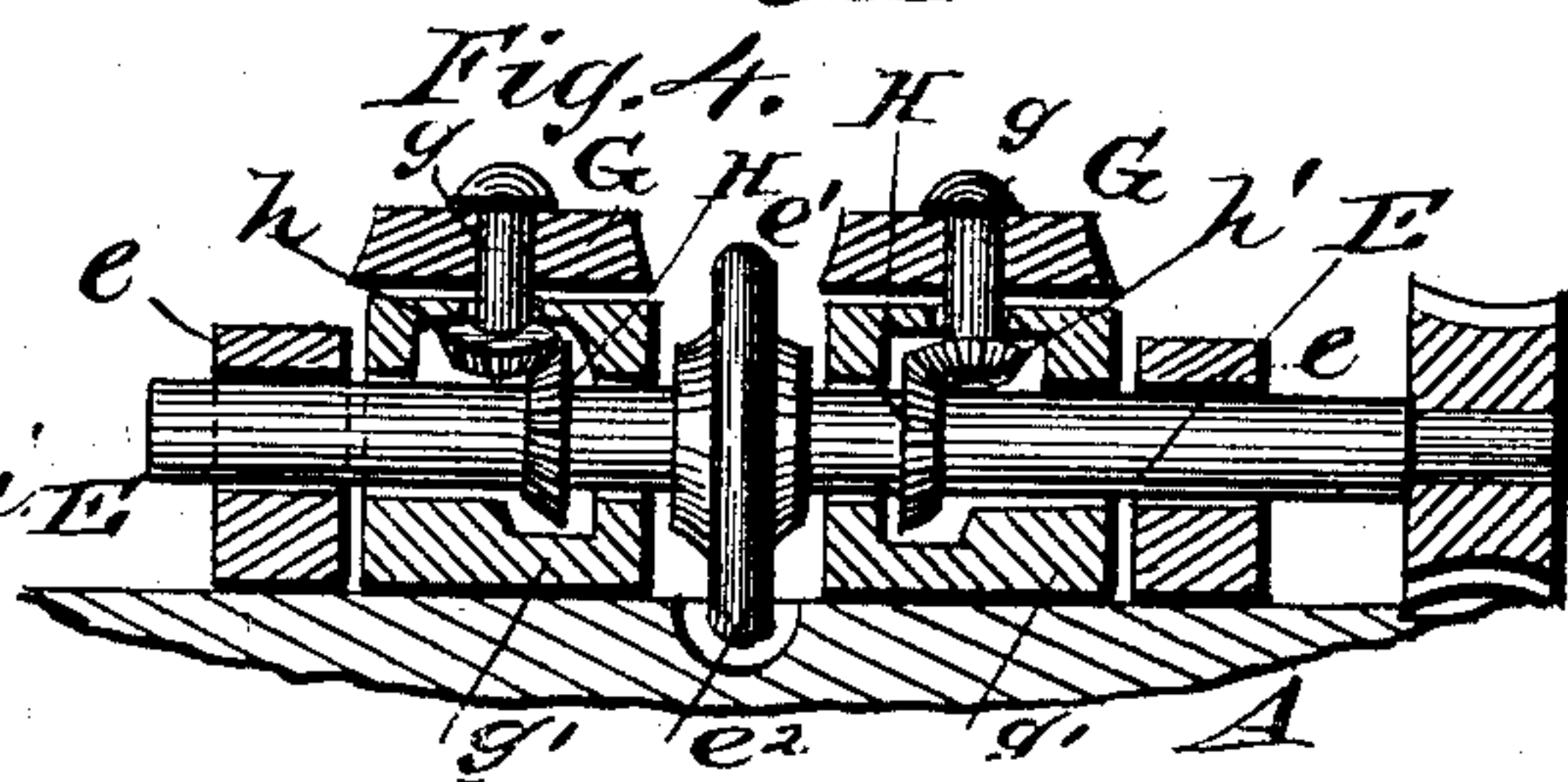
