

No. 622,463.

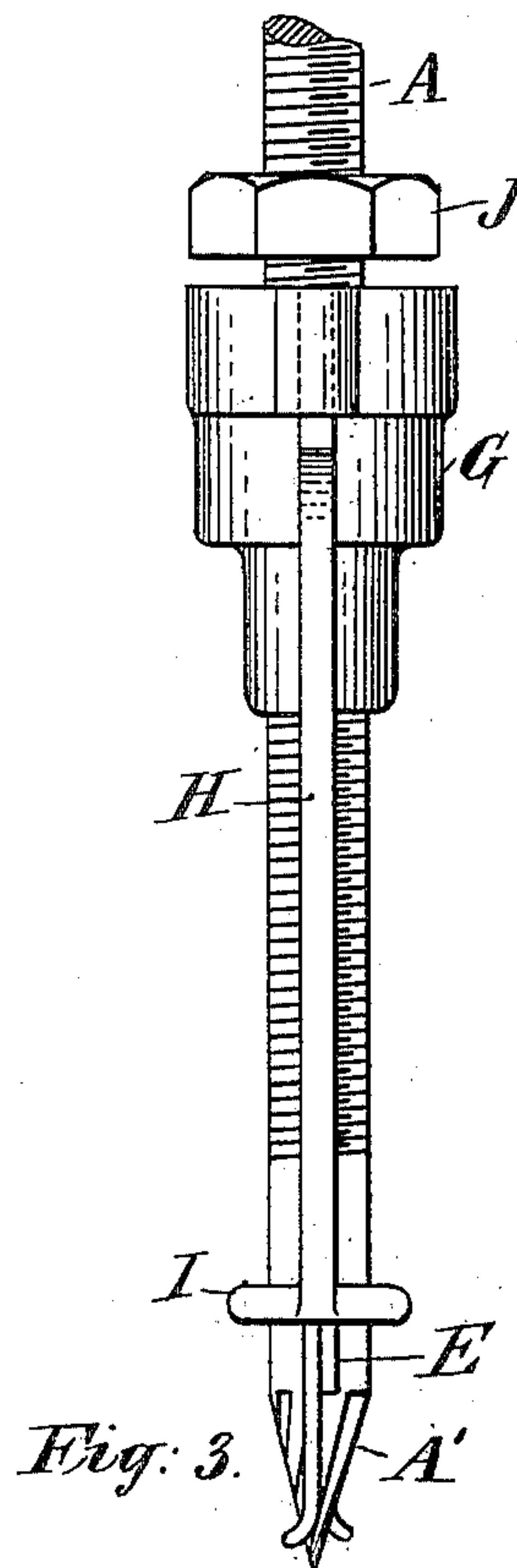
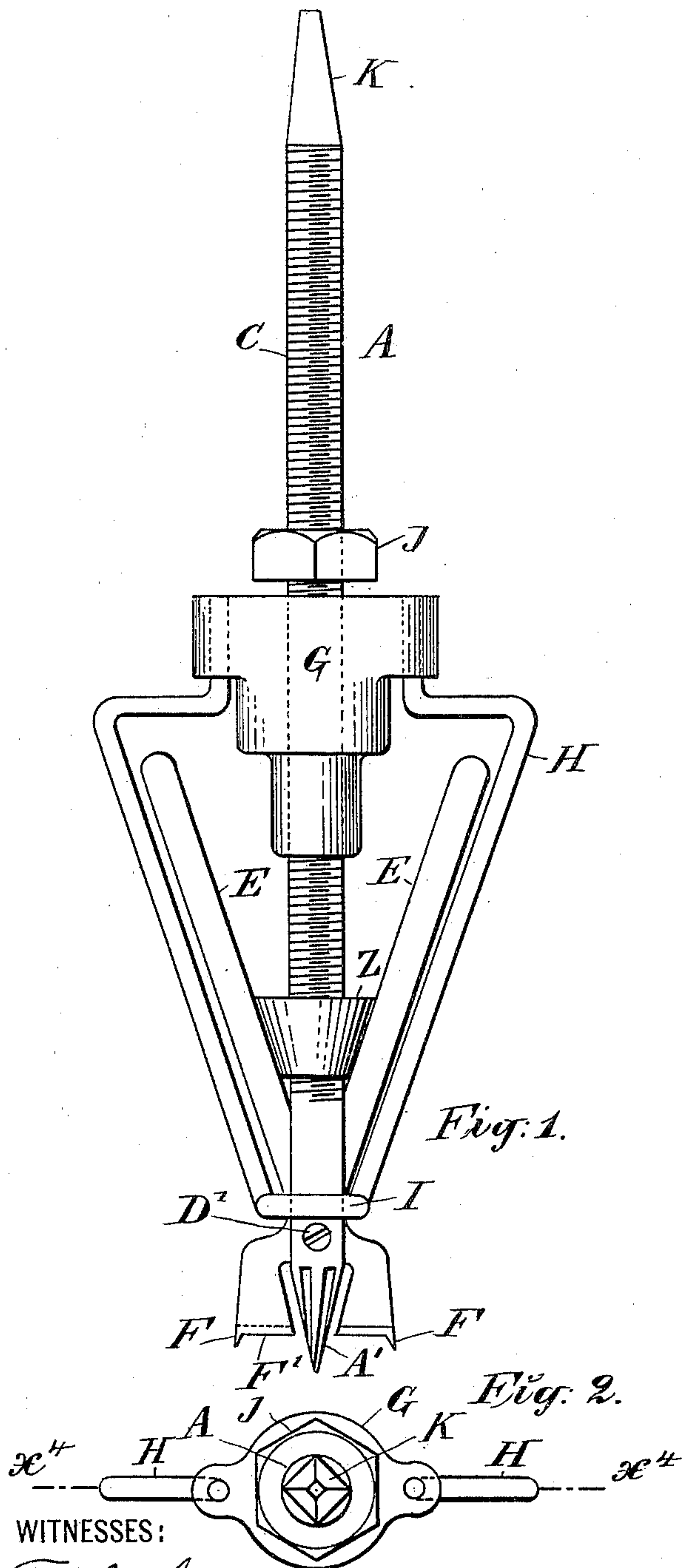
Patented Apr. 4, 1899.

