

No. 616,118.

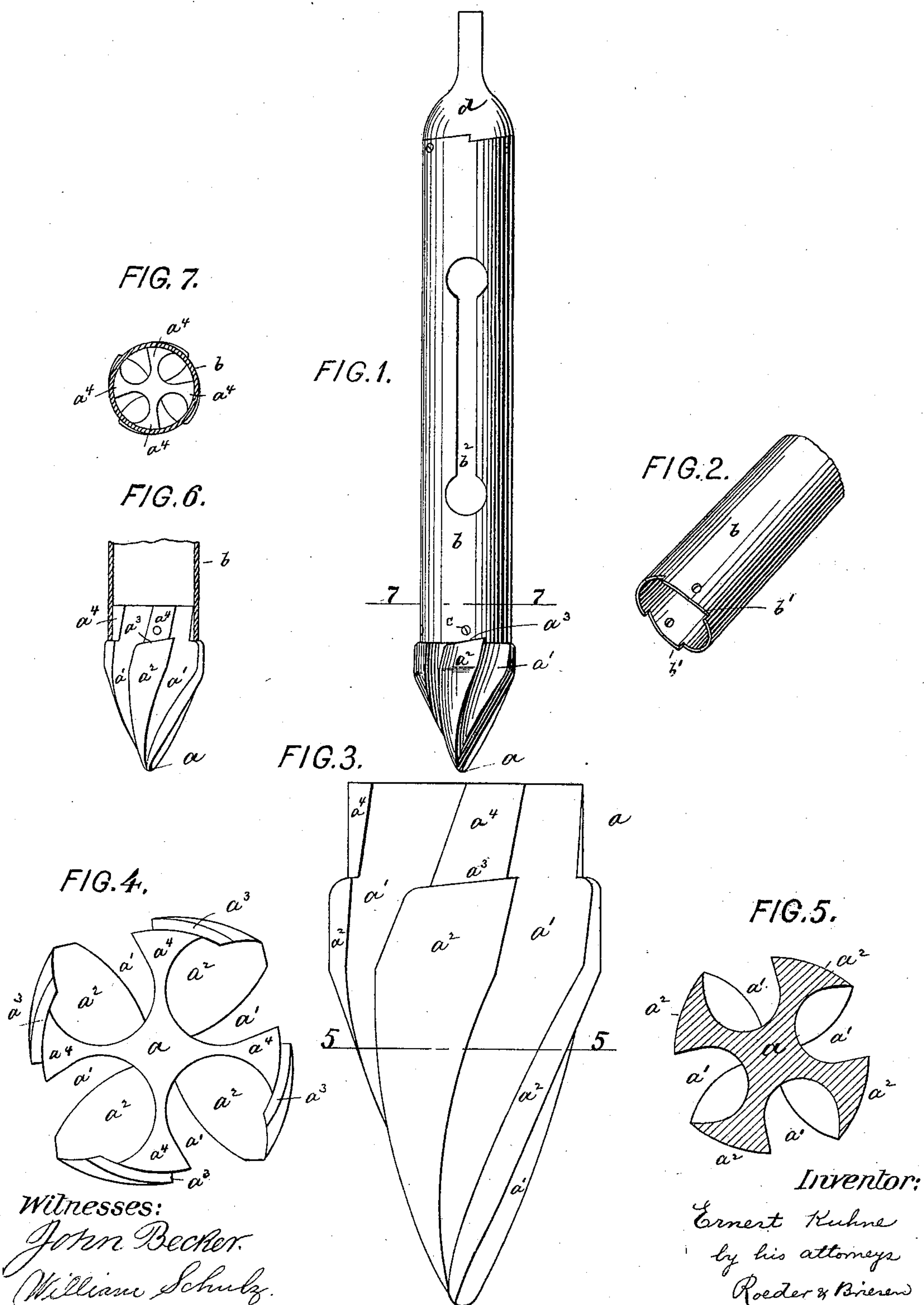
Patented Dec. 20, 1898.

E. KUHNE.

DRILL.

(Application filed Mar. 22, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

ERNEST KUHNE, OF NEW YORK, N. Y.

DRILL.

SPECIFICATION forming part of Letters Patent No. 616,118, dated December 20, 1898.

Application filed March 22, 1898. Serial No. 674,779. (No model.)

To all whom it may concern:

Be it known that I, ERNEST KUHNE, a citizen of the United States, residing at New York city, county and State of New York, have

invented new and useful Improvements in Drills, of which the following is a specification.

This invention relates to a drill more particularly designed for boring or drilling into the soil for the removal of earths and minerals.

The drill is composed of a spiral drill-head of peculiar construction, which is securely fitted into the drill-tube and discharges the borings directly into such tube by means of grooves formed between the cutting-blades. To prevent the drill-head from working loose under lateral strain, the tube terminates in a serrated lower edge which is engaged by the upper inclined edges of the cutters on the drill-head.

In the accompanying drawings, Figure 1 is a side elevation of my improved drill; Fig. 2, a perspective view of the lower end of the drill-tube; Fig. 3, a side view of the drill-head; Fig. 4, a top view thereof; Fig. 5, a section on line 5 5, Fig. 3; Fig. 6, a longitudinal section of the lower end of the drill-tube, showing the head inserted; and Fig. 7, a cross-section on line 7 7, Fig. 1.

The letter *a* represents the drill-head, which is preferably composed of tempered cast-steel and is of conical shape. Within the surface of the head are formed a number of spiral grooves *a'*, that extend to and open at the top of the head and gradually increase in width from the drill-point upwardly. The spiral cutters *a''*, between the grooves *a'*, are backed off, so that a bit is formed along one of their edges. At its upper end each cutter *a''* terminates in an inclined edge *a'''*, and above such edge the cutters are reduced in diameter and made concentric to form the ribs *a''''*. These ribs are telescoped by the boring-tube

b and are attached thereto by screws *c* or otherwise.

The bottom of the tube *b* is serrated, as at *b'*, the serrations extending in a direction opposite to that of the cutters *a''*. These serrations are engaged by the inclined upper edges *a'''* of the cutters *a''*, and in this way the transverse strain to which the cutter-head is subjected will not be apt to wrench the head off its fastening, because such strain will force the upper edges of the cutters *a''* against the serrations *b'*.

The grooves *a'* extend to the upper end of the ribs *a''''*, Fig. 6, and will consequently form ducts in the overlapped portion of the head that convey the borings directly into the interior of the tube *b*.

The tube *b* is provided with a suitable discharge-orifice *b''* and carries on its top a cap *d*, adapted to be coupled to a boring-rod, by means of which a rotating motion may be imparted to the drill in suitable manner.

What I claim is—

1. A drill composed of a conical head having backed-off spiral cutters, concentric ribs above the cutters, and upwardly-opening spiral surface grooves, combined with a tube that overlaps the ribs and into which the upper ends of the surface grooves open, substantially as specified.

2. A drill composed of a conical head having spiral cutters with an inclined upper edge, concentric ribs above the cutters, and upwardly-opening spiral surface grooves, combined with a tube having a lower serrated edge which engages the inclined upper edge of the cutters and telescopes the ribs, substantially as specified.

ERNEST KUHNE.

Witnesses:

GEORGE FREDERICK CORTS,
JOSEPH WILLIAM KENNY.