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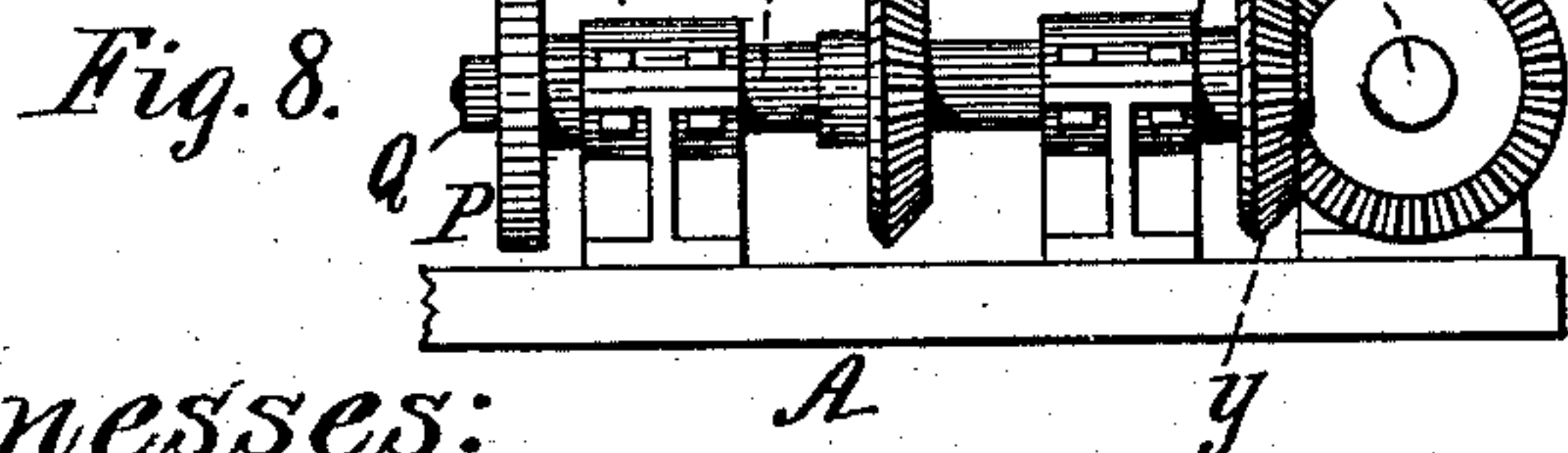
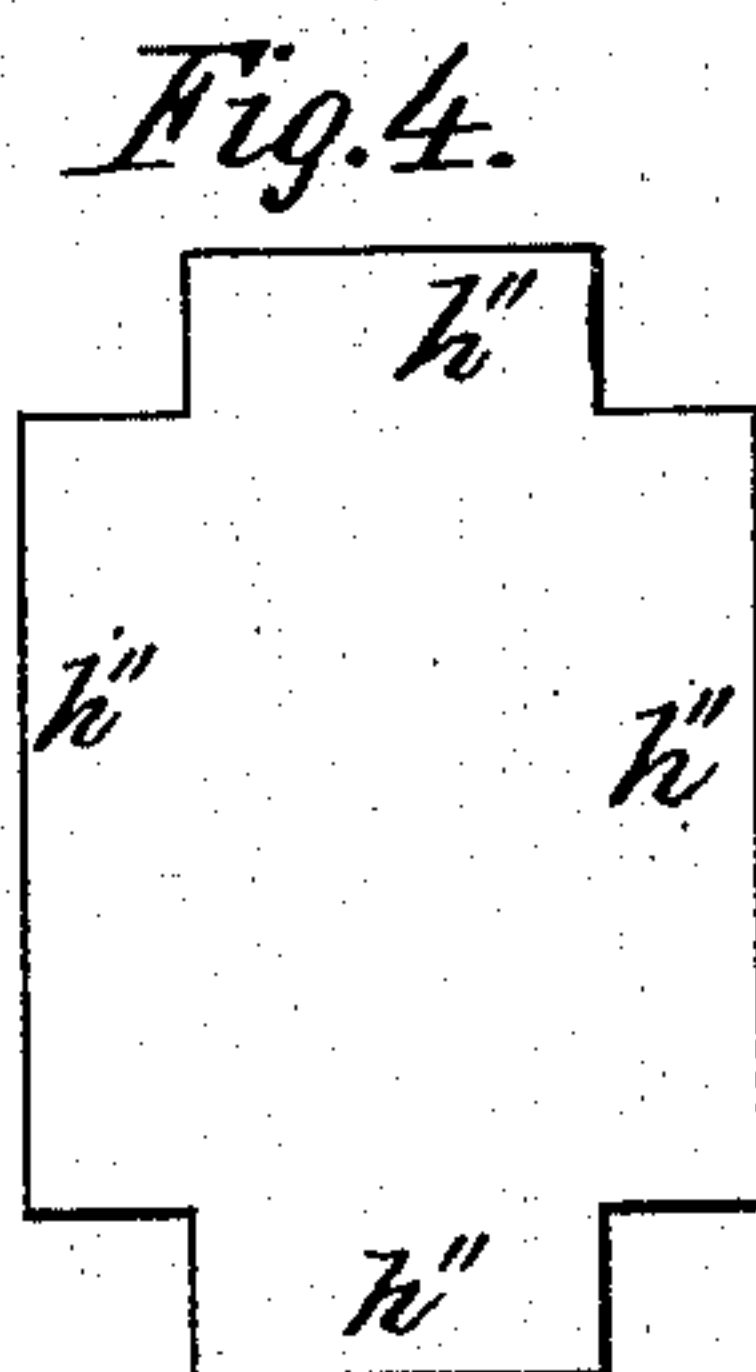
