May 27, 1924. 1,495,544

H. B. ABERNATHY

WELL DIGGING OUTFIT

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Fig. 1

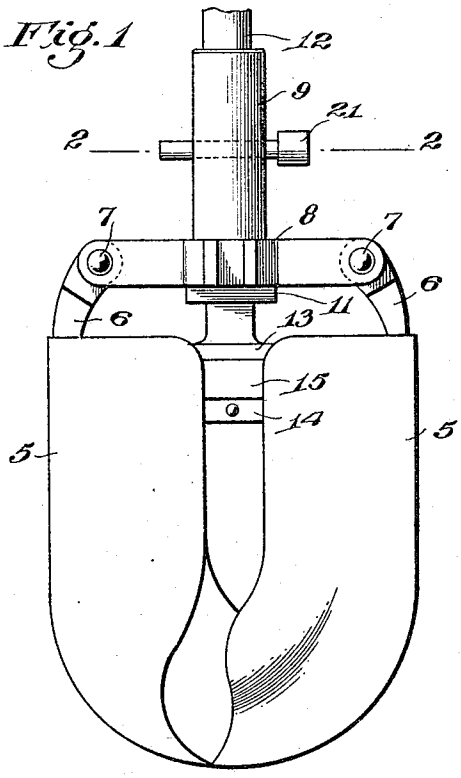


Fig. 3

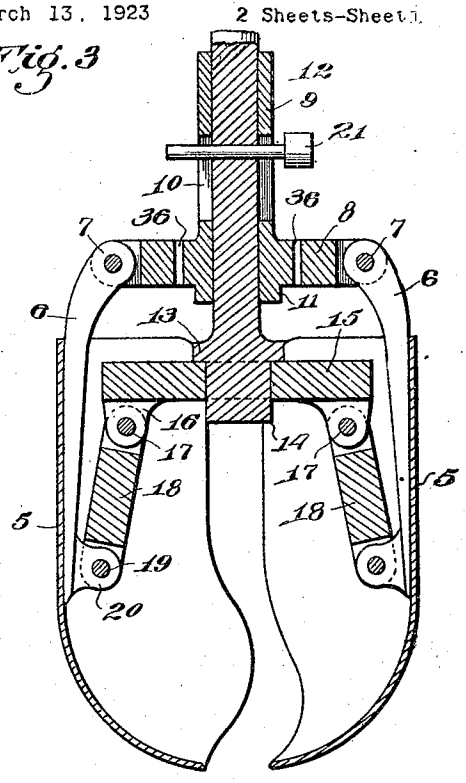


Fig. 6

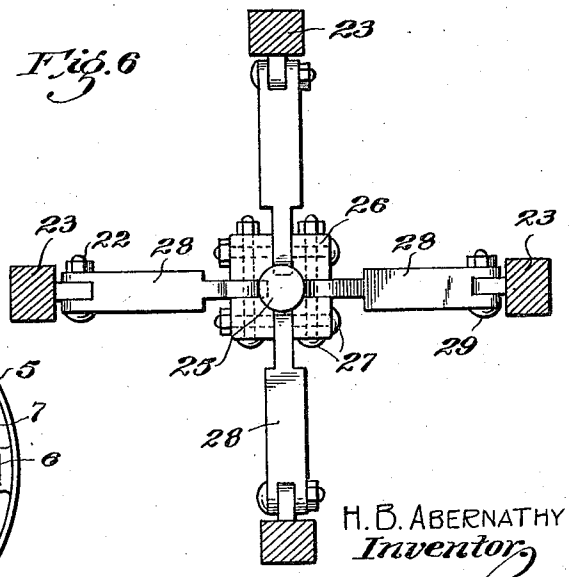
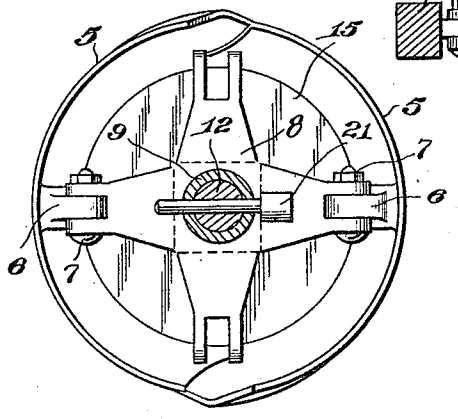


Fig. 2



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Fig. 5.

