

Fig 1

2 Sheets--Sheet 1.

A. D. WILLIAMS.

Rock-Drilling Machines.

No. 125,923.

Patented April 23, 1872.

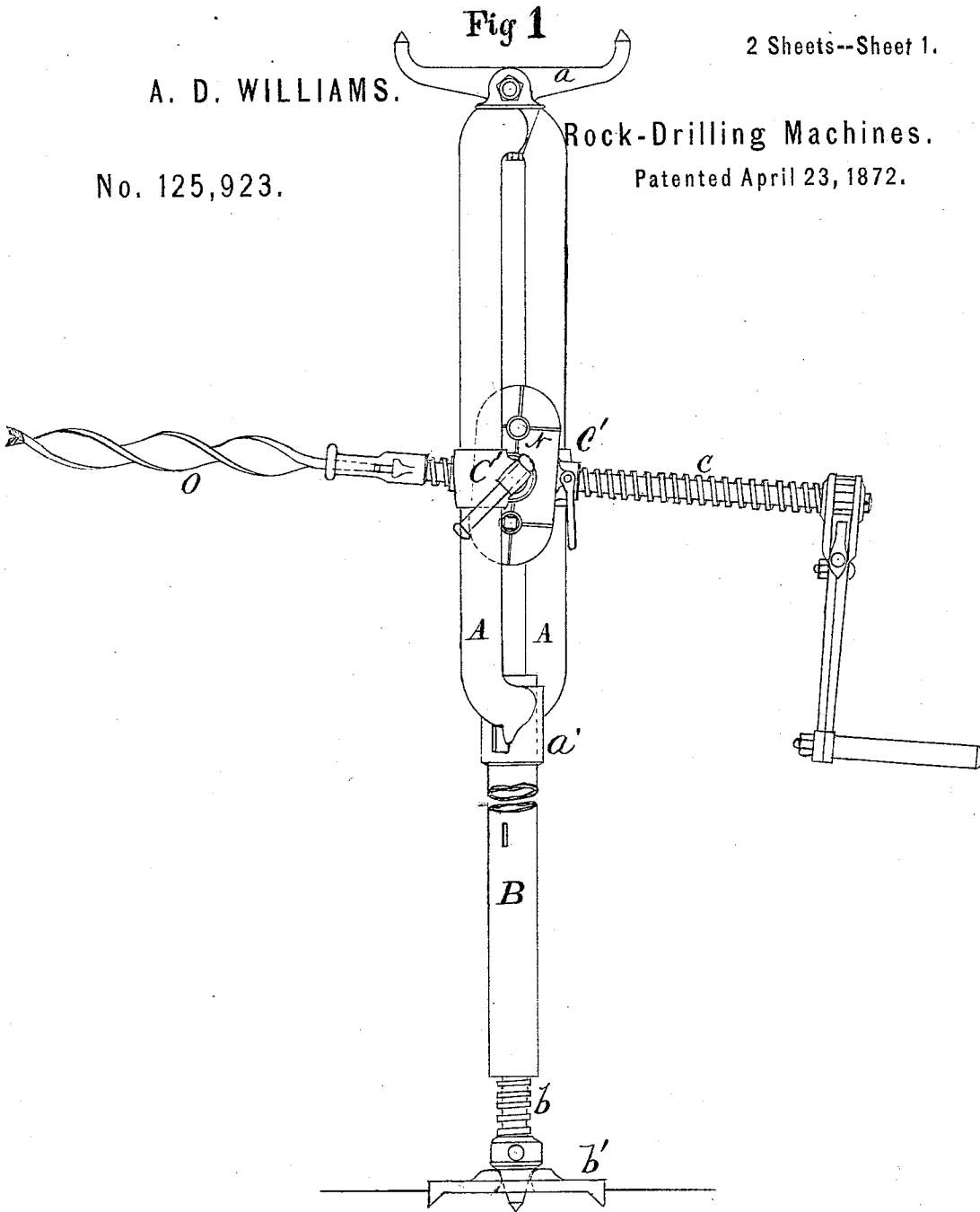
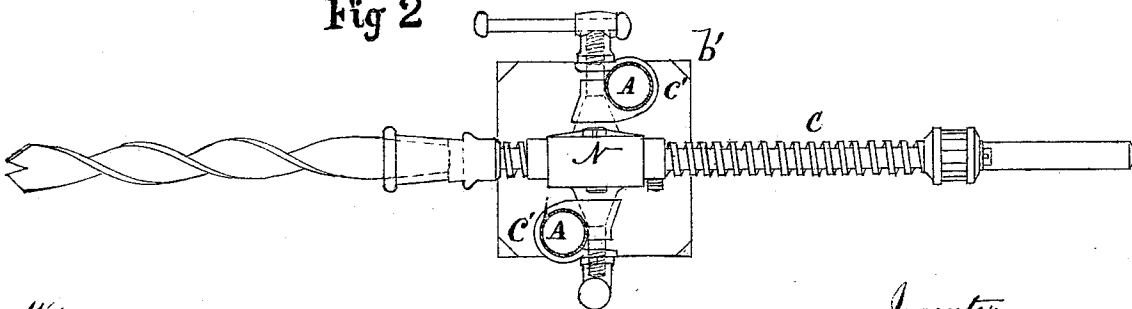


