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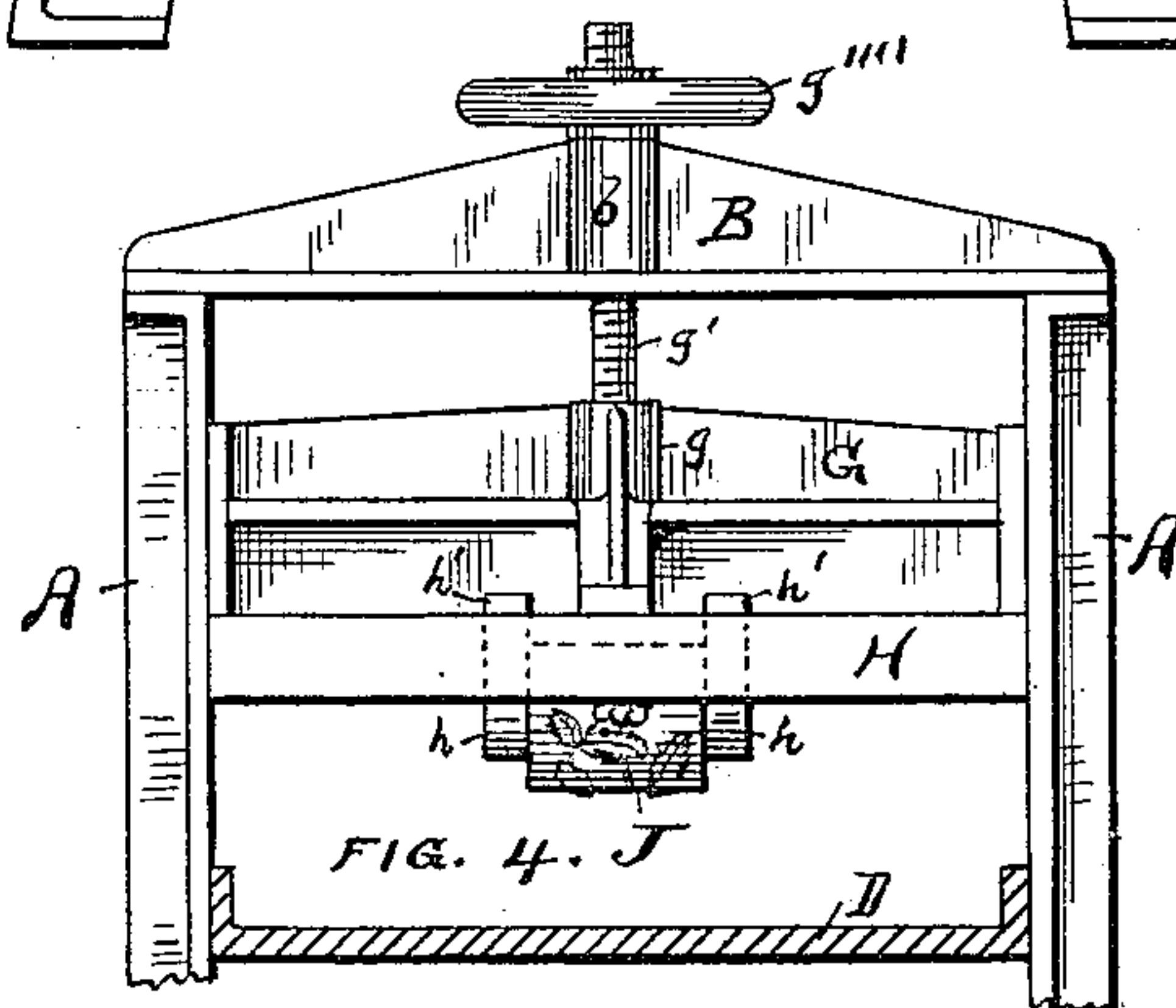
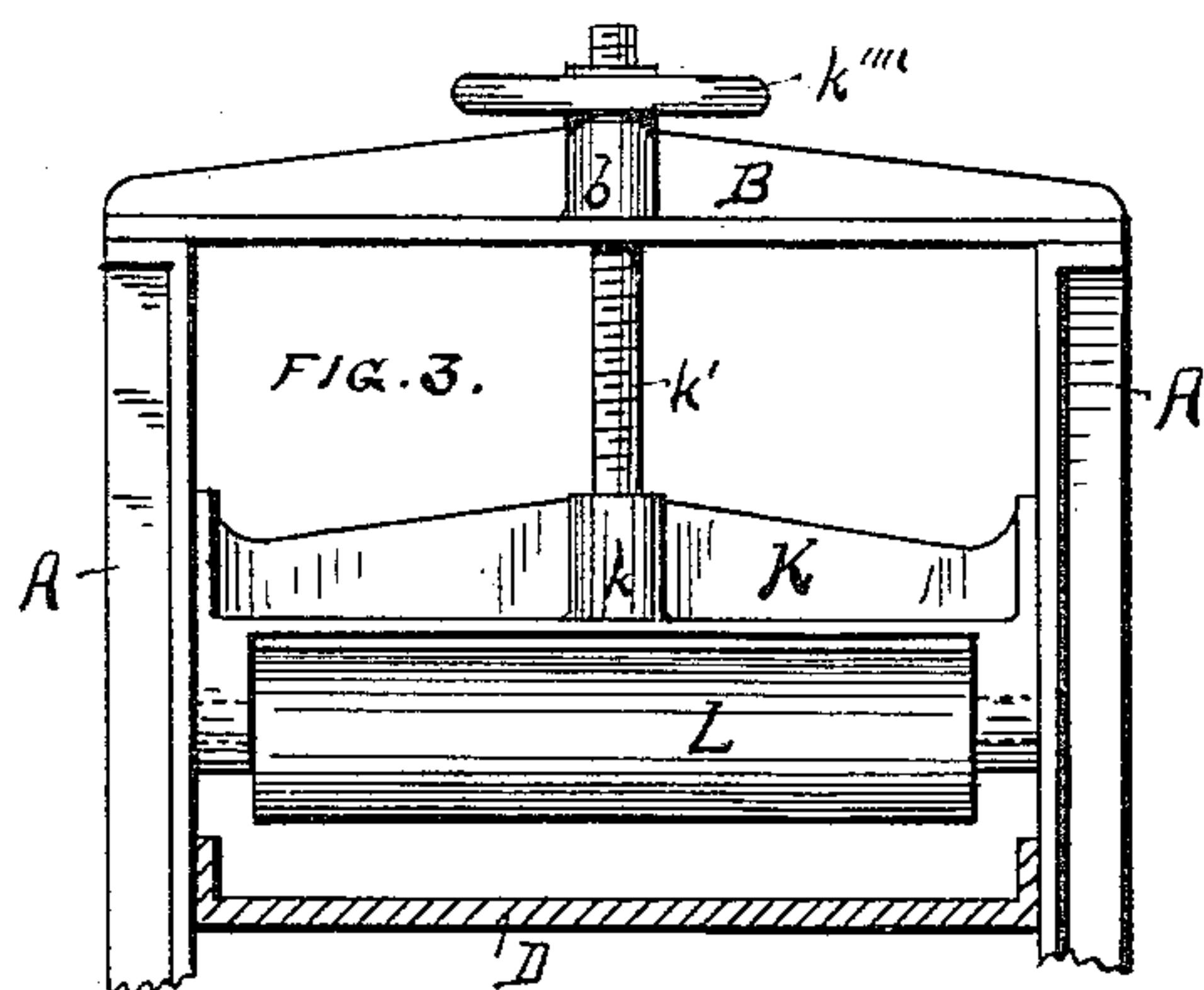