G. W. GREEN.
EXPANDING BIT FOR BORING WOOD, &c.

(Application filed May 6, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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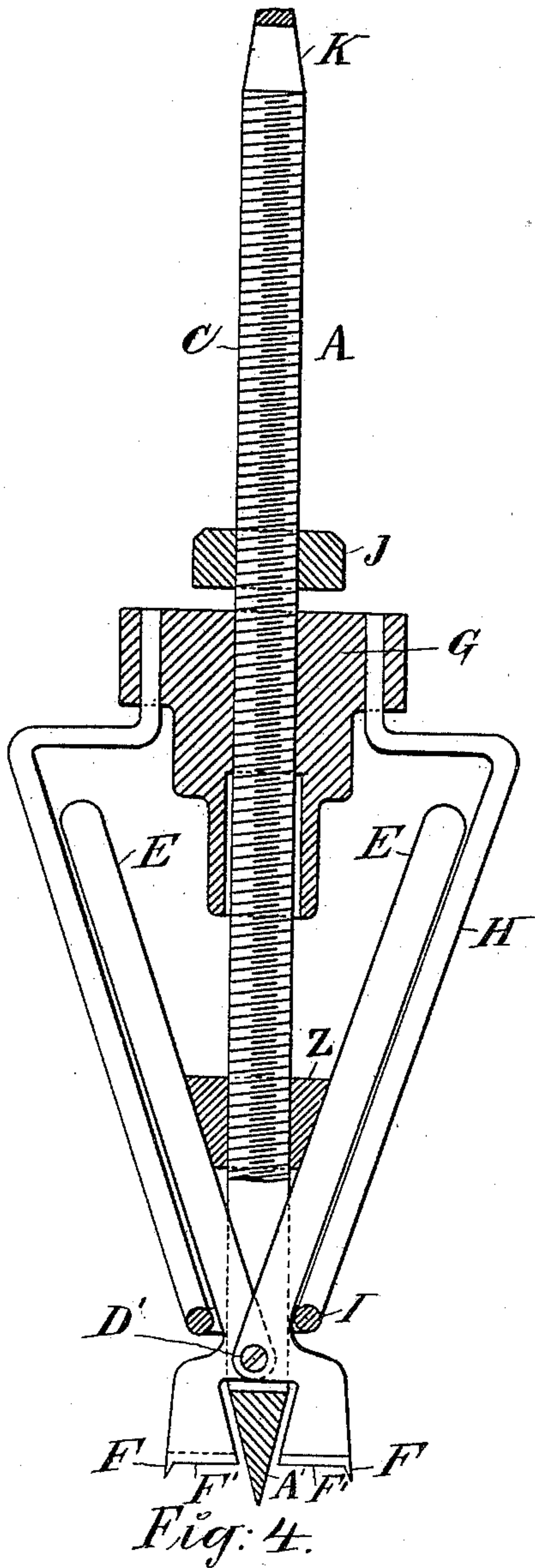
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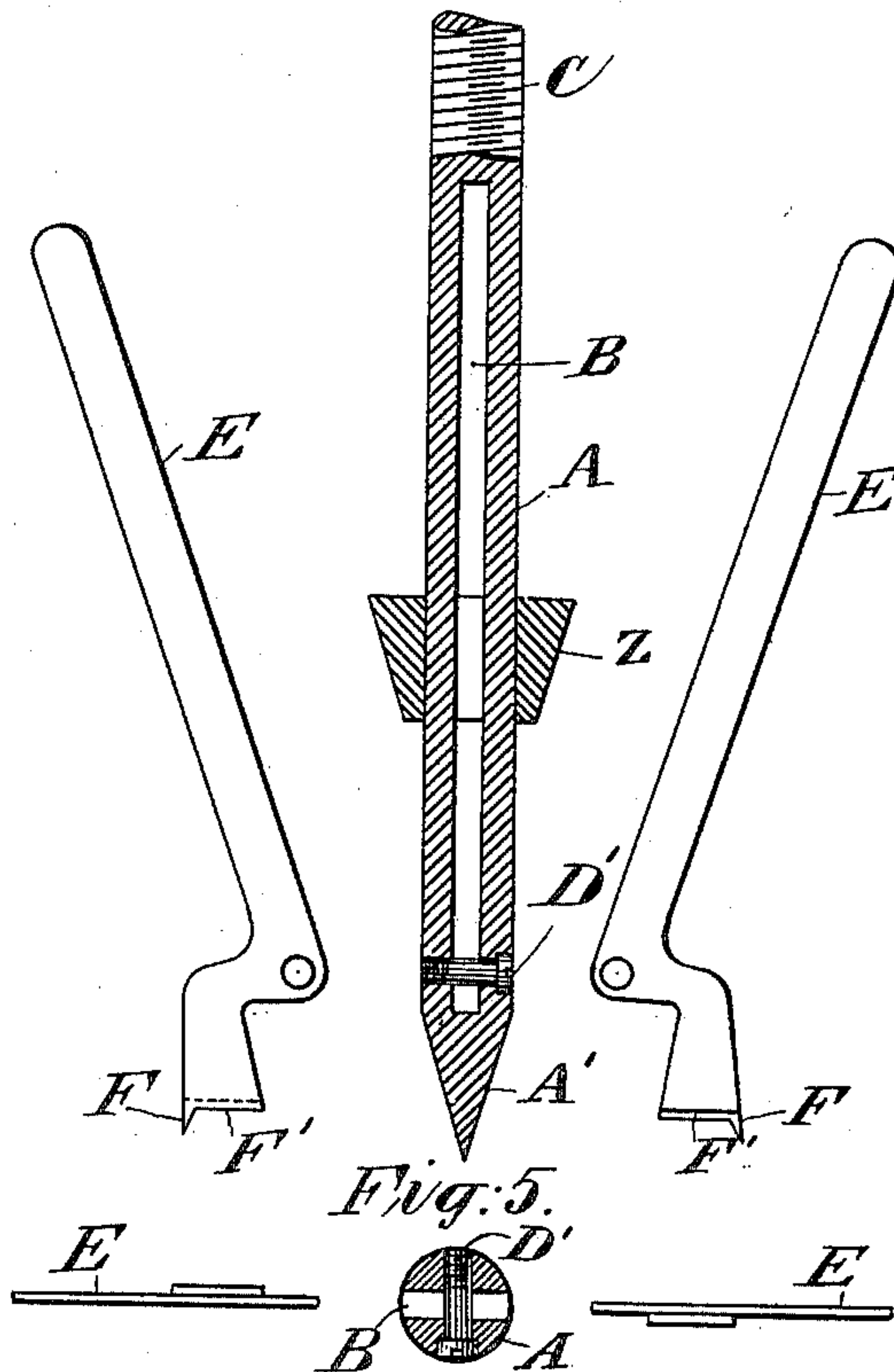
(No Model.)

