

(No Model.)

2 Sheets—Sheet 1.

S. M. VAUCLAIN.

MACHINE FOR TURNING TAPERED BOLTS.

No. 410,051.

Patented Aug. 27, 1889.

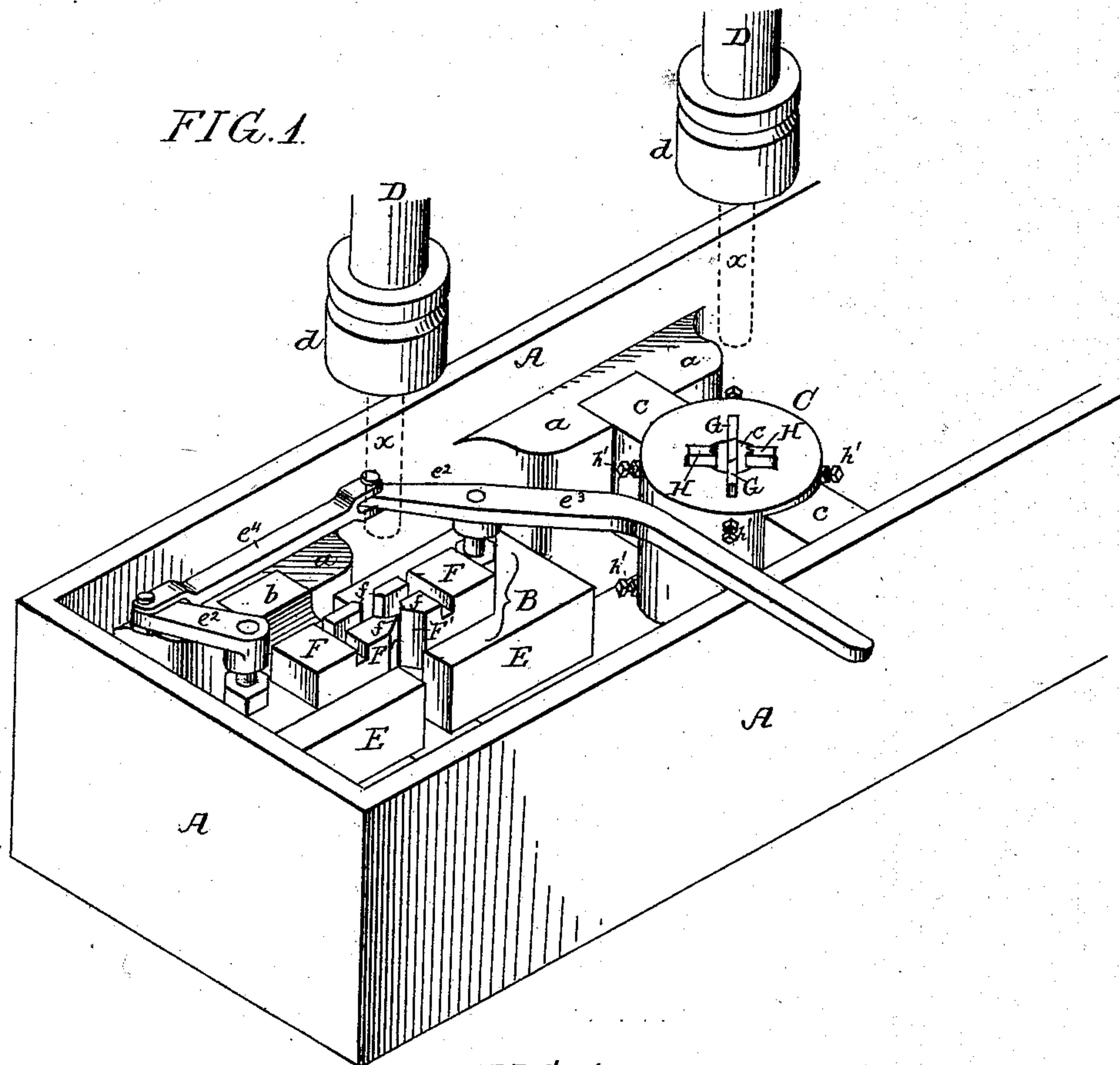


FIG. 4.

