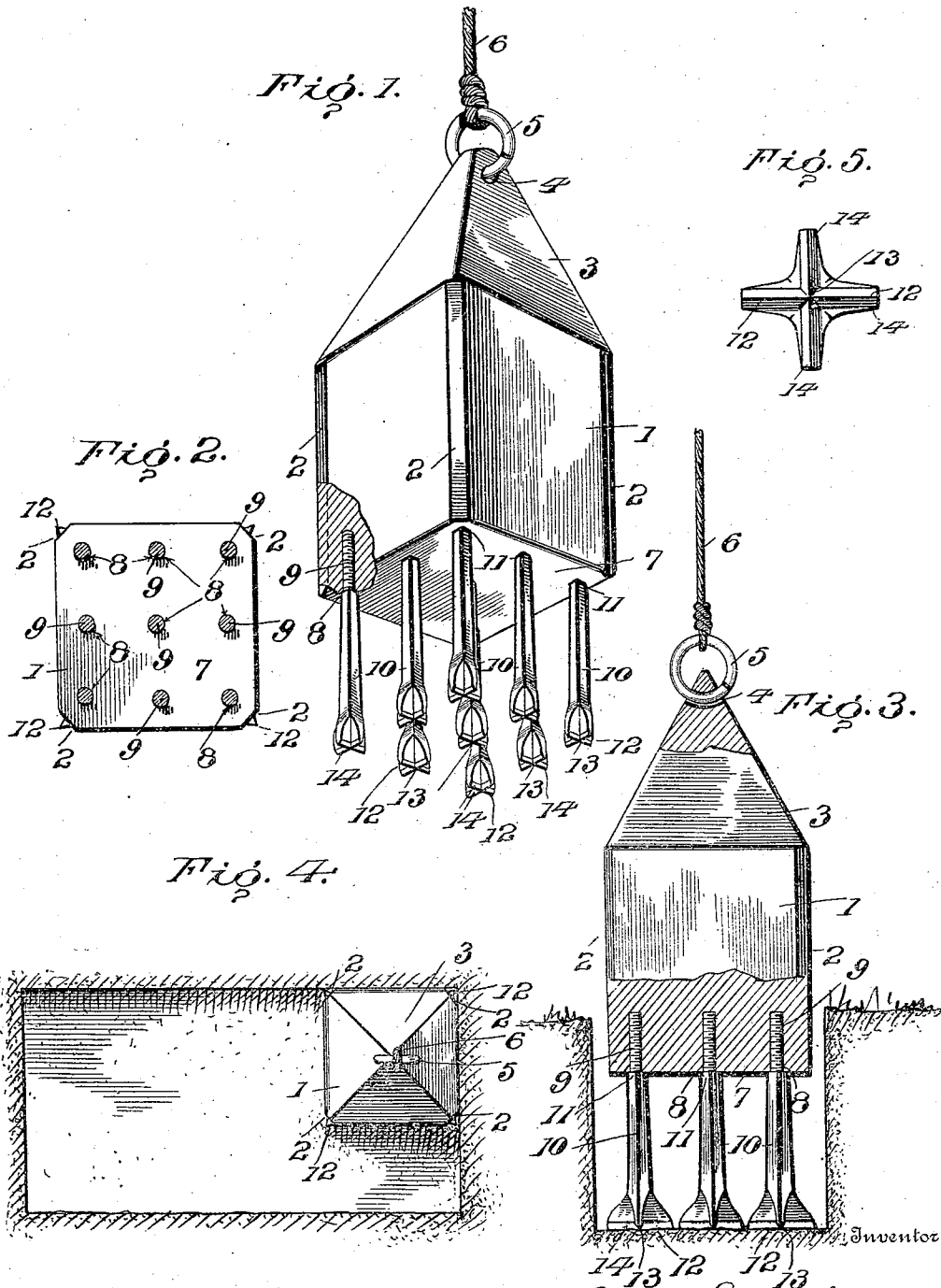


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J. B. SCOVELL.
CHURN DRILL.

APPLICATION FILED SEPT. 22, 1906.



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CHURN-DRILL.

No. 848,502.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSIAH BOARDMAN SCOVELL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Churn-Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in drills, and pertains particularly to what are known as "churn-drills."

The object of my invention is to provide a drill of the character described in which the drill-head is formed of a heavy piece of solid metal and by means of which the drilling power is obtained.

Another object of my invention is to provide a simple, cheap, and effective drill of this character in which an opening of any size or shape may be readily drilled.