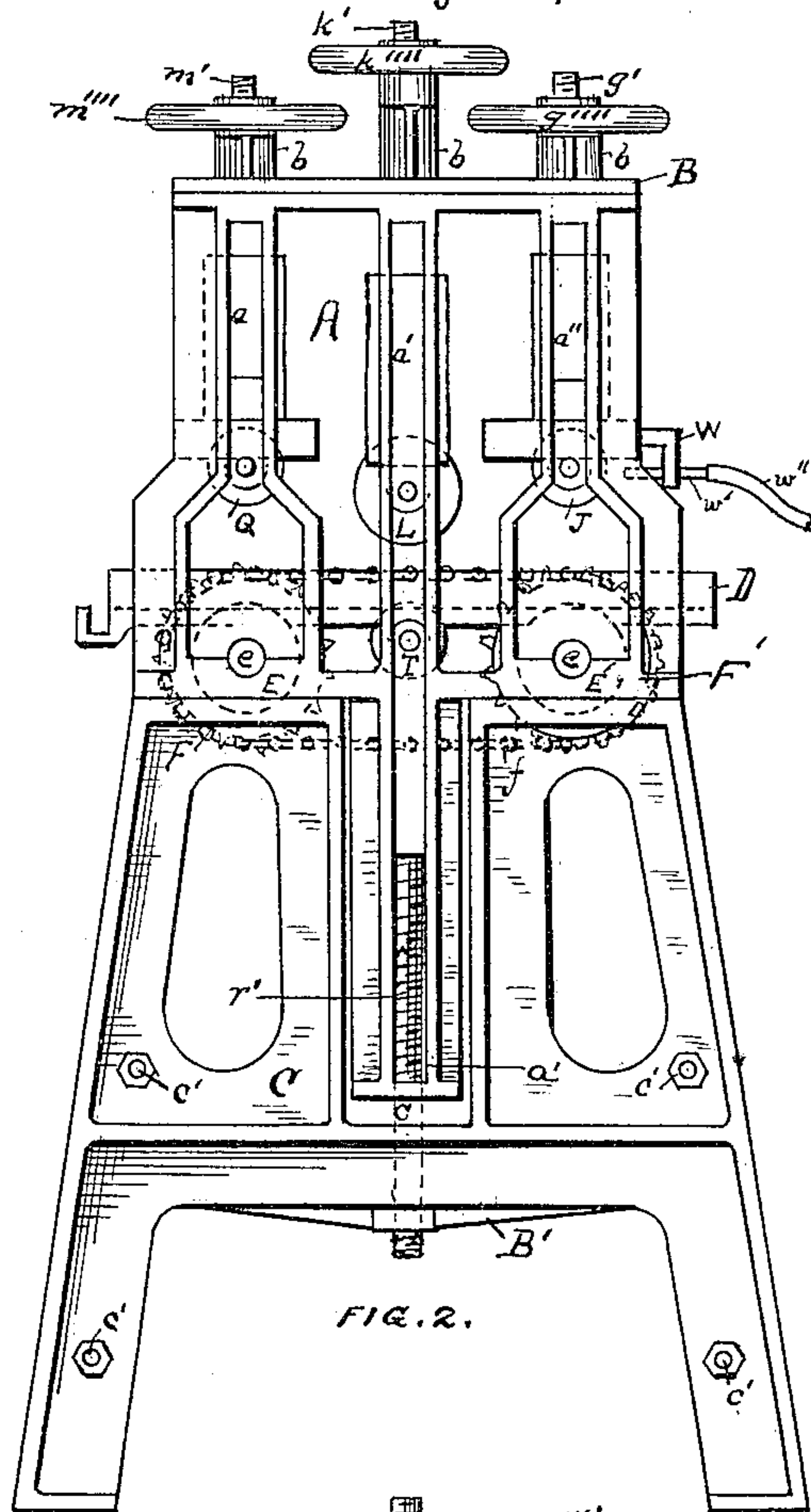
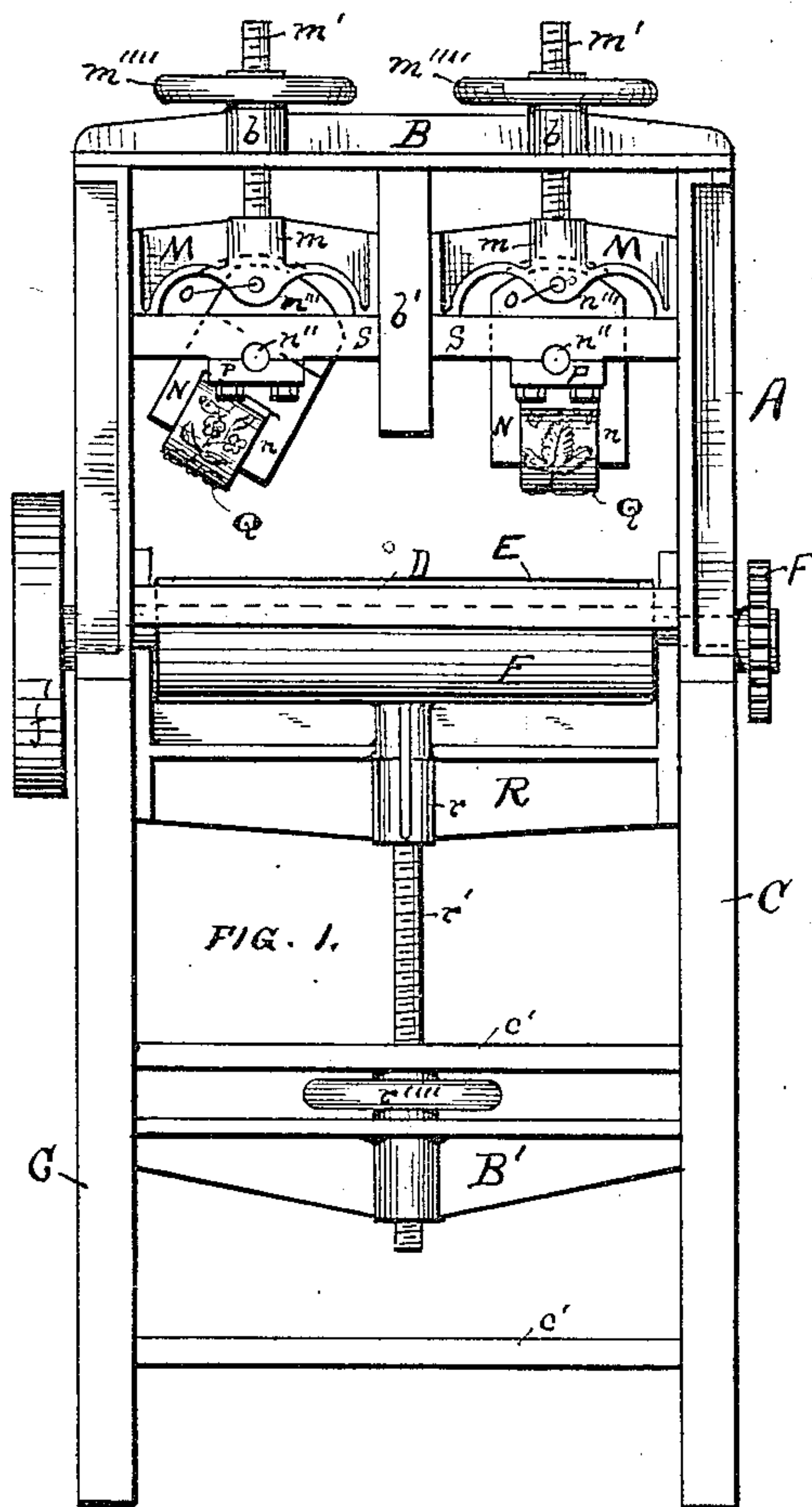
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D. B. BURDETT.