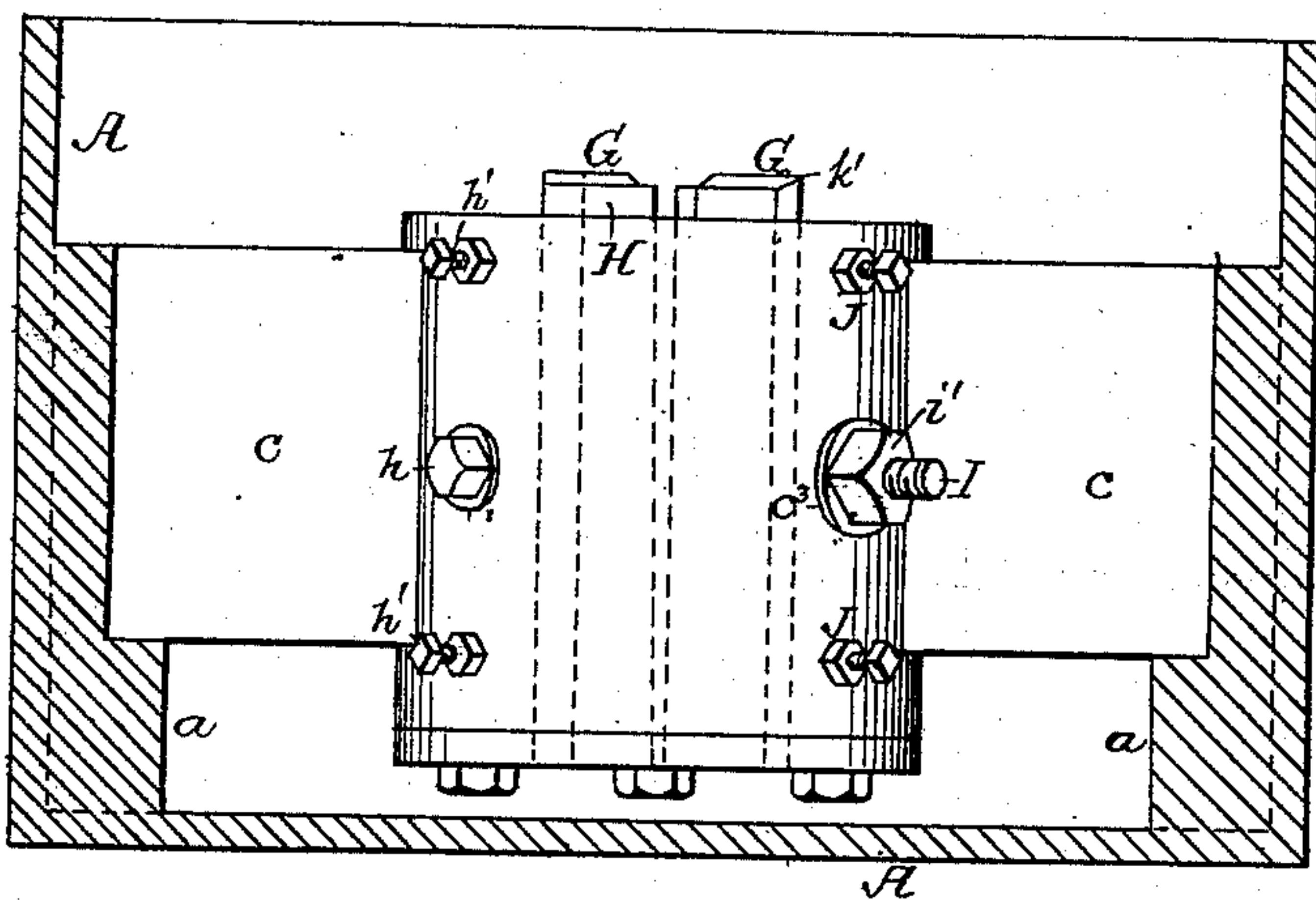
