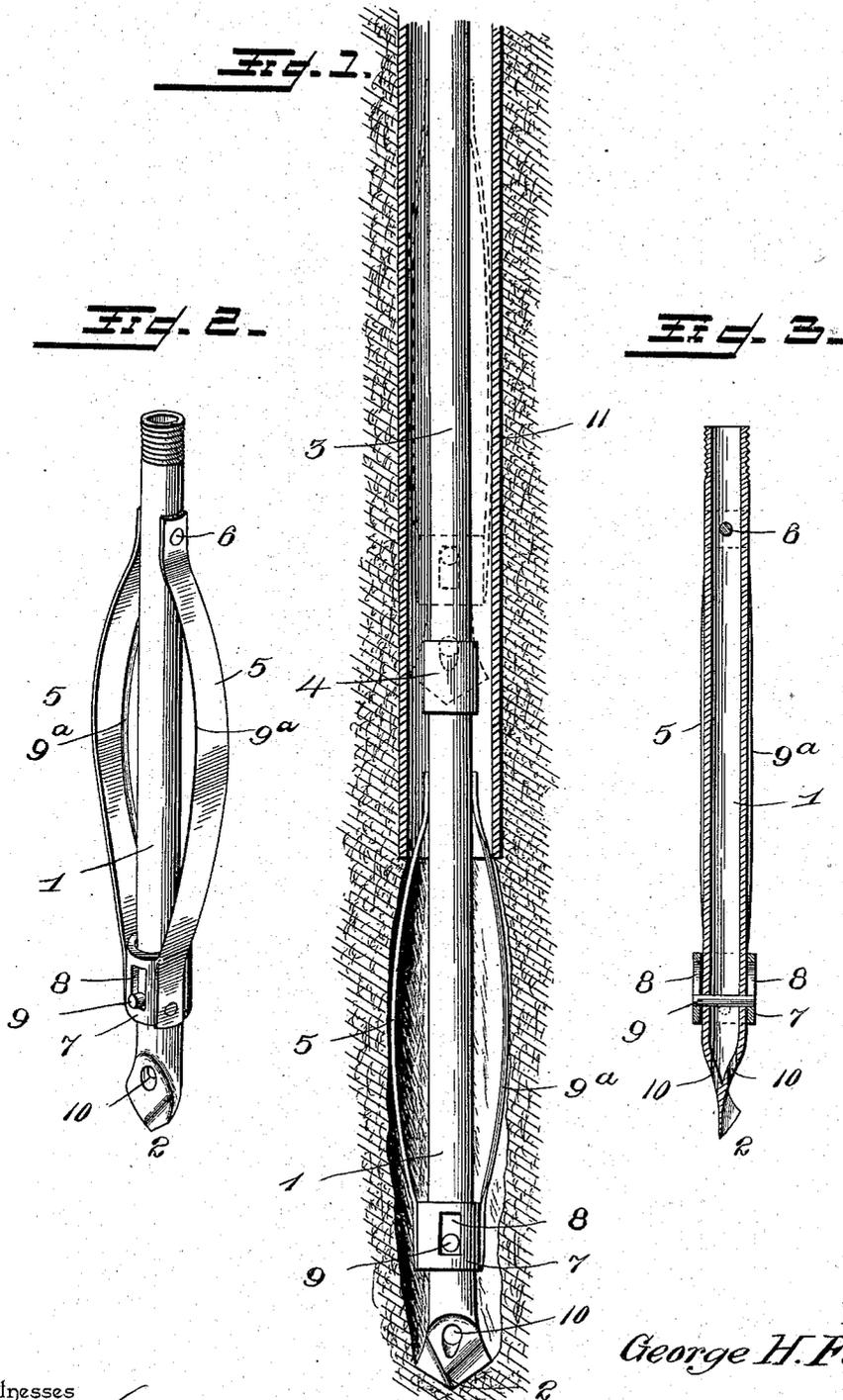


(No Model.)

G. H. FULLER.
DRILL.

No. 568,067.

Patented Sept. 22, 1896.



Witnesses
W. J. Smith
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By his Attorneys,

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UNITED STATES PATENT OFFICE.

GEORGE H. FULLER, OF GRESHAM, NEBRASKA.

DRILL.

SPECIFICATION forming part of Letters Patent No. 568,067, dated September 22, 1896.

Application filed December 26, 1895. Serial No. 573,358. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. FULLER, a citizen of the United States, residing at Gresham, in the county of York and State of Nebraska, have invented a new and useful Drill, of which the following is a specification.

