Dec. 12, 1933. E. MASON 1,938,601

EXTRACTOR

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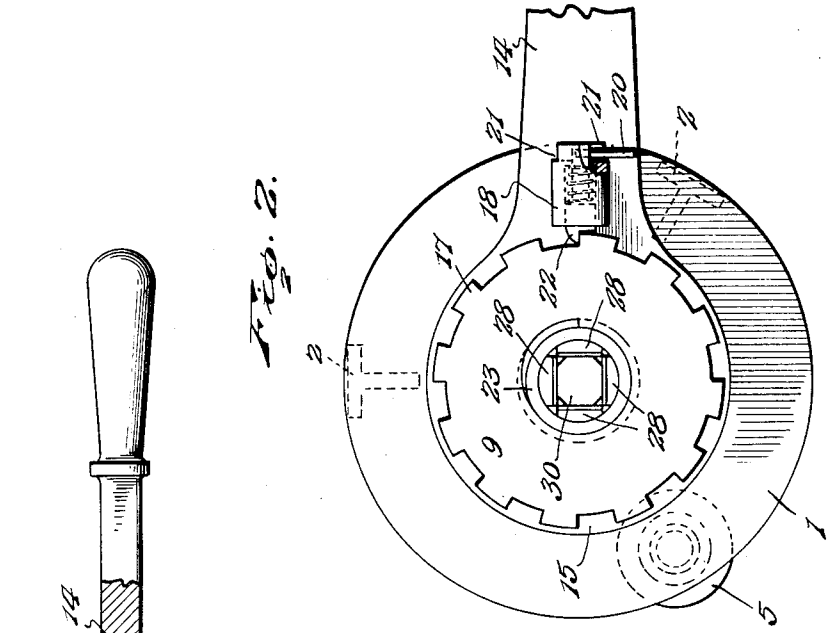

Fig. 2.

Fig. 1.

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EXTRACTOR

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1 Claim. (Cl. 254—30)

The tool of the present invention is intended more particularly for extracting drills when they have become tightly lodged in drill holes but it may, of course, be used wherever a tightly wedged element is to be withdrawn and cannot be withdrawn by hand. The object of the invention is to provide a tool for the stated purpose which is simple and compact in construction, easily manipulated, efficient in use, and readily adjusted to the surface against which it is to work.

In the accompanying drawing,

Figure 1 is a longitudinal section of a tool embodying the invention,

Fig. 2 is a top plan view of the same.

