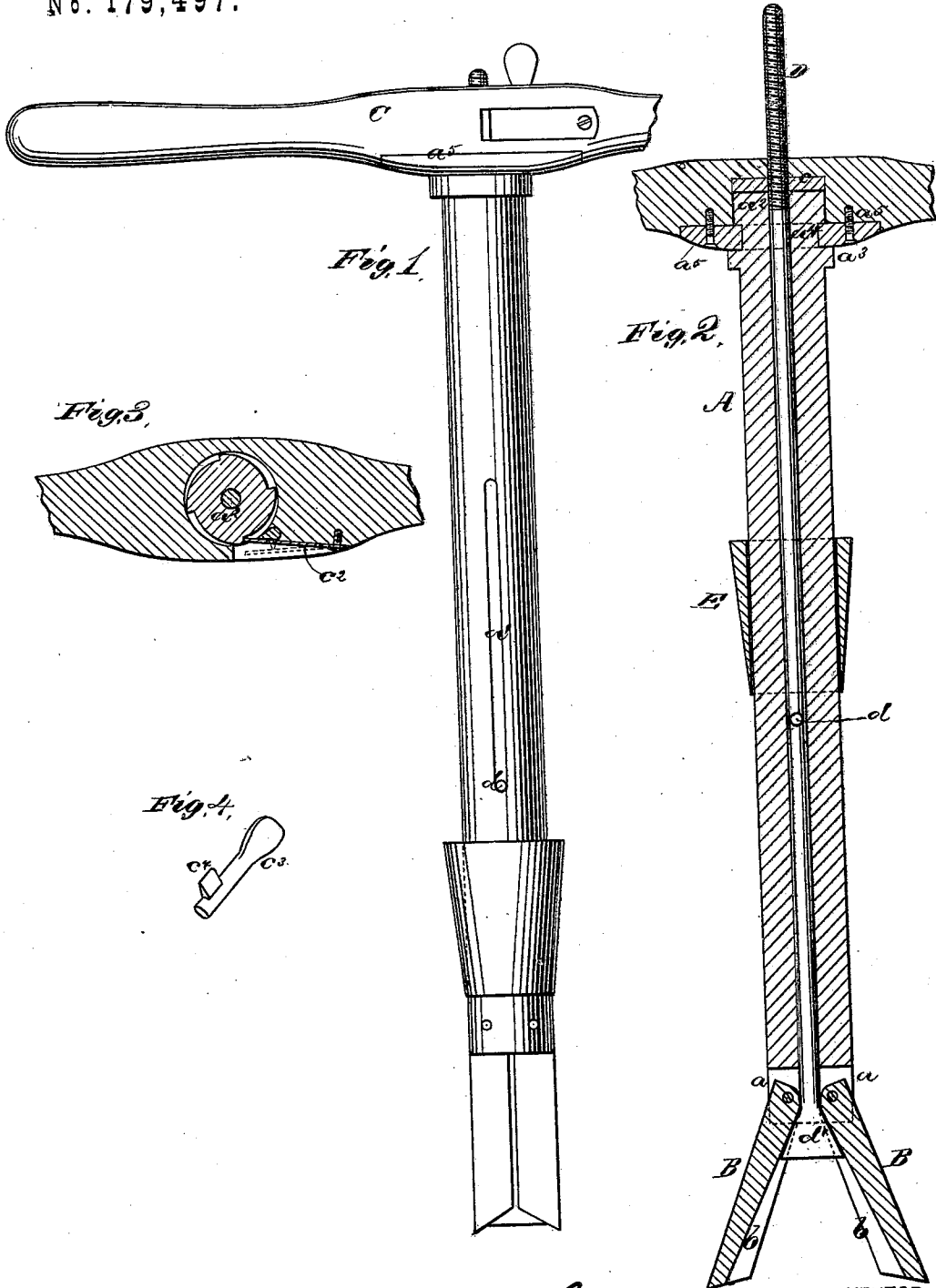


E. K. ADAIR.
REAMER.

No. 179,497.

Patented July 4, 1876.



WITNESSES

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EVAN K. ADAIR, OF OASIS, IOWA.

IMPROVEMENT IN REAMERS.