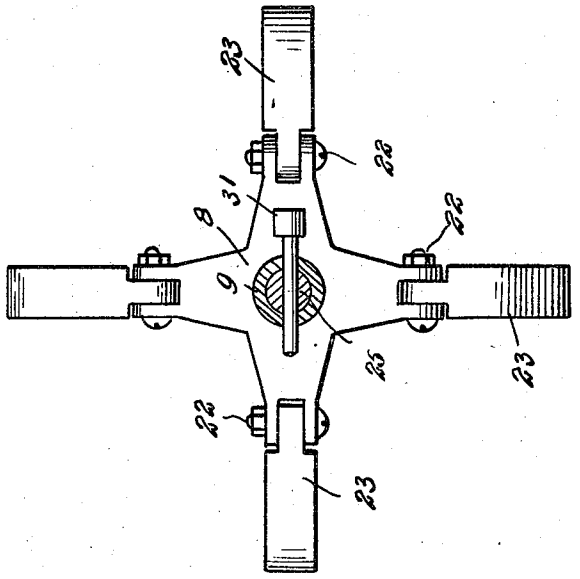
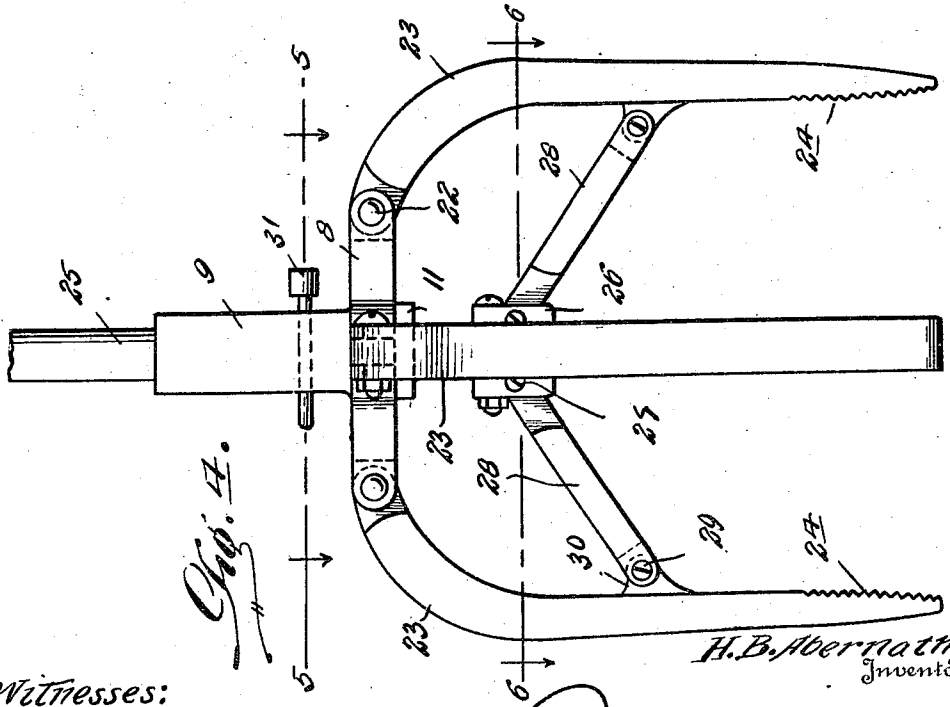


Fig. 4.



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Patented May 27, 1924. 1,495,544

UNITED STATES PATENT OFFICE.

HENRY B. ABERNATHY, OF BIRMINGHAM, WASHINGTON.

WELL-DIGGING OUTFIT.

Application filed March 13, 1923. Serial No. 624,731.

To all whom it may concern:

Be it known that I, HENRY B. ABERNATHY, a citizen of the United States, residing at Birmingham, in the county of Snohomish and State of Washington, have invented certain new and useful Improvements in Well-Digging Outfits, of which the following is a specification.

The main purpose of my invention resides in the provision of a well digging outfit, wherein the component parts thereof may be readily changed to provide a boring tool stone grapple, or reamer, the device being characterized by its simplicity of construction and adaptability to be changed in an expeditious manner with the said different types of tools.

The nature and advantages of the invention will be better understood when the following detailed description is read in connection with the accompanying drawings, the invention residing in the construction, combination, and arrangement of parts as claimed.

In the drawings forming part of this application, like numerals of reference indicate similar parts in the several views, and wherein:

Figure 1 is an elevation of an earth boring tool.

Figure 2 is a cross section upon the line 2—2 of Figure 1, and looking downwardly in the direction of the arrows.

Figure 3 is a vertical transverse cross sectional view thereof.

