F. W. ALLAN.

ROCK CUTTING APPARATUS.

APPLICATION FILED DEC. 22, 1908.

928,574.

Patented July 20, 1909.

Fig. 1.

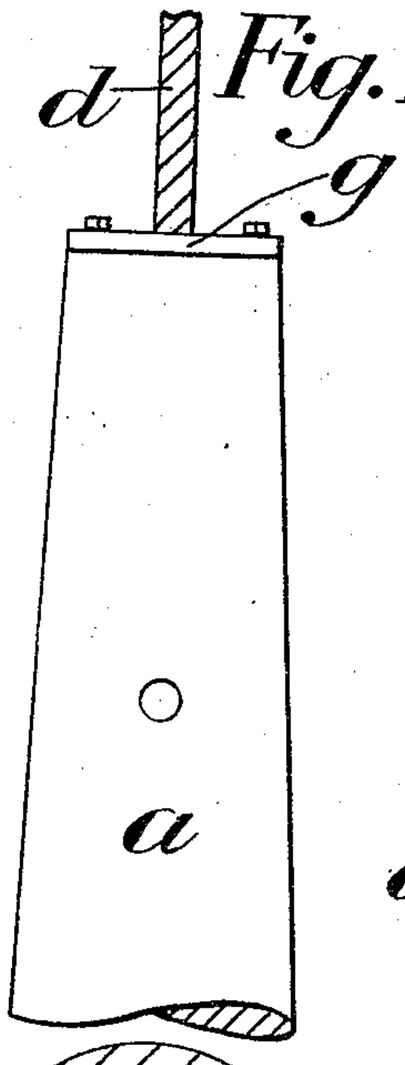


Fig. 2.

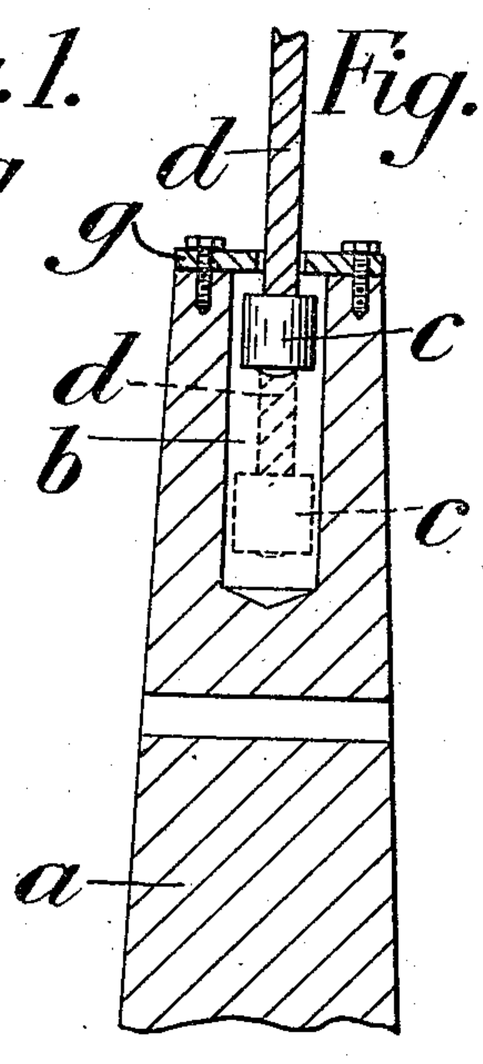
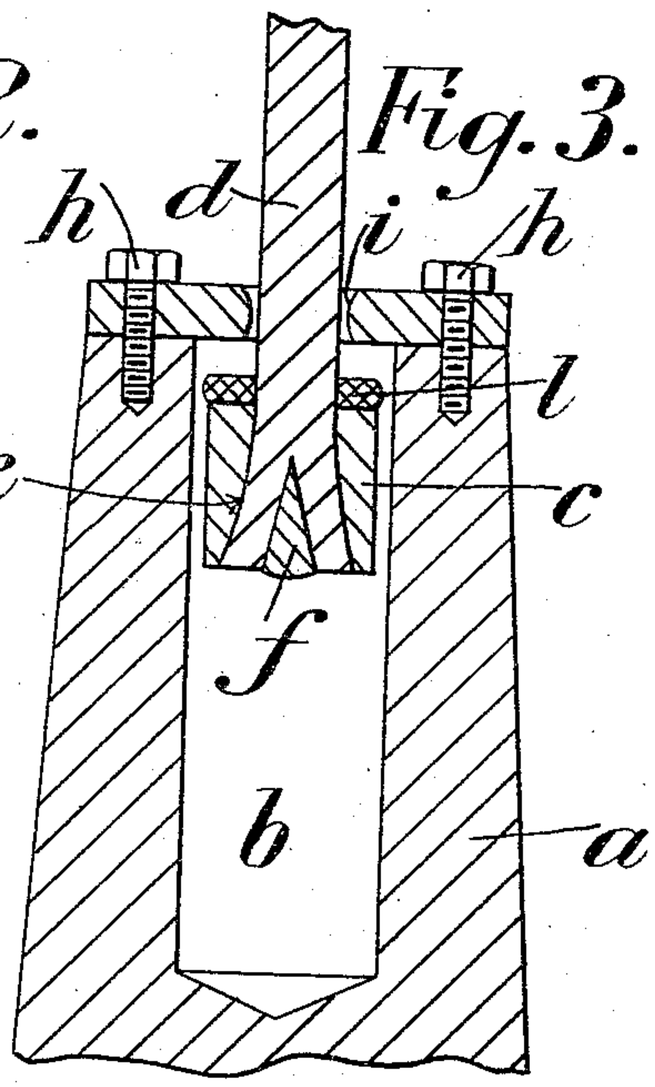


