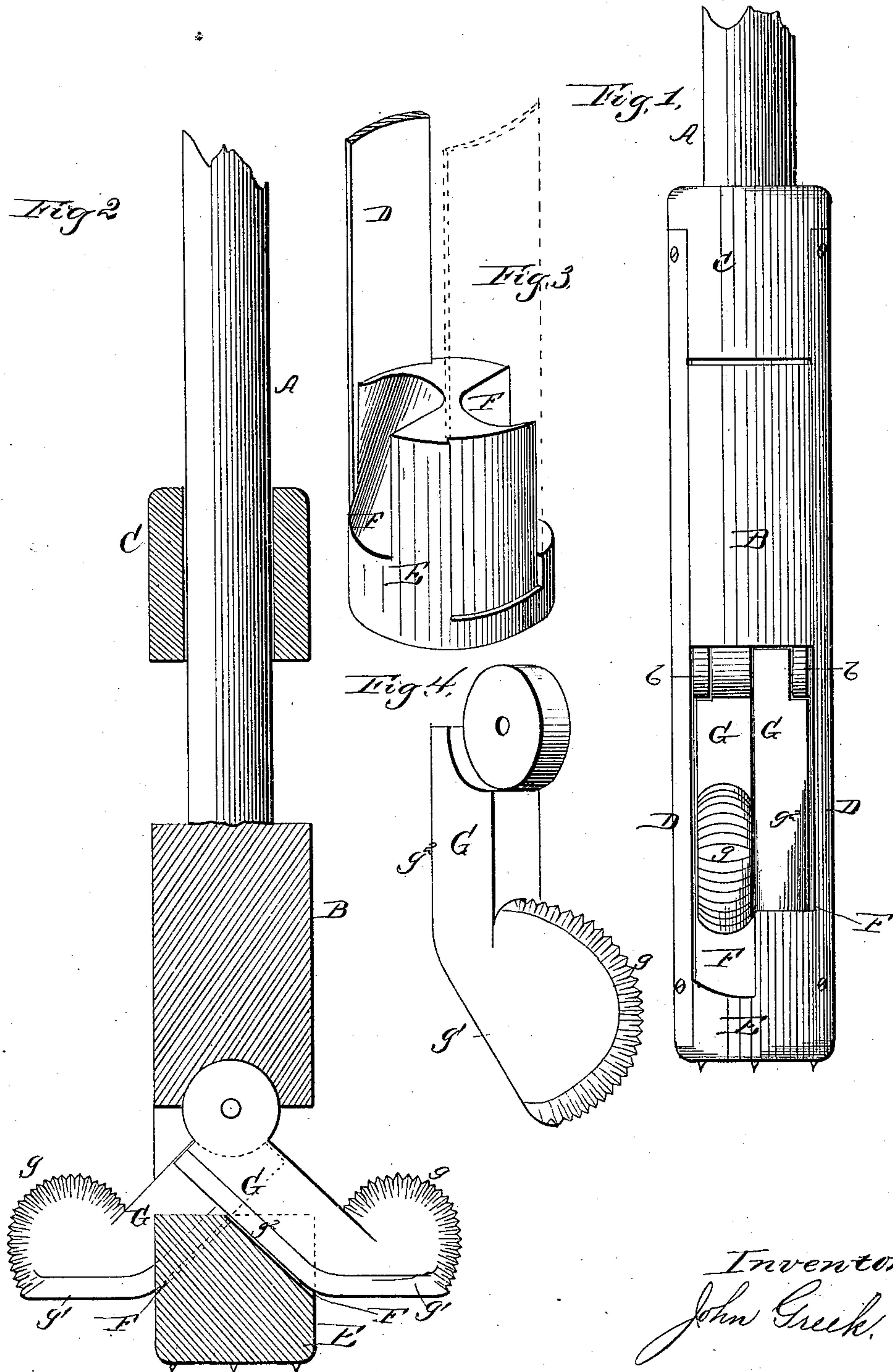


(No Model.)

J. GREEK.
STONE DRILL OR REAMER.

No. 247,044.

Patented Sept. 13, 1881.



Witnesses:
H. B. Arthur
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UNITED STATES PATENT OFFICE.

JOHN GREEK, OF EVANSVILLE, INDIANA, ASSIGNOR TO EDWARD A. GREEK,
OF SAME PLACE.

STONE DRILL OR REAMER.

SPECIFICATION forming part of Letters Patent No. 247,044, dated September 13, 1881.

