

4 Sheets—Sheet 1.

Patented Dec. 8, 1891.

Fig. 1.

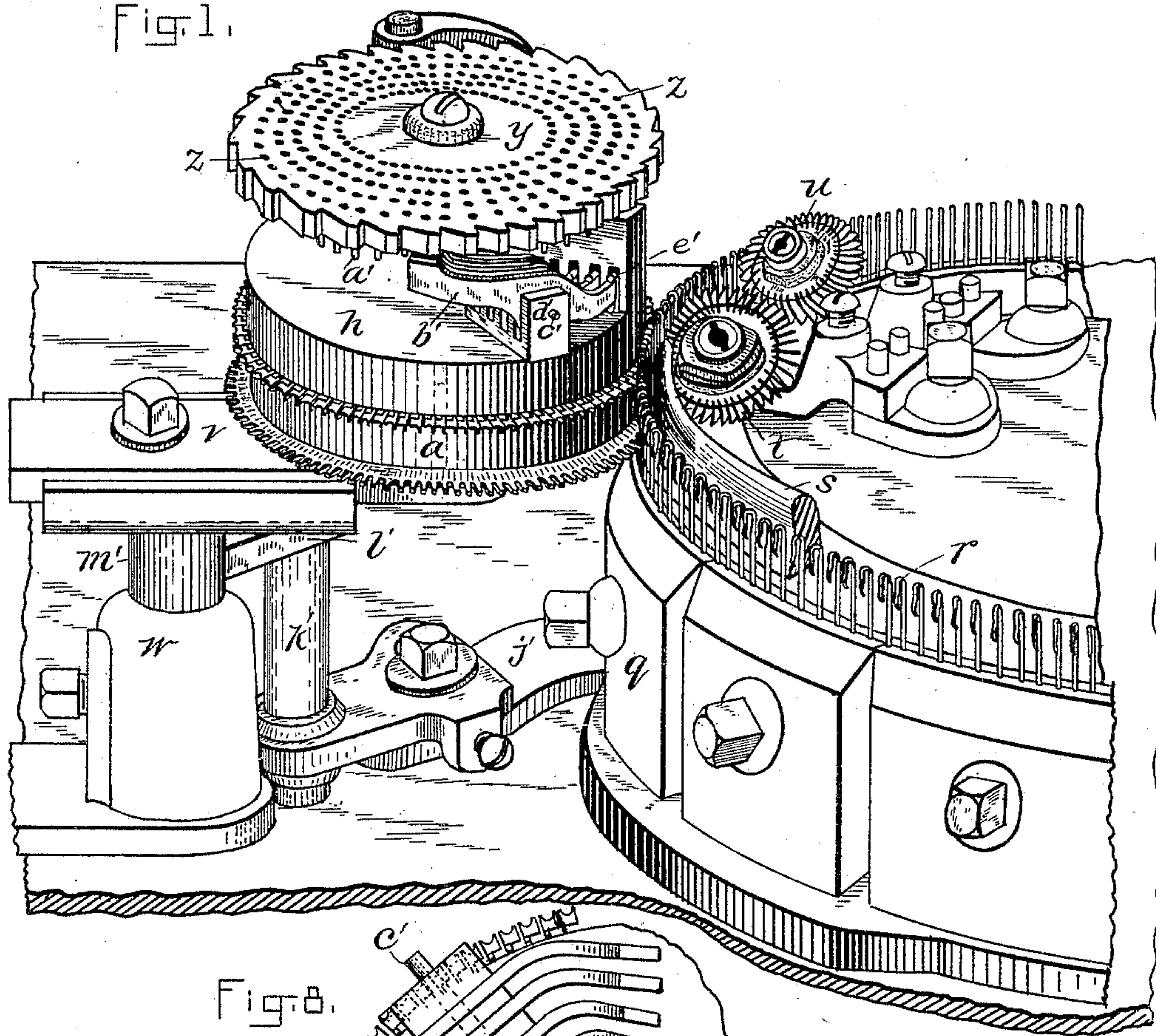
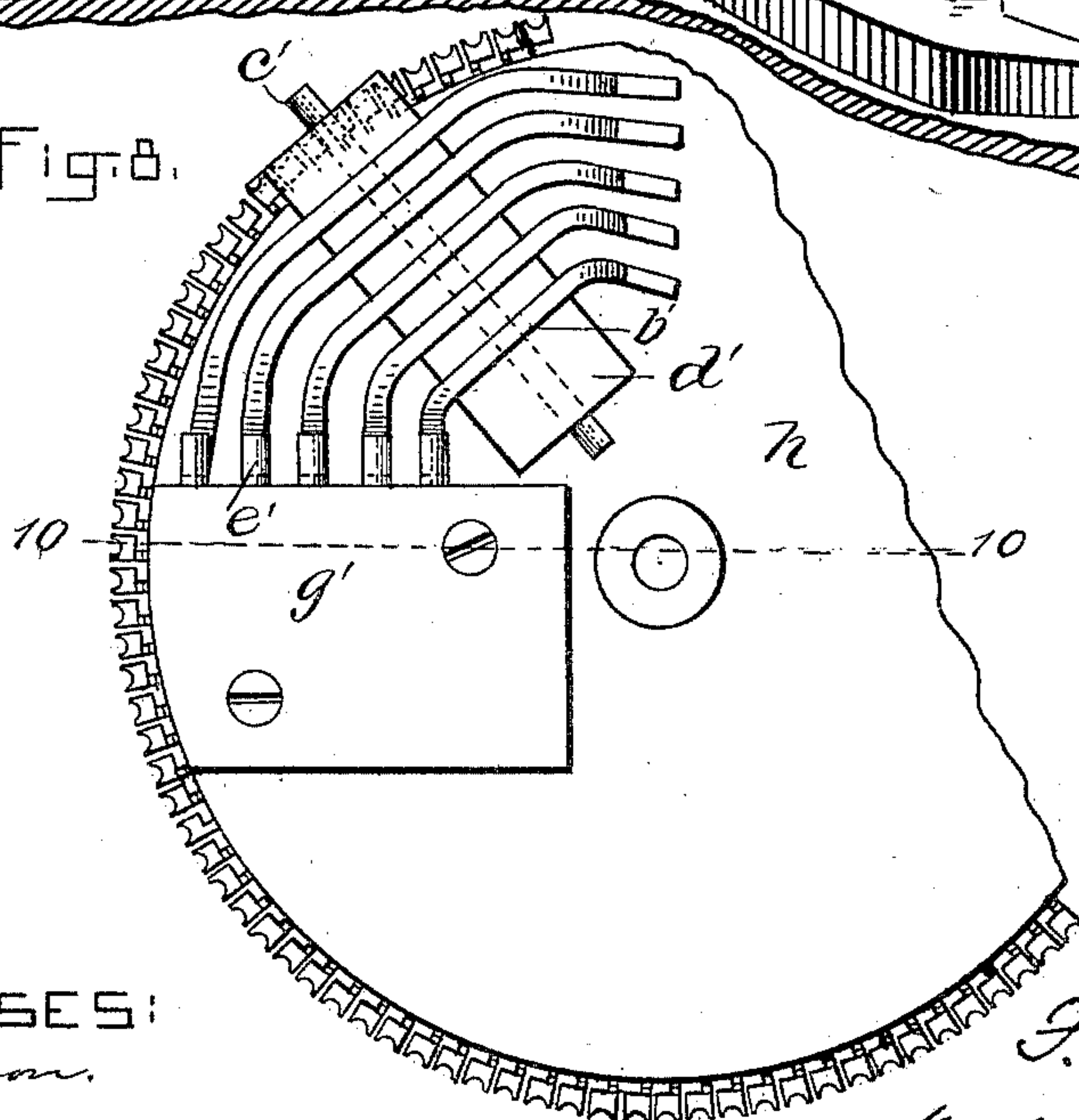