ORNAMENTING WOOD, LEATHER, &c

No. 362,874.

Patented May 10, 1887.



WITNESSES

G. H. Warren  
Emma F. Elmore.

INVENTOR

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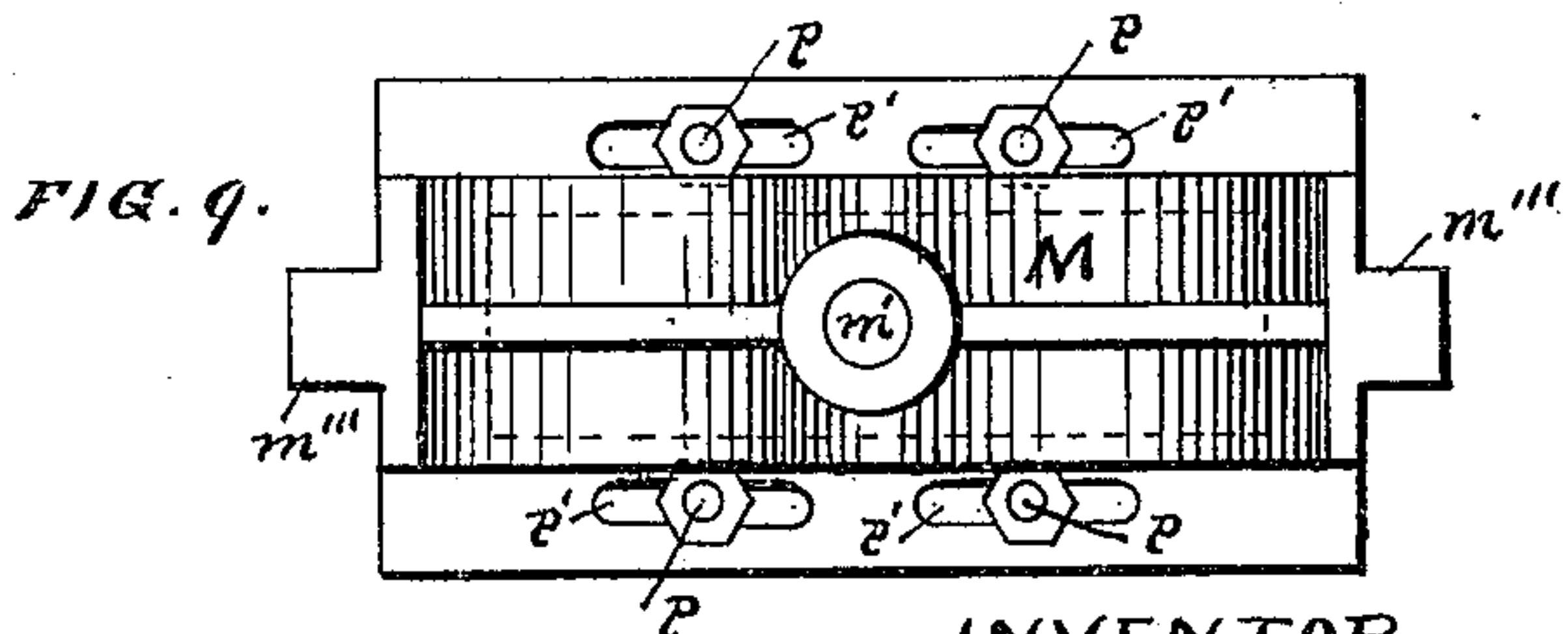
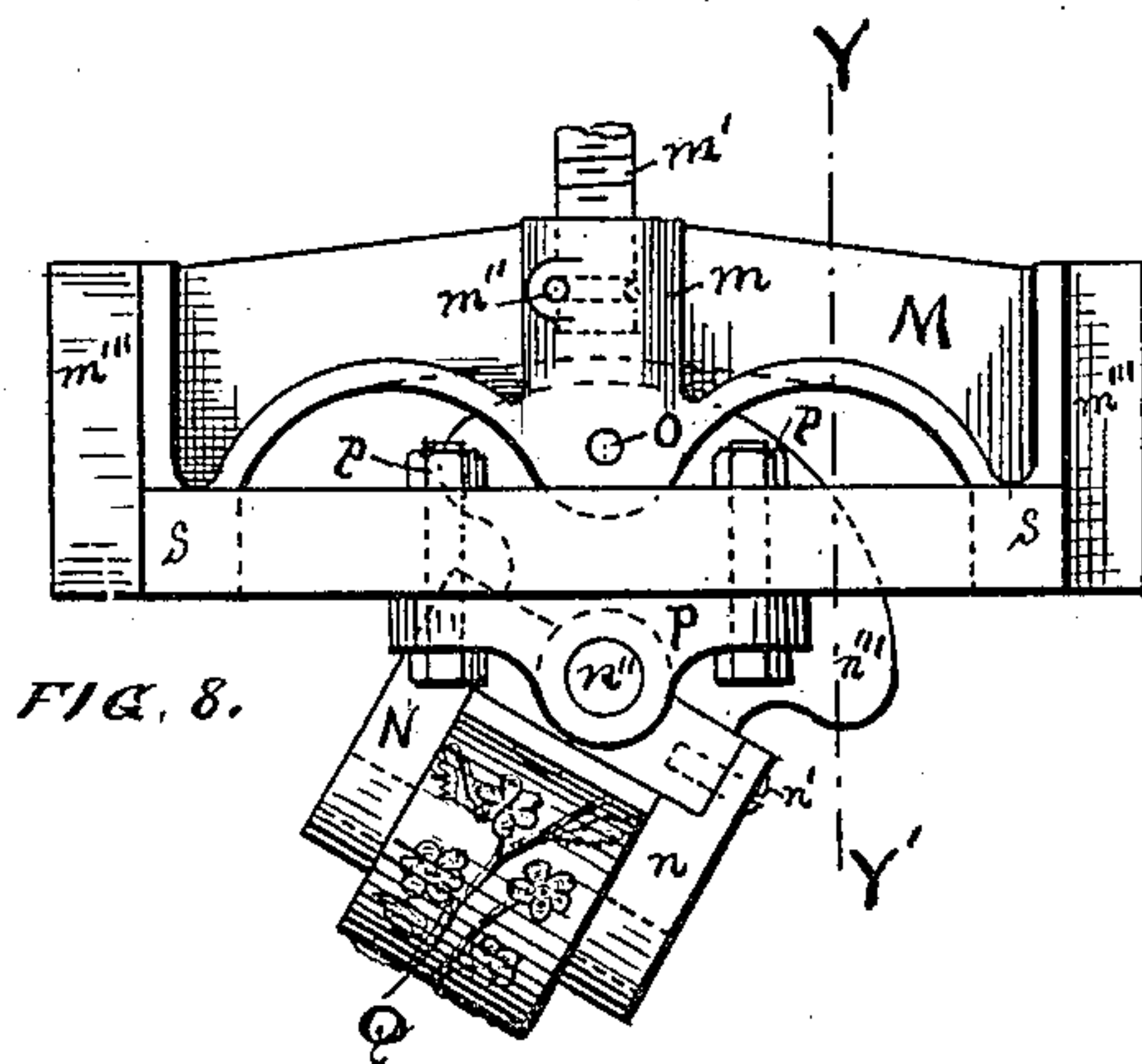
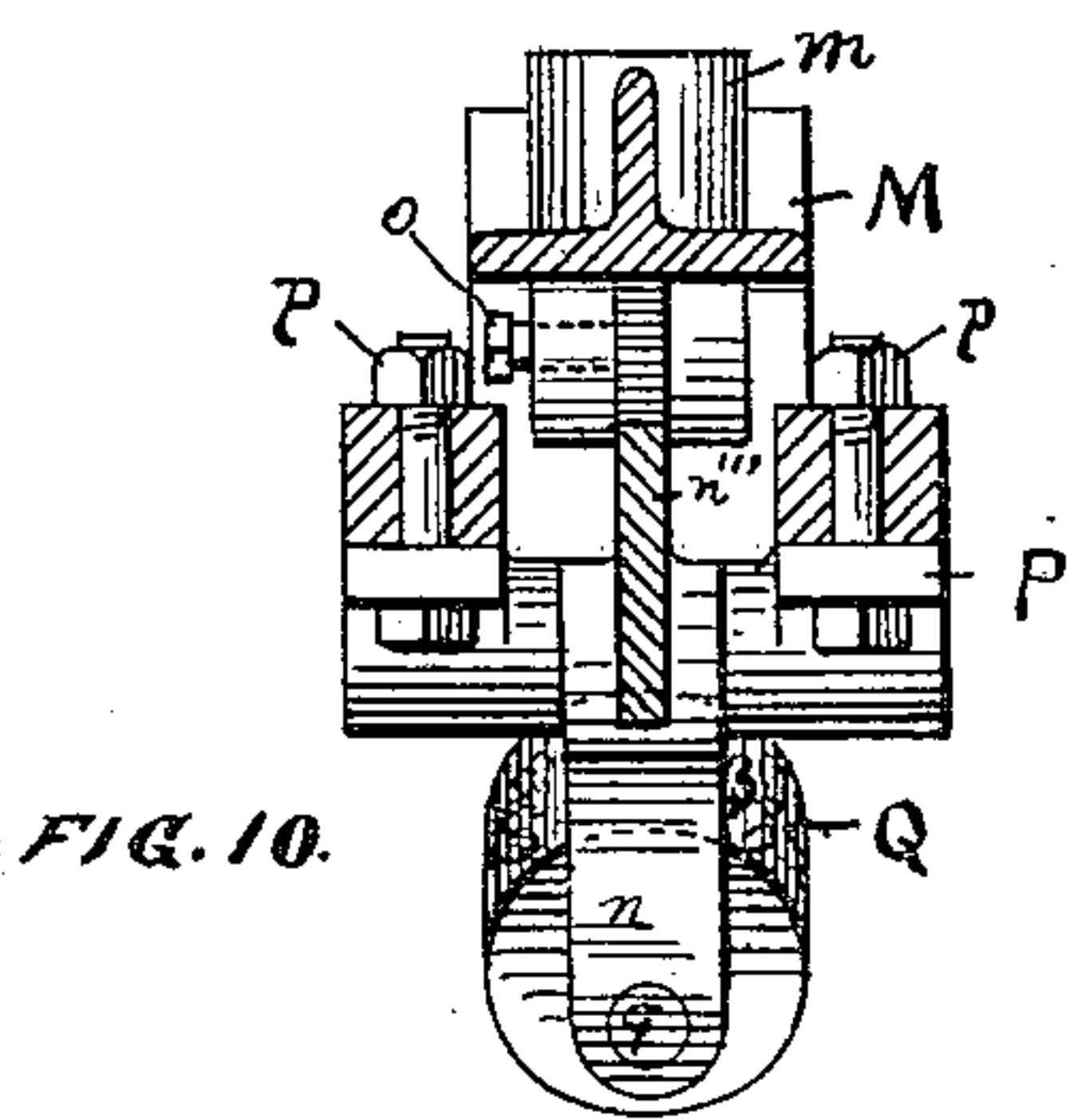
