C. L. Noe,

Rock Drill Jar.

No 46,815. Patented Mar. 14, 1865.

Fig. 1

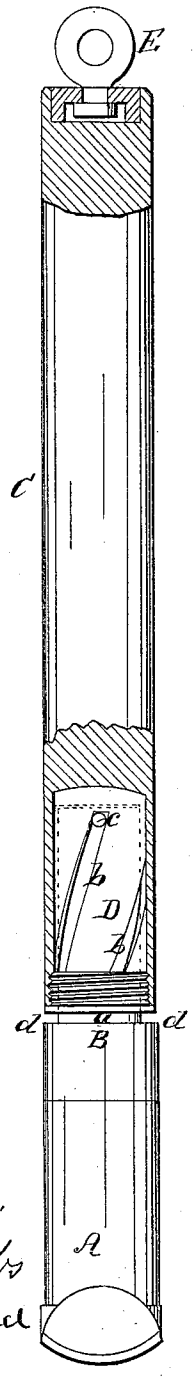
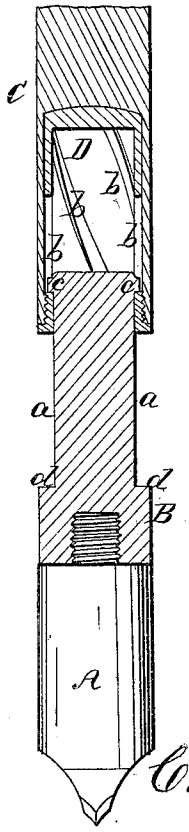


Fig. 2.



Witnesses;
J. W. Coombs
J. W. Reed

Inventor;
Charles. L. Noe

A.M. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

CHARLES L. NOÉ, OF BERGEN POINT, NEW JERSEY.

IMPROVEMENT IN DRILLS.

Specification forming part of Letters Patent No. 46,815, dated March 14, 1865.

To all whom it may concern:

Be it known that I, CHARLES L. NOÉ, of Bergen Point, in the county of Hudson and State of New Jersey, have invented a new and useful improvement in apparatus for drilling or boring Artesian wells or other holes in rock or other hard mineral substances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of the apparatus, partly in section. Fig. 2 is a vertical central section of the tool-stock and the lower part of the sinker-bar or hammer.

Similar letters of reference indicate corresponding parts in both figures.

In drilling or boring Artesian wells and in other drilling or boring operations through rock, stone, and other hard mineral substances it is generally desirable to turn the drill or boring tool between the successive blows or descents of the sinker bar or hammer, in order to prevent the drill or tool from becoming embedded or fast in the stone or other substance operated upon. This is commonly done by a workman detailed for that special duty.

The object of this invention is to effect the turning operation automatically by the act of raising the sinker-bar or hammer for the repetition of the blows by which the drilling or boring operation is performed; and to this end the said invention consists in a mode of combining the drill or tool of the stock thereof with the sinker-bar or hammer by means of a system of spiral grooves or pins, or their equivalents, whereby as the sinker-bar or hammer is lifted for the repetition of the blow it will turn the tool, as hereinafter described, or when the tool becomes embedded in the rock or sand a short up and-down motion of the sinker-bar or hammer will completely free the tool for further blows.

A is the drill or boring-tool, of any well-known or suitable form, according to the character of the stratum in which it is to be used. This is screwed into or otherwise secured in a stock, B, the upper part, *a*, of which is made of cylindrical form and sufficiently smaller diameter than the sinker-bar or hammer C to fit and turn easily, as well as move longitudinally, in a hollow socket, D, provided in the lower end thereof. The sinker-bar or hammer, except as regards the socket D, and the absence of the "jars" commonly provided, is constructed like the sinker-bar commonly used in boring Artesian wells. The socket D has in the sides of its interior one or more spiral grooves, *b b*, which receive a corresponding number of pins or projections, *c c*, on the exterior of the portion *a* of the tool-stock, which is received within the said socket. The said portion *a* of the tool-stock, though free to move longitudinally in the socket D to the extent of nearly the whole depth of the socket, is not permitted to drop out, that being prevented by the pins *c c* coming in contact with the bottoms of the grooves, or by any other suitable means. The sinker-bar or hammer C has attached to its upper end a swivel-ring, E, by which to suspend it from a rope or chain, and which permits the said box to turn freely without turning the rope or chain. The depth of the socket D and length of the part *a* of the tool-stock are such that the top of the interior of the socket may strike upon the head of the tool-stock, or that the bottom of the said socket may strike upon the shoulder *d* on the tool-stock; but I prefer the top of the socket to strike upon the head of the tool-stock, and in such case I prefer the head of the tool-stock to be convex and the top of the interior of the socket concave.

The operation is as follows: Every time the sinker-bar descends to produce the blow upon the tool-stock or tool the spiral grooves *b b* in the socket D working upon the pins *c c* on the exterior of the tool-stock, cause the stock and tool to turn on its axis before the blow is struck upon the head of the stock or the shoulder *d*, and every time the sinker-bar is raised again the sinker-bar is caused by the working of the grooves in its socket upon the pins *c c* to turn in the opposite direction to that in which the tool has turned by its descent. In this way the tool is turned preparatory to every blow of the sinker-bar upon it. From this it is seen that if the drill becomes tightly embedded in the rock or other material to be bored, a short but rapid up-and-down motion of the sinker-bar will cause the tool to free itself.

The socket D is represented as made of a

separate piece, and screwed at *e e* into a hole bored in the lower end of the sinker-bar; but the socket may consist of a simple bore in the lower end of the sinker-bar, and the spiral grooves be cut in the said bore.

The spiral grooves may be spiral only for a portion of their length, the remaining portion in such case being parallel with the axis of the tool and sinker-bar.

What I claim as my invention, and desire to secure by Letters Patent, is—

The tool or tool-stock A, in combination with the sinker-bar or hammer C, and its interior arrangement of parts, *b b* and *c c*, operating substantially as and for the purpose herein described.

CHARLES L. NOÉ.

Witnesses:
J. W. COOMBS,
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