Fig. 8.



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(No Model.)

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F. L. WIGGIN.

PRESSER WHEEL FOR KNITTING MACHINES.

No. 464,907.

Patented Dec. 8, 1891.

Fig 2.

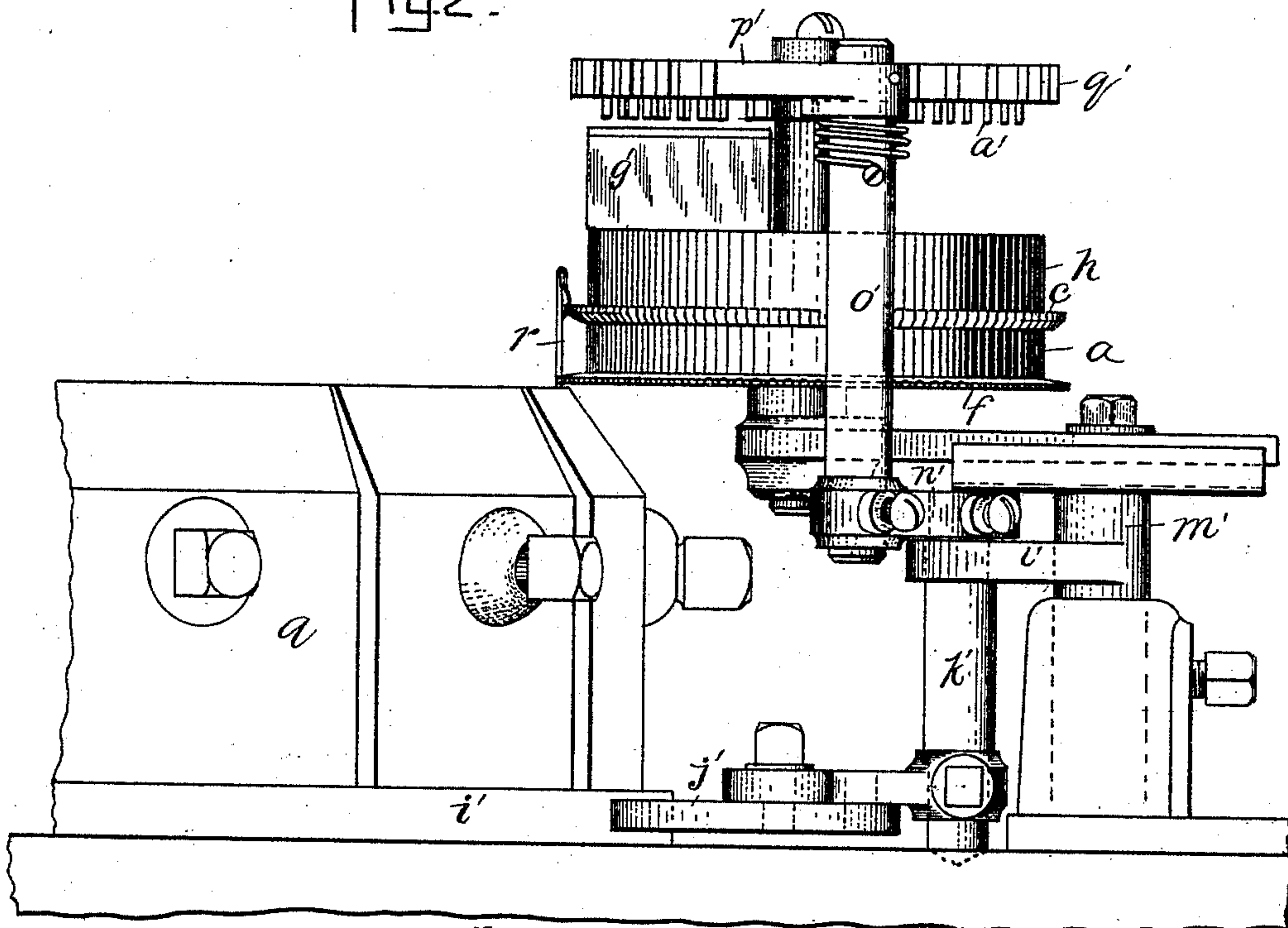