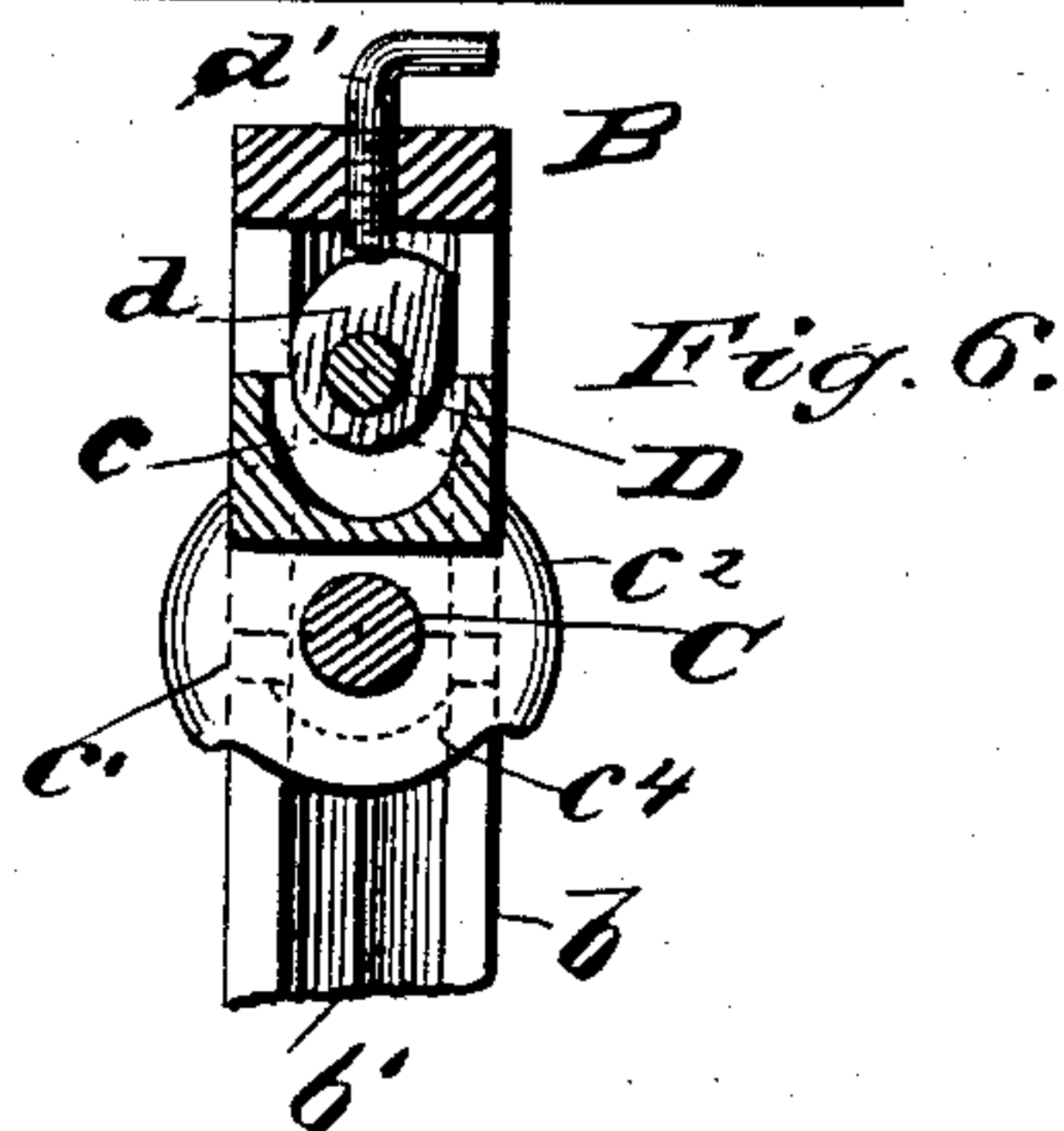