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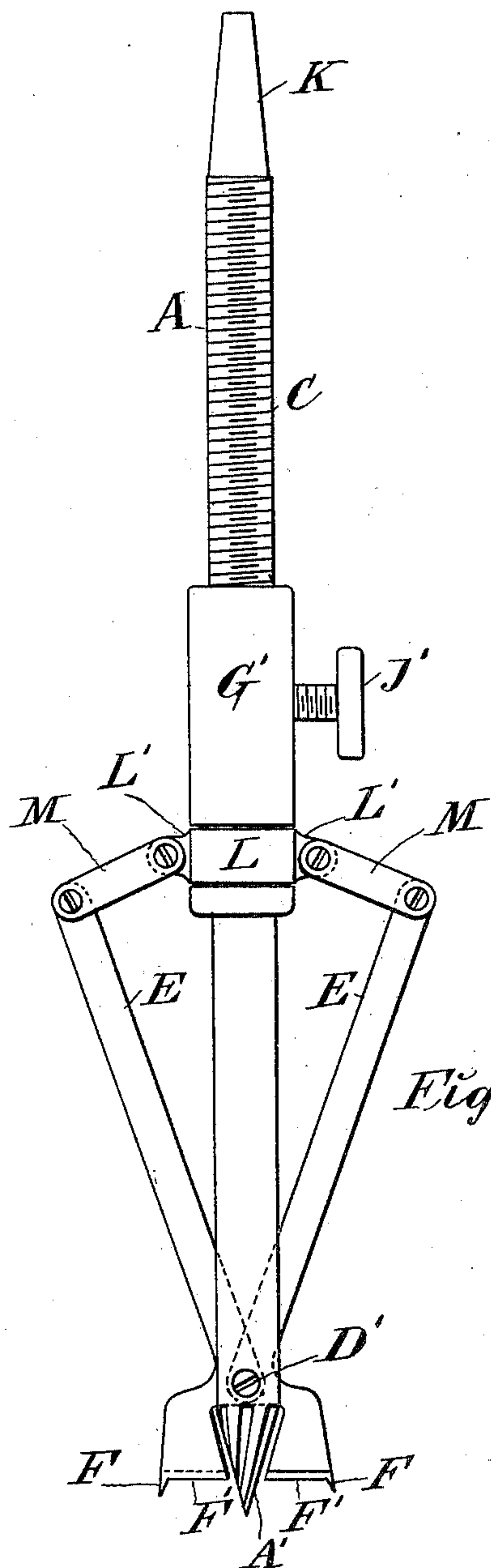


Fig. 7.

