

(No Model.)

W. S. GREEN.
EXPANSION WELL DRILL.

No. 369,403.

Patented Sept. 6, 1887.

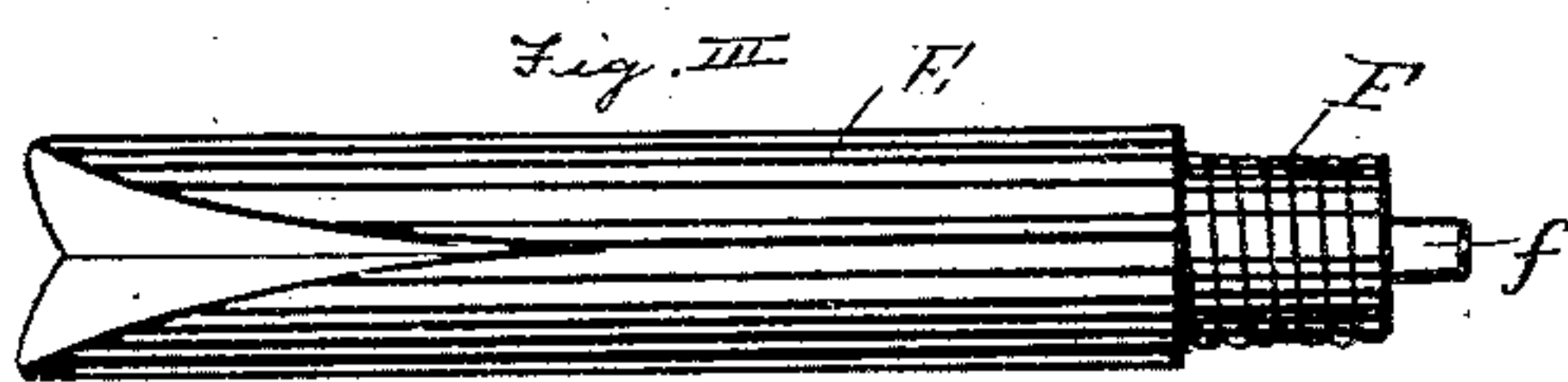
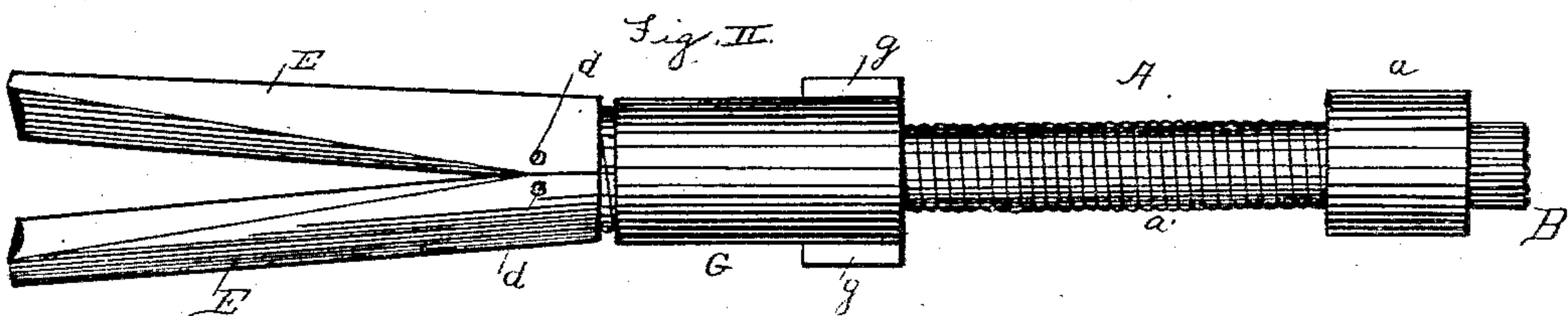
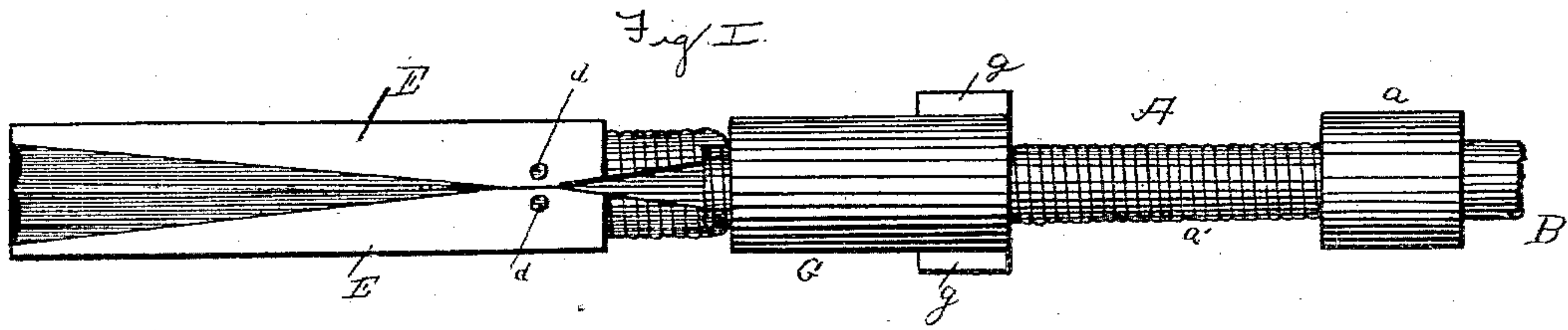