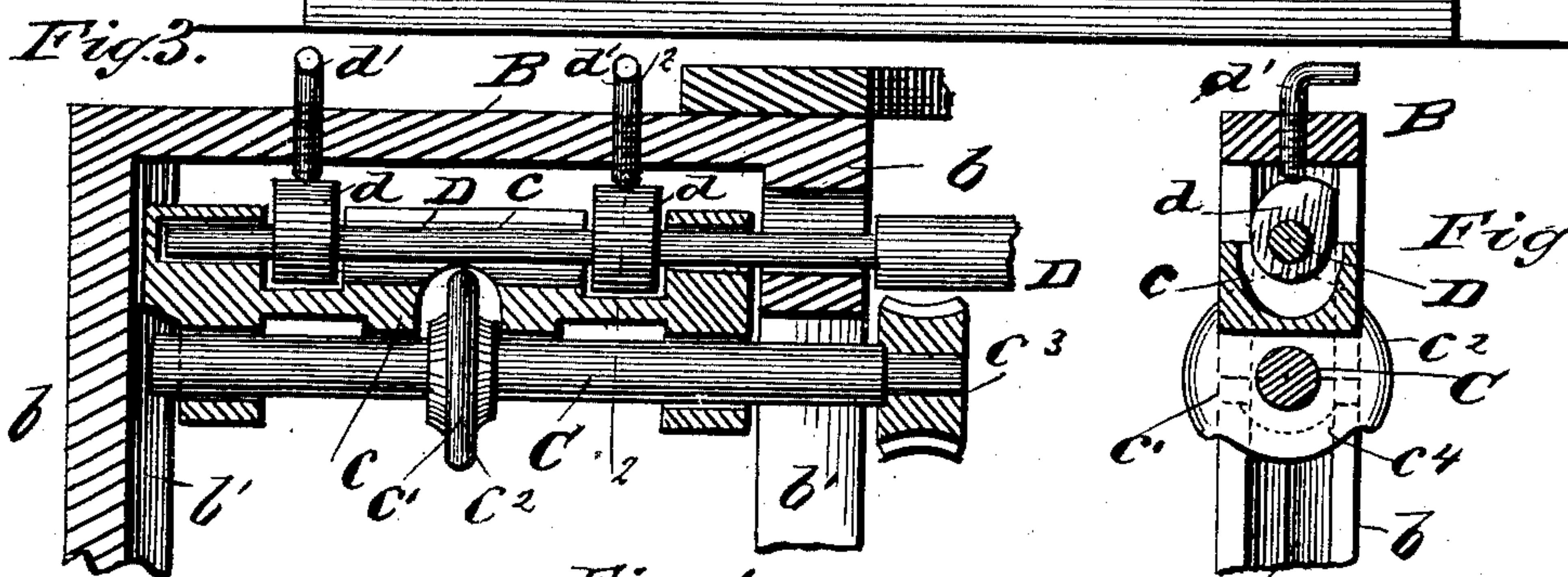
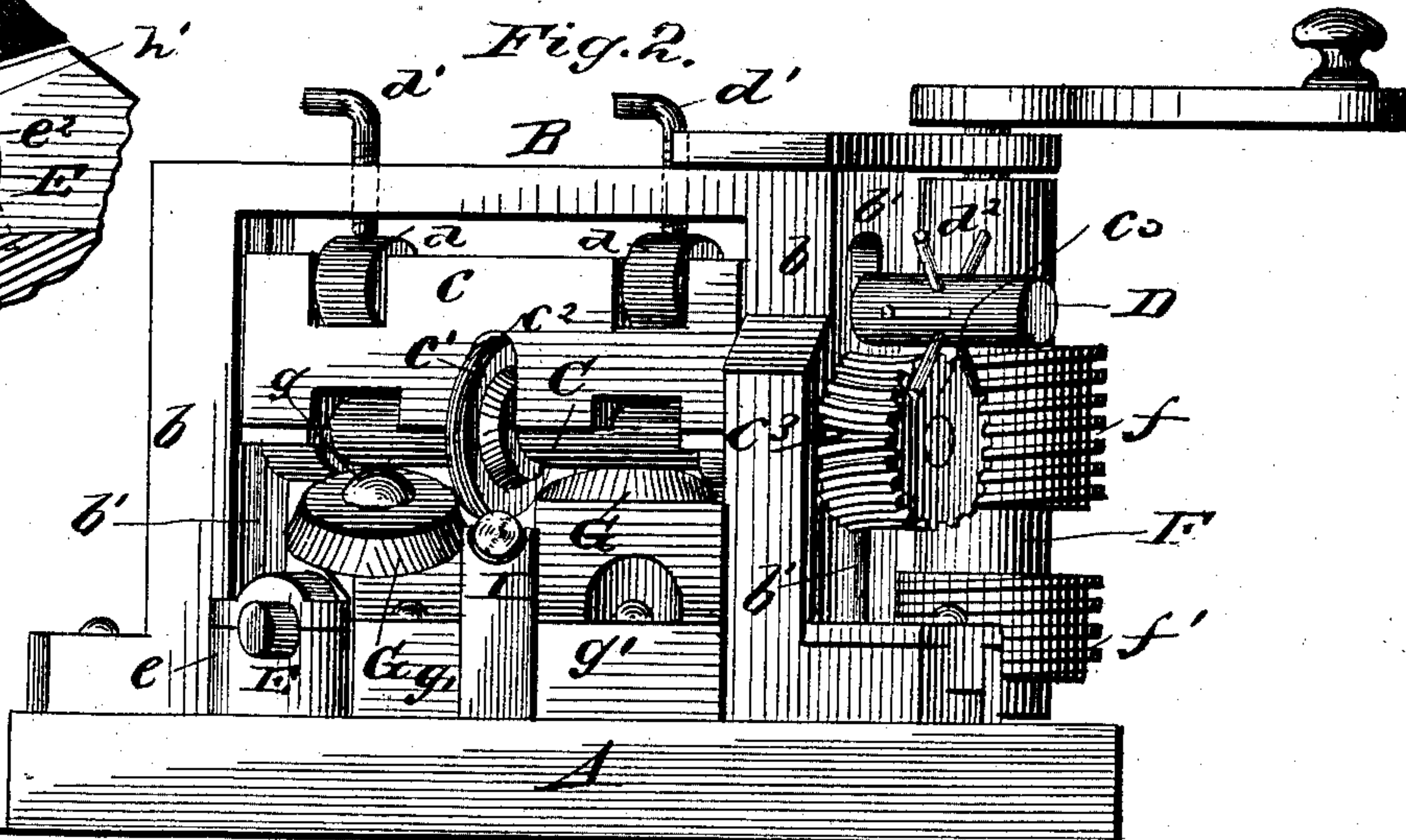
