Nov. 10, 1942. E. L. TIBBALS, JR., ET AL 2,301,478

BORING DEVICE

Filed Nov. 15, 1941

Fig. 1.

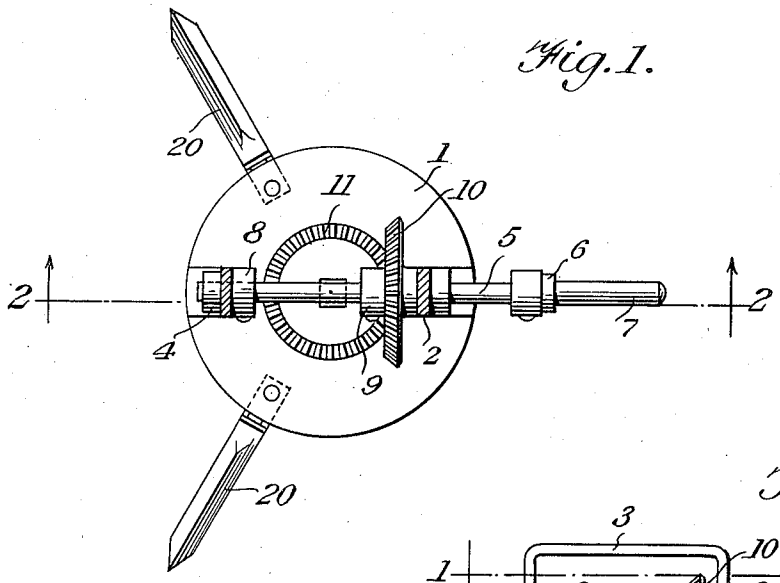


Fig. 2.

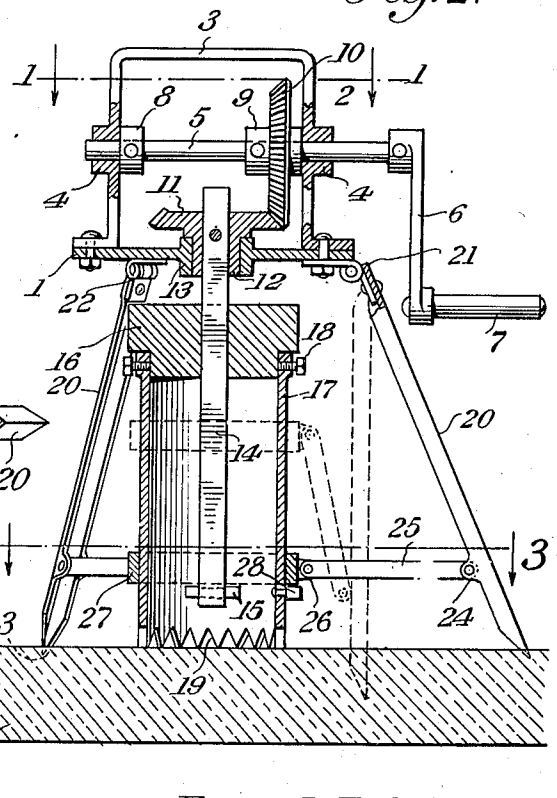
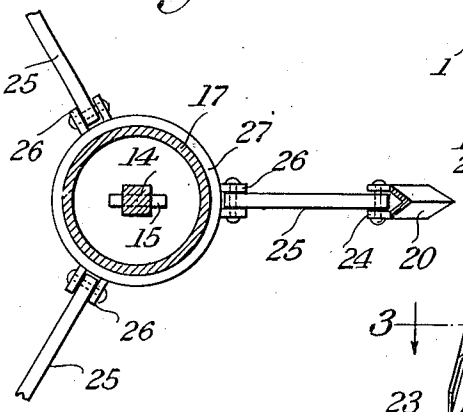


Fig. 3.



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BORING DEVICE

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4 Claims. (Cl. 255—72)

This invention relates to boring devices, and its general object is to provide a device in the form of an auger that is primarily designed for boring through ice what is commonly known as a fishing hole, the device being operable with minimum effort on the part of the user, and is capable of boring a hole of relatively large diameter through ice of various thicknesses, without cracking or otherwise weakening the ice adjacent the hole, thus the adjacent ice provides ample supporting means for a shelter or windbreak about the hole, for protection while fishing.

A further object is to provide a boring device that is capable of performing its intended function in an easy and expeditious manner, and is foldable for convenience in carrying and for taking up minimum space in storage.

Another object is to provide a boring device that is simple in construction, inexpensive to manufacture, and extremely efficient in operation, use and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a sectional view taken approximately on line 1—1 of Figure 2, looking in the direction of the arrows.

Figure 2 is a sectional view taken approximately on line 2—2 of Figure 1, looking in the direction of the arrows, and illustrates the legged supporting means in operative position in full lines and in partially folded position in dotted lines.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 2, looking in the direction of the arrows.

Referring to the drawing in detail, the reference numeral 1 indicates a disk shaped platform having secured thereto and rising therefrom the arms 2 of an inverted substantially U-shaped frame 3, the arms being provided with diametrically opposite bearings 4 which have mounted for rotation therein, a drive shaft 5 of a length to extend a considerable distance laterally of one of the arms, and the extending end of the shaft has secured thereto a crank handle 6 that is provided with a hand grip 7.

The shaft is held in the bearings 4 by a retaining collar 8 and the hub 9 of a beveled gear 10 that meshes with a beveled gear or pinion 11 having a hub 12 provided with a reduced portion seated for rotation in a bearing collar 13 formed centrally of and through the platform 1, as best shown in Figure 2.