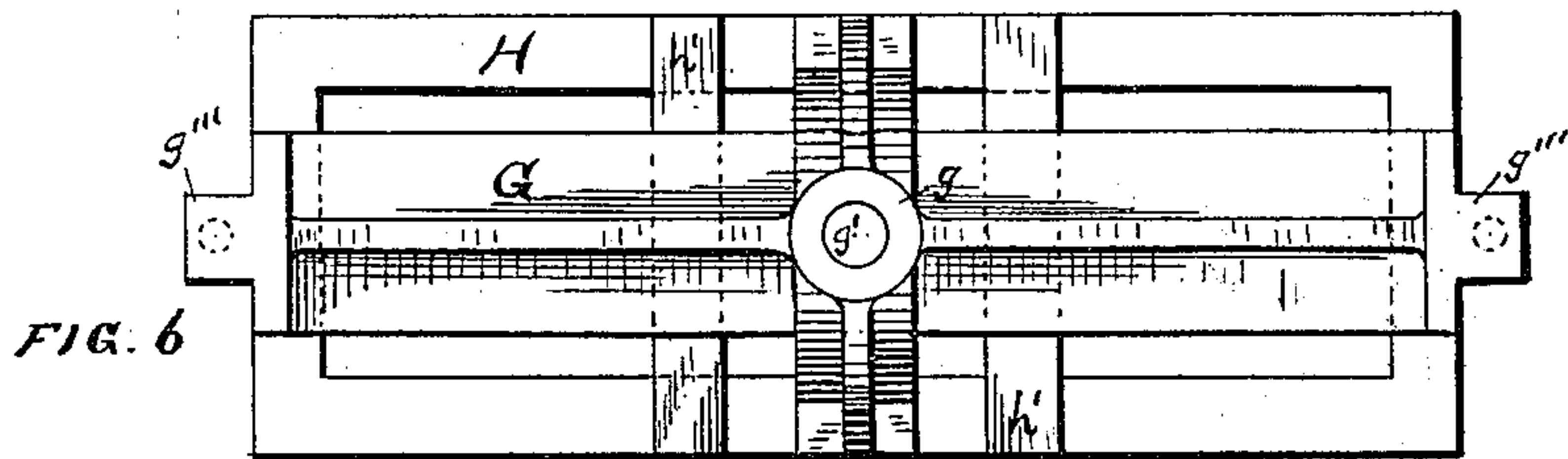
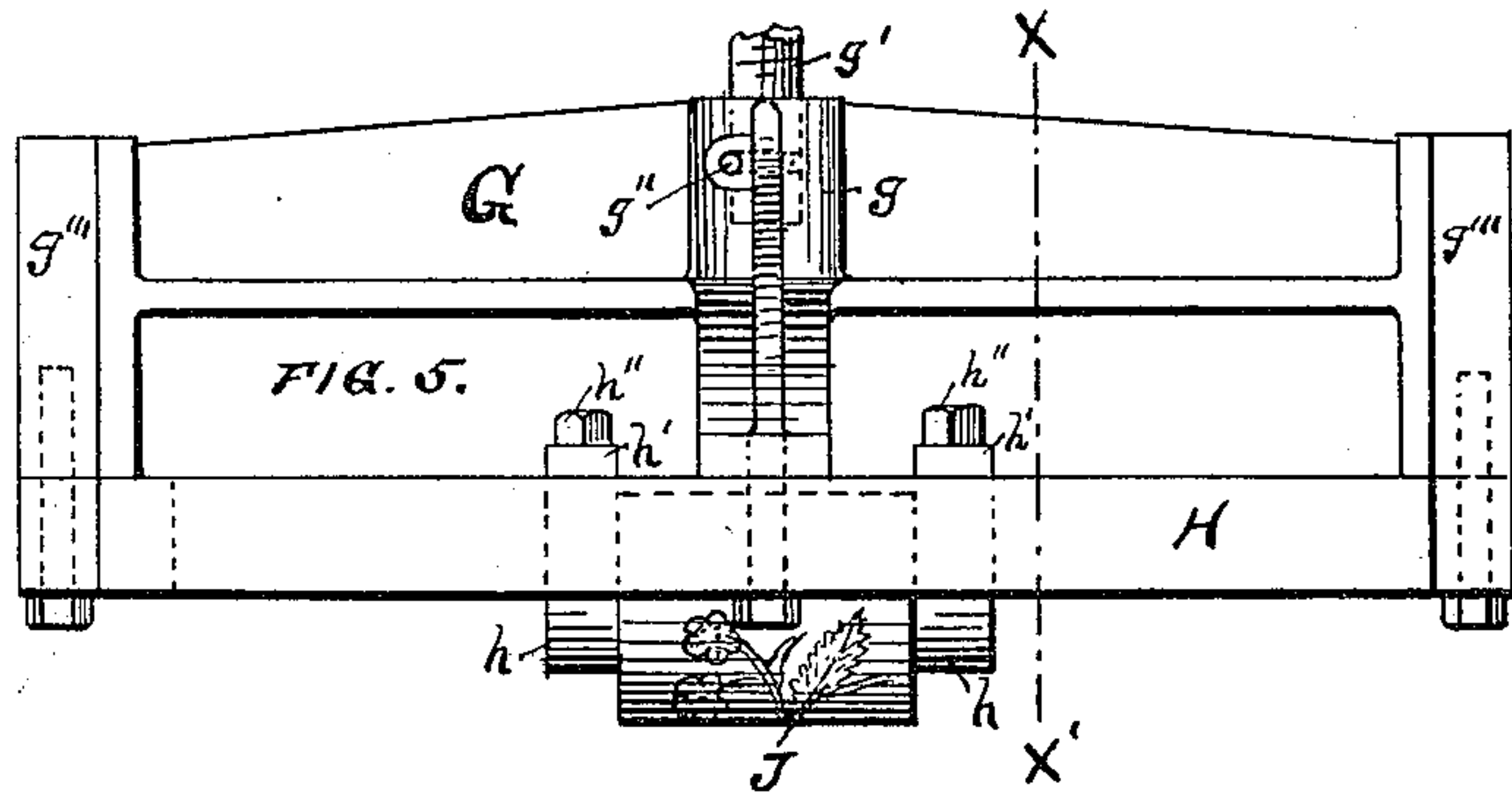
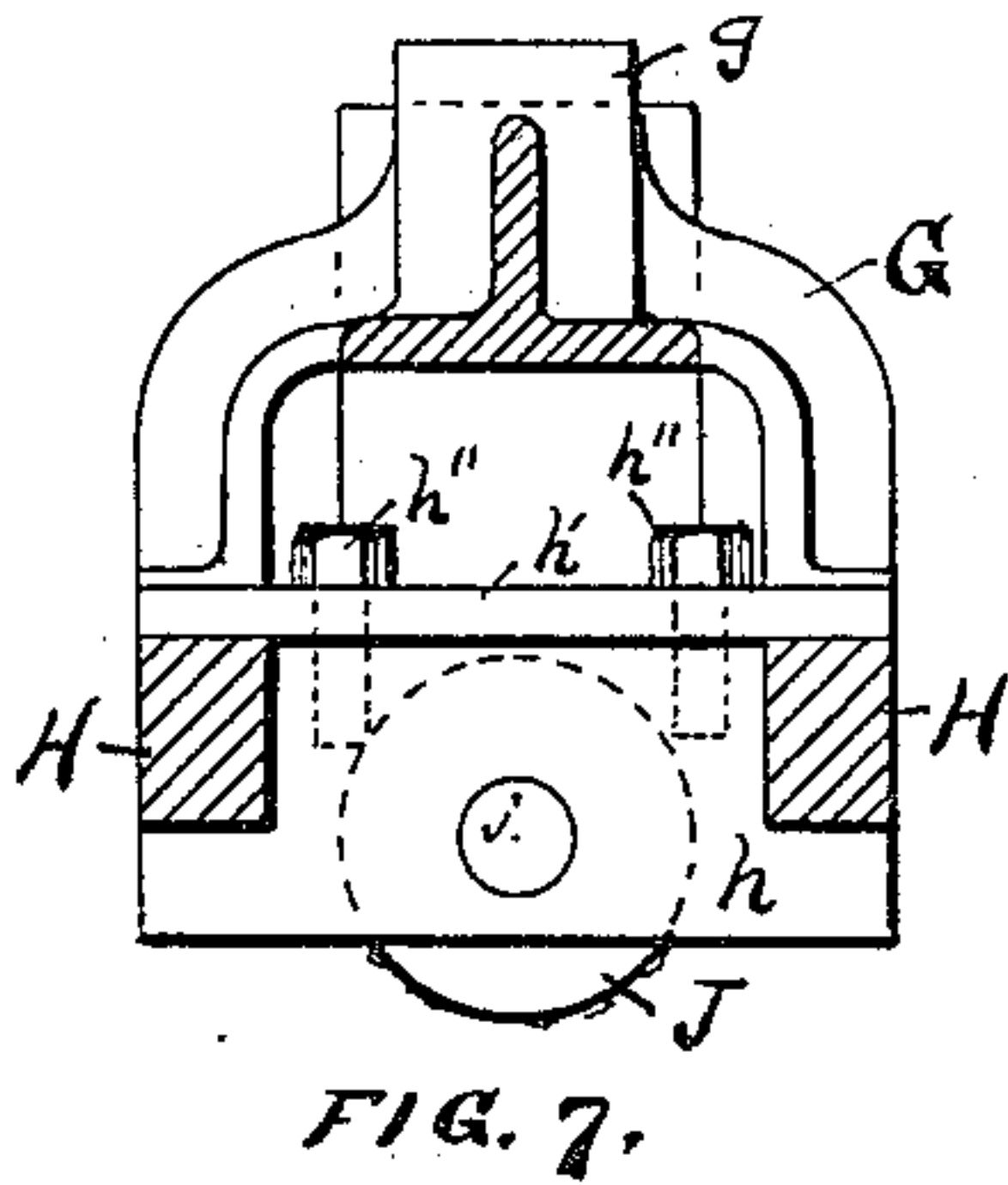
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