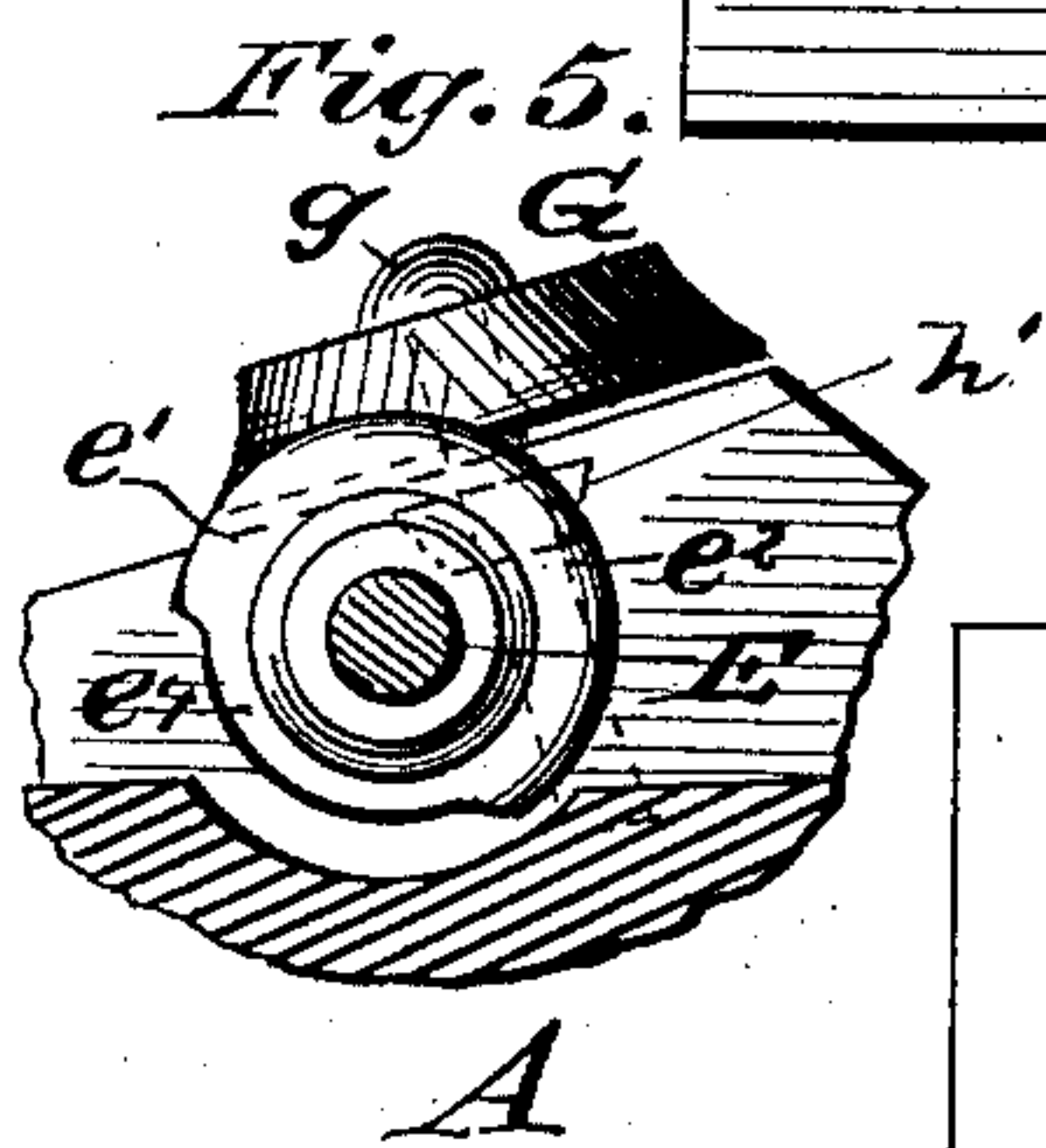
