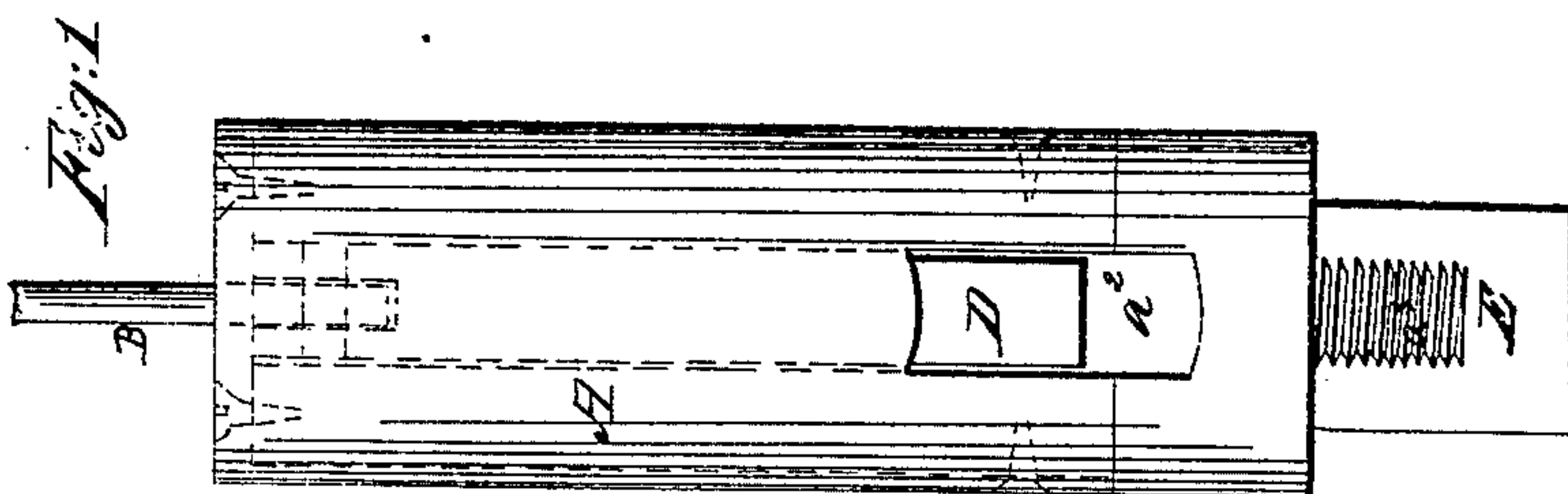
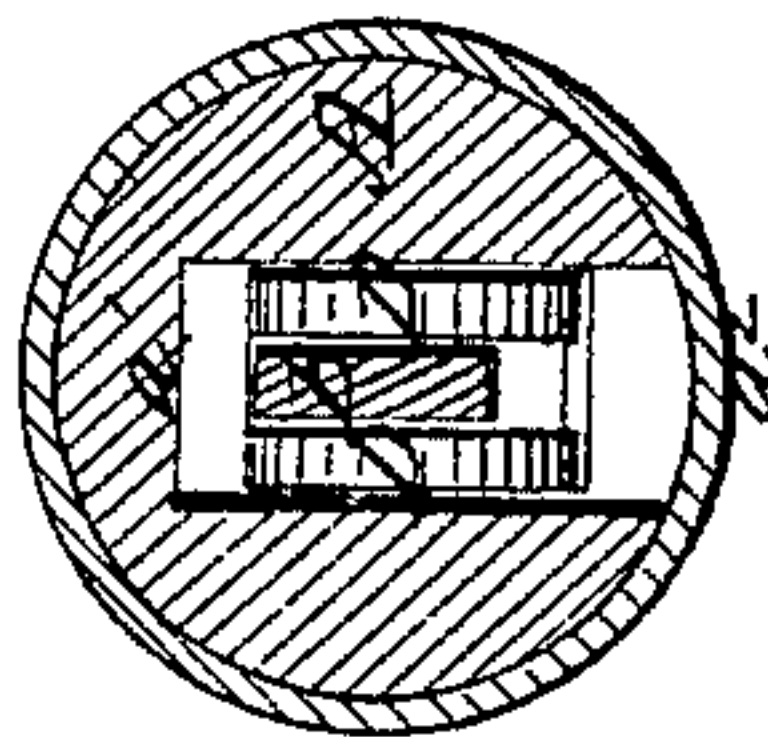


Expanding Rock Drill.

Patented May 30, 1865.



