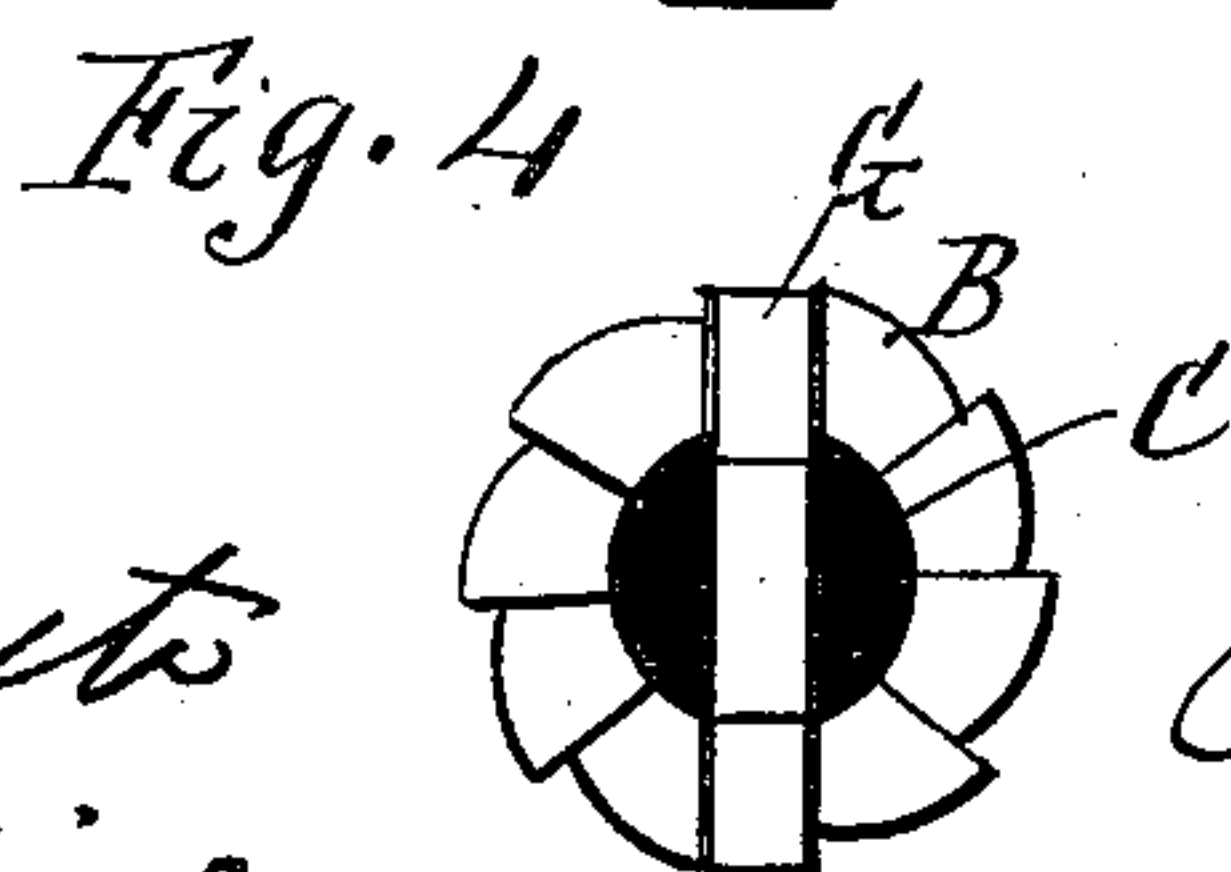
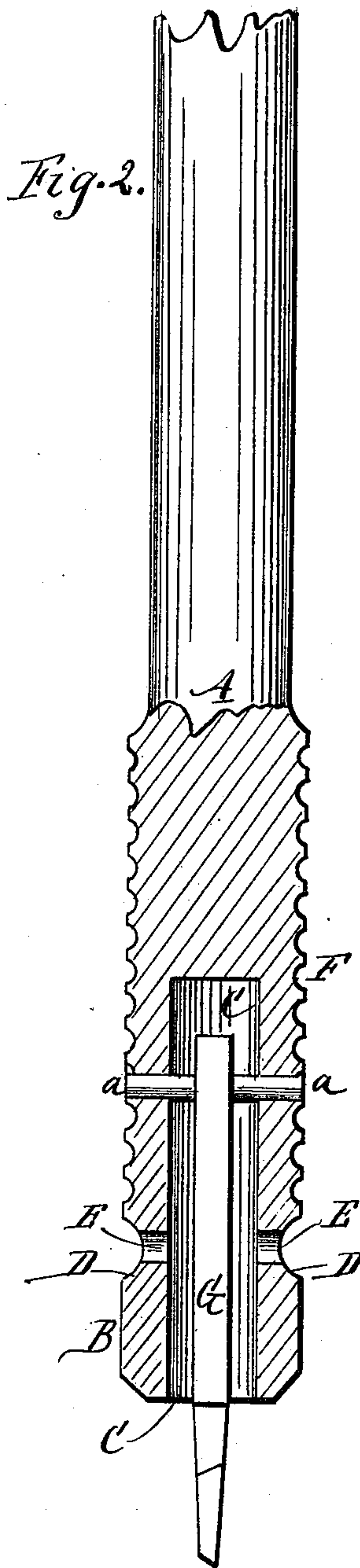