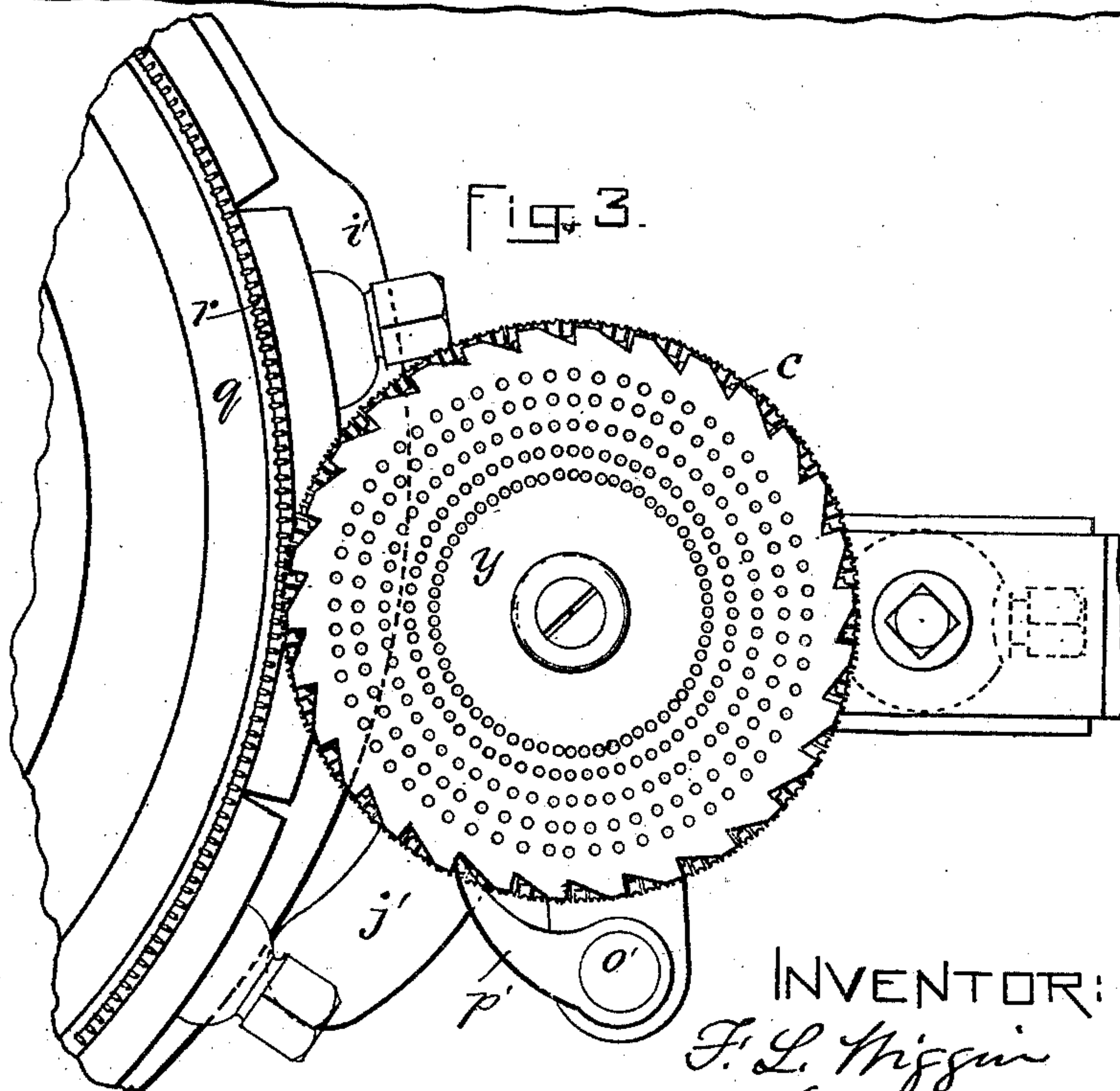


Fig 3.



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(No Model.)

4 Sheets—Sheet 3.

F. L. WIGGIN.
PRESSER WHEEL FOR KNITTING MACHINES.

No. 464,907.

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FIG. 5.