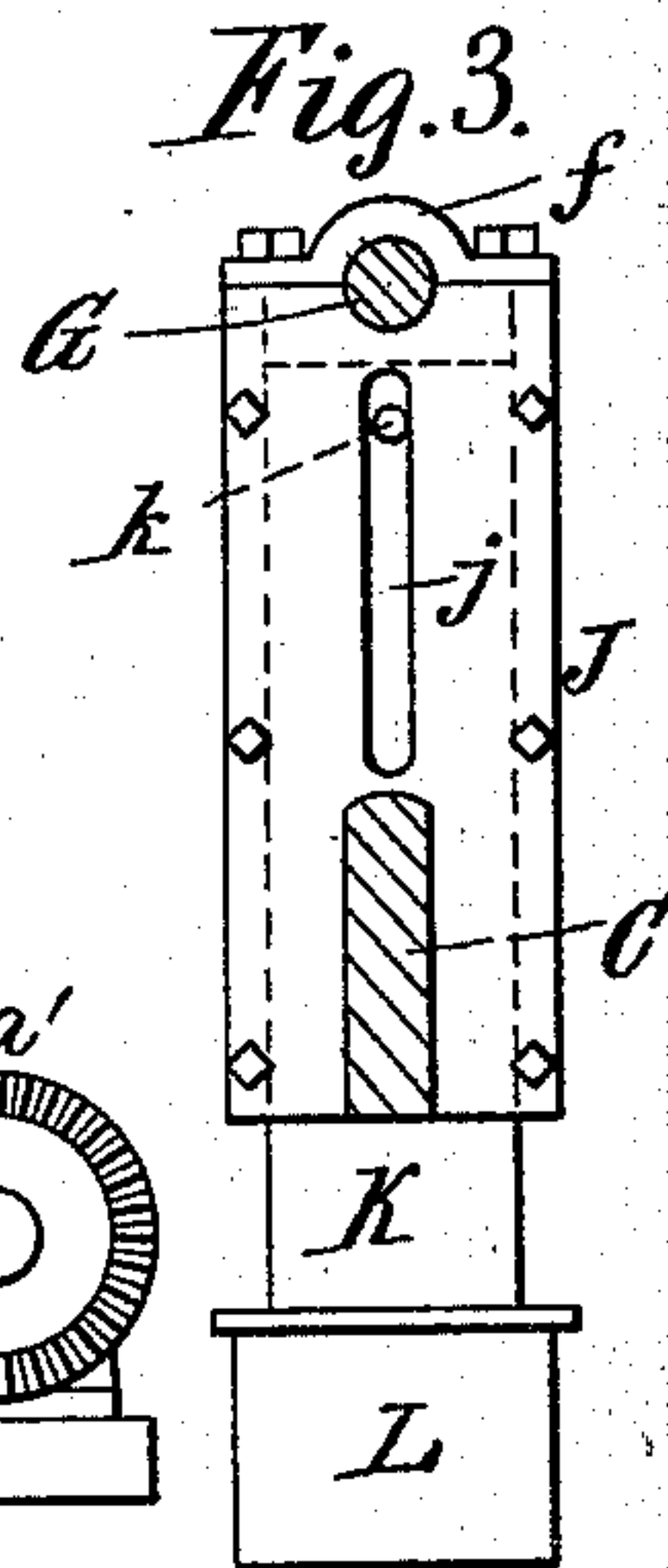
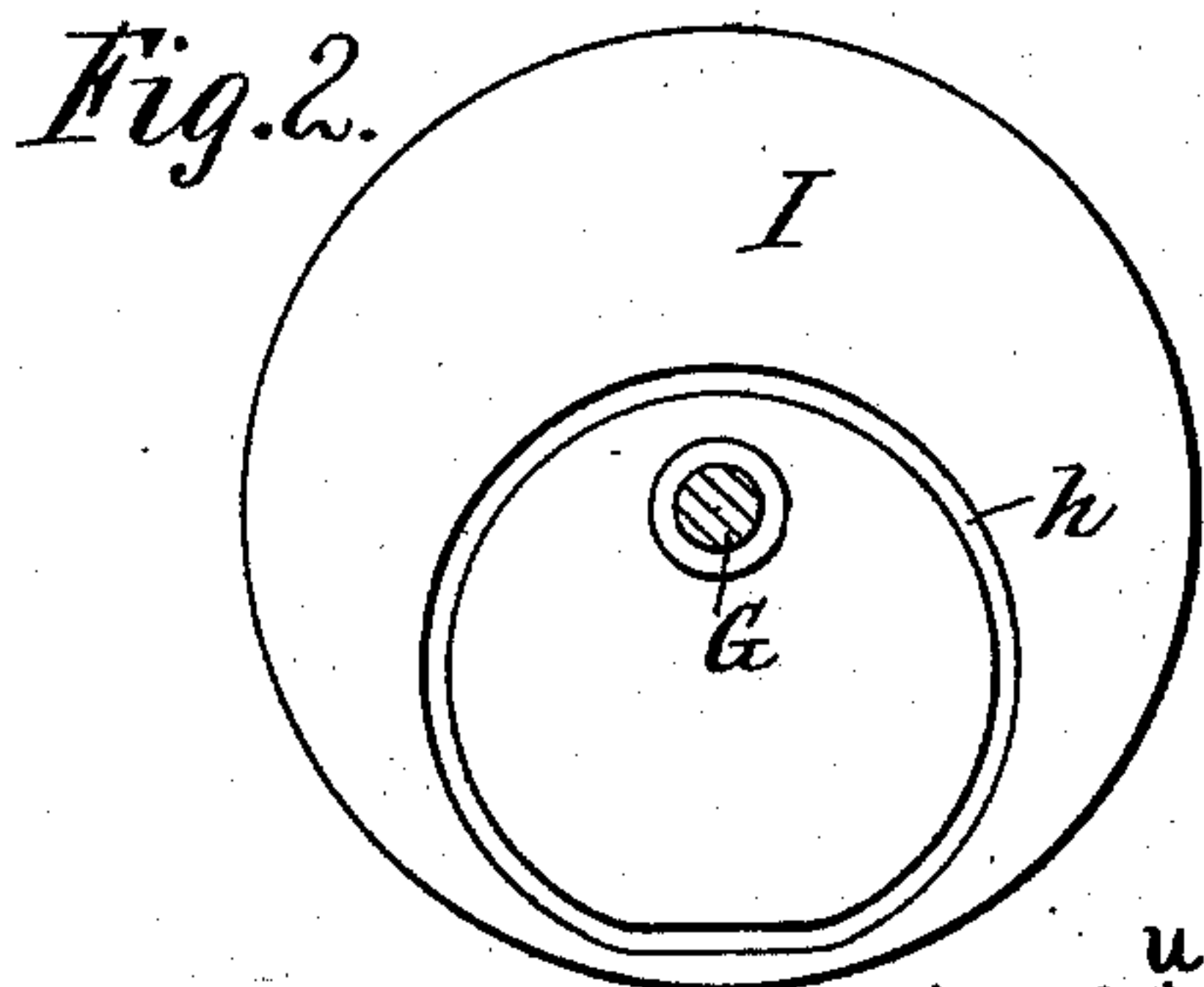
