

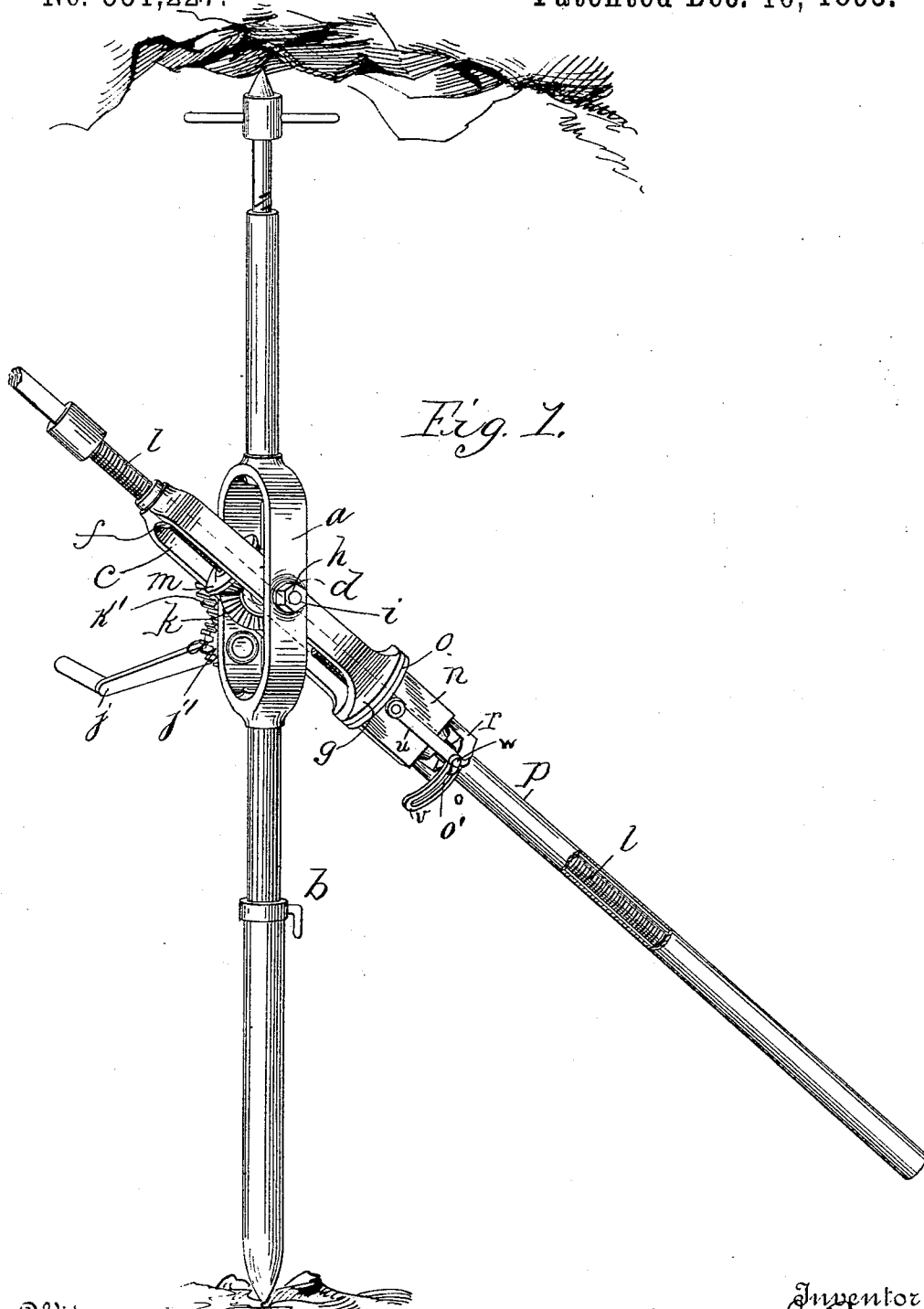
(No Model.)