In the accompanying drawings, Figure 1 is a perspective view of my improved drill. Fig. 2 is a bottom plan view showing the drills removed. Fig. 3 is a side elevation, partly broken away, showing the drill in operation. Fig. 4 is a top plan view of the drill in operation, showing an oblong opening drilled thereby; and Fig. 5 is a bottom plan view of one of the drills.

Referring now to the drawings, 1 represents a solid block of metal, either steel or iron, and is of an elongated form and preferably square in cross-section, having the corners cut away at 2, as shown in Fig. 2. The upper end of said block is conical-shaped, as indicated at 3, and the apex thereof is provided with an opening 4, through which a ring 5 loosely passes and to which the operating-cable 6 is attached either by tying or by means of a hook, as desired. The lower end 7 of said block is made perfectly flat and is provided with a series of openings 8, into which are screwed the upper reduced screw-threaded ends 9 of the drills 10. The shoulder 11, formed by the reduced screw-threaded portion 9, abuts against the lower face 7 of the drill-block, and thus the threads of the drill are relieved of the drilling action.

The drills 10, as shown, are of an elongated form and square in cross-section and slightly increase in size toward the lower end. The lower end of the drills are provided with the enlarged outwardly-flared cutting edges 12, which are arranged or extend from the corners of the squared stem and are thus four in

number. The said cutting edges extend radially from the center 13 and are beveled at 14 to form the knife-edges.

The openings 8 in the block are arranged in alinement at equal distances apart and the outside openings are so positioned in respect to the edge of the block that the outer cutting edges 14 extend beyond the edge of the block in order to cut a hole larger than the block to allow the same to freely move up and down within the opening cut by the drills and preventing the block from retarding the cutting action of the drill. The shanks of the drill being considerably smaller than the cutting edges allow the ground dirt or rock to pass up between the same and obviating the necessity of removing the drill as often for removing the dirt as would be the case if the shanks were short, as the ground dirt or stones would soon engage the lower face 7 of the block and prevent the drill from having any cutting action.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. A drill comprising a heavy solid-metal block, and a plurality of downwardly-extending cutting-bits secured within the lower face of said block.

2. A drill, comprising a heavy solid-metal block, and a plurality of downwardly-extending cutting-bits removably secured within the lower face of said block.

3. A drill, comprising a heavy metal solid block, and a plurality of downwardly-extending cutting-bits screwed within the lower face of said block.

4. A drill, comprising a heavy metal block, and a plurality of downwardly-extending cutting-bits secured within the lower face of the block, and the bits adjacent the edges of the block having their cutting-surface extending beyond the plane of the side wall of the block adjacent thereto.

5. A drill, comprising a heavy metal block and a plurality of downwardly-extending cutting-bits secured within the lower face of the block, and having enlarged cutting-surfaces and the bits adjacent the edges of the block having a portion of the enlarged cutting-surface extending beyond the plane of the side wall of the block adjacent thereto.

6. A drill, comprising a heavy metal block having a flat lower face provided with a series of screw-threaded opening, and independent drills screwed within said openings.

7. A drill, comprising a heavy metal block

having a flat lower face provided with a series of screw-threaded openings, and independent drills having reduced screw-threaded portions screwed within the openings.

5 8. A drill, comprising a heavy metal block having a flat lower face provided with a series of screw-threaded openings, and independent drills having a square shank portion and reduced upper screw-threaded ends
10 adapted to enter the screw-threaded openings, and the lower end of said shank having radially-extending enlarged cutting edges in a plane with the corners of the shanks.

9. In a churn-drill, the combination of a
15 heavy metal block, of a plurality of downwardly-extending cutting-bits removably secured in its lower face, the upper end of said block being cone-shaped, and a flexible operating means secured within the apex of
20 said cone.

10. A churn-drill, comprising a heavy metal block having a flat lower face provided with a series of screw-threaded openings, independent drills having reduced shanks
25 screwed into said openings, and the upper

end of said block beveled to a central point, and having a horizontal opening therein and a flexible operating means secured within said opening.

11. A drill, comprising a heavy solid-metal
30 block having a flat lower face provided with a series of screw-threaded openings, and independent drills having a square shank portion, and reduced upper screw-threaded ends
35 adapted to enter the screw-threaded openings, and the lower ends of said shanks having radially-extending enlarged cutting edges extending in a plane with the corners of the shanks and the cutting edges of the drills
40 adjacent the edges of the block extend beyond the plane of the side wall of the block adjacent thereto, and the upper edge of the blocks having beveled faces.

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

JOSIAH BOARDMAN SCOVELL.

Witnesses:

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