In carrying out the invention, there is provided a head plate 1 which may be circular or of other shape, as may be preferred. This head plate has welded, or otherwise intimately united therewith, two or more solid fixed legs, or supports, 2 which, as indicated in Fig. 2, may be T-shaped in cross section. There is also a hollow column 3 united with the head plate and this hollow column, or leg, is internally threaded, at its lower end, to be engaged by the screw 4, which is housed therein and is equipped with a foot 5, as shown, said foot being provided with sockets 6 for the reception of a turning tool. The tool is placed against the face of the rock with the ends of the legs 2 bearing thereagainst and the screw 4 is rotated so as to adjust the foot 5 to a greater or less distance from the end of the hollow column 3 so that the tool will be accommodated to the face of the rock when the bit to be withdrawn is disposed at an angle other than a right angle thereto. The head plate 1 has a central opening formed therethrough to receive the hub 7 of a turntable 8, the bore of the hub having a coarse internal thread 9 formed therein. The turntable is provided with a depending annular rim 10 which is spaced from the hub and may extend to the head plate 1, as clearly shown in Fig. 1. An anti-friction bearing 11 is disposed between the head plate 1 and the turntable 8 and is housed between the hub and the rim 10, as shown, so that the turntable may turn freely whenever the proper force is applied thereto. To maintain the turntable in proper relation to the head plate 1, a stop collar 12 is fitted on the end of the hub, against the underside of the head plate, and is secured on the hub by a set screw 13. A hand lever 14 is provided and has an annular body 15 encircling the rim 10 of the turntable, and upon the hand lever is mounted a dog 16 which is adapted to engage the ratchet teeth 17 upon the margin of the turntable, above the annular body 15, whereby the movement of the hand lever may be applied directly to the turntable. The dog 16 is disposed within a bearing box 18 formed on or secured upon the upper side of the hand lever 14, immediately adjacent the turntable, and is adapted to rotate in the box about its own axis. An expansion spring 19 is mounted within the box about the shank of the dog 16 and tends constantly to hold the dog in engagement with the turntable. At its outer end, the dog is equipped with a lateral pin 20 which constitutes a handle whereby the dog may be rotated to be reversed, when desired, and in the end of the bearing 18 are notches 21 in either of which the pin 20 may be engaged so that the dog will be held in the position in which it may be set. It will be understood that the dog is slidable as well as rotatable in its bearing so that, when moving in one direction, it will ride over the teeth or lugs 17 and, when moving in the other direction, the tooth 22 of the dog will engage against the side of a tooth or lug on the turntable and thereby cause the turntable to follow the movement of the hand lever. When the dog is to be reversed, the pin 20 is slid out of engagement with the notch in which it is seated and then rocked to the opposite side of the bearing and released, whereupon the spring 19 will expand and draw the pin into engagement with the alined notch. A hollow stem 23, having a coarse external thread 24 extending nearly its entire length, is fitted through the hub 7 and engaged with the threads 9 in the bore of the hub. This stem extends parallel with the legs 2 and 3, as shown, and its extremity more remote from the hub has finer threads thereon, as shown at 25. Mounted upon the threads 25 is a chuck 26 which projects forward beyond the end of the stem and has a tapered hollow body 27 fitting about and supporting clamping jaws 28 which are correspondingly tapered and have work-engaging teeth 29 formed on their inner faces. These jaws 28 are adapted to bear against the sides of the bit which is to be extracted, and which is indicated at 30, so as to firmly clamp the bit, as will be understood. The chuck 26 is suitably constructed to be engaged by a turning tool, as by having sockets 31 formed in its peripheral surface.

When the device is to be used, it is placed in position against the face of the rock in which the broken bit or shank is embedded, and the adjustable leg set to give a firm support against the rock. The chuck 26 is rotated about its threaded connection with the stem 23 so that the tapered body 27 will ride toward the inner or upper wider

ends of the several jaws and will thereby force the jaws into clamping engagement with the projecting end of the bit or other element. The hand lever 14 is then oscillated about the hub 7 and the turntable will be thereby rotated so that, through its threaded engagement with the stem 23, the stem will be caused to move away from the rock, and inasmuch as the jaws have a firm biting hold on the projecting end of the bit, the bit will be withdrawn readily from the hole in which it is wedged. After the bit has been withdrawn, the chuck 26 is rotated in the proper direction to loosen the hold of the jaws 28 upon the bit and thereby release the same.

From the foregoing description, taken in connection with the accompanying drawing, it will be seen that I have provided an exceedingly simple and compact tool which may be easily manipulated and will operate in a highly efficient manner to withdraw bits or other elements which may be wedged in the hole in which they were working. When the bit or other element is to be engaged, the dog 16 is set to operate in one direction so that the turntable will be rotated in the proper direction to feed the stem 23 to the work. The dog is then reversed so that, upon further oscillation of the hand lever, the turntable will be rotated in the opposite direction and the stem, with the chuck and jaws mounted thereon, will be caused to move away from the rock and pull the wedged implement therefrom.

Having thus described the invention, I claim,

An extractor comprising a support, a turntable swiveled upon the support and having an internally threaded hub, and a depending marginal rim spaced from the hub and bearing against the support, an anti-friction bearing interposed between the rim and hub, an externally threaded stem fitted through the hub of the turntable and engaging the threads thereof, a chuck mounted upon an end of the stem and having a hollow tapered body extending beyond the end of the stem and provided with tool receiving sockets, tapered clamping jaws mounted within the chuck to engage around work whereby to bind against the work when the chuck is adjusted longitudinally of the stem, and means for rotating the turntable.

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