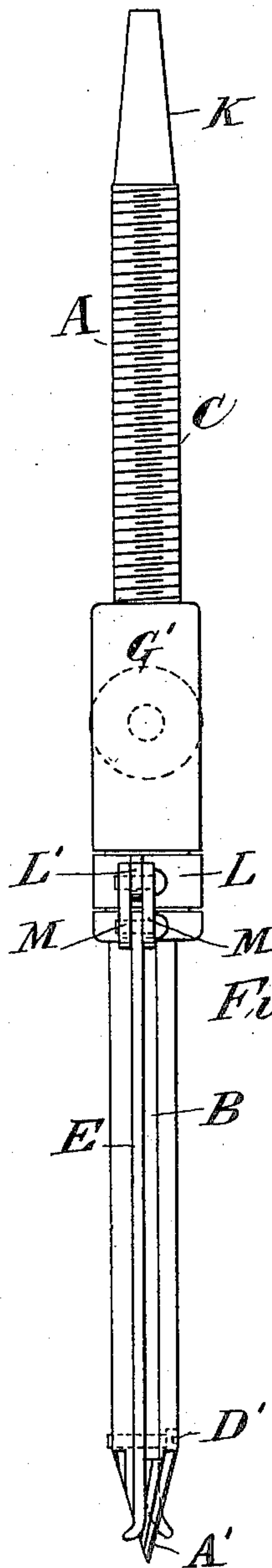


Fig. 8.