Inventor:
Wm. B. Oliver

UNITED STATES PATENT OFFICE.

WILLIAM G. OLIVER, OF BUFFALO, NEW YORK, ASSIGNOR TO HIMSELF, SAML. O. BIGELOW, GEORGE H. RANDEL, AND DAVID P. BENSEN, OF SAME PLACE.

IMPROVED DRILL FOR OIL AND OTHER WELLS.

Specification forming part of Letters Patent No. 48,026, dated May 30, 1865.

To all whom it may concern:

Be it known that I, WILLIAM G. OLIVER, of the city of Buffalo, in the county of Erie and State of New York, (assignor to himself, SAMUEL O. BIGELOW, GEORGE H. RANDEL, and DAVID P. BENSEN,) have invented a new and improved expansion-drill for enlarging the bore of oil-wells at intermediate places in their depth, and for other purposes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is an elevation, the drill-pick being drawn up to its highest position in the drill-stock. Fig. II is a vertical section, the drill-pick being shown as thrust out from the drill-stock. Fig. III is a transverse section.

The nature of this invention relates to the construction of an expanding-drill, which may be used in Artesian or other deep wells; and it consists, mainly, of a drill-stock having an internal inclined surface, on which the drill-pick works, and a hinged drill-pick, which is operated by a vertical or up-and-down movement, and is thrust outwardly and laterally from the drill-stock by gravity to enlarge the bore of the well at such place in its depth as may be desired, for the purpose of opening a vein of oil or other liquid not hit in the sinking of the well.

Letters of like name and kind refer to like parts in each of the figures.

A represents the drill-stock, cylindrical in form, made of wrought-iron, and of a diameter a little smaller than the bore of the well in which it is to be used, and in length three times (more or less) than its diameter. It has an internal inclined and slightly-curved surface, as shown at a' , on which the drill-pick works, which inclined surface is for the purpose of directing the drill-pick outwardly, so that the drill-pick will work its way into the rock laterally at an angle from the main bore of the well. The angle or inclination of the surface a' may be of any degree required to insure an easy working of the drill-pick. An opening, a'' , is made in the stock, through which the drill-pick works.

D represents the drill-pick, which is made

of the best cast-steel, and hardened and tempered for drilling into the hardest rocks. It is hinged to the vertically-working bar B, as shown at b' , so that it may be drawn into the drill-stock and thrust out at pleasure by an up-and-down motion. It has a curvature on its under side corresponding to the inclined curved surface a' , so that it may work or slide freely thereon. The working-bar B has a collar formed thereon, as shown at b^2 , to limit its downward movement. It also has a screw-thread cut upon its upper end, as shown at b^3 , for the purpose of attaching other working bars or tubes thereto, in order to give it sufficient weight to thrust the drill-pick into the rock. The lower end of the drill-stock is provided with a screw projection, as shown at a^3 , for the purpose of connecting therewith bottom sections, E, of different lengths, which will rest upon the bottom of the well and support the drill at such height in the well as may be requisite for operating it at any given or desired place. Any required number of these bottom sections may be used, of different lengths, to answer the purpose required.

Operation: This expansion-drill is placed in the well, the lower end of the drill-stock resting upon the bottom of the well; or, in case it is required to work the drill higher up in the well, a bottom section, E, of the required length, is attached thereto. The drill-pick and operating-bars B are connected by means of ropes or other suitable connections to a spring-bar or other device at the surface. The upward movement of the spring-bar or other device will draw the drill-pick into the stock and lift the drill-stock a few inches, more or less. The lifting-power being released, the drill-stock drops by its own gravity until it (or its bottom section) strikes the bottom of the well and the drill-pick, by its own gravity, and also that of the operating-bars B, is thrust outwardly through the opening in the stock and against the rock; and the operation is continued until the drill-pick has forced its way into the rock its whole length, which may be from five to seven inches, or more, according to the diameter of the well. The drill-stock may be turned or revolved in the operation, and one, two, three, or more holes drilled into

the rock on either side of the bore, or in its entire circumference. By adding bottom sections of different lengths, the operation may be repeated at any required place in the well.

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

1. An expansion-drill consisting, mainly, of the drill-stock A, hinged drill-pick D, and connecting-bar B, and operated by a vertical up-and-down motion thereof, for the purposes and substantially as herein described.

2. The bottom section, E, in combination with the drill-stock A, for the purposes and substantially as described.

WM. G. OLIVER.

Witnesses:

GEO. W. WALLACE,
E. B. FORBUSH,
W. H. FORBUSH.