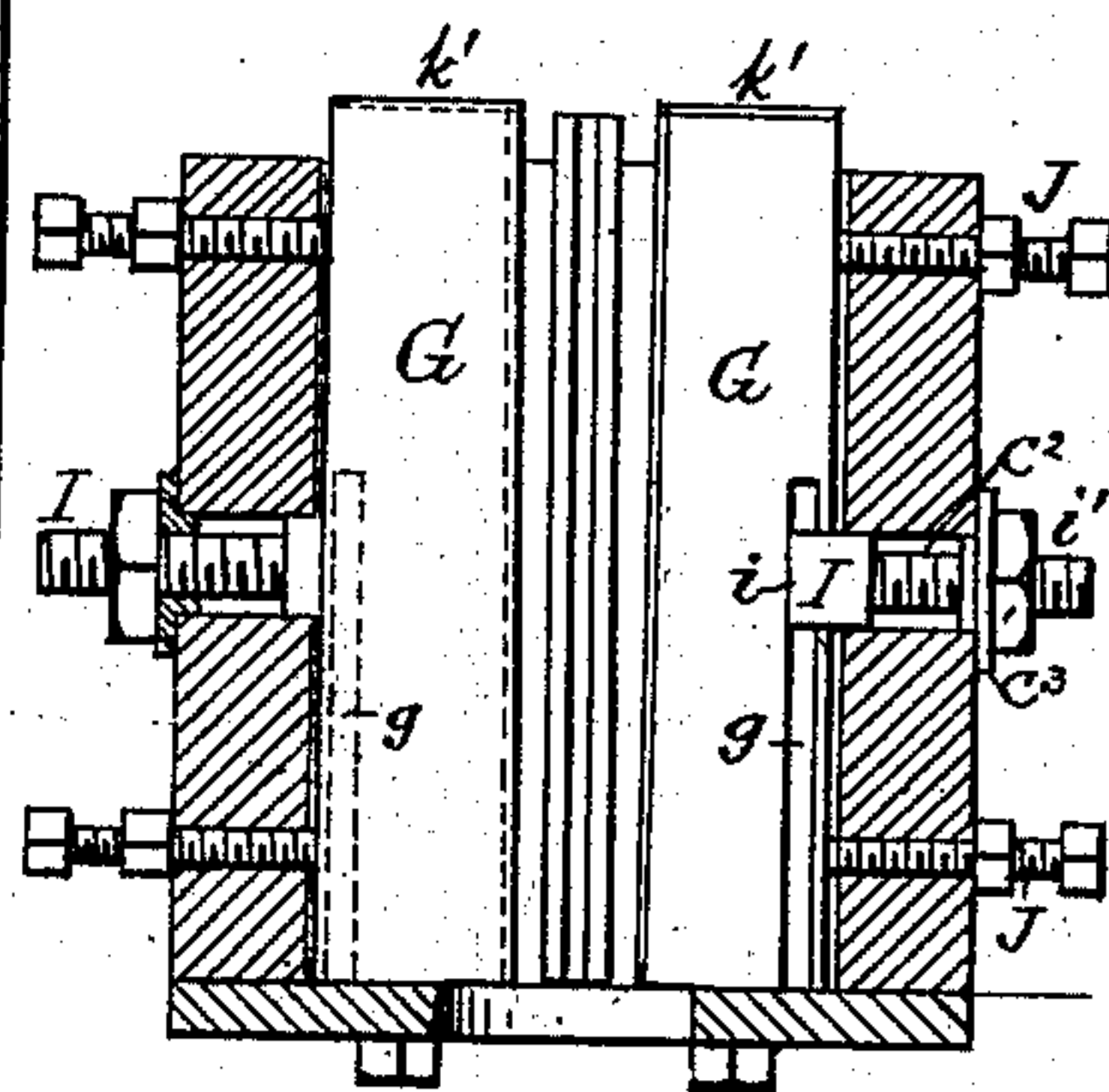


