

M. REPP.
WELL DRILLING APPARATUS.
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1,052,847.

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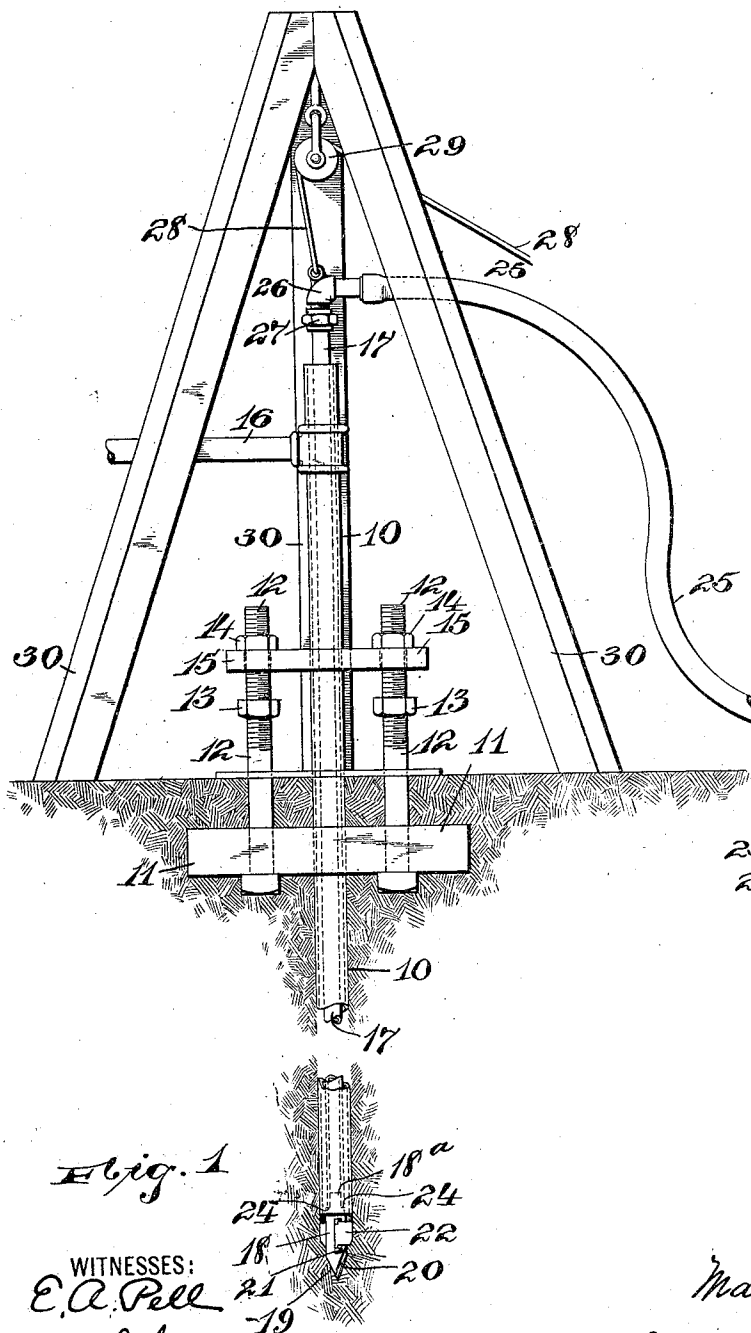


Fig. 1

WITNESSES:
E. A. Pell
M. A. Johnson.

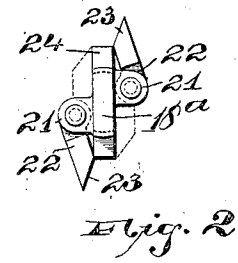


Fig. 2

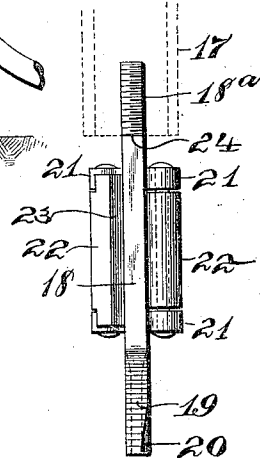


Fig. 3

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WELL-DRILLING APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MATYAS REPP, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Well-Drilling Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

15 This invention relates to a boring apparatus which is designed to drill into the ground for wells and the like, and is one in which an outer pipe is sunk into the ground, being preceded by a drill which operates beyond the end of the outer pipe, and a means for suspending the drill and also for operating it so that the drill precedes the outer pipe and the descent of the outer pipe is therefore made easy.

25 The drill is of a kind that is adapted to be rotated, and when rotated in one direction, there are means on the drill, such as wings, for extending the drill to the width of the outer pipe so as to drill a hole or a bore the size of the outer pipe, said drill also being adapted to be contracted, when rotated in the other direction, so as to be withdrawn with the suspending means from the outer pipe.

35 The suspending means is preferably an inner pipe which acts to conduct a liquid, such as water, down through the inner pipe and wash the material from around the drill and make the work of the drill easy, the drill being attached to the inner pipe in a way so as to not close the inner pipe, the outer pipe acting as an outlet pipe and conducting the water and the material from the bore.

45 The outer pipe is also designed to be forced into the ground, and I provide means for forcing the outer pipe downward as the drill and the liquid make the bore deeper. I also provide a feed pipe, coupling with the inner pipe, to conduct the liquid to the inner pipe, and I also provide a joint between the feed pipe and the inner pipe so that the inner pipe can be rotated freely. I also provide suitable means for raising and lowering the inner pipe.