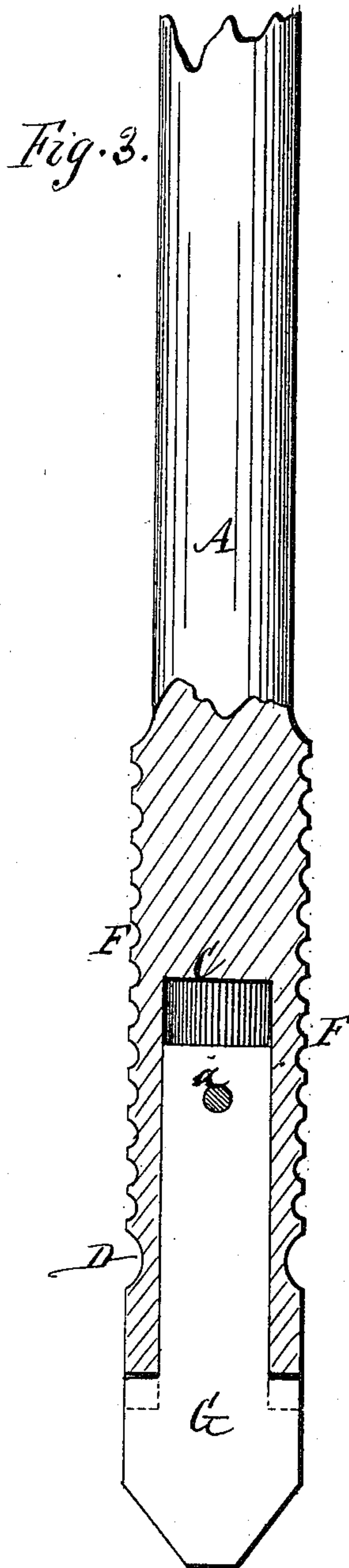
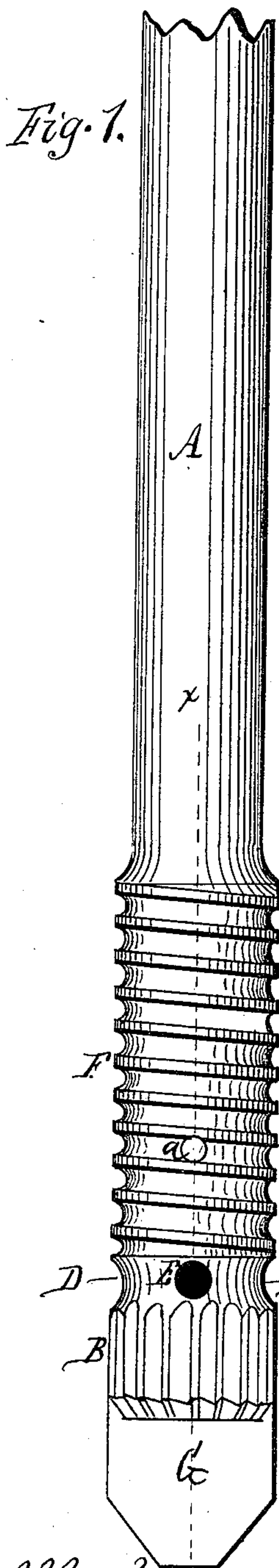


