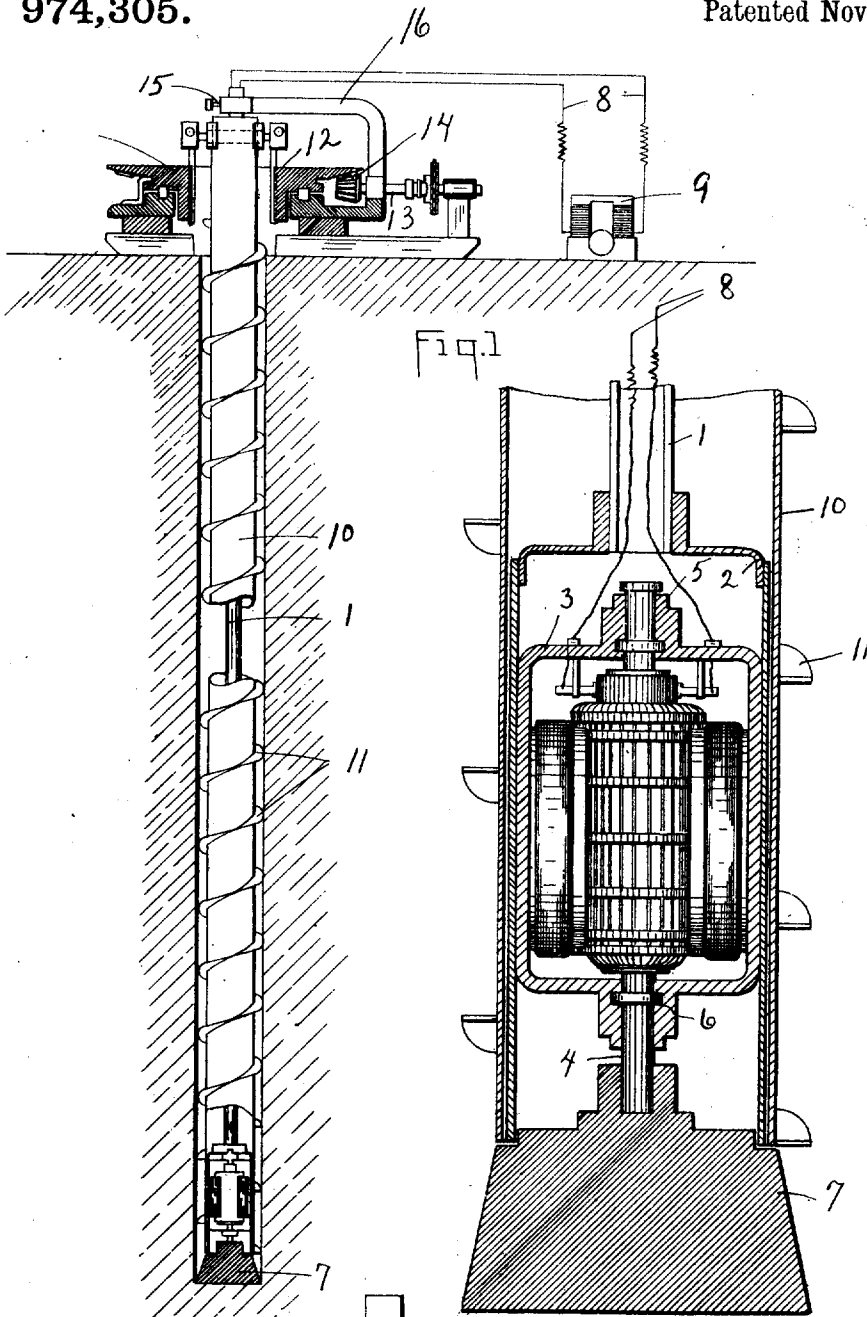


J. S. STEWART.
WELL DRILLING DEVICE.
APPLICATION FILED JUNE 24, 1910.

974,305.

Patented Nov. 1, 1910.



WITNESSES:
H. S. Barker
W. Tompkins

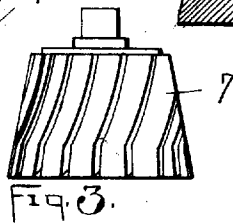


Fig 2

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UNITED STATES PATENT OFFICE.

JOHN S. STEWART, OF HOUSTON, TEXAS.

WELL-DRILLING DEVICE.

974,305.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed June 24, 1910. Serial No. 568,669.

To all whom it may concern:

Be it known that I, JOHN S. STEWART, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Well-Drilling Devices, of which the following is a specification.

My invention relates to new and useful improvements in well drilling devices.

The object of the invention is to provide a device for drilling oil, water, or other wells wherein the power is applied to the drill bit from a motor located near thereto; and further comprehends a mechanism whereby, the cuttings of the bit are elevated to the surface without the necessity of flushing the well.

It is the common custom to operate the bit, or boring tool, used for boring wells, from the surface of the ground through a long connecting rod or pipe which is rotated by a rotary driven by any suitable motive means. After the well reaches a considerable depth this pipe is liable to be twisted off or become stuck, to the great loss and inconvenience of the well driller, and often causing the abandonment of the well. It is also the common custom to flush out the well by means of water which is forced into the casing by a hydraulic or other suitable pump in order to remove the drill cuttings therefrom; but this method is objectionable in as much as the water pressure prevents the oil or gas from coming to the surface, thereby often causing the well to be lost, and furthermore when the cuttings are flushed out it is impossible to ascertain with certainty the character of the soil through which the drill is passing.