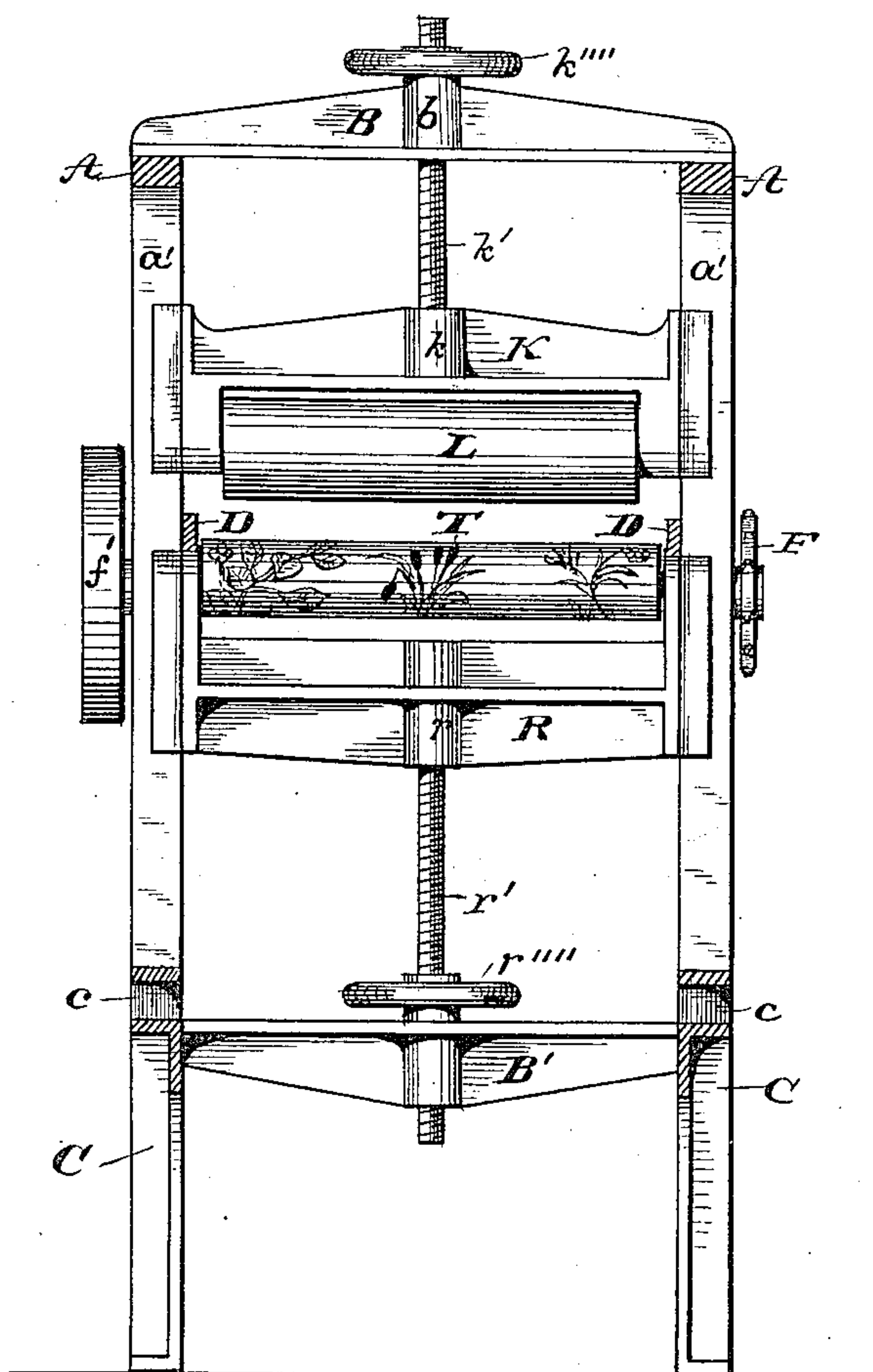
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*Fig. 11.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