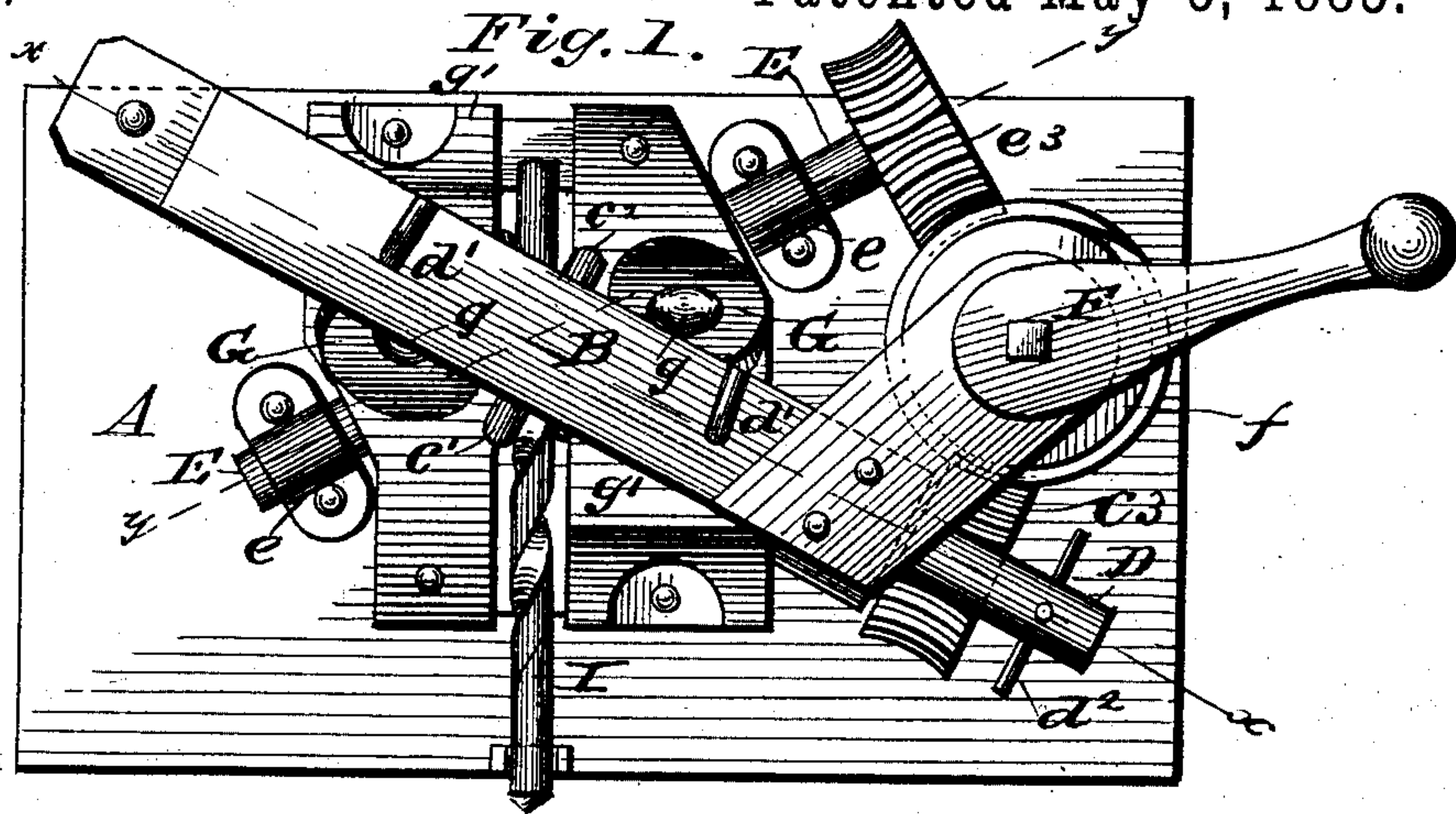