Fig. 3.



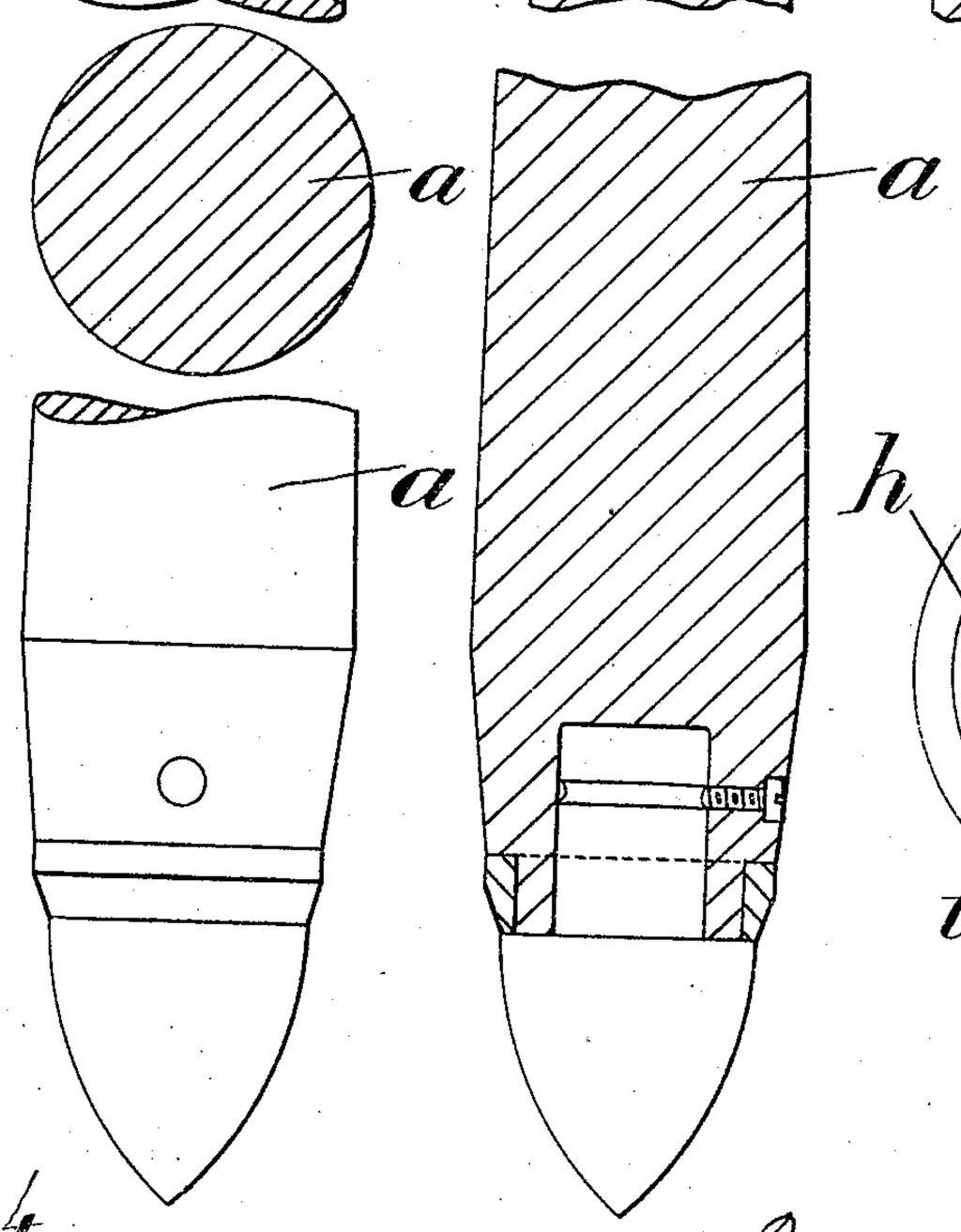
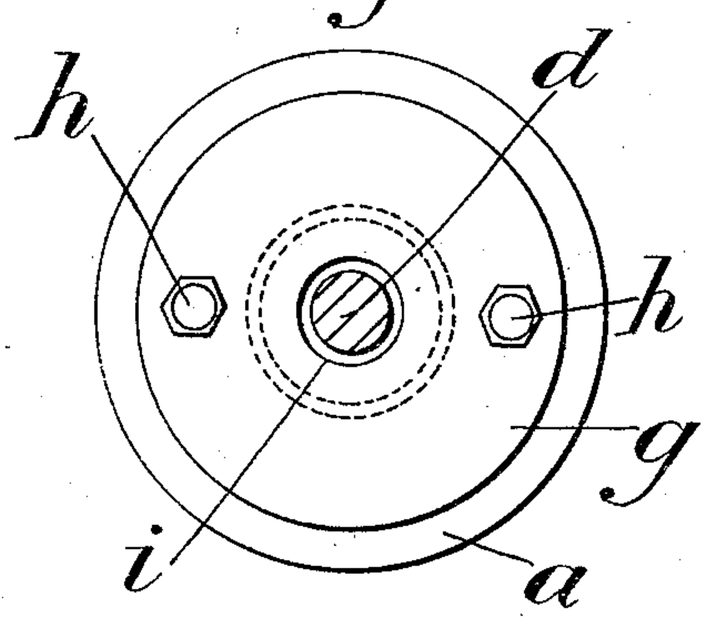


Fig. 4.



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ROCK-CUTTING APPARATUS.

No. 928,574. Specification of Letters Patent. Patented July 20, 1909.

Application filed December 22, 1908. Serial No. 468,831.

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM ALLAN, residing at Buffalo, New York State, United States of America, and a subject of the King of Great Britain, have invented a certain new and useful Improvement in Rock-Cutting Apparatus, of which the following is a specification.