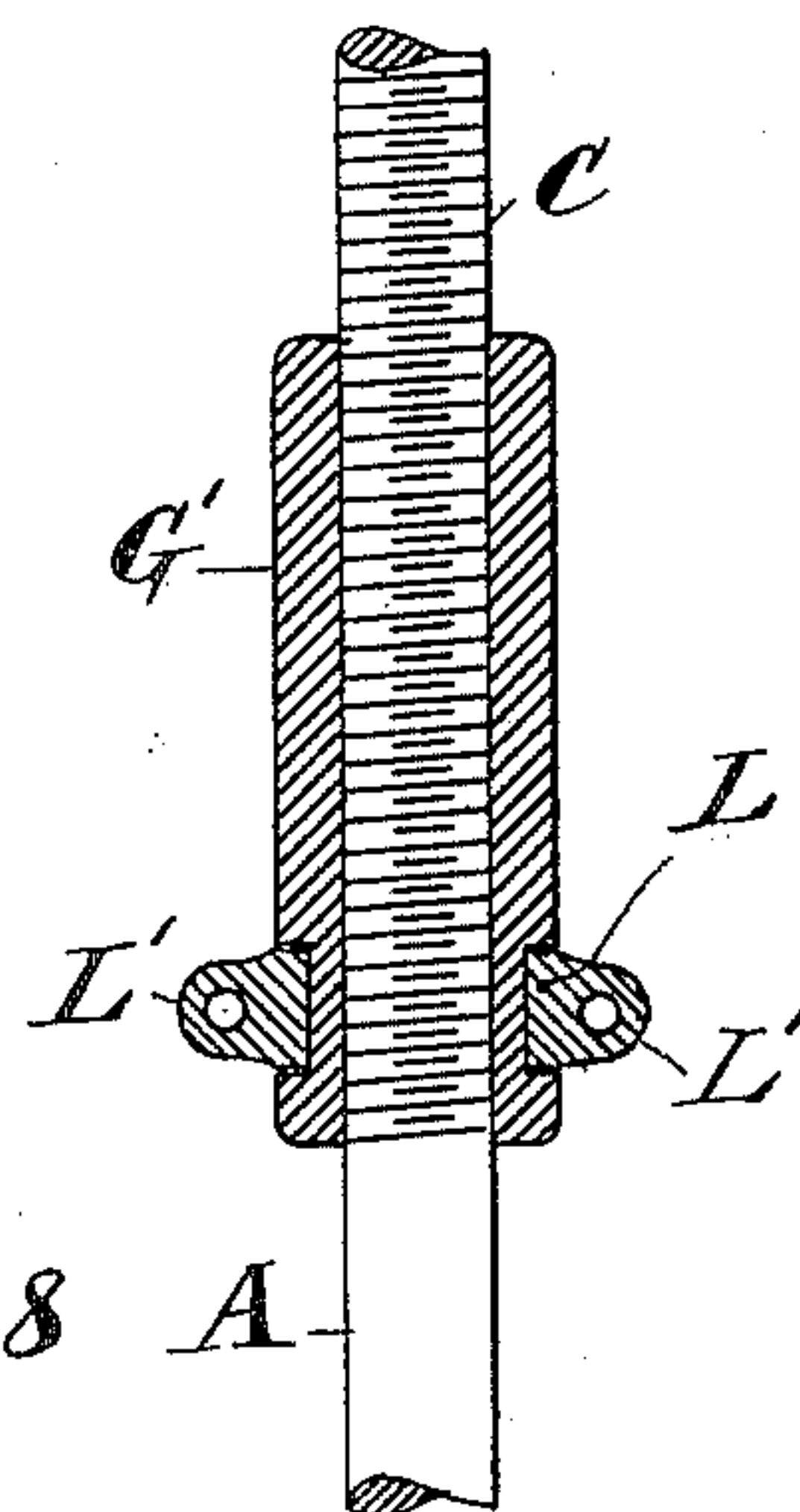


Fig. 9.

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UNITED STATES PATENT OFFICE.

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EXPANDING BIT FOR BORING WOOD, &c.

SPECIFICATION forming part of Letters Patent No. 622,463, dated April 4, 1899.

Application filed May 6, 1898. Serial No. 679,874. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WILLIAM GREEN, a subject of the Queen of Great Britain and Ireland, and a resident of North Sydney, in the Colony of New South Wales, have invented certain new and useful Improvements in Expanding Bits for Boring Wood and the Like, of which the following is a specification.

This invention relates to expanding bits or augers; and the object is to provide a bit which when occasion requires may be employed to bore a hole which is of greater diameter at the bottom than at the mouth. The expansion may be effected automatically.

In the accompanying drawings two embodiments of the invention are illustrated, Figures 1 to 6 showing one form and Figs. 7 to 9 the other form.

Referring to Figs. 1 to 6, Fig. 1 is a side elevation of the bit. Fig. 2 is a plan view. Fig. 3 is a side elevation at right angles to the position seen in Fig. 1. Fig. 4 is a section at line x^4 in Fig. 2. Fig. 5 is a view showing the spindle and cutter-bars detached, and Fig. 6 is a plan view of the parts seen in Fig. 5. Figs. 7 and 8 are side elevations corresponding to Figs. 1 and 3, respectively, and illustrating the other embodiment of the invention; and Fig. 9 is a sectional detail view of the same.

Referring first to Figs. 1 to 6, inclusive, A is the axial spindle or bit-shank, provided with a centering-point A', which may be a cutting-point or a gimlet-point. The spindle has in it a longitudinal slot B and on it an external screw-thread C. At D in the spindle is a hole which receives a screw or pin D', on which are fulcrumed the two cutter bars or levers E E, which occupy the slot B. Each cutter-bar is formed of a flat relatively thin angular metal plate, and the angular elbows thereof overlap at the fulcrum-point and fit snugly side by side in the slot B. Fig. 5 shows the form of the cutter-bars, each of which is furnished with a shallow edge cutter F and peeling-cutter F'. G is a sleeve tapped to screw on the spindle, and I is a ring connected to the sleeve G by depending brackets H. The ring I embraces the spindle loosely, as seen in Figs. 1 and 4, and may be moved up and down along the spindle by means of the

sleeve G. J is a lock-nut on the spindle above the sleeve G to lock or bind the latter. Z is a wedge-nut on the spindle below the sleeve. K is the tapered end of the spindle or bit-shank, which fits into the brace-socket.