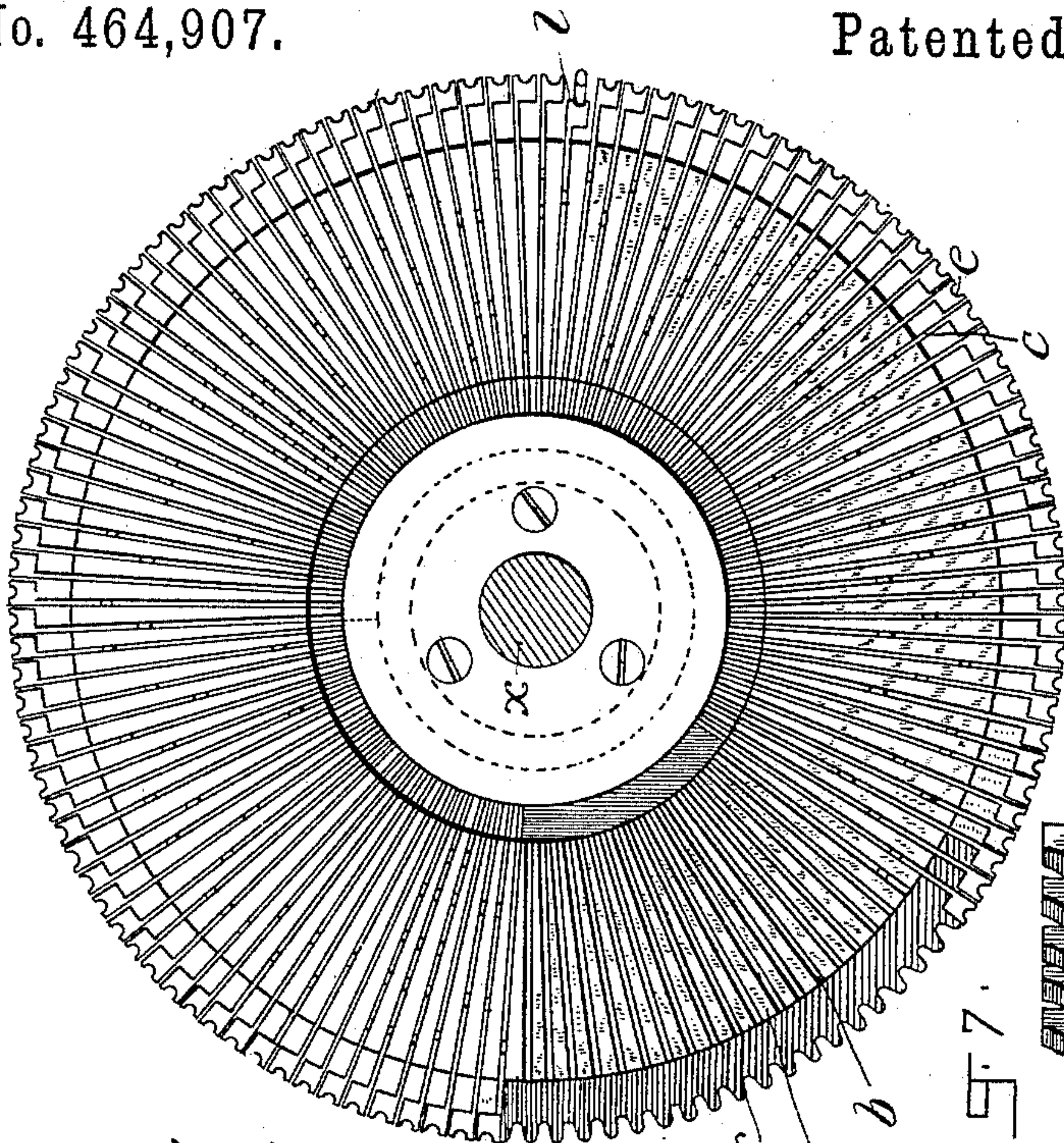


FIG. 7.