My invention is designed to provide a drill wherein the motor is to be located near the bit, which it operates, and which is also provided with a mechanism for elevating the cuttings, of the bit, to the surface of the ground, without the necessity of flushing.

With the above and other objects in view, my invention has particular relation to certain novel features of construction and operation, an example of which is given in this specification, and illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of my complete device in the position which it will assume while in operation, and showing an intermediate section thereof broken away.

Fig. 2 is a sectional view of the lower end thereof showing a complete motor and the bit operated thereby. Fig. 3 is a side elevation of the bit.

Referring now more particularly to the drawing the numeral 1, refers to a suitable pipe to the lower end of which a casing 2, is secured. This casing is designed to protect the motor 3, which is secured therein and which may be of any desirable type. The numeral 4, refers to the motor shaft which rotates in suitable bearings 5 and 6 and to the lower end of which the bit 7, is secured.

The numeral 8 refers to the circuit wires which extend from the dynamo, 9, at the surface of the ground, through pipe 1 and connect with the motor armatures and conduct the electric fluid thereto.

The point of the bit is sufficiently flared to drill a hole considerably larger, in diameter than the diameter of the pipe 1, and the motor casing 2, in order to provide a free space therearound for the elevating mechanism presently to be described. This elevating mechanism comprises a casing 10, which surrounds, or incases, the pipe 1 and the motor casing 2, and is designed to rotate therearound, and is provided with a spiral flange 11, projecting outwardly therefrom, and integral therewith, which spirals extend from one end to the other thereof. This mechanism extends above the surface of the ground and is operated by a suitable rotary 12, in the ordinary manner, and extends downwardly to the cutting bit, and in the figures shown rotates from right to left receiving the cuttings from said bit and elevating them to the surface of the ground. It is to be observed that this pipe 10, and its projecting flange are rotatable independently of pipe 1, and may be elevated and lowered independently thereof, consequently should the bit become stuck or in any manner clogged the motor may be stopped, thus stopping the bit, and by continuing the rotation of pipe 10, the clogging material may be carried away from the bit thus leaving the same free to rotate. The rotary 12, is operated through a drive shaft 13, which receives power from a motive mechanism (not shown) and transmits the same to the rotary through the bevel gear 14.

The pipe 1, is secured against rotation by means of a clamp 15 which is carried by a supporting member 16, and is firmly secured

around said pipe, and sufficient space is provided between the motor casing 2 and the surrounding casing 10, to permit the last mentioned casing to rotate freely independently of the motor casing. It is further to be observed that the spiral flange 11, is provided with sharp cutting edges and in case the bore caves in the dirt or obstruction falling against said flanges is cut up and carried to the surface. It is further obvious that in case the bit becomes stuck the pipe supporting the same and the surrounding casing may be withdrawn slowly and the bit thus forced to cut itself out.

15 A well drilling device constructed in accordance with the foregoing description, and the drawings accompanying the same will obviate the necessity of rotating a long heavy pipe in order to rotate the cutting bit, thus dispensing entirely, with the liability of wrenching the pipe in two, and the attendant inconvenience and expense. A drill, so constructed, will also be capable of cutting itself out in case of a "cave in" and will always reveal to the operator, the exact character of the soil through which the bit is passing.

What I claim, is:—

1. In a device of the character described, a casing; a drill bit secured at the extremity thereof; a means adjacent to said bit for rotating the same and an outer pipe surrounding said casing, rotatable independently thereof, and carrying means upon its external surface for receiving and elevating the cuttings from said bit.

2. In a device of the character described, an inner casing; a motor therein; a drill bit operatively connected to said motor; an outer casing surrounding said inner casing and operating independently thereof; means carried upon the outer surface of said outer casing for receiving the cuttings from said drill and elevating the same, and means for operating said outer casing.

3. In a device of the character described, an inner casing; a motor therein; a drill bit operatively connected to said motor; an outer casing surrounding the said inner casing and operating independently thereof; a

spiral flange carried upon the outer surface of said outer casing for receiving the cuttings from said drill bit and elevating the same, and means for operating said outer casing.

4. In a device of the character described the combination with an inner casing and a motor carried thereby; of a drill bit operatively connected with the motor; a means for supplying a motive force to said motor; an outer casing surrounding said inner casing and operating independently thereof; a spiral flange carried upon the outer surface of said outer casing for receiving the cuttings from said drill bit and elevating the same; and means for operating said outer casing.

5. In a device of the character described the combination with an inner casing and a supporting means therefor, of a motor carried thereby, a drill bit operatively connected with the motor, means for supplying a motive force to said motor, an outer casing surrounding said inner casing and its supporting means and operating independently thereof; a spiral flange carried upon the outer casing for receiving the cuttings from said drill bit and elevating the same, and means for operating said outer casing.

6. In a device of the character described the combination with an inner casing and the supporting means therefor, of a motor carried thereby, a drill bit operatively connected with the motor, a means for supplying a motive force to said motor, an outer casing surrounding said inner casing and its supporting means and operating independently thereof; a spiral flange carried upon the outer surface of said outer casing for receiving the cuttings from said drill bit, and elevating the same, and a rotary, having an engagement with said outer casing for rotating the same.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN S. STEWART.

Witnesses:

H. S. BARKER,
A. TOMPKINS.