

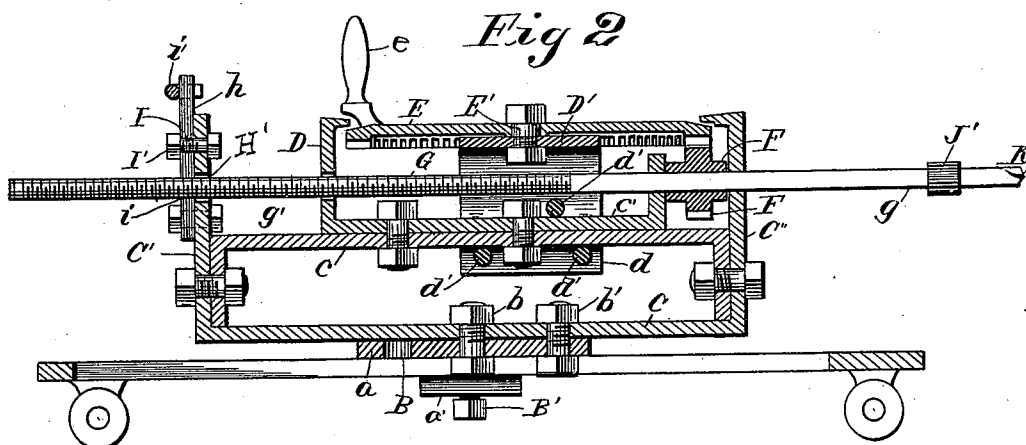
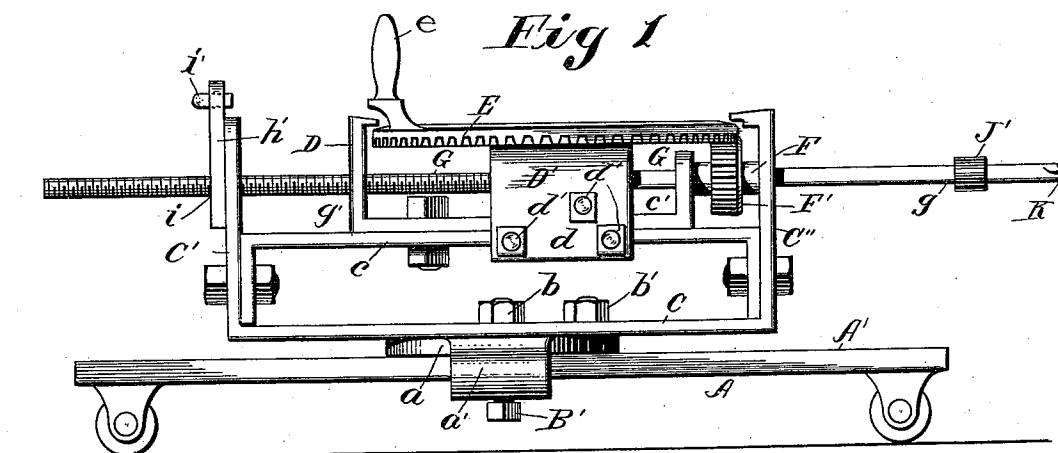
(No Model.)

2 Sheets—Sheet 1.

R. F. WYATT.
DRILLING MACHINE.

No. 510,148.

Patented Dec. 5, 1893.



WITNESSES:

C. C. Burdine
I. B. Orrison.

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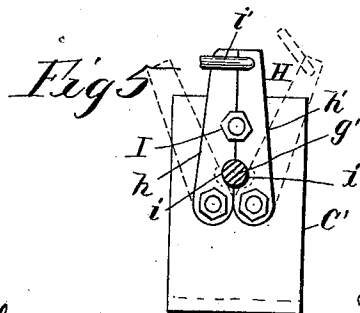
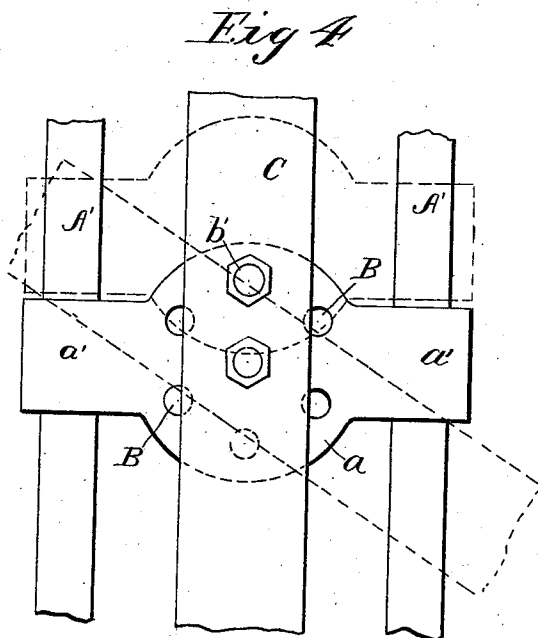
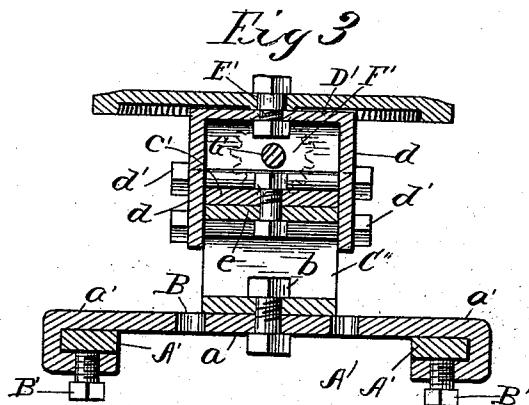
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2 Sheets—Sheet 2.

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WITNESSES:

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ROBERT F. WYATT, OF JASPER, ALABAMA.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 510,148, dated December 5, 1893.

Application filed April 4, 1893. Serial No. 469,030. (No model.)

To all whom it may concern:

Be it known that I, ROBERT F. WYATT, a citizen of the United States, residing at Jasper, in the county of Walker and State of Alabama, have invented certain new and useful Improvements in Drilling-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in rock drills, and has particular reference to that class in which the screw-feed is employed or those wherein the drill-shaft is threaded and, with the co-operation of an internally threaded bearing, is made to feed the drill proper to its work simultaneously with the revolution of the drill-shaft, and it comprehends for its object a drill in which the drill-shaft and its operating mechanism may be adjusted on every side and one which may be operated solely by hand power.

A further object is to make the drill as light and durable as possible, and at the same time not to sacrifice a particle of its efficiency.

With these ends in view I have devised a machine, the essential features of which will now be fully disclosed and finally embodied in the claim.

Referring to the accompanying drawings which illustrate the machine aforesaid: Figure 1 represents a side elevation thereof; Fig. 2 a longitudinal section; Fig. 3 a cross section; Fig. 4 a view showing diagrammatically the means employed for effecting the adjustment characteristic of my machine; Fig. 5 a detail showing the bearing or box by which the feed of the drill-shaft is effected.

The reference letter A indicates the base or body portion of my machine which is by preference mounted upon a suitable carriage, although it may be arranged on a stationary base. This does not form any part of my invention, however, and is therefore not shown or described in detail. This base is provided with the parallel longitudinal bars A', A' which are two in number and serve as a track

or way upon which the drill mechanism may be moved to advance it upon the substance operated on. Working on this track is the base-portion *a* of the drill mechanism which consists of a metallic table provided with the arms *a'* and a series of bolt-holes B, the function of which holes will be hereinafter described. The arms *a'* are bent under at their ends and thereat provided with a set of binding screws B', so that the bent portion may embrace the track A' and by means of the binding screws be secured in place.

To the table *a* the drill mechanism is secured by means of a bolt *b* passing from such mechanism, downward and through an opening in the center of the table. From the foregoing it will be obvious that the drill mechanism may be revolved on the pivot or bolt *b* so as to adjust the disposition of the drill, and that by means of the bolt *b'* and holes which are arranged in a circle around a central opening, it can be secured in the desired position all of which is shown in detail by Fig. 4.