2 Sheets—Sheet 1.

W. J. PEARCE.
DRILL.

No. 551,227.

Patented Dec. 10, 1895.



Witnesses
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Inventor
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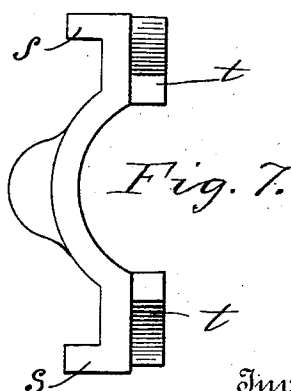
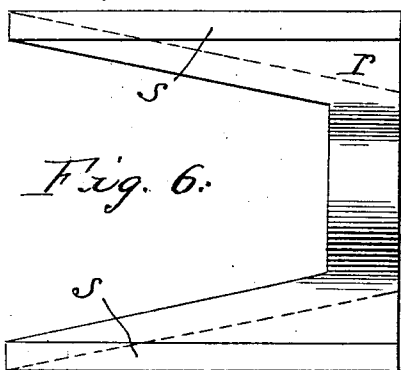
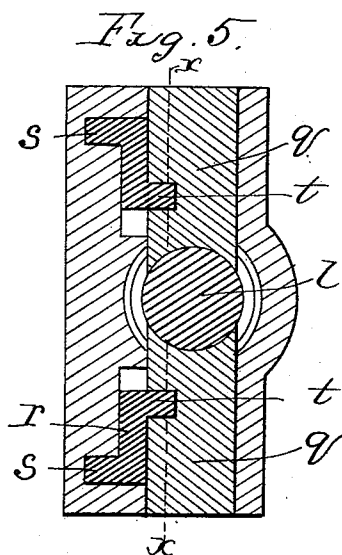
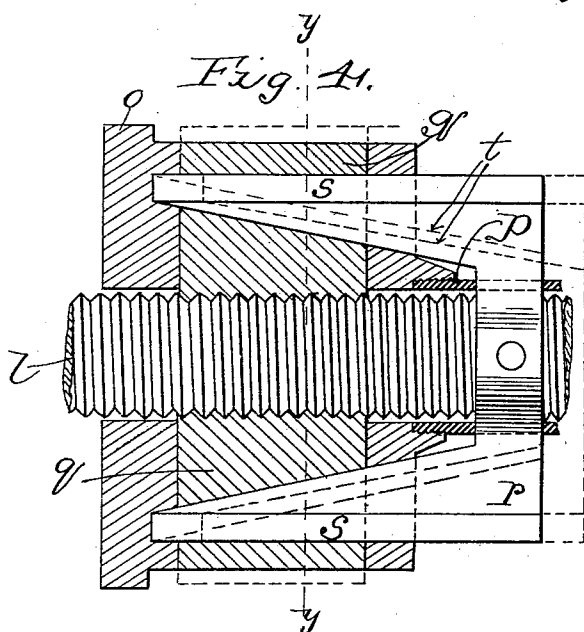
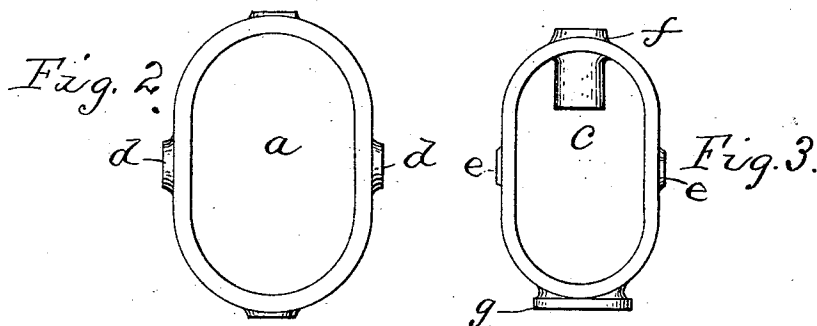
(No Model.)