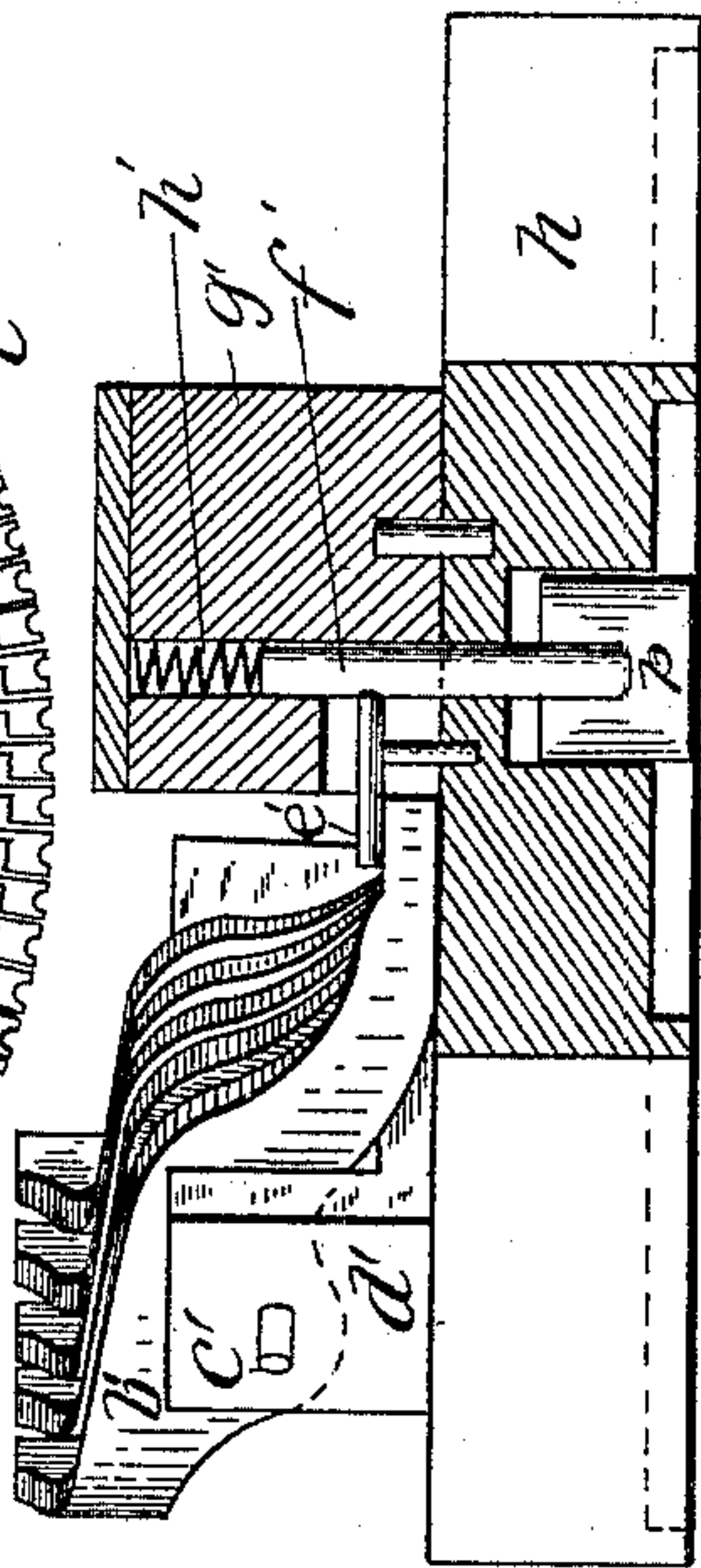


FIG. 4.