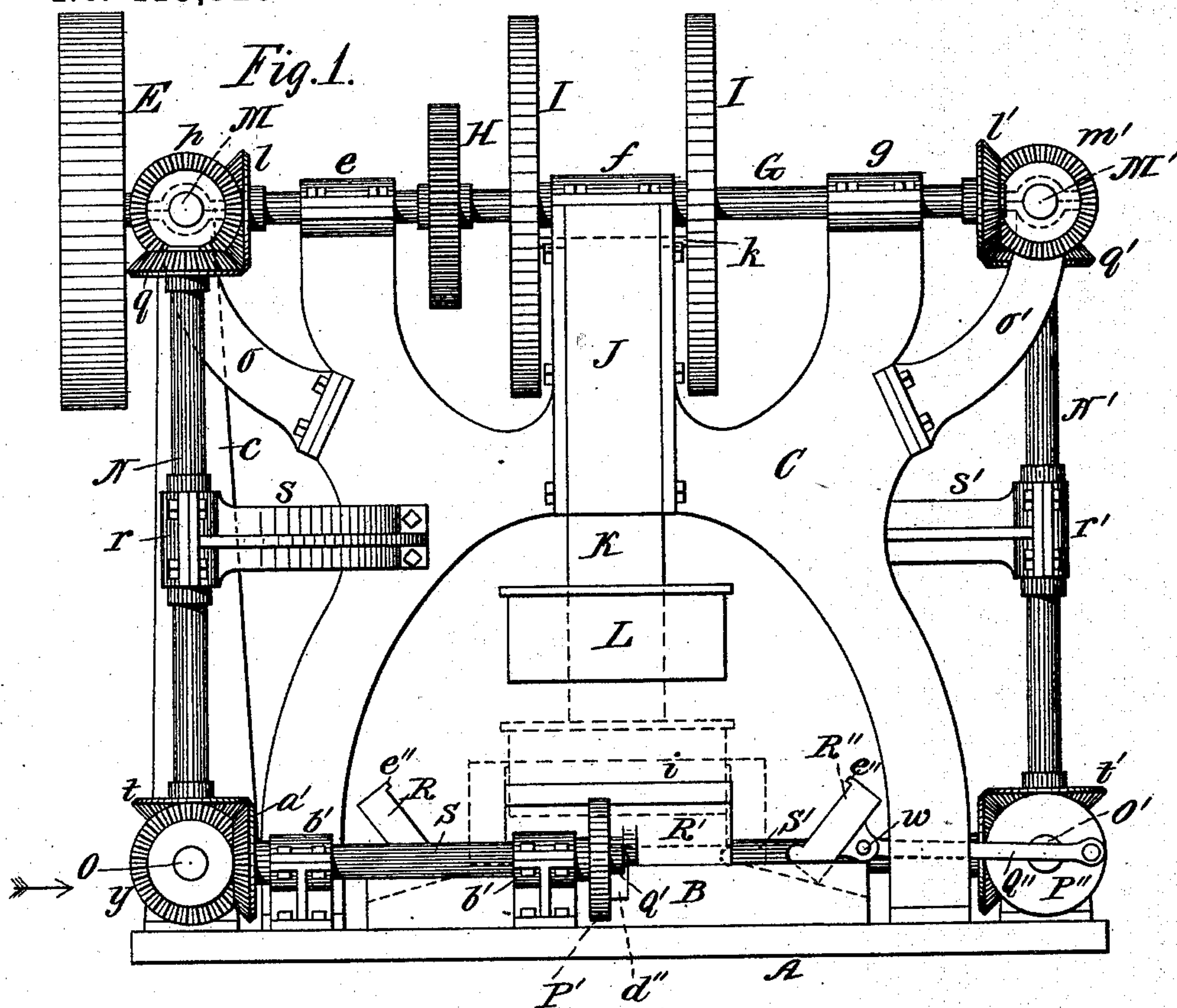
2 Sheets—Sheet 1.