Fig 2



Witnesses

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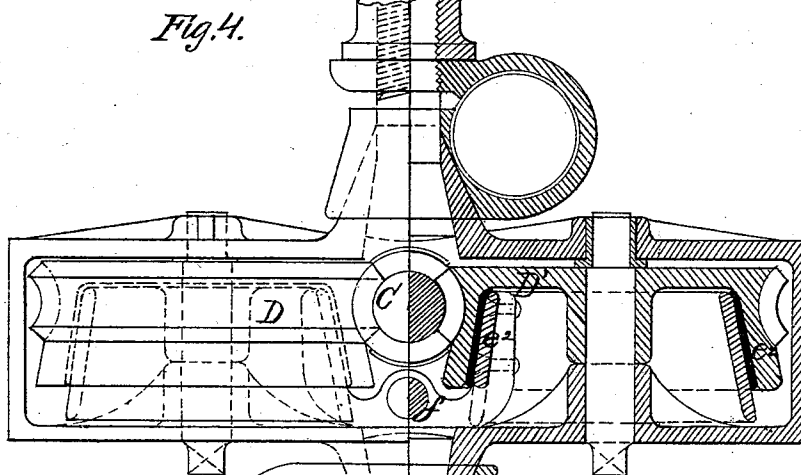
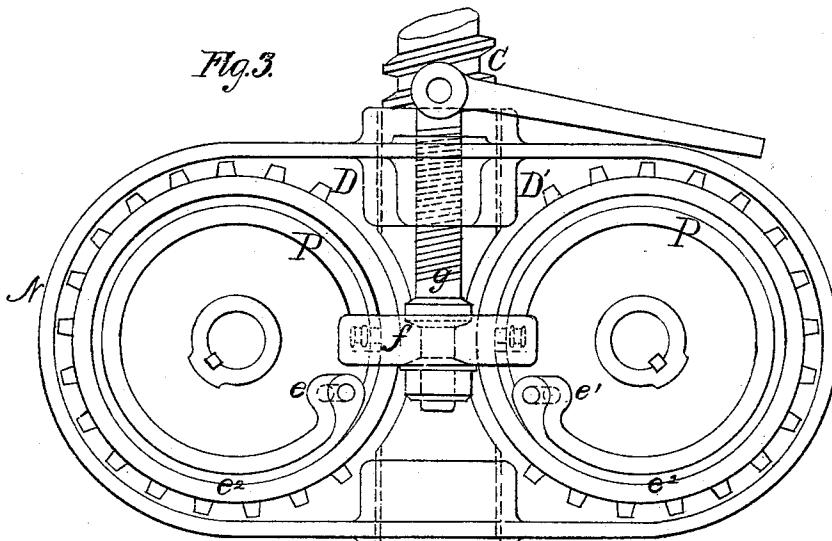
Arthur David Williams

A. D. WILLIAMS.

Improvement in Rock-Drilling Machines.

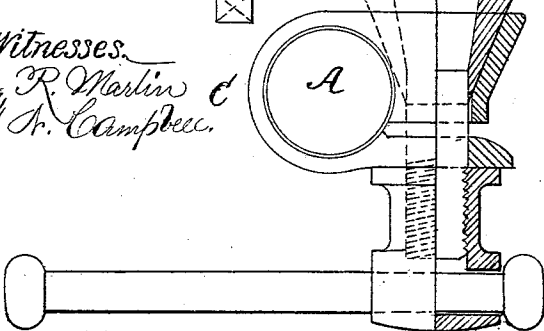
No. 125,923.

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Witnesses.
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by his attys
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UNITED STATES PATENT OFFICE.

ARTHUR DAVID WILLIAMS, OF LONDON, ENGLAND.

IMPROVEMENT IN ROCK-DRILLING MACHINES.