The drill mechanism is mounted upon the U-shaped frame C, having its arms C' and C'' extending vertically, the arms C'' being bent slightly inwardly at its end, for a purpose that will hereinafter appear. Bolted to the arms C' and C'' is a cross brace *c* to the upper side of which the second U-shaped frame *c'*, smaller than the first, is secured, the arm D of which is bent inwardly and is on the same horizontal plane as the end C'' of the frame C. Arranged between the ends of the frame *c'* is a support D' shaped like an inverted U and having its arms *d* projecting down sufficiently to embrace the frame *c'* and cross-brace *c*, whereat they are connected by bolts *d'* thus arranging them together and clamping the support in position against the frame *c'* and brace *c*. Journaled in the upper portion of the support D' by means of the short shaft E', is a crown gear E, having an operating crank *e* fixed thereto by which it is revolved and the machine operated. The ends C'' and D of their respective frames, are arranged to embrace the outer edge of this gear-wheel, thereby aiding the shaft E' to hold the gear in position. Revolvably

mounted on the arm C'' and in the unbent arm of the frame c' is a sleeve F having its longitudinal passage of an angular pattern, preferably square, and provided with the pinion gear F' which meshes with the gear E and by which a rotary motion is imparted to the sleeve F.

The reference letter G indicates the drill-shaft which is divided into substantially two parts or sections, though formed of an integral piece of steel. The part *g*, or that part which is locked in the sleeve F, is square or of such a shape in cross section that it will conform to the shape of the passage in sleeve F, and the remaining portion *g'* is round in cross section and provided with a screw thread extending its entire length. This latter portion *g'* of the shaft G, is journaled in the bearing H shown in detail by Fig. 5. In this view the reference letter C' represents one of the vertical arms of the frame C, in which is formed an opening H' through which the shaft G projects. This opening is larger than the shaft and is formed solely to allow the shaft to pass. Pivoted to the outer side of the arm C' at their lower ends, are two twin-links *h, h'* arranged to be in their normal position vertical and hence side by side, and having formed in their contiguous edges the semi-circular openings I for the reception of the headed pin or stud I' secured to the arm C' and embracing the outer side of the links *h, h'*, thereby holding and steadying them. Below the opening I in the links *h, h'*, is formed a second pair of semi-circular openings *i* in each link and in such position that they will form, when the links are in their normal position, a circular opening. This opening is threaded internally and designed for the reception of the part *g'* of the shaft G. The links *h, h'* are removably secured in their normal (vertical) position by means of the swing-hook *i'* secured to the link *h'* and arranged to swing over the upper end of the link *h*, thereby locking the two together. They may be disengaged by swinging the hook to the right thereby releasing it and the link *h*. By this means, the shaft G after having been fed as far forward as possible, may be retracted preparatory to repeating the operation, simply by opening the bearing *i* and disengaging the

screw threads thereof and of the shaft, whereupon it will be free to slide back longitudinally in the sleeve F. Thus it will be seen that upon the revolution of the shaft G effected by means of the sleeve F, the shaft will be fed forward owing to the co-operation of the screw threads on the shaft and in the hole *i* of the links *h, h'*. The shaft G when arranged in the machine, extends from the arm C' of the frame C through the arm D of frame c' and through the sleeve F to the opposite end of the machine. The forward end of the shaft G is provided with a suitable drill chuck J' and drill K all of which may be of the usual or any preferred construction.

To use the invention as a rock drill, the carriage or base upon which the entire mechanism is mounted, is advanced upon the bank to be drilled and the table *a* adjusted on the track A' so that the drill K will engage the bank, whereupon the drill-shaft is started to revolving and the drill is, as before explained, fed to the rock as fast as it forms a hole therein.

The operation of the screw-feed drill is well-known and does not require any further description. The drill may also be adjusted to any position on its horizontal plane by means of the bolt *b'* and circular series of openings *b''*, as shown in the diagrammatical view in Fig. 4.

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

A rock drilling machine having a frame consisting of a main portion C, formed in the shape of a horizontally elongated U, and having bearings in its arms for the drill shaft, a second section, *c*, shaped as an inverted U, and with its arms secured to the arms of the main portion, a third section *c'* shaped as the first and secured to the section *c*, and a binding section D' arranged to embrace the sections *c* and *c'* and to form bearings for the driving gear, substantially as described.

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

ROBERT F. WYATT.

Witnesses:

J. B. CARRINGTON,
JOHN B. SHIELDS.