(No Model.)

W. Y. A. BOARDMAN.
MACHINE FOR MAKING DRILLS.

No. 317,287.

Patented May 5, 1885.



WITNESSES
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WILLIAM Y. A. BOARDMAN, OF HYDE PARK, MASSACHUSETTS.

MACHINE FOR MAKING DRILLS.

SPECIFICATION forming part of Letters Patent No. 317,287, dated May 5, 1885.

Application filed November 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM Y. A. BOARDMAN, a citizen of the United States, residing at Hyde Park, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Drill-Manufacturing Machines; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a plan view of my device. Fig. 2 is a face view of the same. Fig. 3 is a vertical sectional view, and Figs. 4, 5, and 6 are detail views.

This invention relates to means of rolling drill-points, its main object being to roll the grooves on the points spirally; and it consists in the construction and novel arrangement of parts, hereinafter fully described, and pointed out in the appended claims.

Reference being had to the accompanying drawings, and to the letters of reference marked thereon, A represents the base-plate of the machine, from which the rectangular frame B rises, standing at an angle across the base-plate, as shown. The angle at which the frame B stands varies according to the pitch that it is desired to give to the drill, as is hereinafter explained.

C is a shaft having bearings on a rectangular block, *c*, which slides up and down between the side standards, *b b*, of the frame B in vertical slots *b'* of the frame.

c' is a rolling-wheel or roller, fixed centrally upon the shaft C and turning therewith, the block *c* being recessed to accommodate its rotation. The roller *c'* has on its circumference a bead, *c²*, of proper shape to form the spiral depression on the drill-point, and the shaft C has on its extended end, outside of one of the standards *b*, a worm-wheel, *c³*, for a purpose hereinafter explained.

D is a shaft passing through the slot *b'* and the upper part of the block *c*. The shaft D turns in proper bearings in said block, and has upon it within the standards *b b* the similar eccentric blocks, *d d*, by means of which and the set-screws *d' d'*, passing through the

horizontal bender of the frame B, the block *c* may be prevented from rising higher than is desired in the frame.

d² is a wheel to set the shaft D and attached blocks *d d* in any desired position.