Fig. IV.

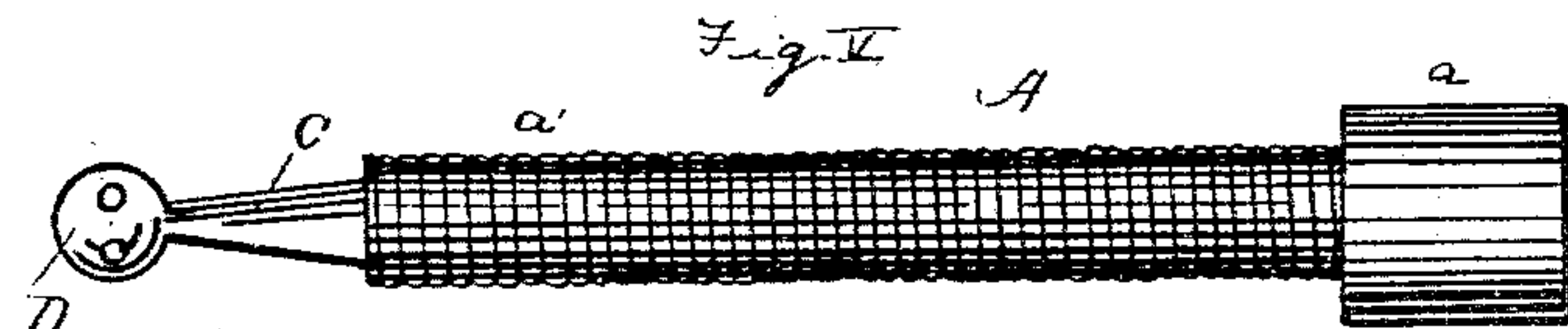
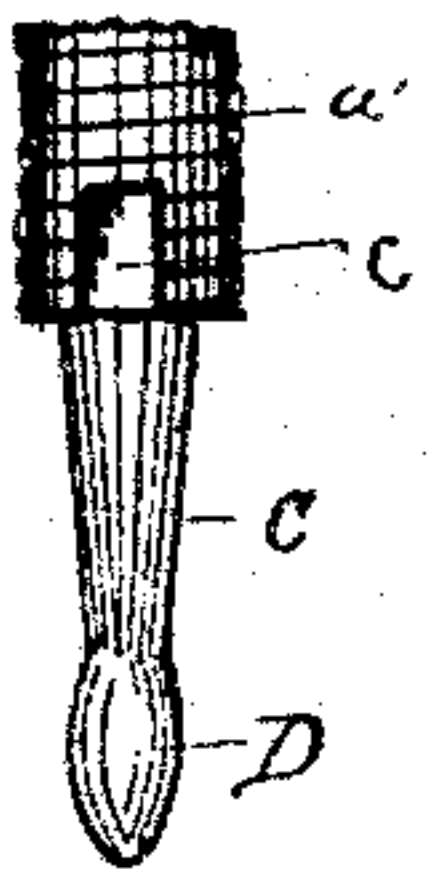


Fig. VI.