DANIEL B. BURDETT, OF MINNEAPOLIS, MINNESOTA.

## ORNAMENTING WOOD, LEATHER, &c.

SPECIFICATION forming part of Letters Patent No. 362,874, dated May 10, 1887.

Application filed October 18, 1886. Serial No. 216,577. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL B. BURDETT, a subject of the Queen of Great Britain, and a resident of Minneapolis, county of Hennepin, State of Minnesota, have invented a new and useful Machine for Ornamenting Wood and other Material, of which the following is a specification.

My invention relates to the ornamentation of wood, leather, paper, or other similar material.

It has for its object to impress ornamental designs of any desired pattern upon various kinds of wood-work, such as finishing and trimming material, wooden ware, picture-frames, furniture, and all kinds of household articles of use or ornament, and upon many kinds of work made out of leather or paper.

It consists, primarily, in the coincident application of heat and pressure through die-rolls containing the desired pattern; and, secondly, in a machine for applying the process, capable of ornamenting both sides at once, and with die-rolls having lateral and angular as well as vertical adjustment, whereby the several surfaces of a piece of material, whatever their angles to each other, may be ornamented and the work be done simultaneously, if desired. For example, a smooth surface and a raised bead on the same or the beveled surfaces of a picture-frame may be ornamented by my process and machine. The die-rolls are also so arranged with reference to each other that several different patterns may be impressed at the same time, or that a light and heavy impression may be made simultaneously on the different parts of the same material. For example, a deep or heavy impression may be made in the middle and light impressions on the edges, or a heavy impression on one side and a light one on the other.

My machine is illustrated in the accompanying drawings, in which, like letters referring to like parts throughout, Figure 1 is a front elevation. Fig. 2 is a side elevation; and Figs. 3, 4, 5, 6, 7, 8, 9, and 10 are details, viz: Fig. 3 is a front or rear elevation of the central upper pressure-roll and press-frame. Fig. 4 is a similar view of the rear upper die-roll and press-frame or of the under die-roll and press-frame. Fig. 5 is an enlarged view of the vertically-reciprocating roll-carrying frame shown in Fig. 4. Fig. 6 is a plan view of Fig. 5. Fig. 7 is a sectional view on line X X' of Fig.

5. Fig. 8 is a front view, on an enlarged scale, of a modified form of the adjustable roll shown in Fig. 1. Fig. 9 is a plan view of Fig. 8, and Fig. 10 is a section of Fig. 8 on the line Y Y'. Fig. 11 is a vertical transverse sectional view showing the lower die-roll and its supporting mechanism.

In a general way, the machine may be described as consisting of a main frame, a bed-plate for holding the material, feed and resistance rollers protruding through the bed-plate, die-rolls held in vertically-reciprocating blocks, two sets above and one below the bed-plate, a resistance-roller held in a similar vertically-reciprocating block directly above the under-side die-roll, screws held in cross-ties of main frame for giving the requisite pressure, a gas-flame or other suitable means for heating the die-rolls, and certain details of construction for giving various special adjustments.

A C is the main frame, made of any suitable material, preferably of metal, of which C is the base, and A the upper part. The two parts are cast separately. A rests upon and is secured by bolts to the base-frame C. C is provided with suitable cross-braces, *c'*. In the part A are three vertical grooves, *a a' a''*, on the interior face of each side plate—one near the front, one in the rear, and one in the center. The central part of the upper frame, A, is extended and rests in a cut-away part, *c*, of the lower frame, C. The central groove, *a'*, extends the entire length of this central portion, making a groove on the interior faces of the side plates both above and below the bed-plate D.

B is the top or cap plate resting on the side plates of part A, extending from front to rear, and is provided with raised ribs over and on a line with the vertical grooves *a a' a''*. In these ribs are holes *b*, provided with female screw-threads, through which work screws *m' k' g'*, provided with male threads. These screws are provided with vertical grooves. Hand-wheels *g''' k''' m'''*, provided with a feather fitting in the vertical grooves of the screws, fit over the screws and rest on the ribs of plate B, for operating the screws.

B' is a bottom plate attached to the lower frame, C, provided with a raised rib under the central vertical groove, *a'*, and having a hole with female screw-threads, through which works screw *r'*. This screw *r'* has a vertical groove similar to screw *m'*, and a hand-wheel,



$r'''$ , with a feather, fits over the same and rests on plate B', for operating the screw.

D is a bed-plate fixed between the side plates of frame A, provided with transverse openings, through which protrude feed and resistance rollers E E'. These rollers E E' may or may not be corrugated, as desired. The shaft or journals of one of the feed-rollers are extended outward beyond the frame on both sides of the machine, and on one side is attached a pulley,  $f'$ , which is connected, by a belt or other suitable means, with a source of motion, (not shown,) and on the other side is attached a sprocket-wheel, F. A chain,  $f$ , connects F with a similar sprocket-wheel, F', attached to a similar extension on the same side of the journal of roller E'.

In the grooves  $a''$  of the side plates of A fit tenons  $g'''$  of block G  $g$  H, of which G is a cross-bar or spider, with legs extending downward at the ends and in the middle, and made integral at those points with H.

H is a rectangular plate considerably wider than the spider G, and has its central part in cross-section cut away for its whole length to within a margin of each end. On the upper surface of the sides of plate H rest cross-bars  $h'$ , to which are attached, by bolts  $h''$ , journal-bearing plates  $h$ , fitting between the interior and against the under faces of the plate H. The plates  $h$  are provided with suitable journal-boxes, in which, by journals  $j$ , is held the die-roll J.

The spider G is provided with a shallow recess or hole,  $g$ , serving as a point of application for the screw  $g'$ , and a pin,  $g''$ , extending into an annular groove in the screw, serves to keep the two parts connected when the screw is being raised. By thus attaching the die-roll J through  $h$  to cross-plates  $h'$ , it may be moved laterally at will wherever desired.

The under-side die-roll, T, is attached in exactly the same way to a plate integral through spider-legs to the spider or cross-bar R. R and its connected plate are provided with similar tenons fitting into the grooves  $a'$  below the bed-plate, and is connected to and operated by screw  $r'$  in the same way as block G  $g$  H. Roll T works through opening in D. A block, K, having similar tenons fitting in the grooves  $a'$  above the bed-plate D, is attached in a similar manner to screw  $k'$ , and carries in journal-bearings rigid therewith the resistance-roller L.

In the front of the machine, attached to and rigid with cap-plate B, and on a line with the grooves  $a$ , is a pendent bar,  $b'$ , having grooves on its sides similar to  $a$ , and in the same plane therewith.

In the grooves of  $b'$  and the grooves  $a$  fit tenons  $m'''$  of a vertically-reciprocating block, M.

M is a cross-bar or spider attached to a plate,  $s$ , below by spider-legs at the ends integral with the plate, and is provided with a shallow recess receiving the screw  $m'$ , and is attached to the screw by a pin,  $m''$ , fitting into an annular groove on the screw. The lower plate,  $s$ ,

has its central part cut away, as in the case of plate H. To this plate  $s$ , by bolts, are attached on the under side the half journal-boxes P, (in Fig. 1,) the under side of the plate  $s$  being recessed to form the other half of the box. In these boxes rest journals or trunnions integral with a block solid above and bifurcated below the trunnions, forming a head,  $n'''$ , and arms N  $n$ .