2 Sheets—Sheet 2.

W. J. PEARCE.
DRILL.

No. 551,227.

Patented Dec. 10, 1895.



Witnesses
Chas. Brindley
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UNITED STATES PATENT OFFICE.

WILLIAM J. PEARCE, OF TERRE HAUTE, INDIANA, ASSIGNOR OF ONE-HALF TO JOHN A. HARTH, OF SAME PLACE.

DRILL.

SPECIFICATION forming part of Letters Patent No. 551,227, dated December 10, 1895.

Application filed November 22, 1893. Serial No. 491,660. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. PEARCE, of Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Drills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 part of this specification.

This invention relates to certain improvements in drills.

The object of the invention is to provide an improved rock-drilling machine exceedingly cheap, simple and durable in construction, and sure and positive in action.

A further object of the invention is to provide an improved support or tripod for drilling-machines capable of various adjustments and very simple and durable in construction and so arranged and constructed that the drills can be rigidly held at the desired angle and can be readily adjusted to any angle.

A further object of the invention is to provide simple means for controlling and adjusting the screw-threaded blocks or nuts that feed the feed-screw, so that said screw can be readily moved in or out when desired.

A further object of the invention is to provide certain improvements in the details of construction and arrangements of parts whereby a most highly efficient drill is provided.

The invention consists in certain novel features of construction and in combination of parts more fully and particularly pointed out hereinafter.

Referring to the accompanying drawings, Figure 1 shows the improved drill in perspective. Figs. 2 and 3 are respectively plan views in detail of the two open frames composing the adjustable tripod. Fig. 4 is a longitudinal detail sectional view on the line X X, Fig. 5, the nut-operating wedge being shown in elevation. Fig. 5 is a cross-

sectional view on the line Y Y, Fig. 4. Figs. 6 and 7 are detail views in side elevation and edge view of the nut-controlling means.

In the drawings the reference-letter *a* indicates an open or elliptically-shaped frame supported in an upright position by means of the extensible adjustable braces or supports *b*, extending from the top and bottom of said frame and arranged to engage upper and lower supports on the floor and top of a cavity or shaft. These supports carry the drill in the usual manner. This rigid vertical frame *a* is provided with the side bearings or openings *d d*, arranged oppositely.

c indicates an inner swinging open or elliptical frame having the side bearing *ee* arranged to register with the bearings *d d* of the vertical rigid elliptical frame so that the inner frame extends through the said vertical rigid frame. The inner frame is mounted on suitable journals or studs extending through said bearings, so that the inner frame can be rocked or swung vertically to any desired angle. The stud or pivot *h* on one side is threaded and provided with a nut *i*, whereby the two frames can be clamped rigidly together at the desired adjustment after the inner frame has been rocked to the desired point when the nut *i* is loose. The stud passing through the opposite bearings *e d* is provided with a gear *k'* at the outer end and at the inner end with a beveled gear *k*, located within the frame *c*, for driving the feed-screw, as hereinafter described. The gear *k'* meshes with a small pinion *j'* journaled on the side of said frame and provided with the handle *j*. The front end of the frame *c* is provided with the elongated bearing *f*, and the rear end of said frame *c* is also provided with an opening for the feed-screw and with the enlarged flange *g*. *l* indicates the feed-screw extending longitudinally through the said adjustable frame *c*, and carried thereby at its front end provided with any suitable chuck or means to carry the drill.

The bevel-gear *m*, meshing with and driven by the gear *k*, is mounted on the feed-screw so as to rotate the feed-screw but permit the feed-screw to slide longitudinally through the

gear-wheel. The outer end of the bearing or hub of the gear-wheel preferably bears against the elongated bearing *f*, so as to hold the gear in the proper position.