T. HERBERGER & R. SINGER.

BOX MAKING MACHINE.

No. 413,323.

Patented Oct. 22, 1889.



Witnesses:
W. C. Jirdinston.
Charles Billou.

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(No Model.)

2 Sheets—Sheet 2.

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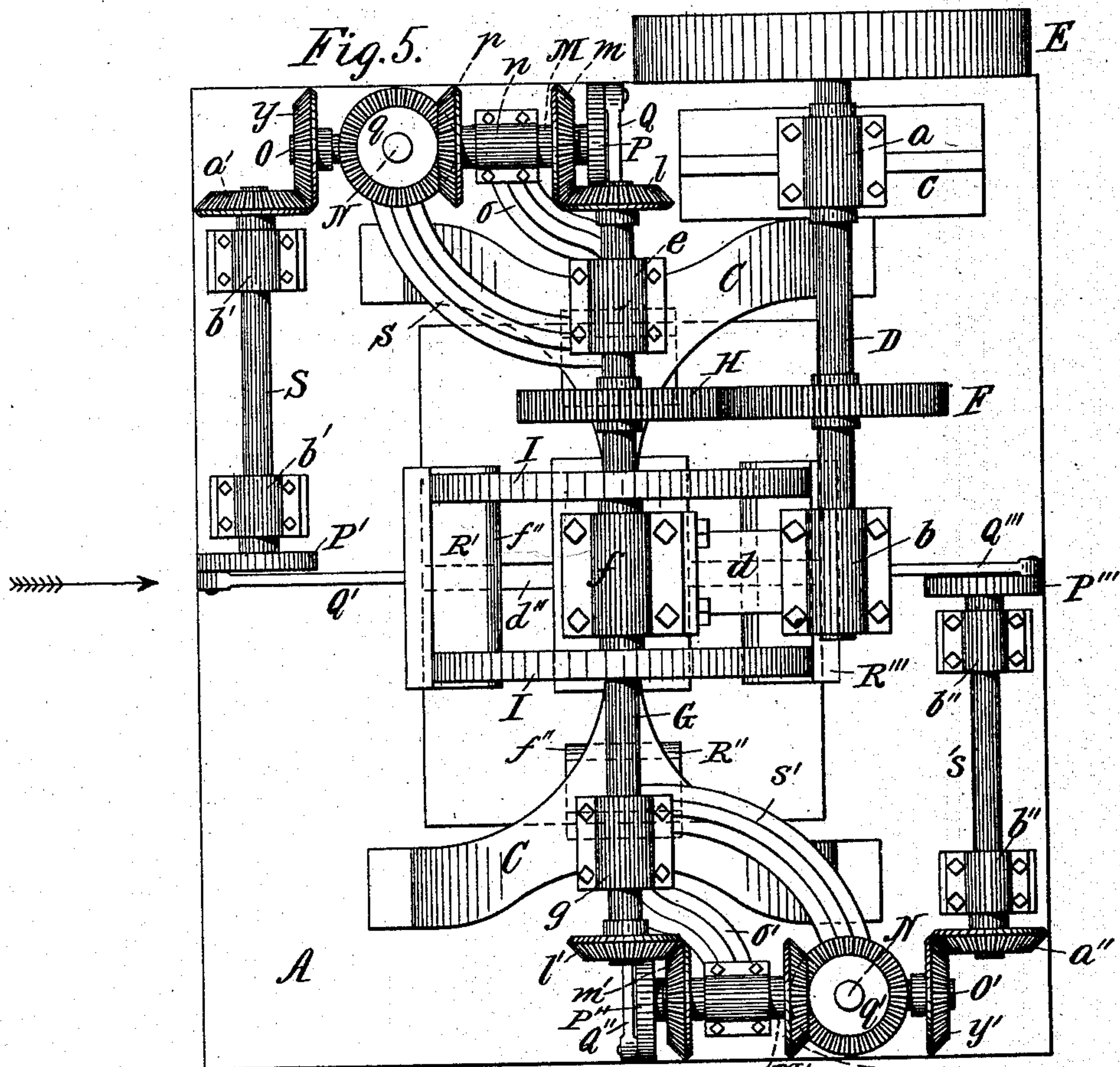


Fig. 6.