Specification forming part of Letters Patent No. 179,497, dated July 4, 1876; application filed May 20, 1876.

To all whom it may concern:

Be it known that I, EVAN K. ADAIR, of Oasis, in the county of Johnson and State of Iowa, have invented a new and valuable Improvement in Reamers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front elevation of my reamer, and Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a transverse vertical sectional view, and Fig. 4 is a detail view.

This invention has relation to means for drilling into rock for the purpose of blasting; and it consists in devices for enlarging the lower part of the holes for the purpose of forming a chamber, and allowing the powder to exert a greater explosive force, as will be hereinafter explained.

In the annexed drawings, A designates the hollow shaft of the reamer, which is preferably made of malleable iron, and is cut away at the bottom, so as to form recesses a , in which are pivoted at one end the opposite reaming-jaws B B. These jaws are capable of the fullest expansion, but ordinarily, when not in use, they lie close together, and in line with shaft A. They are preferably made of steel, and are provided on their inner faces with grooves b , which guide the passage of the wedge of the separating-rod, and enable the jaws B B to be folded upon it when out of use, so as to touch one another and lie in small compass. Shaft A has also a longitudinal slot, a^1 , which guides and limits the upward and downward motion of the separating-rod. On the head or upper end of shaft A is a ratchet, a^2 , below which is a collar, a^3 . In the recess a^4 , which is left between ratchet a^2 and collar a^3 , are fastening-plates a^5 , which are suitably cut away to correspond to the cylindrical surface of the shaft, and adapted to fit recesses on the lower face of the handle C. These plates may be fastened to the handle by screws, or in any other detachable manner. The handle C is recessed in the middle to receive the ratchet-head a^2 of the

shaft A, and the fastening-plates a^5 , and it is perforated to allow the passage of screw-threaded rod D. The sides of the passage thus made are correspondingly threaded, so as to act as a nut, and advance or withdraw the rod D. A metal shield, c , may set in the bottom of the recess, which is provided to receive the ratchet-head of the shaft A. The lever-handle C is provided with a spring-pawl, c^2 , adapted to engage on the shaft A. This handle is also provided with a loose pin, c^3 , having a handle and lug or feather, c^4 , for throwing a spring-pawl, c^2 , out of engagement with ratchet a^2 when pin c^3 is rotated. D designates the operating and separating rod, which is screw-threaded at its upper end, and is provided with pin d , working up and down in longitudinal guide-slot a^1 of the shaft A, and it is provided with flaring or wedge-shaped extension d' . E is a conoidal washer, sliding on the outside of the shaft, and adapted, by its movability and the inclination of its sides, to keep the reamer upright in holes considerably larger in diameter than shaft A, and to guide the reamer.

The operation is as follows: The reamer is inserted in the hole, with the jaws B B close together. Then the handle C is turned to the left, and, acting as a nut, raises the rod D and wedge-shaped extension d' . This extension d' gradually forces the reaming-jaws B B apart. Then the handle is reversed, when the pawl c^2 engages the ratchet a^2 , and thereby turns the entire reamer. In this way an enlarged chamber is cut at the bottom of the drilled hole. When it is desired to withdraw the reamer the rotating pin c^3 is turned so as to disengage the spring-pawl c^2 from the ratchet a^2 . The shaft A will then no longer turn, and the rod D, under the reversed action of the nut, will descend, and will allow the reaming-jaws B B to come together again, so as to be withdrawn.

What I claim as new, and desire to secure by Letters Patent, is—

1. The lever C, provided with an interior screw-threaded surface, in combination with a screw-threaded rod, D, having a separating wedge-extension, d' , and hollow shaft A, and expansible jaws B B, substantially as and for the purpose set forth.

2. In a reamer for enlarging drilled holes, a hollow shaft, A, adapted to guide an end-wise-movable rod, and which is provided with ratchet a^2 on its upper end, substantially as and for the purpose set forth.

3. The combination of a ratchet, a^2 , on shaft A with pawl c^2 on handle C, and lifting-pin a^3 , substantially as set forth.

4. In combination with the screw-threaded rod D, handle C, shaft A, and the adjusting

and sustaining washer E, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EVAN K. ADAIR.

Witnesses:

WM. WRIGHT,

DAVID E. MACKEY.