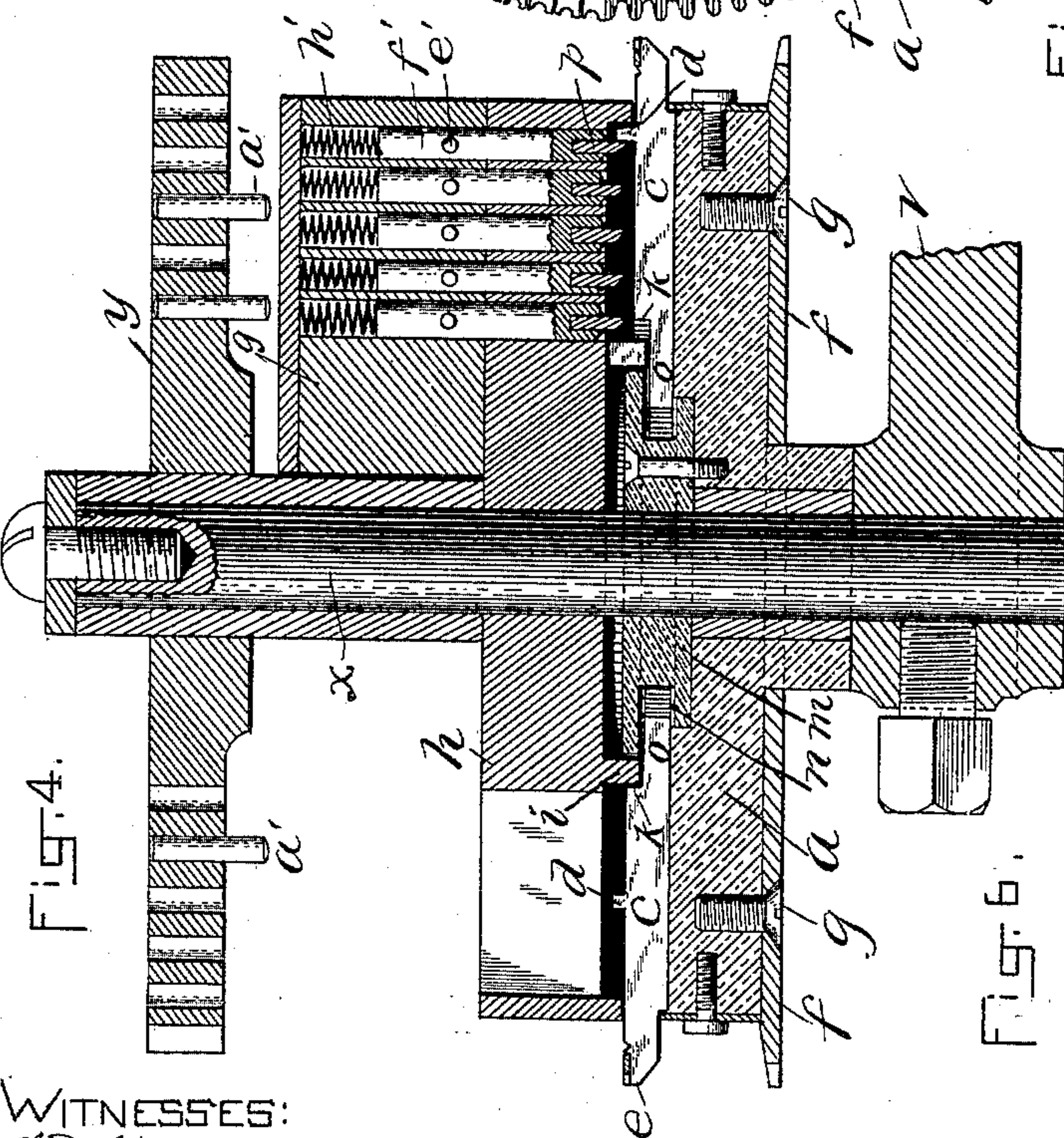
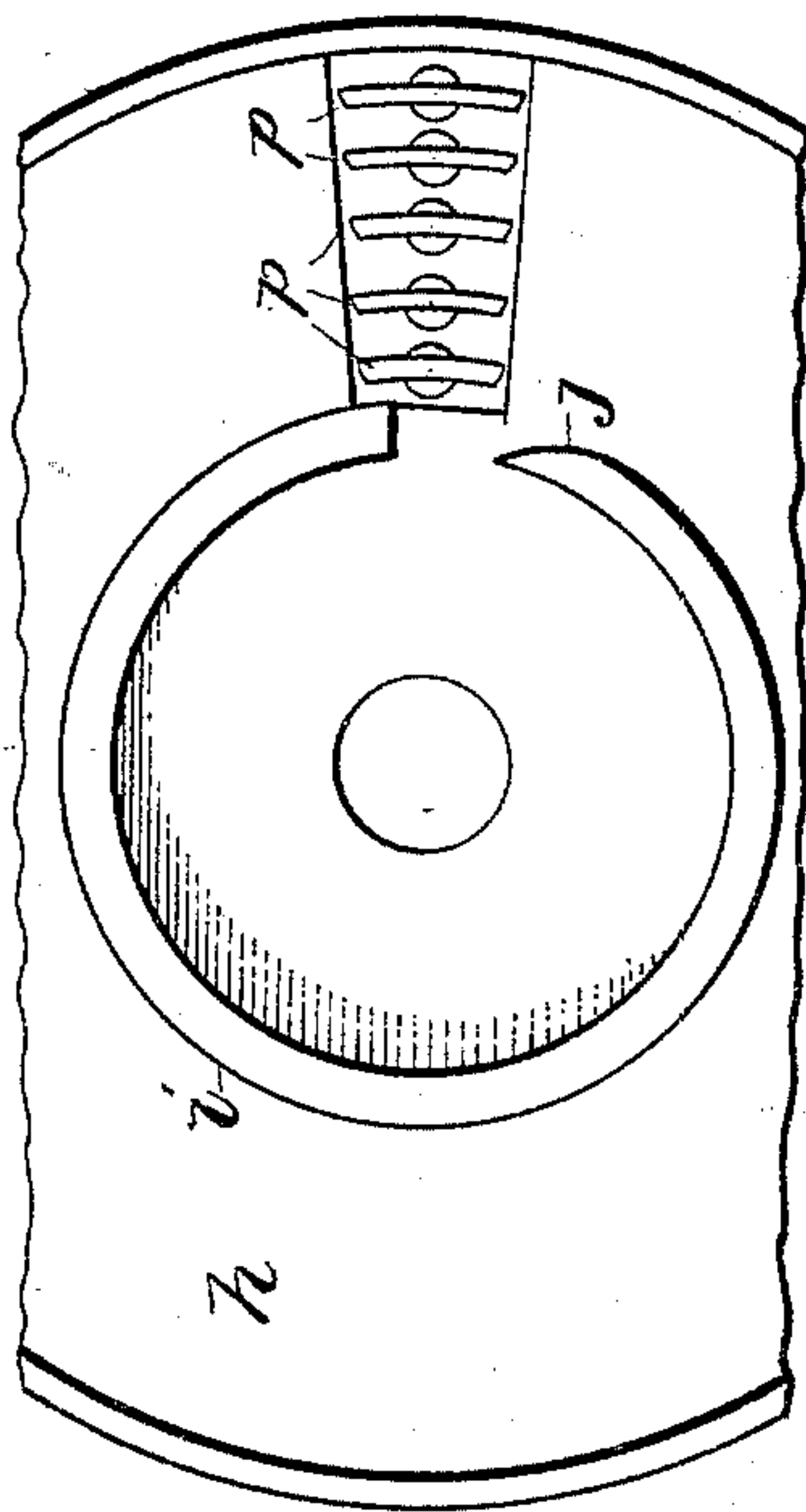