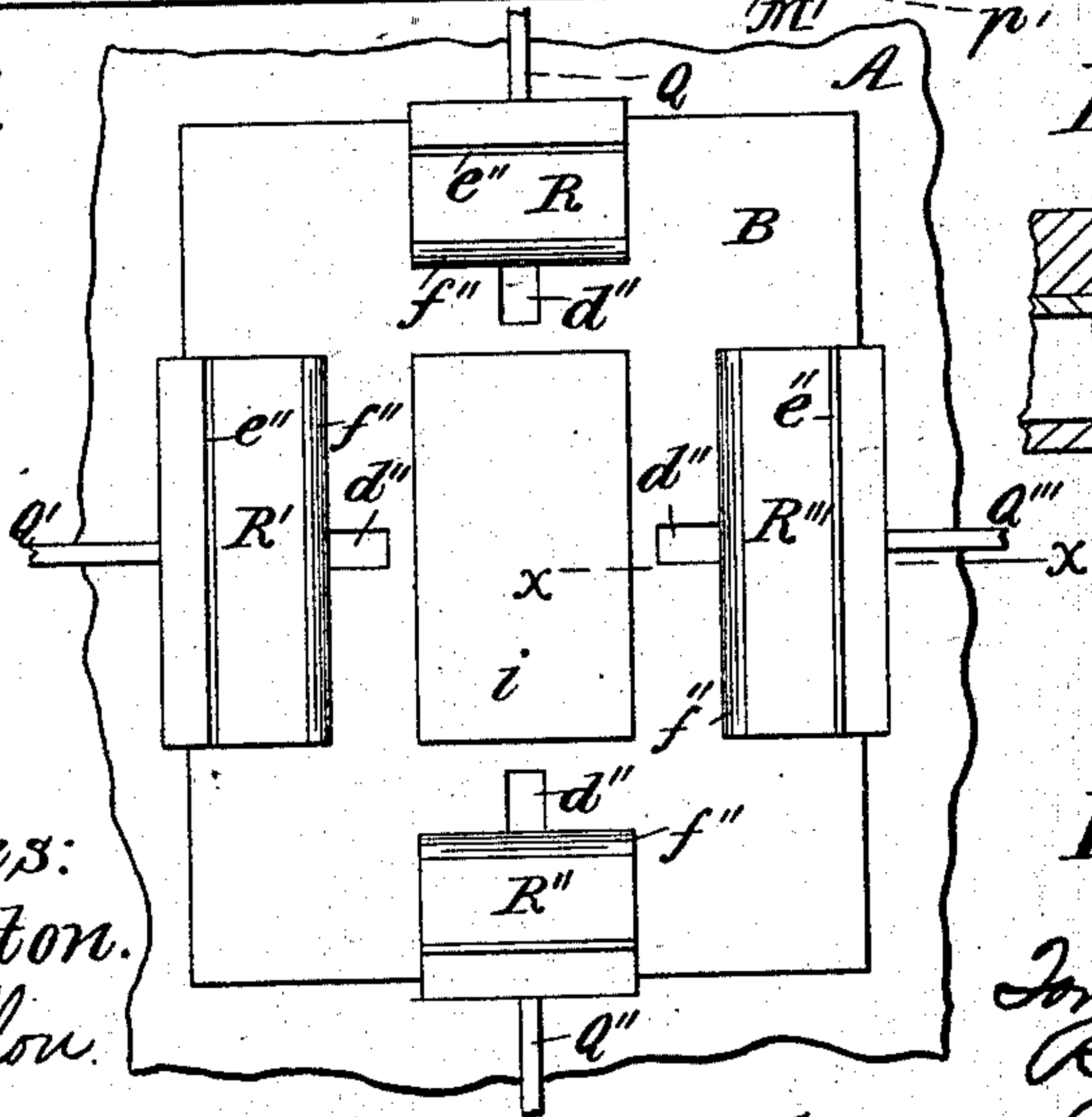
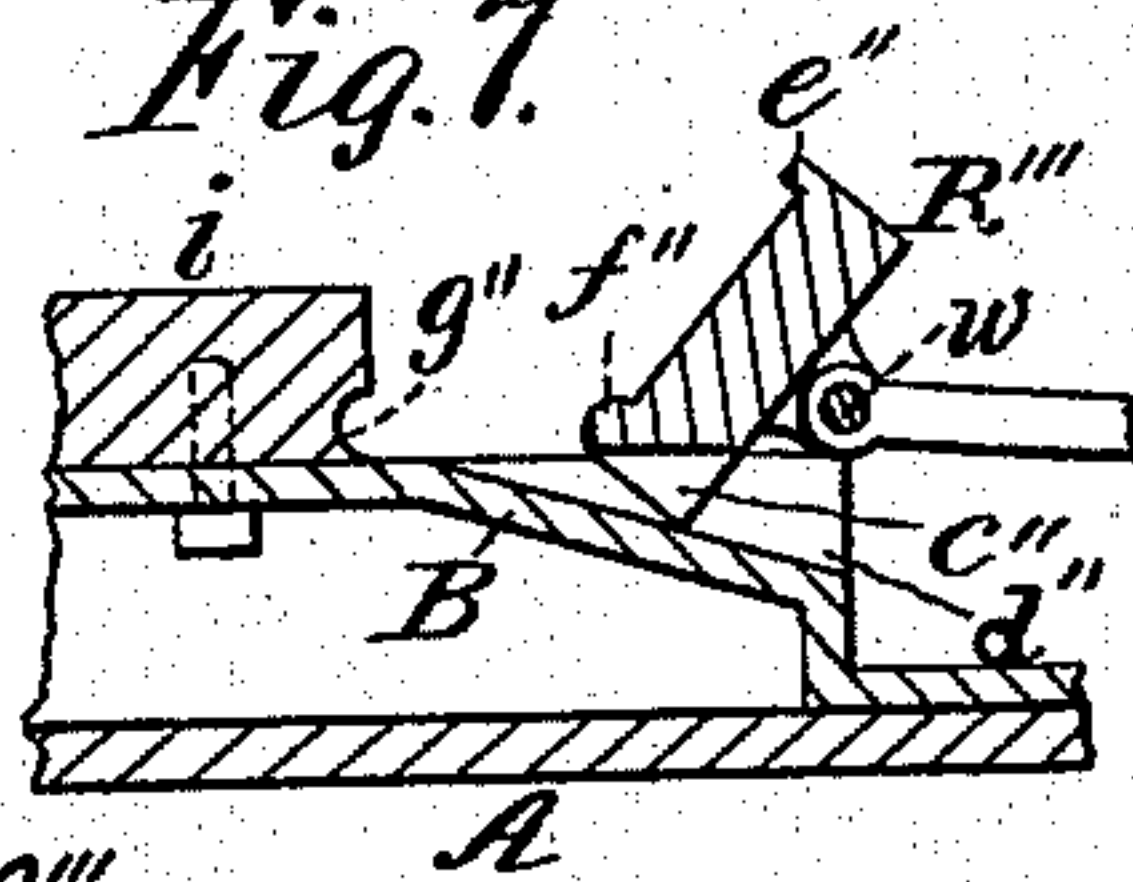


