J. V. RIDLEY, SR. & A. G. RIDLEY.

WELL DRILLING TOOL.

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1,166,153.

Patented Dec. 28, 1915.

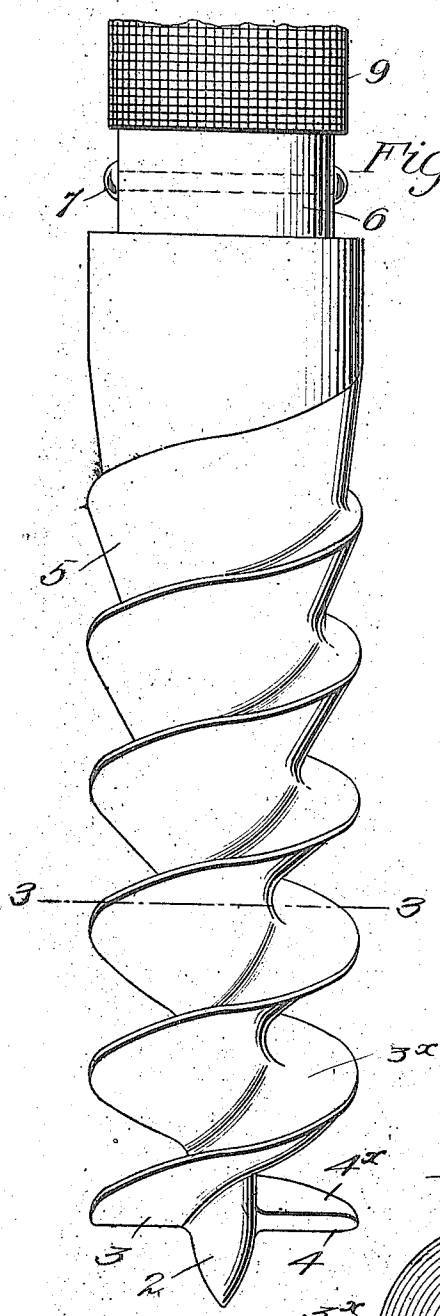


Fig. 1.

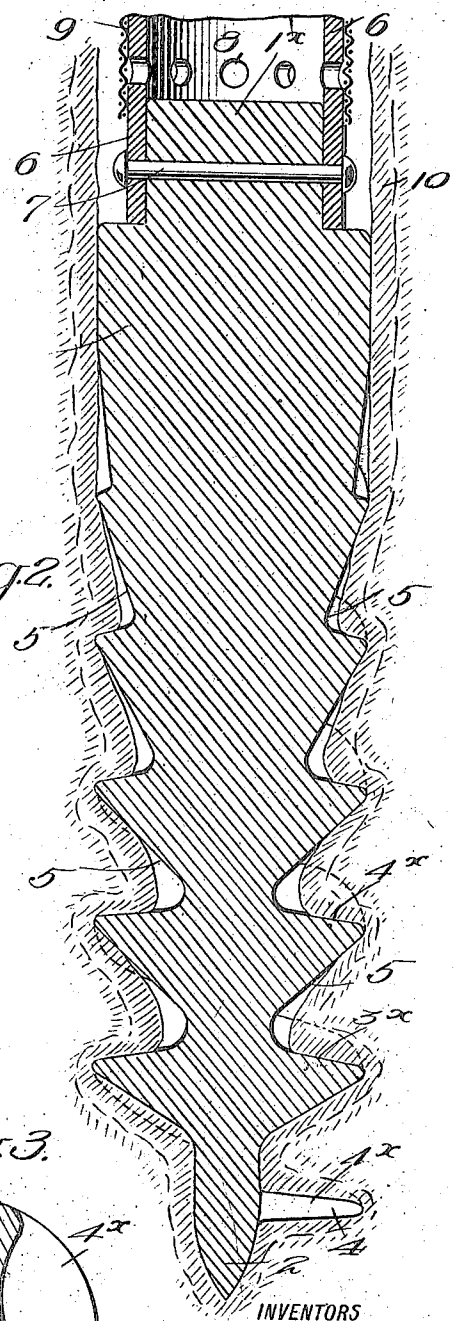


Fig. 2.

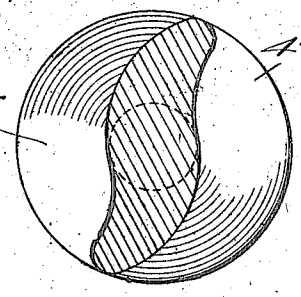


Fig. 3.

WITNESSES:

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WELL-DRILLING TOOL.

1,166,153. Specification of Letters Patent. Patented Dec. 28, 1915.

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To all whom it may concern:

Be it known that we, JAMES V. RIDLEY, Sr., and ALBERT G. RIDLEY, citizens of the United States, and residents of Newport, in the county of Jackson and State of Arkansas, have invented certain new and useful Improvements in Well-Drilling Tools, of which the following is a specification.