This invention has reference to so called "rock cutting apparatus" in which a heavy metal cutter is used to break up rocks, boulders, hardened earth, etc. and it relates to means for attaching the hoisting rope to the cutter and is a development of the prior inventions of Fred Lobnitz Nos. 874217 dated 17th. December, 1907 and 880227 dated 25th. February, 1908.

Under this invention the end of the hoisting rope is provided with an enlargement or head which is inserted in a hole in the end of the cutter and is prevented from coming out of place by means of a washer or plate or equivalent, at the end of the cutter, the hole being deep enough to allow the rope end to move or play freely therein whenever the cutter strikes the rock thereby preventing or tending to prevent the rope being broken or snapped by the violent shock or jar given thereto when the cutter impinges against the rock.

In order that the invention may be clearly understood I have hereunto appended an explanatory drawing, whereon,

Figure 1 is an elevation and Fig. 2 a section of the cutter with its rope attachment. Fig. 3 is an enlarged section showing the method of attachment. Fig. 4 is a plan view of the upper end of the cutter Fig. 3.

The upper end of the cutter *a* has a hole *b* bored centrally therein for the reception of the head, or ring, *c* which is secured in any suitable manner to the end of the hoisting rope *d* but preferably is made with a tapered hole *e* therein into which the extreme end of the rope is fitted and is then expanded by means of a wedge pin *f* so as to prevent the head *c* coming off the rope. The head is made of such diameter as to work freely in the hole and it is or may be lubricated (by charging the hole with some oil or otherwise) and is prevented from coming out of place by the circular plate or washer *b* which is secured rigidly in position by screw studs *h h*. This washer has a central hole *i* for the passage of the rope and said hole is preferably tapered or flared outward at top and bottom to prevent abrasion of the rope. A rope or other cushioning ring *l* may be fitted on top of the head *c*.

When the heavy cutter is allowed to fall and strike the rock it impinges thereon with such force that it not only vibrates violently but also rebounds with the result that the wire rope attached thereto is subjected to a violent jerk and is also suddenly kinked which results, sometimes, in the rope being snapped. With this invention, when the cutter rebounds upward, the rope remains, practically speaking, in position owing to the fact that the hole *b* is sufficiently deep to allow the cutter to move upward until the head *c* is at the bottom end of the hole (see dotted lines Fig. 2). The air (and lubricant) in the hole *b* serves to cushion the head *c* during the movements of the cutter.

Of course the head *c* may be secured in any other suitable way than that shown. In some cases it might be made as an actual enlargement or knotted part on the end of the rope.

Having now fully described my invention what I claim and desire to secure by Letters Patent is:—

1. In combination, a cutter having a hole therein, means for partially closing said hole, a hoisting rope for the cutter, and means on the rope adapted to engage said closing means.

2. In combination, a cutter having a cylindric hole therein, means for partially closing said hole, a hoisting rope for the cutter and means on the rope adapted to engage said closing means.

3. In combination, a cutter having a hole therein, means for partially closing said hole, a hoisting rope for the cutter and an enlargement on the rope adapted to engage said closing means.

4. In combination, a cutter having a hole therein, means for partially closing said hole, a hoisting rope for the cutter and a ring on the rope adapted to engage said closing means.

5. In combination, a cutter having a hole therein, means for partially closing said hole, a hoisting rope for the cutter and an internally tapered ring on the rope adapted to engage said closing means.

6. In combination, a cutter having a hole therein, a hoisting rope therefor, an enlarge-

ment on the end of the rope adapted to work in the hole in the end of the cutter and means for so closing the said hole that the enlargement on the rope cannot pass out of the hole.

7. In combination, a cutter having a cylindrical hole therein, a hoisting rope therefor, a cylindrical enlargement on the end of the rope adapted to work in the hole in the end of the cutter and means for so closing the said hole that the enlargement on the rope cannot pass out of the hole.

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

FREDERICK WILLIAM ALLAN.

Witnesses:
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