Fig. 7.



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UNITED STATES PATENT OFFICE.

TONY HERBERGER AND ROBERT SINGER, OF DAYTON, OHIO.

BOX-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 413,323, dated October 22, 1889.

Application filed March 18, 1889. Serial No. 303,700. (No model.)

To all whom it may concern:

Be it known that we, TONY HERBERGER and ROBERT SINGER, citizens of the United States, both residing at Dayton, in the county of Montgomery and State of Ohio, have jointly invented certain new and useful Improvements in Box-Making Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates more particularly to machines for forming or bending paper-box blanks for cigar-boxes; and it has for its object the improved construction and mode of operation of such machines.

The novelty of our invention will be herewith set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1, Sheet 1, is an elevation of a machine embodying our invention and looking at the same in the direction of the arrow of Fig. 5. Fig. 2, Sheet 1, is an inside elevation of one of the plunger-actuating cams. Fig. 3, Sheet 1, is an elevation, partly in section, of the plunger and its guide-housing. Fig. 4, Sheet 1, is a plan of the box-blank. Fig. 5, Sheet 2, is a plan view of the machine. Fig. 6, Sheet 2, is a detail plan view of the bed-plate and presser-blocks when the latter are drawn back. Fig. 7, Sheet 2, is a sectional elevation through the dotted line *x x* of Fig. 6. Fig. 8, Sheet 1, is a detail elevation of the lower corner of the machine, looking in the direction of the arrow, Fig. 1.

The same letters of reference are used to indicate identical parts in all the figures.

A is the bottom plate, upon which is firmly secured the bed-plate B and frame C, in which the various operating parts are journaled. Journaled in boxes *a b*, Fig. 5, upon an upright *c* and a bracket *d*, extending from the frame C, is a horizontal shaft D, upon which at the outer end is secured a driving-pulley E, and between the boxes a gear-wheel F. Over the center of the frame, in boxes *e f g*, is a second horizontal shaft G, parallel to the shaft D, and upon which is secured a gear-wheel H, with which the wheel F meshes. Secured upon the shaft G, on each side of the

center box *f*, is a disk I, the inner faces of which have coincident cam-grooves *h*, Fig. 2.

In a central vertical guide-housing J is a plunger K, to the lower end of which is secured a rectangular platen L, situated directly over the raised central rectangular bed *i* of the bed-plate B. The housing T has vertical slots *j*, Fig. 3, on each side, through which pins *k* extend from the plunger K into the cam-grooves *h* of the disks I.

