

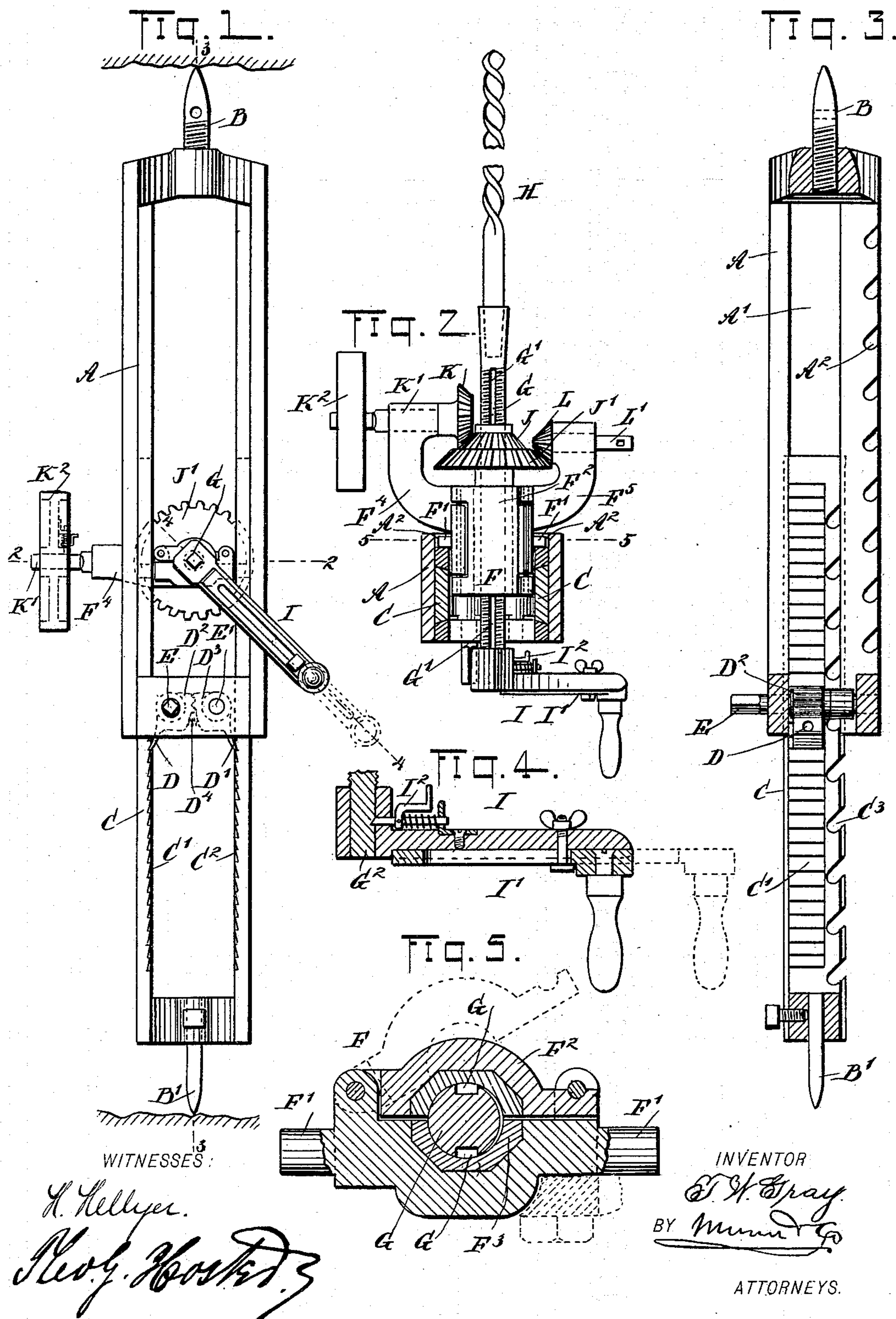
No. 612,329.

Patented Oct. 11, 1898.

T. W. GRAY.
DRILL.

(Application filed Sept. 24, 1897.)

(No Model.)



UNITED STATES PATENT OFFICE.

THOMAS W. GRAY, OF PEOLI, OHIO.

DRILL.

SPECIFICATION forming part of Letters Patent No. 612,329, dated October 11, 1898.

Application filed September 24, 1897. Serial No. 652,860. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. GRAY, of Peoli, in the county of Tuscarawas and State of Ohio, have invented a new and Improved Drill, of which the following is a full, clear, and exact description.