FIG. 6.



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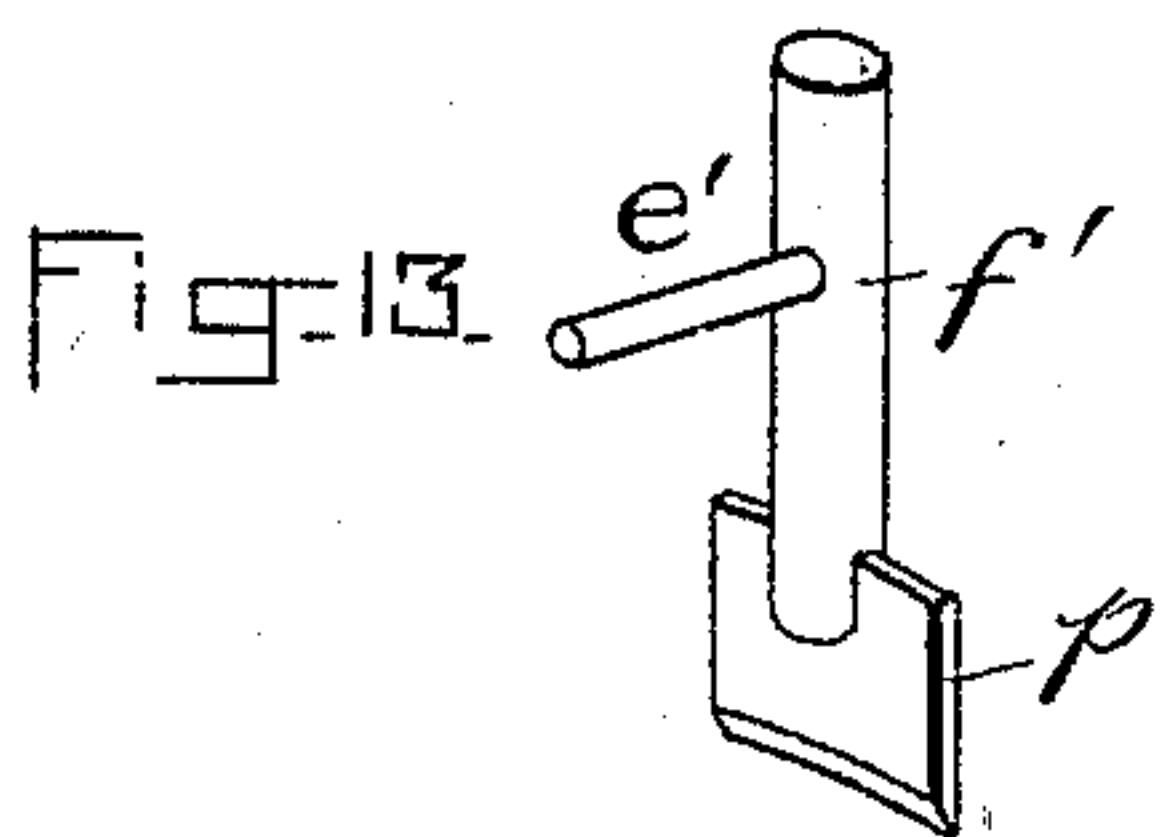