- 5 *n* indicates the nut-block having a longitudinal opening through which the feed-screw passes and having the inner flanged end *o* bolted to the flanged end *g* of the adjustable frame *c*.
- 10 *p* indicates a seamless tube threaded into the rear end of the block *n*, to inclose and protect the feed-screw, said screw moving longitudinally and loosely within said tube so as to be entirely inclosed therein and protected from injury.

15 The nut-block *n* is provided with transverse ways or openings through opposite sides thereof into the two longitudinal openings containing the feed-screws. The half-nuts *q* are located and slide in said ways in planes transverse to the axis of the feed-screw. The inner ends of these nuts are concaved and threaded to fit the thread of the feed-screw and feed the feed-screw forward as it is revolved by the beveled gears before mentioned. Suitable means are provided to move these nuts outwardly in their ways out of engagement with the feed-screw so that said feed-screw can be forced back or forward as desired. These nut-controlling means preferably consist of a forked plate or arm slidable into and out of the nut-block at the rear end thereof. The legs thereof on one side are provided with the parallel straight flanges *s*, moving in suitable guideways in the interior of the nut-block, so as to hold the plate in a fixed path as it moves in and out. The opposite sides of the legs of said sliding plate are, respectively, provided with the inclined flanges *t*, sliding in correspondingly-inclined grooves in the sides of the nuts *q*. The angles of inclination of these flanges *t* and the grooves in which they slide are such that when the plate *r* is drawn out the nuts will be forced outwardly out of engagement with the feed-screw, so that the feed-screw can be moved longitudinally without being rotated and so that when said plate *r* is forced inwardly the said flanges will force the nuts inwardly into the proper feeding engagement with the feed-screw.

A suitable keeper *o'* is provided to hold the nut-controlling plate or wedge against loosening when in operative position. Any suitable means can be employed for this purpose. The keeper here shown consists of an arm *u*, pivoted on the nut-block and extending rearwardly and provided with the longitudinally-slotted bar or plate *v*, extending across the nut-operating wedge. A screw *w* enters the wedge and passes through said slotted bar, so that the wedge can be clamped to the bar by the nut shown on the outer side of said slotted bar. Hence when said nut is loosened the slotted bar can be swung outwardly to

move the wedge outwardly to shift the nuts in the nut-blocks.

By reason of the peculiar frame here shown and described the drill can be easily and quickly adjusted vertically and will be held against oscillating, so that the drill can be worked very easily and with much satisfaction.

As the screw-bar is supported at the front end of the inner adjustable frame, the weight and strain of the feed-bar and parts on the inner frame are distributed throughout the same, so that wear and strain at the nut-block and on the nut are reduced to a minimum.

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

1. In a drill, the combination of a support, the feed screw, nuts movable into and out of engagement with the screw, sliding wedges controlling and moving said nuts, and a swinging slotted keeper controlling said wedges, substantially as described.

2. In a drill, the combination of a support, a nut block, a feed screw, nuts in the block movable into and out of mesh with the screw, the double sliding wedge in the block having parallel flanges in guides in the block and inclined flanges confined in guides in the nuts, and a swinging keeper at the exterior of the nut block provided with a slotted bar confined to the wedge to move or lock the same, substantially as described.

3. In a drill, the combination of a support a feed screw, a nut block having radial ways, the nut sections arranged to slide in said ways to and from the screw, the transverse parallel ways within the block beside said nut sections, the transverse inclined slide ways in the nut sections, and the slide confined to move in and guided by said block slide ways, and having the inclined ribs in said inclined ways of the nut sections to operate substantially as described.

4. The combination, in a drill, of a support, a screw feed, a nut block through which the screw passes and having the radial openings, the transverse parallel ways at each side of an opening, the radially movable nut sections in said openings, each nut section having a transverse side inclined groove, and the slide at the exterior of the block having the two legs extending into said slide ways beside the sections and provided with parallel ribs in said parallel ways and with inclined flanges fitted in said inclined grooves of the nut sections, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM J. PEARCE.

Witnesses:

MARTIN HOLLINGER,
SAMUEL T. JONES.