Figure 4 is an elevational view of a stone lifting grapple.

Figures 5 and 6 are detail cross sections upon the lines 5—5 and 6—6, respectively, of Figure 4.

First, having reference to Figures 1 to 3 inclusive, there is shown an earth boring tool comprising a pair of auger blades 5 of well known construction. Riveted, soldered or otherwise secured to the interior of these blades 5 are vertically extending arms 6, the upper ends thereof being loosely, pivotally secured at 7 to the diametrically opposite arms of a cross head 8 of general cruciform shape. As more clearly shown in Figure 3, this cross head 8 is formed upon the lower end of a relatively elongated sleeve 9, this sleeve being formed with a cross slot 10, it being noted that upon the underside of the said cross head 6, there is formed a square-shaped projection 11.

Freely slidable within the sleeve 9 is an operating rod 12, the same being formed adjacent its lower end with an annular flange 13, and being squared at its extreme end at 14. Engaging over this square end 14 of the said rod 12 is a cross arm 15, the opposite ends thereof being formed with pendent ears 16, to which are pivotally secured at 17, the upper split ends of links 18. The lower ends of these links 18 are similarly split and are loosely, pivotally secured at 19 to laterally inwardly projecting ears 20, upon the lower ends of said vertically extending arms 6. Carried by the said handle 12 and freely slidable within the said slot 10 is a headed cross pin 21, it of course being understood that the upper end of the operating rod 12 is provided with the usual cross handle, and whenever it is desired to use the tool for boring purposes in well digging, it will be at once understood that a downward pressure upon the rod 12 will cause the said blades 5 to open to the degree desirable, after which the returning movement will effectively cut into the ground and by raising upon the handle, the blades will close upon the loose dirt, whereby the same may be raised and effectively dumped by again sliding the rod 12 through the sleeve 9.

Referring now to Figures 4, 5 and 6, and whenever it is desired to provide a grappling tool for the purpose of removing rocks or the like from the ground, the auger blades 5 as well as the said cross arm 15, together with their directly associated parts are removed from the sleeve 9 formed with the cross head 8, and pivotally secured at 22 to the ends of each of the arms constituting the cruciform shaped cross head 8 are grappling fingers 23, the same extending downwardly, as clearly shown and being toothed or corrugated at their lower ends, and upon the inner faces thereof as at 24. In this instance, there is extended through the said sleeve 9 an operating rod 25, upon the lower end of which, there is formed or secured a square-shaped head 26. Pivotally secured to the four sides of the head as at 27 are the inner ends of links 28, these links normally extending outwardly and downwardly, and being in turn pivotally secured as at 29 to laterally, inwardly extending ears 30 formed upon the said grapple fingers 23. In this instance also, as well as in the tool shown in Figures

1 to 3 inclusive, the operating rod 25 carries a cross pin 31, the same extending through the said slot 10 in the sleeve 9, for limiting the movement of the rod within the sleeve for consequently controlling the expansion and contraction of the grapple fingers 23, with respect to each other.

In view of this construction, it will be at once understood that this grapple tool may be inserted within a hole, it being noted that by forcing the operating rod 25 downwardly, the grapple fingers 23 will be extended away from each other, and after the fingers have been positioned over a rock, an upward pull upon the rod 25 will consequently cause the contraction of the same about the rock, after which the same may be pulled from the ground.

In view of the foregoing, it will be readily appreciated that I have produced a highly improved form of well boring outfit, the same comprising three distinct and separate types of tools, wherein the component parts of each may be readily changed and combined with each other for forming these types of tools, and although I have herein shown and described the preferred embodiments of the present invention, it is nevertheless to be understood that minor changes may be made therein, without departing from the spirit and scope of the invention as claimed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is:—

A well digging outfit including an operating rod, a cross head removably secured to the lower end of said rod, a sleeve member having radially projecting arms slidably mounted on said operating rod, said sleeve having diametrically opposite longitudinally extending slots formed therein, a limiting pin mounted in said rod and extending through the slots of said sleeve for limiting the sliding movement of the sleeve on said rod, arms pivotally mounted in the ends of the radial extensions on said sleeve and carrying work engaging elements, and links pivotally connected with said arms and the cross head on said operating rod whereby movement of said rod through the sleeve member will operate the work engaging element through the relative movement between the sleeve and cross head, and the removable connection of the sleeve and cross head with the operating rod will permit the removal thereof from said rod so that any one of a plurality of differently formed work engaging elements may be used in connection with said rod.

In testimony whereof I affix my signature.

HENRY B. ABERNATHY.