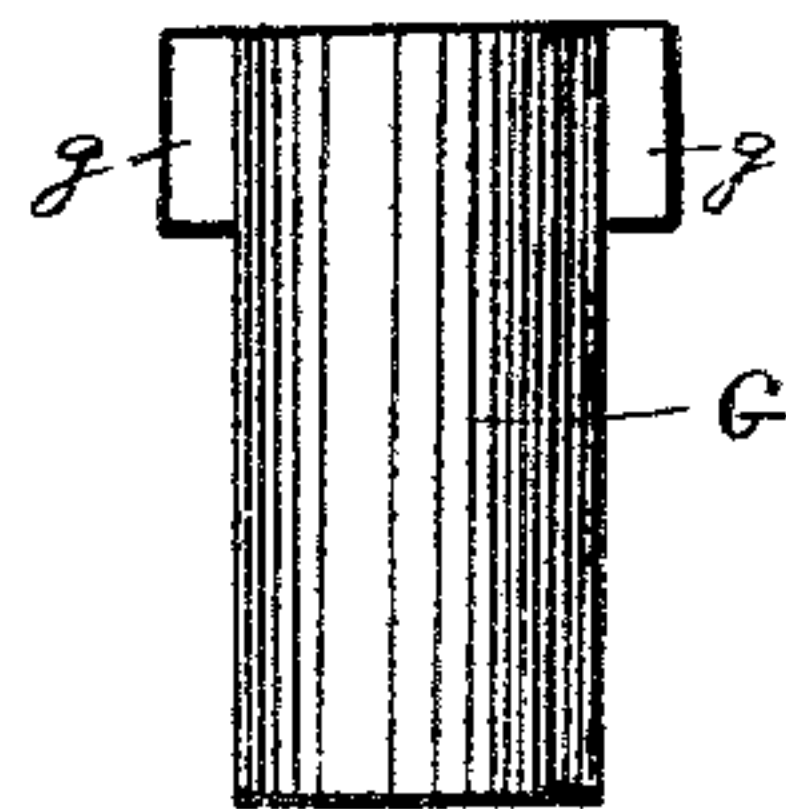
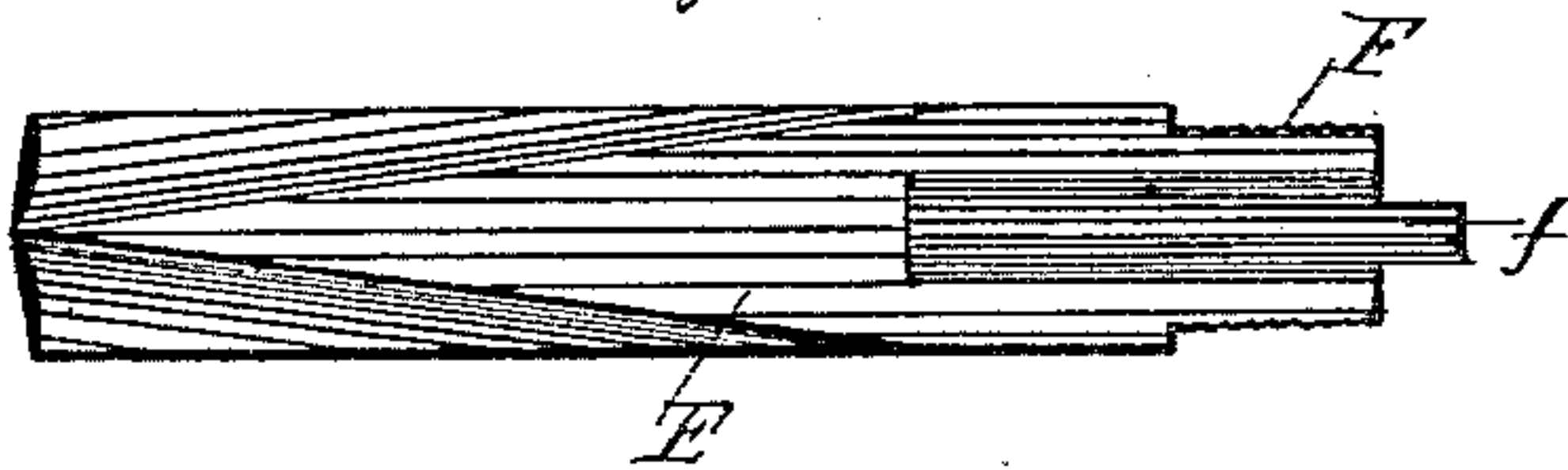