FIG. 5.



Witnesses:

Andrew D. Groupe.
Murray Cheston Boyer

Inventor
Samuel M. Vauclain
by his Attorneys
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(No Model.)

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FIG. 2.

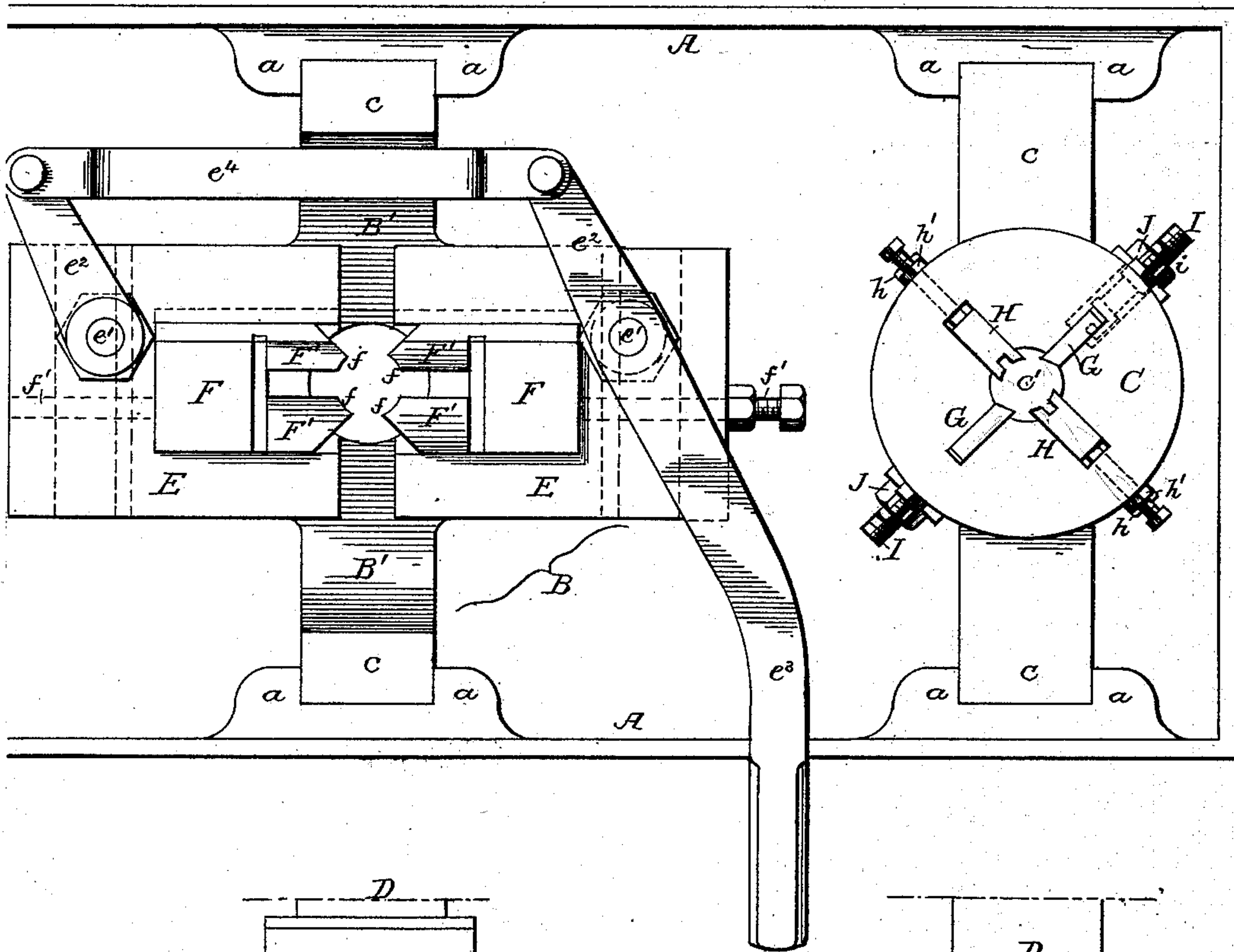
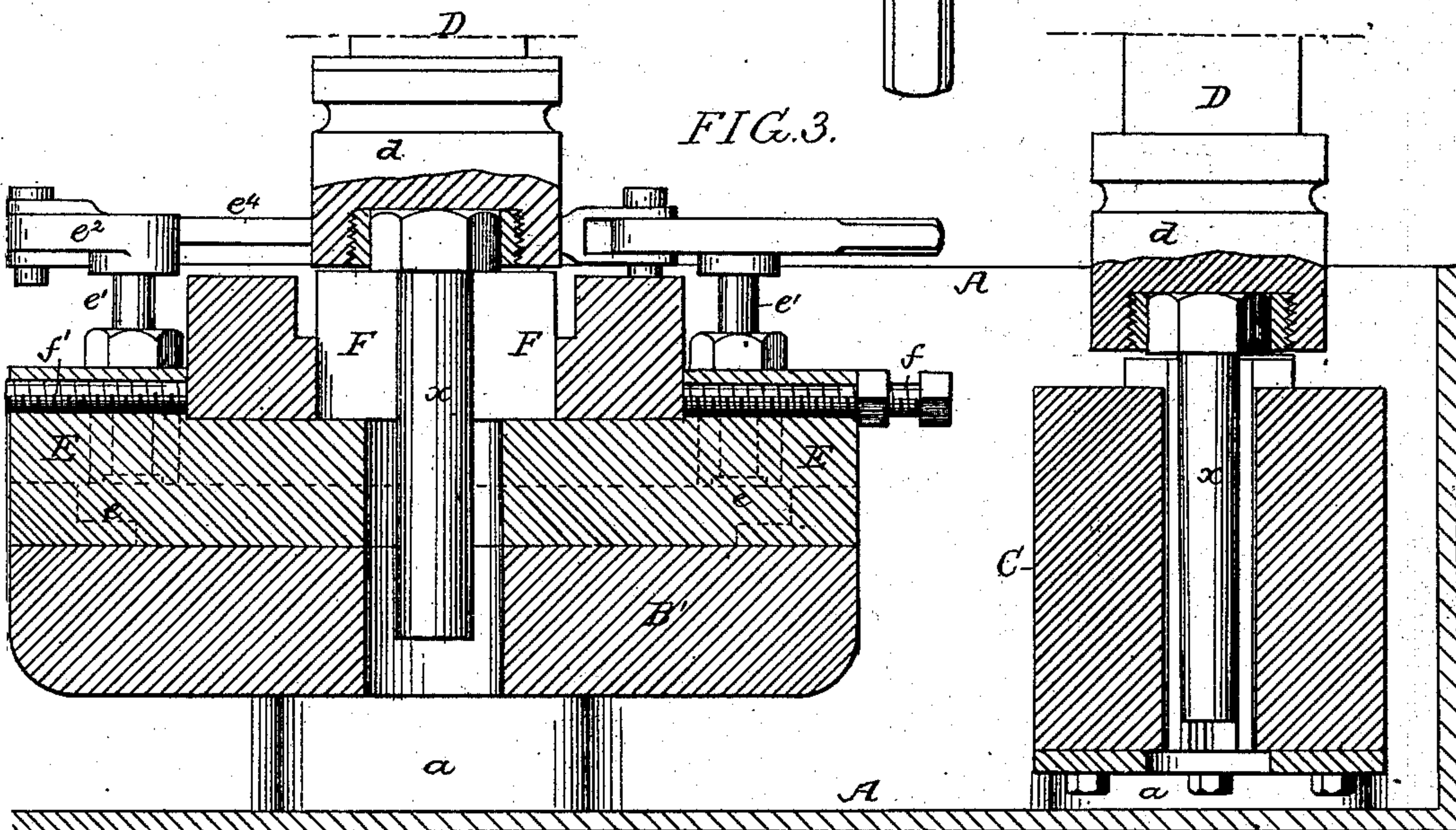


