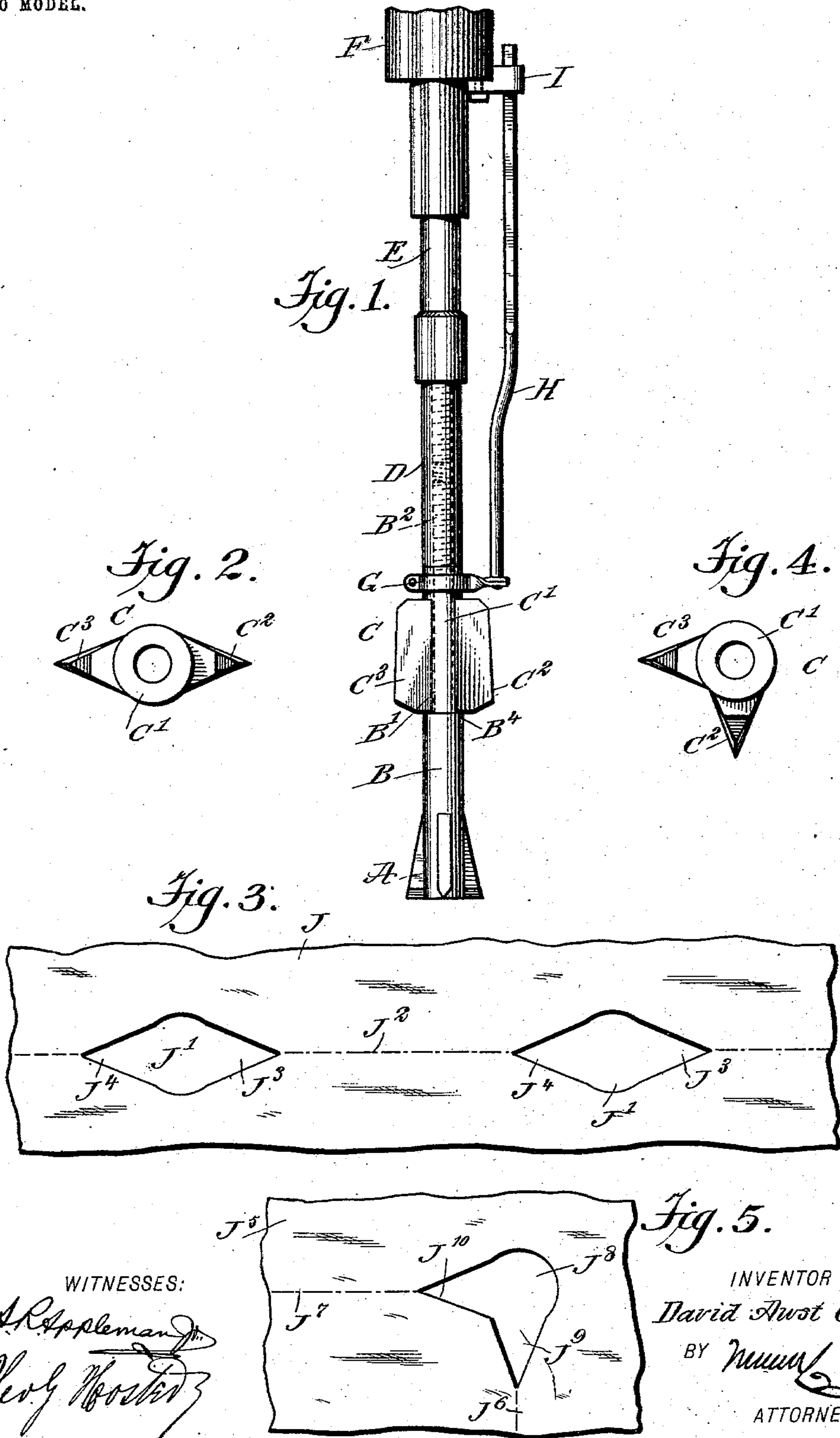


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D. A. OWEN.  
ROCK DRILL ATTACHMENT.  
APPLICATION FILED JULY 22, 1902.

NO MODEL.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

DAVID AWST OWEN, OF POULTNEY, VERMONT.

## ROCK-DRILL ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 740,906, dated October 6, 1903.

Application filed July 22, 1902. Serial No. 116,525. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID AWST OWEN, a citizen of the United States, and a resident of Poultney, in the county of Rutland and State of Vermont, have invented a new and Improved Rock-Drill Attachment, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved rock-drill attachment for drilling holes in rock to facilitate the splitting of the rock along a desired line of fracture or cleavage upon firing the explosive with which the hole is charged.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied. Fig. 2 is an enlarged plan view of the improvement. Fig. 3 is a plan view of the rock, showing a series of drill-holes. Fig. 4 is a plan view of a modified form of the improvement arranged for splitting the rock along an angular line of fracture; and Fig. 5 is a plan view of the rock, showing a drill-hole and an angular line of fracture.

