes.

The object of the invention is to provide a device of the character described having a pilot bit and a cutting disk which follows the same and by means of which the loosened earth is carried from the bore to the surface and comprehends also a structure whereby air is introduced into the bore, beneath said disk whereby a vacuum is prevented from forming in the bore as the tool is withdrawn therefrom.

With the above and other objects in view, the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the complete device. Fig. 2 is a side elevation thereof, partially in section, and Fig. 3 is a plan view of the cutting disk.

Referring now more particularly to the drawings, wherein like numerals designate similar parts in each of the figures, the numeral 1 refers to a tubular member, to the lower end of which the disk 2 is secured. This disk has a central orifice surrounding which and upstanding from the disk is the collar 3, which is integral with the disk and which surrounds the lower end of said tubular member 1. The disk 2 is circular in form and is composed of sheet steel, or some other durable material and is reinforced by means of ribs 4, 4 on its upper side, which radiate from the collar 3 and which are integral with said disk. The disk is provided with radiating slots 5 between the ribs 4 which extend to the periphery thereof, one side of each slot curving downwardly and being serrated so as to form cutters 6. Secured to the upper end of the member 1 is a T union 7 secured to which are the tubular handles 8, 8, one on each side. Within the tubular member 1 is the shaft 9 whose upper end projects up through the union 7 and is threaded and has the nut 10 screwed thereon and whose lower end extends a short distance below the disk 2 and is outwardly threaded and attached to which is the pilot bit 11. This bit has the general contour of an inverted cone having a plurality of dull cutting edges, as shown in Fig. 1, which extend from the apex to the base thereof.

The shaft 9 is somewhat smaller in diameter than the diameter of the passage way through the tubular member 1, so as to form an air space within said member and around said shaft. Upstanding from said pilot bit on opposite sides of the shaft are the teeth 12 and vertically alined above them in the inner edge of the disk 2 are correspondingly shaped notches 13.

In operation the disk 2 seats upon the pilot bit 11, the teeth 12 engaging in the notches 13 and clutching said disk and bit together. The disk and bit are then turned by means of the handles 8 through the tubular member 1 and the tool is thus forced downwardly into the earth, the loose earth passing up through the slots 5 above the disk 2. As the work progresses, it will be necessary to often withdraw the tool so as to lift the dirt which accumulates above the disk 2 out of the bore. When an upward pull is exerted on the handles 8, the tubular member 1 and the disk 2 will slide upwardly relative to the shaft 9 and the bit 11, until the T-coupling 7 seats against the nut 10. As the disk 2 moves upwardly air will be admitted through the tubular handles 8 and the tubular member 1 beneath said disk and a vacuum will thus be prevented from forming therebeneath. In case the handles 8 are made solid, an orifice 14 should be provided to admit air to the tubular member 1. This provision for the admission of air beneath the disk 2, as the disk is withdrawn from the bore constitutes one of the chief advantages of this device inasmuch as otherwise a vacuum would be formed beneath the disk as the same is withdrawn, thus causing the bore to fill up and making it very difficult, if not impossible, to withdraw the tool from the bore.

The pilot bit 11 is provided for the purpose of directing the course of the bore and the bore formed thereby is then gradually enlarged by the disk 2 which follows said pilot, the disk also serving for the purpose

of lifting the loose earth which accumulates thereabove from the bore.

What I claim is:—

1. A device of the character described, consisting of a tubular member, a cutting disk fixed to the lower end thereof, a means for rotating said member and disk, a shaft extending through the tubular member and disk, a pilot bit fixed to the lower end thereof, said shaft and bit having a limited lengthwise movement relative to said tubular member and interlocking means carried by the disk and pilot bit, respectively, for locking said bit and disk against rotation relative to each other.

2. A device of the character described, consisting of a tubular member, a cutting disk fixed to the lower end thereof, means carried by the upper end thereof for rotating the same, a shaft extending through the tubular member and disk, a pilot bit fixed to the lower end of said shaft, said tubular member and disk being slidable on said shaft, a means carried by the upper end of the shaft for limiting the upward movement of said tubular member and disk relative thereto and means carried by the disk and pilot bit, respectively, for locking said pilot bit against rotation relative to said disk.

3. A device of the character described, consisting of a tubular member, a cutting disk fixed to the lower end thereof, a means for rotating said disk and tubular member, a shaft extending through the tubular member and disk, said shaft being less in diameter than the passageway through said tubular member, so as to form an air passageway therebetween, a pilot bit fixed to the lower end of said shaft, a means fixed to the other end of said shaft for limiting the lengthwise movement of the tubular member relative to the shaft and such members carried by the disk and pilot bit, respectively, for locking said pilot bit and shaft against rotation relative to said disk and tubular member.

4. A device of the character described, consisting of a tubular member; a cutting disk fixed to the lower end thereof, said disk consisting of a circular plate having a plurality of slots radiating from the center thereof and extending to the outer edge thereof, the corresponding sides of said slot being curved downwardly and serrated; a means for rotating said tubular member and disk; a shaft extending through the tubular member and disk, said tubular member being slidable lengthwise on the shaft, a pilot bit fixed to the lower end of said shaft, a means carried by the upper end of said shaft for limiting the upward movement of the tubular member relative to the shaft and interengaging clutch members for locking said disk and tubular member against turning relative to said pilot bit and shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MICHAEL J. KEENAN.

Witnesses:
MAY MONTGOMERY,
J. W. YEAGLEY.

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