FIG. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL M. VAUCLAIN, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR TURNING TAPERED BOLTS.

SPECIFICATION forming part of Letters Patent No. 410,051, dated August 27, 1889.

Application filed June 29, 1889. Serial No. 316,051. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL M. VAUCLAIN, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Machines for Turning Tapered Bolts, of which the following is a specification.

The object of my invention is to construct a machine for turning tapered bolts. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of sufficient of a machine to illustrate my invention. Fig. 2 is a plan view. Fig. 3 is a section on the line 1 2, Fig. 2. Fig. 4 is a section on the line 3 4, Fig. 2; and Fig. 5 is a section on the line 5 6, Fig. 2.

Referring to the drawings, A is a tank or box having projections *a*, in which are cut ways for the reception of tongues *b b* and *c c* of the cutting-dies B and C. The die B is the roughing-die, used to roughly cut the bolt to the required size for the die C. This die is the taper or finishing die, which turns the bolt to the taper required, so that it will accurately fit an orifice reamed to the same taper.

Heretofore in turning taper bolts it has been the practice to turn them on a lathe, and it has rested solely with the operator whether the bolt was accurately turned or not, and consequently slight variations occur in the taper and an accurate fit is not insured.

D D are the spindles, at the lower end of which are chucks *d d*, which receive the heads of the bolt-blanks *x*, as shown clearly in Fig. 3.

I will first describe the roughing-die B.

Adapted to ways on the base B' of this die are slides E E, carrying the cutting-dies proper F F. The dies F are forked, forming prongs F', the edges *f* of which are the cutting-edges. On the under side of the blocks E are cams *e e*, secured to a vertical shaft *e'*, attached to each block, and secured to each shaft is a lever *e²*, one of which has an arm *e³*. The two levers *e² e²* are connected together by a link *e⁴*. The cams *e e* rest in grooves in the base B', so that on moving the levers *e²* through the medium of the hand-lever *e³* the dies F F can be moved toward or from the bolts to be turned. In each block E is an adjusting-

screw *f'* for adjusting the cutting-dies F F in the blocks.

I will now describe the die for turning the taper on the bolt.

In the shell of the die C is a central opening *c'* for the passage of the bolt *x*, as shown clearly in Fig. 3, and radiating from this central opening are vertical slots for the reception, respectively, of the cutters G G and guides H H. In one side of each cutter is a groove *g*, in which rests the hooked end *i* of a screw-bolt I, which passes through an orifice *c²* in the shell and through a washer *c³*. An adjusting-nut *i'* on the bolt I tends to draw the cutters G away from the center of the shell. Two set-screws J J press against the rear of each cutter, one at the top and the other at the bottom. These set-screws tend to force the cutter toward the center of the shell, so that it will readily be seen that the cutters G G can be set at any taper required, or where a regular taper is necessary the cutters can be cut in the first instance to the taper, and then as they become worn can be taken up by the mechanism described. Each cutter G has a cutting-edge *k* its entire length, and at the top a cutting-edge *k'*, which faces the under side of the head of the bolt *x*. This under side of the head is first rough-faced by the roughing-die B. The guides H H for the tapered bolt can be adjusted to accord with the taper of the bolt by the three set-screws *h h' h'*. The set-screw *h* passes into the die, while the set-screws *h'* press against the die. The spindles D, to which are secured the chucks *d d*, can be guided in any suitable frame-work, the spindle not only having a limited vertical movement, but also a rotary movement.

The mechanism for operating the spindle can be the same as used in drilling-machines, the bolt carried by the spindle being forced into the die, and as it rotates the necessary taper is turned upon the bolt.

The tank A can be partially filled with oil, so that the cutters are at all times lubricated.

I claim as my invention—

1. The combination of the tank A with dies B and C, one a roughing-die and the other a taper-cutting die, said dies being mounted in said tank with spindles carrying the bolts to

be turned situated directly above said dies, substantially as described.

2. The combination, in a taper-cutting die for turning tapered bolts, of the tapered cutters G G, having cutting-edges extending the full length of the bolt, and devices for adjusting the cutters, substantially as described.

3. The combination, in a die for turning tapered bolts, of a shell, the cutters mounted therein having cutting-faces extending the full length of the bolt to be turned, with guides also extending the full length of the bolt to be turned, and devices for adjusting both the guides and the cutters, substantially as described.

4. The combination of the taper-cutting die, the shell, vertical cutters therein, said cutters having a groove *g*, with a bolt I, having a hooked end adapted to said groove, and adjusting-screws J J, substantially as and for the purpose set forth.

5. The combination of the base B', slides E E mounted thereon and carrying dies F F, forked, substantially as shown, with levers, and cams connected to said levers, whereby on the movement of one of said levers the dies F F will be adjusted from or toward each other, substantially as described.

6. The combination, in a die for turning tapered bolts, of the shell, the cutters G, mounted therein, having a cutting-face *k* for the shank of the bolt, and a cutting-face *k'* for the under side of the head of the bolt, substantially as described.

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

SAMUEL M. VAUCLAIN.

Witnesses:

FRANK H. MASSEY,
GEO. H. SIMPKINS.