Between the arms N  $n$  and in boxes in the same are journaled the die-rolls Q. The outside upper surface of the head  $n'''$  is cut to the lines of a perfect circle from its trunnion  $n''$  as a center. The under surface of bar M is cut to the lines of a corresponding circle from the same center, the concave surface of M fitting exactly over the convex surface of  $n'''$ . This causes the pressure to be equally applied to the die-roll in whatever position it may be.

The bar M has integral with its front and rear surfaces pendent lips embracing the head  $n'''$ . The front lip is provided with a screw-threaded hole, into which fits a set-screw,  $\sigma$ , whereby the head  $n'''$  may at will be made rigid in any given angle to the bed-plate and the material to be ornamented.

In the modification shown in Figs. 8, 9, and 10, the plates P contain the entire bearing for the trunnions, and are secured by bolts and nuts  $p$ , through longitudinal slots  $p'$ , to the plate  $s$ . The arm  $n$  is removably attached by set-screw  $n'$  to the die-roll block, whereby the die-roll may be removed and another substituted when desired. By the construction shown in Figs. 8, 9, and 10 the die-rolls Q may be moved laterally as well as vertically and at angles to the bed plate. This is my preferred construction.

W is a bracket attached to some convenient part of the vertically-reciprocating block, for holding a gas-burner,  $w'$ , in close proximity to the die-roll.  $w''$  is a gas-tube communicating with a reservoir of gas. (Not shown.)

Any other suitable means may be used for heating the die-rolls—as, for example, steam may be introduced to the interior of the roll.

In the drawings I have shown means in position for heating one rolls. In my working machine I heat all the die-rolls. I find this to be a radical improvement on cold rolls. The heat extracts and evaporates the moisture forced out in part by the pressure, closes the pores, more effectually overcomes the elasticity of the material, preventing its return to its original position, and leaves a smooth and finished surface. In other words, the coincident and simultaneous application of heat and pressure leaves a more permanent and a finer impression. It also enables me to impress a lighter and more delicate ornament.

The operation of the machine is apparent from the description. Motion having been imparted to the pulley  $f'$  from the source of motion, (not shown,) the material to be ornamented is placed on the bed-plate in the rear of the machine, and is fed forward by the feed-rollers under the die-rollers, which have been previ-



ously set for the desired pressure and depth of impression. The rear die-roll, J, will impress any desired ornament on the central part of the upper surfaces. The under die-roll, supported in block R, will do the like for any part or the whole of the under surface, if desired, and the die-rolls Q will impress ornaments on the edges of the upper surface. The designs on the various die-rolls may be similar or different, as desired. A heavy impression may be given by one or more of the die-rolls and a light impression by the others.

If the material have raised beads or moldings, either in the center or on the edges, these may be ornamented as well as the body of the material by properly adjusting the die-rolls; and if there be beveled edges, as in picture-frames, the die-rolls Q may be set at an angle and these edges be ornamented. The lateral adjustments enable the machine to ornament wide or narrow pieces of material, as desired. By varying the size of the die-rolls a narrow or wide pattern, as desired, may be impressed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a machine for ornamenting wood, leather, paper, or other material, the combination, with a fixed bed-plate, of devices for feeding parallel with the bed-plate and a die-roll above the bed-plate, angularly adjustable thereto in a vertical plane, substantially as described.

2. In a machine for ornamenting wood, leather, paper, or other material, the combination, with a horizontal bed-plate and horizontal feeding devices, of a lower die-roll vertically adjustable and an upper die-roll angularly adjustable in relation to said bed-plate in a vertical plane, substantially as described.

3. In a machine of the class described, provided with a bed-plate, feed and resistance rollers, and suitable driving mechanism, a die-roll adjustable with reference to the bed-plate vertically, laterally, and angularly in the vertical plane, in combination with an independent die-roll laterally and vertically adjustable with reference to said bed-plate, and means for giving pressure to said die-rolls, substantially as set forth, whereby a horizontal surface and a raised bead on the same side at an angle to said horizontal surface or a plane surface with beveled edges may be ornamented at the same time.

4. In a machine of the class described, the combination, with a horizontal bed-plate, of a horizontal feeding-roll projecting above the face of said bed-plate, and a die-roll above said feeding-roll, said die-roll being laterally adjustable along the said feed-roll and angularly adjustable thereto in a vertical plane, substantially as described.

5. In a machine of the class described, the combination, with a horizontal bed-plate, of horizontal feeding-rolls projecting above said bed-plate, a lower die-roll vertically adjustable in relation to said bed-plate, and upper die-rolls adjustable vertically and angularly in refer-

ence to said bed-plate and adjustable transversely thereto, substantially as described.

6. In a machine of the class described, a die-roll head provided with a circular convex upper surface and with journals at right angles to its die-roll, in combination with a vertically-reciprocating block provided with a lower cross-plate having journal-boxes for carrying the journals of said die-roll head, and provided with an upper cross-bar with concave circular under surface fitting over the corresponding convex circular upper surface of the die-head, whereby pressure is applied equally to the die-roll, regardless of the angle at which it may be set.

7. In a machine of the class described, a die-roll head with circular convex upper surface and provided with journals, as described, a vertically-reciprocating block with a lower cross-plate having journal-boxes, as described, and provided with an upper cross-bar with circular concave under surface, as described, and having pendent side lips inclosing the die-head, and a set-screw in one of said lips for fixing said die-head and die-roll in any desired angular position, all in combination, substantially as described.

8. In combination, for ornamenting wood, leather, paper, and similar material, a bed-plate fixed in a main frame, feed and resistance rollers protruding through openings in said plate, means for imparting motion to said feed-rollers, die-rolls above said bed-plate, attached to vertically-reciprocating blocks, screws for giving pressure to said die-rolls, an under-side die-roll working through transverse opening in said bed-plate attached to a vertically-adjustable block, a screw for giving pressure to said under-side die-roll, a resistance-roller above and directly over the under-side die-roll and attached to a vertically-adjustable block, and a screw for giving pressure to said roller, all substantially as described, whereby material may be ornamented on both sides at the same time.

9. In combination, for the purpose set forth, bed-plate D, fixed in the main frame, feed-rollers E E', protruding through openings in said bed-plate, vertically, laterally, and angularly adjustable die-rolls Q, attached to block M S, as described, screw *m'*, for giving pressure to die-rolls Q, laterally and vertically adjustable die-roll J, attached to block G H, as described, screw *g'*, for giving pressure to the same, under-side die-roll T, laterally and vertically adjustable, attached to block R, and screw *r'*, for giving pressure to the same, all substantially as described, whereby both sides of the material and surfaces of the material at angles to the main body of the material may be ornamented simultaneously, and diverse designs may be impressed, if desired.

DANIEL B. BURDETT.

In presence of—

G. H. WARRER,  
E. F. ELMORE.