E is a shaft journaled in standards *e e*, rising from the bed-plate, as shown, and having upon it the roller *e'*, provided with the circumferential bead *e²*. The shafts C and E make similar angles with the central transverse line of the base-plate on opposite sides of the same, so that as the roller *c'* makes one groove the roller *e'* makes the opposite groove, in all respects similar to the first.

e³ is a worm-wheel on the shaft E outside of the frame.

F is a vertical shaft having bearings in the base-plate and an extension from the frame B, and provided with the worms *f* and *f'*, the former of which engages the wheel *e³* and the latter *e³*, thus rotating the shafts C and E, and as the wheels engage the worms on opposite sides the rollers *c'* and *e'* are rotated in opposite directions, as is necessary. The rollers *c'* and *e'* have their beads cut away similarly at the points *c⁴* and *e⁴*.

G G are side rollers for the blanks, fixed upon the shafts *g g*, journaled in the blocks *g' g'*. The shafts are inclined equally in opposite directions, the inclination being just sufficient to keep the edges of the rollers G on the blank between the grooves made by the rollers *c'* and *e'*. The rollers G may be turned in opposite directions by any proper mechanism, but are preferably turned by bevel gear-wheels H H, fixed on the shaft E, on each side of the roller *e'*, meshing, respectively, with the bevel gear-wheels *h* and *h'* on the shafts *g g*, as shown. In some cases the side rollers are turned by the motion of the blank only.

I represents the blank passing through the rollers.

In rolling small blanks (which are rolled cold) the mechanism is as described, the upper roller, *c'*, being arranged to lower and rise, according to the thickness of the blank, and the edges of the rollers G G fitting against the blank below its central longitudinal plane, the pressure of the upper roller keeping the blank in place. By this means the finished blank is more easily removed from the rollers

as it can be partially lifted out. In rolling large or thick blanks, which are usually rolled hot, the edges of the rollers G G fit centrally against the blank and embrace and support it, so that it has to be drawn from between them. In this case both rollers c' and e' are arranged to be adjustable in the frame B. As the edges of the rollers G G fit against the sides of the blanks, and as the said rollers are inclined, the concaves of the edges are not on the arcs of circles, but on those of similar ellipses, varying according to the inclination of the rollers.

In operating the machine the blanks are passed from behind forward and rolled from shank to point, the cut-away portions of the rollers c' and e' allowing the shanks to be introduced to the proper distance without being grooved.

In practice, the blanks are passed through the rolls several times to deepen the grooves and are turned over by automatic mechanism.

In rolling thick blanks a holder is attached to the blank and acts as a gage for introducing the blank the proper distance in between the rolls, beside facilitating the operation in turning it over.

It is evident that the side rolls, G G, besides keeping the blank in form and preventing it from spreading, aid the upper and lower rolls in giving it the proper twist, and when rolling thick hot blanks aid the elongating of the same.

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

1. In a machine for rolling drill-points, the combination of similar upper and lower rolls

oppositely inclined to form the grooves in the drill-blank, and similar side rolls having their edges concaved to keep the blank in shape and prevent it spreading, with means, substantially as specified, for operating the same.

2. In a machine for rolling drill-points, the combination of similar upper and lower groove-forming rolls, inclined equally and oppositely to the central transverse line of the base-plate of the machine, with similar side rolls having their edges concaved on the arcs of similar ellipses and inclined equally in opposite directions, so as to fit between the grooves formed by the upper and lower rolls, thereby preventing the blank from spreading laterally and helping to give it the requisite shape, substantially as specified.

3. In a machine for rolling drill-points, the combination of the base-plate A, frame B, rolls c' and e' , and mechanism for rotating said rolls oppositely at an equal rate of speed with the rolls G G, rotating oppositely to each other and actuated by any proper mechanism, substantially as specified.

4. In a machine for rolling drill-points, the combination of the base-plate A, frame B, rolls c' and e' , and mechanism for rotating said rolls oppositely at an equal rate of speed with the rolls G G, shafts $g g$, bevel-gears H h, and bevel-gears H and h', substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM Y. A. BOARDMAN.

Witnesses:

CHAS. A. REED,
ADELIE L. BOARDMAN.