Fig. VII.



WITNESSES

H. R. Kennedy.
J. B. Harris.

INVENTOR

William S. Green
By J. M. O'Leary.
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM S. GREEN, OF ELLSWORTH, KANSAS.

EXPANSION WELL-DRILL.

SPECIFICATION forming part of Letters Patent No. 369,403, dated September 6, 1887.

Application filed December 1, 1886. Serial No. 220,410. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. GREEN, of Ellsworth, in the county of Ellsworth and State of Kansas, have invented certain new and useful Improvements in Expansion Well-Drills; 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 pertains to make and use the same.

My invention relates to expansion well-drills, the object being to provide a device of this character of cheap and durable construction.

The invention consists in the features of construction and combination of parts, herein-after fully described, and pointed out in the claims.

In the drawings, Figure I represents a side elevation of my improved drill with the bits in closed position. Fig. II is a similar view with the bits expanded; and Figs. III, IV, V, VI, and VII show the parts of the improvements detached.

A represents the drill-shank, connected by a coupling, *a*, to a drill-rod, B. The shank A is screw-threaded, as shown at *a'*, and is provided at its lower end with a contracted or reduced portion, C, which terminates in a head or enlargement, D. The shank A is also formed with diametrically-opposite depressions or slots *c c*.

E E represent the bit-sections of the drill, each of which is recessed on its inner side to receive the head D of the shank, to which the bits are pivoted by pins *d*. Each bit is provided with an upper threaded extension, F, which is inclined on its inner side and provided with a lug, *f*, adapted to enter the slots *c c* of the shank.

G represents an internally-threaded thimble arranged upon the shank A, and provided with oppositely-arranged wings or lugs *g*, adapted to enter grooves or guides in the drill-tube within which the device works, to prevent the thimble from turning. The thimble is also adapted to inclose the upper threaded ends of

the bit-sections, thus drawing the latter together to expand the lower ends, as shown in Fig. 2.

The thimble-lugs *g g* are, as above stated, adapted to slide in grooves of the drill-tube, (not shown,) and the thimble is brought in contact with the threaded upper ends by turning the drill-rod. The bit-sections are grooved on their outer sides to form V-shaped ends; but any preferred form of cutting or drilling points may be employed.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a screw-threaded shank, of bit-sections pivotally secured to the lower end of said shank and provided with threaded upper ends, and a threaded thimble arranged upon the shank to engage the upper ends of the bit-sections, substantially as described.

2. The combination, with the screw-shank and drill-rod, of bit-sections pivoted on each side of the head of the shank and provided with threaded upper ends, and an internally-threaded thimble to engage said upper ends of the bit-sections and formed with oppositely-projecting lugs or fins, substantially as described.

3. The combination, with the screw-shank provided with a head and a contracted lower end, as described, and formed with opposite depressions, of the bit-sections pivotally secured to said head and having the threaded upper ends and projecting lugs, substantially as described, and a threaded thimble to engage the upper ends of the bit-sections to cause their lower ends to expand, substantially as described.

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

WILLIAM S. GREEN.

Witnesses:

W. T. ANDERSON,
W. F. INGRAM.