Specification forming part of Letters Patent No. 125,923, dated April 23, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ARTHUR DAVID WILLIAMS, of Scott's Chambers, Pudding Lane, in the city of London, England, have invented certain Improvements in Machinery for Drilling; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is an elevation of the drilling devices mounted in a clamping standard. Fig. 2 is a top view of the drilling devices as seen by making a horizontal section through the upper portion of the standard. Figs. 3 and 4 are details of the feed mechanism.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain improved devices for drilling, wherein a tool is employed which is actuated by pressure applied in the direction of its axis, such pressure being adjustable at the will of the operator, but constant when adjusted.

The apparatus represented in the drawing is designed to be operated by hand or other power applied to the shaft carrying the boring-tool, which shaft has a coarse-pitched thread throughout its entire length, which is received between and engages with threads cut upon two worm-wheels. To these worm-wheels adjustable brakes are applied, intended to operate as a retarding force proportioned to the power driving the apparatus, the effect of which will be that the thrust of the screw-shaft or borer is received by the worm-wheels, and they will rotate or slip at a rate proportioned to the difference between the power driving the apparatus and the resistance met with by the borer, and thus an automatic feed is obtained.

The following particular description will enable others skilled in the art to carry my invention into effect.

In the annexed drawing, Figure 1 shows the apparatus mounted on a standard, which is designed to be fixed between two opposite bearing-surfaces. The standard, which is tubular, is formed of two parts, the upper part, A, being double and surmounted by a rocking claw-piece, *a*, attached to the part A by a conical swivel-joint. The lower end is formed into a

collar, *a'*, through which the lower part B passes and is secured by a cotter passing through suitable holes in the collar *a'* and tube B. They can be fixed at various points, and the standard can be thus varied in length. Additional variation can be obtained by means of an adjusting-screw, *b*, which is tapped into the lower end of the tube B, and to which is applied a claw-foot, *b'*. Between the parallel bars of the upper part A of the standard is fixed, by means of two sliding clip-collars, *c'*, a metal box, N, containing worm-wheels D D' forming the automatic feed, between which the driving screw-shaft C works. Any desired direction can be given to the screw C and its borer by means of conical clamp-trunnions, shown in Figs. 2 and 4, which trunnions attach the metal box N to the bars of standard section A, in conjunction with the sliding clip-collars *c'* and a conical swivel-joint. At one end of the screw-shaft C is fixed a socket piece carrying the borer O, and to the opposite end of this shaft is attached a ratchet-handle or other device, by means of which the borer is driven.

I will now explain the automatic feed mechanism contained in the adjustable box N, through which latter the screw-shaft C passes, reference being had to the enlarged scale, Figs. 3 and 4, of which Fig. 3 is a side view of the box N with one side removed. Fig. 4 is a sectional plan of one-half of the box and the mechanism contained therein. The screw-shaft passes between and engages with the teeth of two hollow wheels, D D', which are fixed on axles working in the sides of box N. Inside of each wheel is a metal band, P, one end of which is attached to the box N by a pin. The other end of this band P is attached to a connection, *f*, of the form shown, which connection, by means of a screw, *g*, can be made to traverse endwise, and thus to expand the band P, bringing it, with any required pressure, in contact with a lining of leather, *e*, or other suitable material, covering the inner flanged surface of its worm-wheel.

When the apparatus is in operation pressure, proportioned to the power driving the main screw C, is put upon the wheels D D' by means of the screw *g* with its connection *f*, which expands the metal bands or brakes P. When the thrust of screw C is greater

than the retarding pressure applied by the metal bands or brakes to the wheels D D', the latter revolve, and thus regulate the advance movement to the said screw and its borer in proportion to the resistance encountered by the borer. By releasing the wheels D D' from the brake pressure when the hole is bored the required depth, the screw C can be drawn through the wheels D D', which are then free to revolve, and thus the borer with the débris is withdrawn direct from the hole.

If desired, handles can be applied to the ends of the shafts of wheels D D', for the purpose of withdrawing the screw-shaft and borer.

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

1. The arrangement of the brakes P P with in their spur-wheels, so as to act outwardly

against the flanges thereof, by means substantially as described.

2. The standard A, A, and B with the collar *a'*, as described, for receiving and supporting between its forked or double portion A A, the adjustable box N of the drilling apparatus and feed mechanism thereto, substantially as set forth.

3. The combination of the brakes P P, connection *f*, and adjusting device *g*, substantially in the manner described.

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

ARTHUR DAVID WILLIAMS.

Witnesses:

EDMUND EDWARDS,

CHARLES JAMES WINTERGILL.