Upon one end of the shaft G is a bevel-pinion *l*, meshing with a corresponding pinion *m* upon the end of a short horizontal shaft M, at right angles to the shaft G, and journaled in a box *n* upon a bracket *o*, extending from the frame C. The opposite end of the shaft M carries a bevel-pinion *p*, meshing with a corresponding pinion *q* upon the upper end of a vertical shaft N, journaled in a box *r* upon the end of a bracket *s*, extending from the frame C. Upon the lower end of the shaft N is a bevel-pinion *t*, meshing with a corresponding pinion *u* upon the middle of a horizontal shaft O, (see Fig. 8,) journaled in boxes *v* upon the bed A, and having at its end, over the middle of the bed A, a disk P or crank, from whose wrist-pin an arm or pitman Q extends inward, and has its inner end pivoted, as at *w*, Figs. 1 and 7, between ears or lugs upon the back of a presser-block R, to be presently described. The opposite end of the shaft O carries a bevel-pinion *y*, meshing with a corresponding pinion *a'* upon the outer end of a horizontal shaft S at right angles to the shaft O, and journaled in boxes *b'* upon the bed A. The inner end of the shaft S is provided with a disk P' or crank-arm, from whose inner end an arm or pitman Q' extends inward, and is pivoted similarly to Q to a second presser-block R'.

Upon the end of the shaft G, opposite the pinion *l*, is a bevel-pinion *i'*, meshing with a corresponding pinion *m'*, and thence follows an exact duplication of the parts above described, with the same reference-letters in order, and having a prime added to each, but on the diagonal corner of the machine, as will be readily understood by reference to Fig. 5. It results from this construction that there are four rectangular presser-blocks R, R', R'', and R''' opposite the four sides of the rectan-

gular bed *i*, and of a width corresponding to said sides, respectively, but of a greater height. Each block is beveled on its lower outer edge, except at the middle, where a lug *c''* is left, which is confined in an inclined groove *d''* in the bed-plate B, to serve as a guide. The upper inner edge of each block has a flange *e''* of the width of the block and about a depth corresponding to the thickness of the paper to be operated on, and the lower edge of each block has a rounded swell extending the width of the block, and adapted, when the blocks are brought up to a vertical position against the sides of the bed *i*, to fit and be caught in corresponding rounded grooves or depressions *g''* in the lower edges of said bed.

The box-blank, Fig. 4, of suitably thick paper, preferably moistened, is placed with its central portion upon the bed *i*, with the parts *h''* to form the sides projecting therefrom, and the machine is started. The parts are so adjusted and the size of the gears and shape of the cam-slots *h* are such that the platen L is first quickly lowered by the plunger K upon the central portion of the paper blank and clamps it to the bed *i* before the arms Q, Q', Q'', and Q''' press inward the presser-blocks into contact with the projections *h''* of the blank; but these blocks immediately follow and bend up the projections *h''* against the sides of the platen L, and the parts assume the position shown by the dotted lines in Fig. 1, thereby forming the blank into box shape. When the plunger and platen are raised by the complete revolution of the disks I, the box is removed and its corner edges secured in any suitable manner, as by pasting paper strips around them. If desired, the bed *i* may have heat applied to it.

Having thus fully described our invention, we claim—

1. In a box-machine, the combination, with the stationary bed-plate and a vertically-reciprocating clamping-platen above the same, of laterally-arranged sliding and swinging presser-blocks, and mechanism for actuating said clamping-platen and presser-blocks, substantially as described.

2. In a box-machine, the combination, with a stationary bed-plate and a vertically-reciprocating clamping-platen above the same, of laterally-arranged sliding and swinging presser-blocks provided with flanges on their upper inner edges and rounded swells on their lower-inner edges adapted to be caught and engaged by grooves in the bed-platen while the blocks are being swung up, and mechanism for actuating said clamping-platen and presser-blocks, substantially as described.

3. In a box-machine, the combination, with a vertically-reciprocating clamping-platen, a bed-plate beneath the same, and sliding and swinging presser-blocks, of a pitman for each block, and mechanism for actuating said platen and pitman, substantially as described.

4. The combination and arrangement of the base A, beds B *i*, frame C, guide-housing J, with its slots *j*, platen L, with its plunger K and pins *k*, shaft G, with its cam-slotted disks I and pinions *l l'*, shafts M M', with pinions *m p m' p'*, shafts N N', with pinions *q t q' t'*, shafts O O', with pinions *u y u' y'* and disks P P'', shafts S S', with pinions *a' a''* and disks P' P''', pitmen Q Q' Q'' Q''', and presser-blocks R R' R'' R''', all substantially in the manner and for the purpose specified.

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