Application filed June 20, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN GREEK, of Evansville, in the State of Indiana, have invented certain new and useful Improvements in Stone Drills or Reamers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a side elevation; Fig. 2, a central vertical section; and Figs. 3 and 4, detail perspective views of the plug and cutter, respectively.

My invention has for its object the construction of a stone drill or reamer which shall combine ease of operation, quickness, and economy of construction, as well as increased efficiency; and to this end it consists in the peculiar construction of the cutting-tools and such other points, as will be hereinafter more fully described.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A represents the drill or reamer shaft, the lower extremity of which is enlarged, as seen at B. Upon the shaft A is a loose collar, C, to which are secured the upper ends of two metal guides or bars, D D, which extend downward parallel to each other for a suitable distance, and have secured between their lower ends the plug E. This plug E is, upon its upper end, formed with two grooves, F F, whose bottoms are inclined in opposite directions, as seen in Fig. 2, and the purpose of which will be presently seen.

The lower end of the plug E is provided with two or more diamond points, which enable it to cut its way slowly downward. The lower extremity of the enlargement B of the reamer-shaft A is formed with two lugs, b b, between which are pivoted the cutting-tools G G. These tools are of peculiar form, being formed at their outer ends and upper sides with an enlarged semicircular cutting-surface, g, which may either be formed with serrated edges, as shown in the drawings, or provided with the usual diamond or carbon points, according to the nature of the material in which it is to be used.

The under side of the cutting-tool, for a suit-

able distance from its end, is straight, as seen at g', and when the tool is extended to its fullest extent will stand at right angles to the drill-shaft, and from this point to its inner or pivoted end the shank of the tool is turned upward at an obtuse angle, as seen at g², and rests upon the inclined grooves F F.

The operation of this drill or reamer may be either a rotary or reciprocating motion, and is as follows: The hole having been drilled as usual, the drill is withdrawn and the reamer lowered into place with the tools drawn in and lying between the guides or bars D D, with their ends resting upon the inclines F F. As motion is now imparted to the device the cutting-tools are forced outward by the said inclines and cut their way into the rock. At the same time the points upon the plug E are slowly cutting their way downward, and by the time the tools have reached their maximum expansion the plug has progressed downward sufficiently to allow the lower edges, g', of the tools to rest upon the bottom of the opening cut, which will be at right angles to the drilled hole. The bars D D act as guides, between which the tools work, and also serve as a rigid connection between the plug and the collar upon the shaft A.

I am aware that in some reamers a plug is used; but in all such that I have seen the plug was separate from the rest of the device, and after the hole was drilled a small conical hole had to be drilled in the bottom, into which the plug was lowered, and the reamer then put in place; but this occupies much time, and in my invention no hole need be prepared for the reception of the plug; but the whole device is lowered into place as soon as the drill is removed, and the plug eats its way slowly downward, as required to form a right-angle enlargement.

Another important point in my improvement is the fact that by the peculiar shape of my cutting-tools a cavity is formed which is wider at its outer than at its inner sides, thus confining the blasting-charge and giving it an immense lifting force, enabling it to do much greater execution.

The peculiar ball-shaped ends of my cutting-tools also enable them to be made at much less cost when diamond points are used, as the

cutting-surface is very small, compared to that of most bits, which have such surface extending their full length.

It may be found desirable to provide the shaft at some point above the collar with a ball or enlargement of the same diameter as the reamer-head, in order to act as a brace and keep the shaft always perpendicular.

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

1. In a boring or reaming implement, the combination, with a movable rod or shaft, of cutters pivoted thereto, each of said cutters formed with an enlarged solid head, semicircular on its upper face, and provided with serrations or cutting-teeth, substantially as and for the purpose set forth.

2. The combination, in a boring or reaming implement, of a shaft sliding in a sleeve with a pair of cutters having solid enlarged outer ends, semicircular on their upper faces, with

serrations or teeth thereon, and their lower sides opposite the heads formed on a straight line and parallel to the bottom of the plug when the cutters are extended, all substantially as and for the purpose set forth.

3. The combination, in a boring or reaming implement, with a shaft having an enlarged end and sliding within a collar or sleeve, of cutters pivoted to the lower end of said shaft and a plug secured to the collar by means of guides or connecting-braces, said plug being provided with diamond points, all constructed and arranged to operate substantially as and for the purpose set forth.

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

JOHN GREEK.

Witnesses:

M. S. LYON,
CONVERSE CLEMENT.