The invention is illustrated in the accompanying drawing, in which—

Figure 1 is an elevation of the device with its pipes broken away and showing the ground in section. Fig. 2 is a top view of the drill, and Fig. 3 is a side view of the drill.

In my invention I employ an outer pipe 10 which is the pipe that is driven into the ground inside the bore, and which can be removed after the well is complete, or it can be left in the ground, as desired. The usual plan is to leave it in the ground. To force this pipe downward I employ a forcing means which comprises a beam or a plate 11 which is embedded in the ground to make it solid, and vertical screw-threaded bolts 12 project therefrom substantially parallel with the pipe. Nuts 13 are put on the bolts 12 to act as stops, as will be hereinafter described. Forcing nuts 14 are also placed on the bolts and are adapted to be rotated to force down a clamping plate 15 which has means co-acting with the pipe 10 whereby it grips the pipe when it is forced downward, and slips on the pipe when it is elevated so that by successive raisings and lowerings of the clamping plate 15 the pipe can be forced down into the ground. Near the top of the outlet pipe 10 I place a discharge pipe 16 which can be used to conduct liquid which is used in the apparatus in a manner to be hereinafter described.

Acting as a suspending means for a drill is an inner pipe 17 which is placed within the outer pipe, and on the bottom end of which is fastened a drill which consists of a body portion 18 which is preferably flat and has a reduced top 18^a at its top edge, the two edges of the reduced top 18^a being screw-threaded, as shown in Fig. 3, so that it is adapted to be screwed into the screw-threaded bottom end of the inner pipe 17 to form a partition to divide the water coming down through the pipe 17 and not interfere with the efficiency of the stream, allowing a full escape of the water from the pipe.

The bottom of the drill is made into a tapered or pointed portion 19 and it can be provided on each side with a groove 20 to form a sharpened edge whereby the drill can act as an auger. On opposite sides of the body portion 18, and on opposite sides of the longitudinal axis of the drill, I place the

lugs 21 as will be seen from Fig. 2. Between each of the pairs of lugs 21 is arranged a wing 22, which wings, by thus being placed to one side of the center of the drill, can be folded against the body portion as shown in dotted outline in Fig. 2, whereby they can be withdrawn with the pipe 17 through the outer pipe 10, when it is desired to withdraw the drill. When the drill is rotated in the opposite direction the pointed or chamfered portion 23 of each wing 22 swings about until its back edge engages the body portion as shown in Fig. 2, and the ends of the wings make or scrape a bore big enough around to receive the outer pipe 10, and thus make the descent of the pipe 10 comparatively easy. The water coming down on both sides of the drill keeps the dirt away from the sides of the body portion 18 so that it does not interfere with the easy folding of the wings 22. A shoulder 24, between the body portion and the reduced top of the drill, limits the entrance of the drill into the inner pipe and acts as a shoulder against which the bottom of the inner pipe is forced when the drill is rotated to operate it to spread the wings 22.

A conducting pipe 25, which is preferably a flexible hose, conducts liquid, such as water, under pressure to the feed pipe 26. A union or similar joint 27 connects the feed pipe 26 and the inner pipe 17 in such a manner as to provide for an easy rotation of the pipe 17 in either direction without rotating the feed pipe. It will be understood that a suitable wrench or lever can be used to clasp the inner pipe 17 to rotate it.

Means for suspending and for varying the elevation of the feed pipe, and consequently the inner pipe, is provided by means of a rope or strand 28 running over a suitable pulley 29 which is suspended on the tripod 30, but it will be understood, however, that any suitable support can be substituted for the tripod 30.

When the device is used the liquid under pressure passing down through the inner pipe 17 emerges from its end as shown in Fig. 3, this end not being closed, and washes away and assists in dislodging the material which is penetrated by the drill, and the

water and the material that is washed out pass up between the outer pipe and the inner pipe and pass out through the discharge pipe 16.

Having thus described my invention, what I claim is:—

1. A boring apparatus comprising an outer pipe, an inner pipe with a screw-threaded end, a drill flat on both sides from top to bottom and having a reduced top to form a shoulder, the edges of the top being screw-threaded and entering the screw-threaded end of the inner pipe, the sides of the top and the inside of the inner pipe forming the walls of ducts for directing water descending through the pipe to the end of the drill, lugs arranged on the flat sides of the drill and on opposite sides of its longitudinal axis, and wings swinging between lugs, the wings being adapted to project beyond the edge of the drill at the edge nearest their supporting lugs and adapted to fit within the edges of the drill when swung against the flat sides thereof toward the edge farthest from their pivotal connection.

2. A drill comprising a flat body portion having straight parallel sides from the top to the bottom, the top of the drill being reduced with screw-threads on its narrow edges, the end of the screw-threaded portion forming a shoulder for limiting the entrance of the screw-threaded portion into a pipe, the bottom end of the drill being pointed, lugs projecting from the flat sides of the drill, the lugs on the opposite sides of the drill being arranged on opposite sides of the longitudinal axis of the drill, and wings mounted on the opposite sides of the drill between the lugs, each wing being so proportioned that it fits within the limits of the drill when swung toward the edge farthest from its pivotal point and projecting from the edge of the drill when swung toward the edge nearest its pivotal point.

In testimony, that I claim the foregoing, I have hereunto set my hand this 9th day of January, 1911.

MATYAS REPP.

Witnesses:

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