When the bit is to be used for boring ordinary straight holes, the lock-nut J and wedge-nut Z are employed to hold the cutter-bars E stationary where set during the boring operation; but for boring flaring or dovetailed holes the operator proceeds as follows: The cutters are set to bore a hole of the diameter desired at starting, and as the boring progresses the operator grips the sleeve G with his left hand, so as to restrain it from rotating, the spindle A thus advancing through it. The result of this is that the cutters advance with the spindle through the ring I, and the latter acts on the cutter-bars E above the fulcrum D', thus pressing them gradually inward or toward the spindle, while the lower operative ends of said bars, bearing the cutters F and F', gradually spread or expand. The wedge-nut Z and lock-nut J must be run up on the spindle sufficiently to permit of this, and the nut Z may serve as a limiting-stop to limit the degree of expansion. To withdraw the cutters, the upper ends of the bars E are spread apart.

In the construction shown in Figs. 7, 8, and 9 a somewhat different means for expanding and contracting the cutters is employed. In this case a screw-sleeve G' on the spindle A has a collar L, which is rotatable thereon between keeper-shoulders, and this collar is coupled by links M at L' with the upper ends of the respective cutter bars or levers E. The sleeve G' performs the same function as the sleeve G of Fig. 1. A set-screw J' serves to secure the sleeve G' in position on the spindle A, so as to hold the cutters firmly in any position. Fig. 9 shows clearly how the collar L occupies a circumferential keeper-groove in the sleeve G'. This collar may be in two like halves, with lugs at L' to secure them together.

The operation of the tool as shown in Figs. 7, 8, and 9 is the same in substance as that already described with reference to Figs. 1 to 6 and will not require additional explanation. It need only be said that by holding the sleeve G or G' stationary while the spindle

or bit-shank A is rotated the expansion of the cutters will be automatically and gradually effected, the taper being proportioned to the pitch of the screw C. It is within this
5 invention to make the operating-sleeve G or G' movable along the spindle A, and the screw C is only a convenience for effecting this movement conveniently in a regular manner.

10 Having thus described my invention, I claim—

1. In an expanding bit, the combination with the spindle or bit-shank having in it an elongated slot, of two angular cutter-bars E,
15 placed side by side in said slot and fulcrumed on a pivot in common near the centering-point of the shank, and means substantially as described for spreading apart and drawing together the cutters on the bars.

20 2. In an expanding bit, the combination with the slotted bit-shank, and the two angular cutter-bars fulcrumed in the same on a common pivot, said cutter-bars extending back from the fulcrum and oblique to the

bit-shank, of means connecting and inclosing
2 said cutter-bars and the bit-shank for spreading apart and drawing together the cutters, and a wedge-nut, Z, adjustable on the shank between the cutter-bars, and adapted to limit
3 the movement of the said bars inward.

3. In an expanding bit, the combination with the slotted and screw-threaded bit-shank, the angular cutter-bars fulcrumed therein
4 near the operative end of the shank, the sleeve G, screwed on the bit-shank, the ring I, loosely embracing the shank, the brackets H, connecting said ring and sleeve, the lock-nut J, on the shank above the sleeve G, and the wedge-nut Z, on the shank below said sleeve, substantially as set forth.

In witness whereof I have hereunto signed my name, this 25th day of March, 1898, in the presence of two subscribing witnesses.

GEORGE WILLIAM GREEN.

Witnesses:

H. I. SYMSON,
W. I. DAVIS.