Secured to and depending from the gear 11 is a square cornered shaft 14 having an abutment pin 15 extending transversely therethrough adjacent its lower end, to limit the downward movement of a disk like relatively thick heavy head 16 of a hollow cylindrical cutting element 17, the head being slidably mounted on the shaft 14 and provided with a central square cornered hole fittingly receiving the shaft, for that purpose. The head is also provided with a reduced lower portion providing an annular shoulder, and the upper end of the cutting element 17 is mounted on the reduced portion of the head, in bearing engagement with the shoulder, as well as is secured in place by set screws 18, for the head to carry the cutting element, for normal downward movement under the action of gravity, as will be apparent upon inspection of Figure 2. The lower end of the cutting element is notched about the entire periphery thereof to provide V-shaped cutting teeth 19.

The supporting means in the form shown includes three legs 20 of cross sectional V-shape for the major portion of their length and the upper ends of the legs terminate in flat portions 21 to which are secured one of the leaves of barrel type hinges 22, while the other leaves of the hinges are secured to the under face of the platform for disposal of the legs at equidistantly spaced relation about the periphery of the platform for pivotal or hinged association therewith.

The lower ends of the legs are beveled to provide penetrating points 23, and formed on and extending inwardly from each of the legs is a pair of spaced apertured ears 24 having mounted between the same and pivoted thereto, one of the ends of brace links 25. The opposite or inner ends of the brace links are mounted between and pivoted to ears 26 that are formed on and extend outwardly in equidistantly spaced relation to each other, from a centering ring 27 for the cutting element 17. The element 17 is mounted in the ring for slidable movement, and of course for slidable movement of the ring on the cutting element, to allow the supporting means to be folded as indicated in Figure 2, for convenience in carrying the device and to take up minimum space in storage.

A stop member 28 is secured to the cutting ele-

ment adjacent the lower end thereof for disposal in the path of the ring 27 to limit its downward movement and incidentally to prevent removal of the ring from the cutting element. The stop member is arranged relative to the cutting element, so that when the ring engages the stop member, the legs will be held in their outermost extended or set up position as shown in full lines in Figure 2 which illustrates the device set up for use to begin its cutting action to bore a hole through the ice A. However, the dotted line position of the supporting means in Figure 2 illustrates the manner of folding the same, as the supporting means remains in the full line position during the entire time the device is in use or is performing its cutting function.

From the above description and disclosure in the drawing, it is believed that the use of our device will be obvious, but it might be mentioned that the device is set up on the ice A, as shown in full lines in Figure 2, with the teeth in bearing engagement with the ice. Upon rotation of the cutting element, by the crank handle and through the medium of the gears, shafts and heads 16, the teeth will penetrate the ice and be fed therethrough by the action of gravity due to the weight of the head, thus the device will cut a circular hole through the ice for the passage of fishing lines, as will be apparent. However, the device can be used for boring holes through any material and should prove very efficient as a post hole auger.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What we claim is:

1. A boring device comprising a platform, a shaft journaled in the platform and depending therefrom, cutting means including a head mounted for vertical slidable movement on the shaft and against rotation relative thereto, a cutting element fixed to and depending from the head, cutting teeth formed on the lower end of said element, means for rotating the shaft to bring about rotary movement of the cutting element, legs pivotally secured to and depending from the platform, centering means for and surrounding the cutting element, and brace means for the legs and pivoted thereto and to the centering means.

2. A boring device comprising a platform, a frame including parallel arms secured to and rising from the platform, a shaft journaled in the platform and depending therefrom, cutting means including a head mounted for vertical slidable movement on the shaft and against rotation relative thereto, a hollow cylindrical cutting element fixed to and depending from the head, cutting teeth formed on the lower end of said element, a drive shaft mounted for rotation in and bridging said arms, said drive shaft being geared to the first shaft to bring about rotary movement of the cutting element, means for rotating the drive shaft, supporting legs secured to and depending from the platform, centering means for and surrounding the cutting element, and brace means for the legs and connected thereto and to the centering means.

3. A boring device comprising a platform, a frame including parallel arms secured to and rising from the platform, a bearing collar centrally formed on the platform, a gear including a hub mounted for rotation in the bearing collar, a cross sectional square cornered shaft fixed to and depending from the gear, cutting means including a head having a square cornered hole therethrough fittingly receiving the shaft for slidable movement of the head thereon, a hollow cylindrical cutting element detachably secured to and depending from the head, cutting teeth formed on the lower end of said element, a drive shaft rotatably mounted in and through said arms, a gear secured to the drive shaft and meshing with the first gear to bring about rotary movement of the cutting element, a crank handle secured to the drive shaft, means arranged in the path of the head to limit downward movement of the cutting means, and supporting legs secured to and depending from the platform.

4. A boring device comprising a platform, a frame including parallel arms secured to and rising from the platform, a bearing collar centrally formed on the platform, a gear including a hub mounted for rotation in the bearing collar, a cross sectional square cornered shaft secured to and depending from the gear, cutting means including a disk like relatively thick heavy head having a centrally arranged square cornered hole therethrough fittingly receiving the shaft for slidable movement of the head thereon, said head having a reduced lower portion providing a shoulder, a hollow cylindrical cutting element detachably secured to the reduced portion and bearing against the shoulder, cutting teeth formed on the lower end of said element, a handled drive shaft mounted for rotation in said arms for disposal in bridging relation thereto, a gear on said drive shaft and meshing with the first gear to bring about rotary movement of the cutting element, legs pivotally secured to and depending from the platform, a ring surrounding the cutting element for slidable movement thereon, brace links having their ends pivotally connected to the ring and legs respectively, said legs having beveled lower ends providing penetrating points, and means arranged in the path of the ring to limit downward movement thereof.

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