Our invention relates to improvements in well drilling tools, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of our invention is to provide a tool which will facilitate the sinking of Artesian wells or other small bore wells.

A further object of our invention is to provide a drill point which is designed to be rotated and by means of which the earth is pressed outwardly, thereby facilitating the entrance of the drill point proper.

A further object of our invention is to provide a device of the type described which is designed to be left in position after the well is bored, thereby doing away with the necessity of removing the drill point after the operation is finished and again replacing the point.

The other objects of the invention will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

Our invention is illustrated in the accompanying drawings forming part of this application and in which—

Figure 1 is a side view of the device; Fig. 2 is a longitudinal section therethrough showing the point in a well, and Fig. 3 is a section along the line 3—3 of Fig. 1.

In carrying out our invention we provide a body portion 1 which is preferably made of metal of any suitable kind. This body portion is cut, cast, or otherwise shaped in the manner shown in the drawings. It will be seen that at the bottom of the tool is a cone-shaped point or penetrating member 2, from which project two cutting blades 3 and 4, the edges of these blades being turned in opposite directions. The upper surfaces of these blades are shown at $3^{\times}$ and $4^{\times}$ respectively and it will be noticed that they are extended in a continuous spiral toward the upper end of the tool. It will also be noted that a vertical plane through the axis of the tool will cut these surfaces $3^{\times}$ and $4^{\times}$ in horizontal lines, or in other words, the faces $3^{\times}$ and $4^{\times}$ extend outwardly at substantially a right angle to the axis of the tool. It will furthermore be noted that these faces $3^{\times}$ and $4^{\times}$ decrease in width toward the upper end of the tool. Another fact to which we wish to call attention is that the greatest diameter of the tool is maintained through the successive spirals except at the bottom member or point 2. It will be further seen that by this construction the blades have lower spirally extended surfaces inclined to the vertical. These inclined surfaces are shown at 5, the inclination of these lower surfaces becoming more nearly vertical as the top is approached, and finally becoming completely vertical.

At 6 we have indicated a portion of the well pipe. This may be secured to the boring head by extending the boring head as shown at $1^{\times}$, said extension having a reduced diameter to enter the pipe 6 and securing the pipe in any suitable manner such as by a pin or bolt 7. The pipe 6 may be provided with openings 8 and may be covered with a screen 9 in the usual manner.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. Instead of forcing the boring tool into the ground in the ordinary manner, the pipe 6 is rotated in any suitable manner, and the tool is screwed into the ground after the manner of an auger. The tool, however, is not made in the manner of the ordinary auger, nor does it have the functions of the same as will be apparent from the following considerations: The inclined surfaces $3^{\times}$ and $4^{\times}$ will tend to force the tool into the ground like an auger, but unlike an auger the lower inclined surfaces 5 will tend to force the dirt outwardly; that is to say, to press it out in a lateral direction. It is not intended to remove the material and in this it differs from the auger.

It will be seen that the greatest diameter of the tool is greater than that of the pipe 6. There is therefore, little if any frictional engagement of the pipe with the sides 10 of the well. The pipe forms as will be seen an operating member for rotating the boring point.

After the well has been drilled to the depth which has been determined upon, the apparatus is left in place. The boring point or tool forms a substantial base upon which the pipe rests and the water or other fluid

is taken up through the pipe, passing through the openings 8 after having passed the screen 9. This obviates the necessity of removing the boring tool and the pipe, and of afterward replacing the pipe. It will also be noted that the body portion of the tool, near the lower end, does not immediately widen out, but is of substantially the same diameter for approximately one half turn of one of the cutting blades 3 and 4, as clearly shown in Fig. 2. Furthermore, the width of the cutting blades 3 and 4 is uniform for substantially one half turn, then the blades begin to narrow as already explained. This facilitates the boring operation.

We claim:—

1. A boring tool comprising a body portion having a cone-shaped centering point at its lower end, a pair of oppositely directed cutting blades, the edges of the blades extending horizontally from the longitudinal axis of the tool and on opposite sides thereof, the upper and lower surfaces of said blades extending spirally around the axis from the lower to the upper part of the tool, said upper surfaces being progressively narrower toward the upper part of the tool, said upper surfaces extending at right angles to the vertical axis of the tool, and the lower surfaces being inclined with respect to the vertical, the inclination of the lower surfaces from the vertical being progressively less from the lower to the upper end of the tool, and both upper and lower surfaces finally merging into the surface of the body portion.

2. A boring tool comprising a body portion having a cone-shaped centering point at its lower end, a pair of oppositely directed cutting blades, the edges of the blades extending horizontally from the longitudinal axis of the tool and on opposite sides thereof, the upper and lower surfaces of said blades extending spirally around the axis from the lower to the upper part of the tool, said upper surface being progressively narrower toward the upper part of the tool, said upper surfaces extending at right angles to the vertical axis of the tool, and the lower surfaces being inclined with respect to the vertical, the inclination of the lower surfaces from the vertical being progressively less from the lower to the upper end of the tool.

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