The invention relates to mining-drills; and its object is to provide a new and improved drill which is simple and durable in construction, very effective in operation, easily and quickly set up in a mine-shaft, and arranged to enable a miner to drill a hole in any desired direction.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 1. Fig. 4 is an enlarged sectional plan view of the handle and its locking device, the section being taken on the line 4 4 of Fig. 1; and Fig. 5 is an enlarged sectional side elevation of the trunnion-box on the line 5 5 of Fig. 2.

The improved drill is provided with a box-frame A, in the upper end of which screws a pin B for engagement at its point with the ceiling or roof of the mine in which the device is to be used. In the sides of the frame A are formed parallel guideways A', in which are fitted to slide the sides of an extension-frame C, carrying at its lower end a point B' for engagement with the floor of the mine-shaft.

On the forward faces of the sides of the extension-frame C are arranged ratchet-teeth C' C², adapted to be engaged by dogs D D', respectively secured on shafts E E', respectively mounted to turn in suitable bearings in the lower end of the main frame A. The dogs D D' are provided with gear-teeth D² D³, respectively in mesh with each other, so that the said dogs move in unison in and out of engagement with the ratchet-teeth C' C². The outer square end of the shaft E is adapted to

be engaged by a suitable crank-arm or other device for turning the shaft and moving the dogs D D' simultaneously in and out of engagement upon moving the extension-frame outward or inward, as the case may be. A spring D⁴ presses against the dogs D D' to hold the same forwardly in an outermost position—that is, in engagement with the ratchet-teeth C' C².

Now when it is desired to set the machine up in a mine the frame A is moved with its point B in engagement with the top of the mine-shaft, and the shaft E is turned to move the dogs D D' out of engagement with the ratchet-teeth C' C² to allow of sliding the extension-frame C downward until the point B' is in contact with the floor of the mine-shaft. The dogs D D' now engage corresponding teeth C' C², and then the operator turns the point B so as to screw the same outward in the upper end of the frame A to securely fasten the frame in position in the mine-shaft.

On the edges of the sides of the main frame A and the extension-frame C are formed inclined notches A² and C³, respectively adapted to be engaged by trunnions F', projecting from the sides of a box F, having a hinged lid F² and containing a feed-nut F³, into which screws a feed-spindle G, supporting in its socket a bit H, and adapted to receive at the other end a crank-arm I for turning the feed-spindle to drill a hole into the material by the bit H.

The feed-spindle G is provided with longitudinally-extending grooves G', engaged by keys or lugs formed on the inside of a beveled gear-wheel J, in mesh with a beveled gear-wheel K, secured on a shaft K', journaled in a bearing F⁴, projecting from the outer end of the box F. On the shaft K' is secured a fly-wheel K², so that when the spindle G is turned the beveled gear-wheel J rotates with it and imparts a rotary motion by the gear-wheel K to the shaft K' and the fly-wheel K² to insure a steady drilling motion of the bit H.

It is understood that the feed-spindle G moves outward upon being rotated by screwing in the nut F³, the feed-spindle sliding loosely in the beveled gear-wheel J, held in place by the beveled gear-wheel K. A larger gear-wheel J' is formed or secured on the

gear-wheel J and is in mesh with a beveled pinion L, secured on a shaft L', journaled in a bearing F⁵, likewise attached to or formed on the box F. The outer square end of the
5 shaft L' is adapted to receive a crank I for enabling a miner to turn the said shaft L and impart a slow rotary motion to the gear-wheels J J', and consequently to the feed-spindle G, to feed the bit H slowly into ma-
10 terial of a hard nature. Thus the same crank I can be used on the spindle G or on the shaft L, according to the desired speed to be given to the feed-spindle G and the bit H, carried thereby. The crank I is provided with an
15 extension I' and with a spring-catch I² for locking the crank in place on the square end G² of the spindle G or that of the shaft L'.

It will be seen that by the arrangement described the bit H may be conveniently moved
20 into the desired position for drilling a hole at any angle, as the box F can be located higher or lower on the frames A and C and

swung with its trunnions in the bearings in the notches A² and C³ until the desired position is reached.

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

In a drill, a frame, comprising two sections sliding one upon the other, one of the sections being provided with ratchet-teeth, dogs
30 mounted in the sections of the frame without teeth and engaging the said ratchet-teeth of the section, said dogs being provided with gear-teeth meshing with each other and the
35 shaft of one of the dogs being extended to receive a crank, and a spring for holding said dogs in engagement with the ratchet-teeth, substantially as described.

THOMAS W. GRAY.

Witnesses:

JOHN GRAY,

FRANK S. RIPLEY.