This invention relates to an improvement in drills for assisting in sinking or cleaning out oil-wells, &c., and the object in view is to provide a simple, inexpensive, and efficient expansive bit or boring-tool which is capable of being inserted through a sunken tube or pipe and which will automatically expand upon its egress from the lower end of said pipe and upon rotation bore a hole in the earth in advance of the pipe of a diameter equal to or greater than the external diameter of the pipe or tubing with which the well is lined.

A further object of the invention is to provide a boring-tool which may be used simply as a reamer or as a reaming attachment to an ordinary well-drill.

Other objects and advantages of the invention will appear in the course of the subjoined description.

The invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and finally pointed out in the claim.

In the accompanying drawings, Figure 1 is a vertical sectional view showing the application and use of the improved boring device. Fig. 2 is a detail perspective view of such device. Fig. 3 is a vertical longitudinal section through the same.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 designates a tubular stock or bit of any desired length, the lower end of which is shaped in any suitable manner to constitute a drill-point 2, which may be tempered to adapt it to bore through hard substances. At its upper end the stock 1 is screw-threaded to adapt it to be secured to an operating-shaft 3 by means of a threaded sleeve or coupling 4 or in any other convenient manner.

5 designates a pair of bowed springs ar-

ranged diametrically opposite on the stock 1 and secured fixedly thereto at their upper ends by means of a rivet 6. The lower extremities of these springs are riveted or otherwise secured to a slide collar or ring 7, free to slide longitudinally upon the tubular stock and provided at points diametrically opposite with longitudinal slots 8. A through-pin 9 extends transversely through the tubular stock and its projecting ends enter the longitudinal slots 8 of the slide collar or ring 7. This construction admits of the sliding movement of the collar 7 and the consequent compression and expansion of the springs 5, while at the same time preventing rotation of said collar or ring, thereby bracing the lower ends of said springs against lateral strain. The opposite longitudinal edges of the springs 5, or the advance edge of each spring, as regards the direction of rotation of the tool, are sharpened or brought to a cutting edge, as indicated at 9^a, so that upon the rotation of the tool the expansive springs will ream out and enlarge the bore made by the drill. The central bore in the stock 1 opens out upon opposite sides of the stock adjacent to the drill-point, as indicated at 10, so that water forced through the tubular stock under pressure will enter the bore made by the drill and thoroughly flush the same and bring the borings to the surface, where they may be gotten rid of.

In operation, after starting the well, a section of pipe or tubing 11 is inserted until the bottom of the initial portion of the bore is reached, after which the improved boring device is inserted into the upper end of said pipe, and by compressing the spring cutters 5 the said tool is forced downward until it passes out of the lower end of the pipe 11, whereupon the spring cutters 5 automatically expand into the position shown in Fig. 1. Upon now revolving the boring-tool the cutters 5 will ream the bore of the well to an extent equal to or greater than the diameter of the lining-pipe 11, the drill-point 2, of course, traveling in advance of the spring cutters 5 and performing the initial boring. After advancing the boring device to a sufficient depth the pipe 11 is driven downward and an additional section placed behind it. In this manner the well may be bored and lined until

completed. The boring device may also be used with advantage to clean out a drilled well and loosen the dirt and sediment which may have collected in the bottom thereof.

5 Upon drawing upward on the boring-tool the expansive cutters will be compressed by the lower end of the tubular lining 11, so that the said tool may be readily and entirely withdrawn from the well.

10 It will be understood that the expansive cutters may be used either in connection with a drill, as illustrated in the drawings, or upon a plain bit without a drill-point, in the latter case being useful for cleaning purposes.

15 It will also be apparent that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

20 Having thus described the invention, what is claimed as new is—

A boring device for wells, consisting of a tubular stock made in one piece and having

one end flattened from opposite sides to close the end of the stock and form a drill-point 25 and also provided at each side of the drill-point with discharge-openings affording communication between the bore of the stock and the hollows of the drill-point, in combination with a pair of bow-shaped spring cutters permanently attached at their upper ends to the stock, a slide-collar mounted loosely on the stock and having opposing longitudinal slots and also having the lower ends of the cutters permanently attached thereto, and a transverse stay-pin passing through the lower end of the stock and having its projecting ends arranged in the slots of the sliding collar, substantially as and for the purpose described.

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

GEORGE H. FULLER.

Witnesses:

ANTHONY S. COST,

GEORGE R. MCCLERAN.