In the process of drilling rock in quarries to form slabs or blocks it is customary to produce holes in the shape of an ellipse, the holes being disposed in a row along the line of fracture or cleavage, the line coinciding with the long axes of the ellipses. With my improvement, presently to be described in detail, a drill-hole with grooves in its wall in the direction of the straight or angular line of fracture is readily formed when drilling the hole, and for this purpose the usual drill A has its shank B formed with a reduced portion B', on which is mounted to turn a cutter C, having a hub C' and wings C<sup>2</sup> C<sup>3</sup> extending lengthwise of the hub, either in diametrical alinement, as shown in Figs. 1 and 2, or at angles one to the other, as illustrated in Fig. 4. The upper threaded end B<sup>2</sup> of the drill-

shank B screws in the usual manner into a drill-rod D, carried by the piston E of a rock-drill F of any approved construction.

The hub C' of the cutter C is mounted on the reduced portion B' and extends between a shoulder B<sup>4</sup> on the shank B and the lower end of the drill-rod D, and the cutter is hence held against up-and-down movement on the shank B, but is free to be turned on the reduced portion thereof.

To bring the wings C<sup>2</sup> C<sup>3</sup> into alinement with the line of fracture or cleavage, the upper end of the hub C' extends a distance beyond the upper ends of the wings C<sup>2</sup> C<sup>3</sup>, and this upper end of the hub is engaged by a clamp G, held on the lower end of a guide-rod H, mounted to slide up and down in a bearing I, secured to the cylinder or other part of the rock-drill F.

The operation is as follows: When it is desired to drill holes J' in the rock J along the line of fracture or cleavage J<sup>2</sup>, as indicated in Fig. 3, then the cutter C (shown in Figs. 1 and 2) is used, and the said cutter is turned on the shank B' until the wings C<sup>2</sup> C<sup>3</sup> stand in alinement with the line of fracture J<sup>2</sup>, and then the clamp G is firmly engaged with the hub C' to hold the cutter C against turning. Now when the rock-drill is set in motion to cause the drill A to drill the hole J' in the usual manner then the cutter C moves up and down with the said drill, but does not turn with the latter. Now when the hole J' has reached a depth for the lower ends of the wings C<sup>2</sup> C<sup>3</sup> to strike the rock J and the drilling operation is continued then the said wings C<sup>2</sup> C<sup>3</sup> form V-shaped grooves in the side walls of the drill-hole J', made by the drill A, the said grooves J<sup>3</sup> J<sup>4</sup> having their apices coinciding with the line of fracture or cleavage J<sup>2</sup>. Thus while the hole is drilled by the drill A the cutter C forms the grooves J<sup>3</sup> J<sup>4</sup>. The clamp G, rod H, and bearing I are removed as soon as the cutter C has entered the rock to such a depth that the wings on the upstroke of the drill do not move out of engagement with the grooves already formed, it being understood that the cutter now retains its position relative to the line of cleavage until the hole is drilled the desired depth.

It is understood that when the drill-holes



J' are finished and charged with explosives and the latter are ignited then the rock is split along the line of fracture J<sup>2</sup>.

When it is desired to split the rock J<sup>5</sup> along an angular line of cleavage J<sup>6</sup> J<sup>7</sup>, as indicated in Fig. 5, then use is made of the cutter C, (shown in Fig. 4,) and this cutter is held against turning on the reduced portion B' by the clamp G after the cutter is set, so that its wings C<sup>2</sup> C<sup>3</sup> stand in alinement with the lines of fracture J<sup>6</sup> J<sup>7</sup>.

When it is necessary to sharpen the drill A or the cutter C, the several parts can be readily disconnected to allow convenient sharpening.

The device is very simple and durable in construction, not liable to easily get out of order, and can be readily applied to rock-drills now used, it being only necessary to change the shank of the drill A, as above described, to accommodate the cutter C.

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

1. The combination with a rock-drill having a primary cutter, of an auxiliary cutter rotatably adjustable with reference to the primary cutter, and mounted on the shank

of the drill above said primary cutter and adapted to move up and down therewith.

2. A rock-drill having a cutter provided with a hub adjustably mounted on its shank, and cutting-wings extending lengthwise of the hub and at angles one to the other, as set forth.

3. A rock-drill having a cutter mounted for rotatable adjustment thereon and moving up and down with the drill, and means for holding the cutter against turning when the drill is turned, as set forth.

4. A rock-drill having a cutter mounted for rotatable adjustment thereon and moving up and down with the drill, and means for holding the cutter against turning when the drill is turned, the said means comprising a clamp engaging the cutter, a guide-rod carrying the clamp and a bearing for the said guide-rod, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID AWST OWEN.

Witnesses:

WILLIAM H. ROWLAND,  
SYDNEY R. JONES.