(No Model.)

J. P. CHAMPION.
COMBINED BORER AND REAMER.

No. 362,934.

Patented May 17, 1887.



Attest. x
A. S. Smith
John H. Hopkins

Inventor:
Josiah P. Champion,
per R. F. Osgood,
Atty.

UNITED STATES PATENT OFFICE.

JOSIAH P. CHAMPION, OF PHELPS, NEW YORK.

COMBINED BORER AND REAMER.

SPECIFICATION forming part of Letters Patent No. 362,934, dated May 17, 1887.

Application filed September 29, 1886. Serial No. 214,822. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH P. CHAMPION, a citizen of the United States, residing at Phelps, in the county of Ontario and State of New York, have invented a certain new and useful Improvement in a Combined Borer and Reamer; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this specification.

My invention relates to an improvement in the reamer patented by Jabez K. Babcock, August 15, 1882, No. 262,885, of which I am sole owner. That invention consists of a reamer in which a central longitudinal hole extends up into the stock, a circumferential groove extends around the reamer above the cutting-edge, with passages communicating with the interior, and a spiral thread extends around the stock above the groove, for purposes therein set forth.

My present invention consists in the combination, with the reamer constructed as above set forth, of a drill forming a borer, which stands in advance of the reamer and centrally therewith, said drill having a shank extending up in the reamer, dividing the central passage through the same, leaving spaces for the passage of the dirt, and secured in place by a pin or other suitable means, as will be more fully described.

In the drawings, Figure 1 is an elevation of the combined borer and reamer. Fig. 2 is a section in line *x x* of Fig. 1. Fig. 3 is a similar view at right angles to Fig. 2. Fig. 4 is a bottom end view.

A indicates the stock of the reamer. B is the reamer-head; C, the central longitudinal passage in the same. D is the circumferential groove. E is the hole or holes communicating with the interior, and F is the spiral thread.

This construction is the same as described and shown in the aforementioned patent.

My improvement is as follows: G is a drill forming the borer, the same consisting of a flat bar having a beveled end, as shown. The end of the reamer is slotted on two opposite sides to receive the shoulders of the drill, the shank of which extends up the passage in the reamer and divides it centrally, leaving a clear space on each side. The drill is attached by a pin, *a*, or other suitable means. A combined borer and reamer is thus produced in which dust and chips can pass inward through the sides of the reamer and be deposited without being impeded by the drill, as the central passage of the reamer is unobstructed on both sides. The drill being of nearly the full width of the reamer, only one action is required in boring and smoothing the hole. In large holes the hole may first be bored by a smaller instrument, and then bored out and reamed by this device.

I do not claim, broadly, a combined borer and reamer.

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

The combination, with the reamer provided with head B, central passage, C, circumferential groove D, holes E, and screw-thread F, of the drill consisting of a flat shank with a beveled point, said shank extending up centrally into the passage and secured by a pin, and dividing said passage, in the manner and for the purpose specified.

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

JOSIAH P. CHAMPION.

Witnesses:

JOSEPH SPEER,

JOHN T. GIFFORD.