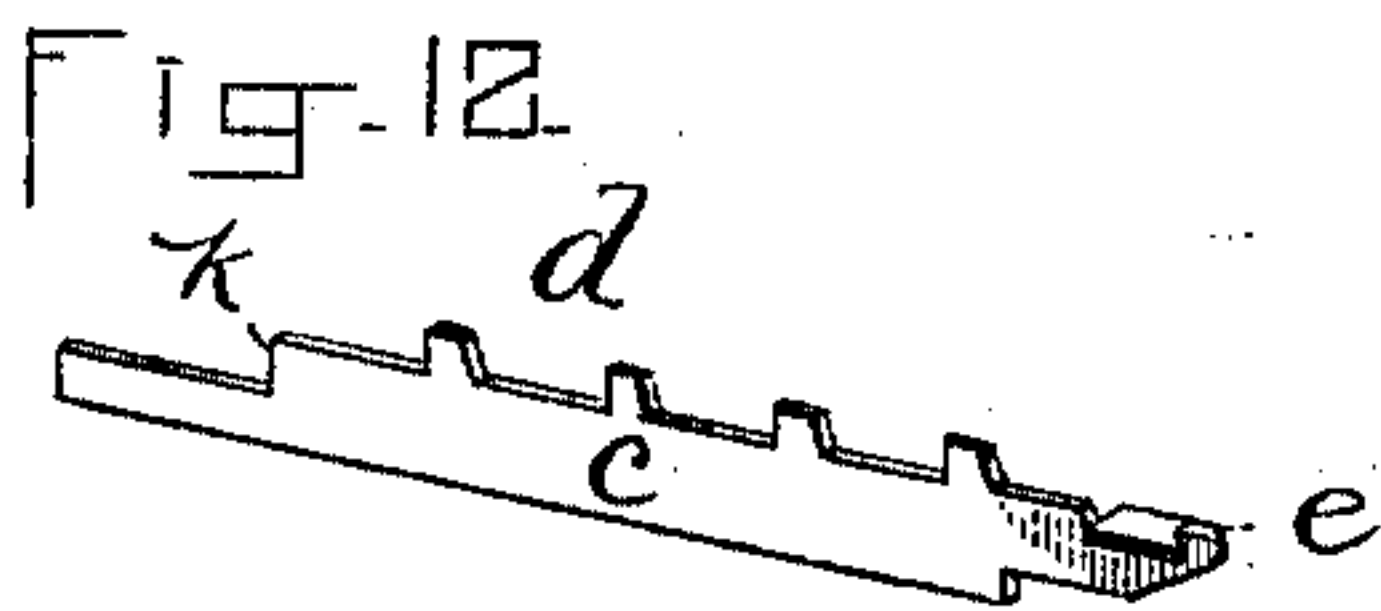
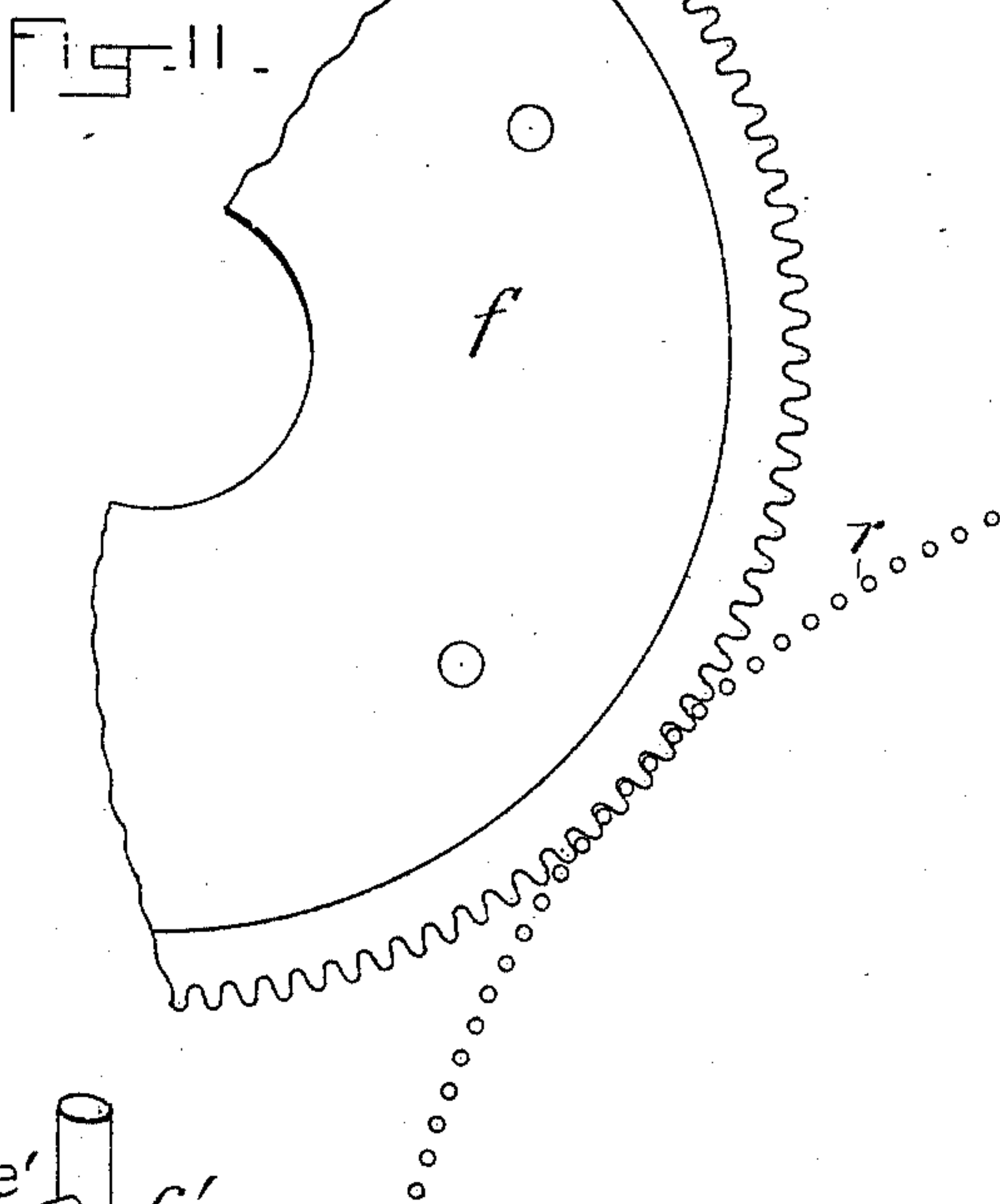
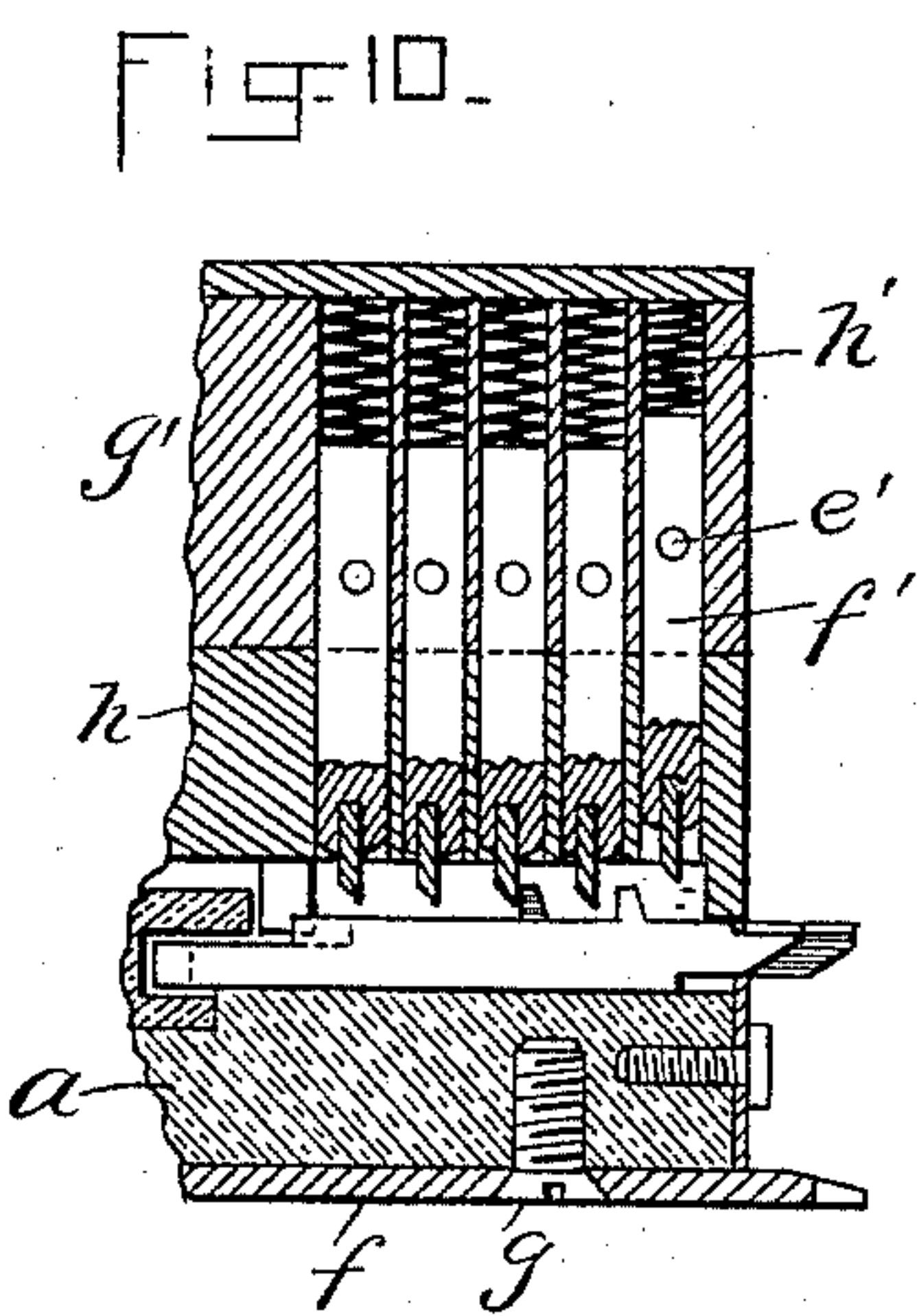
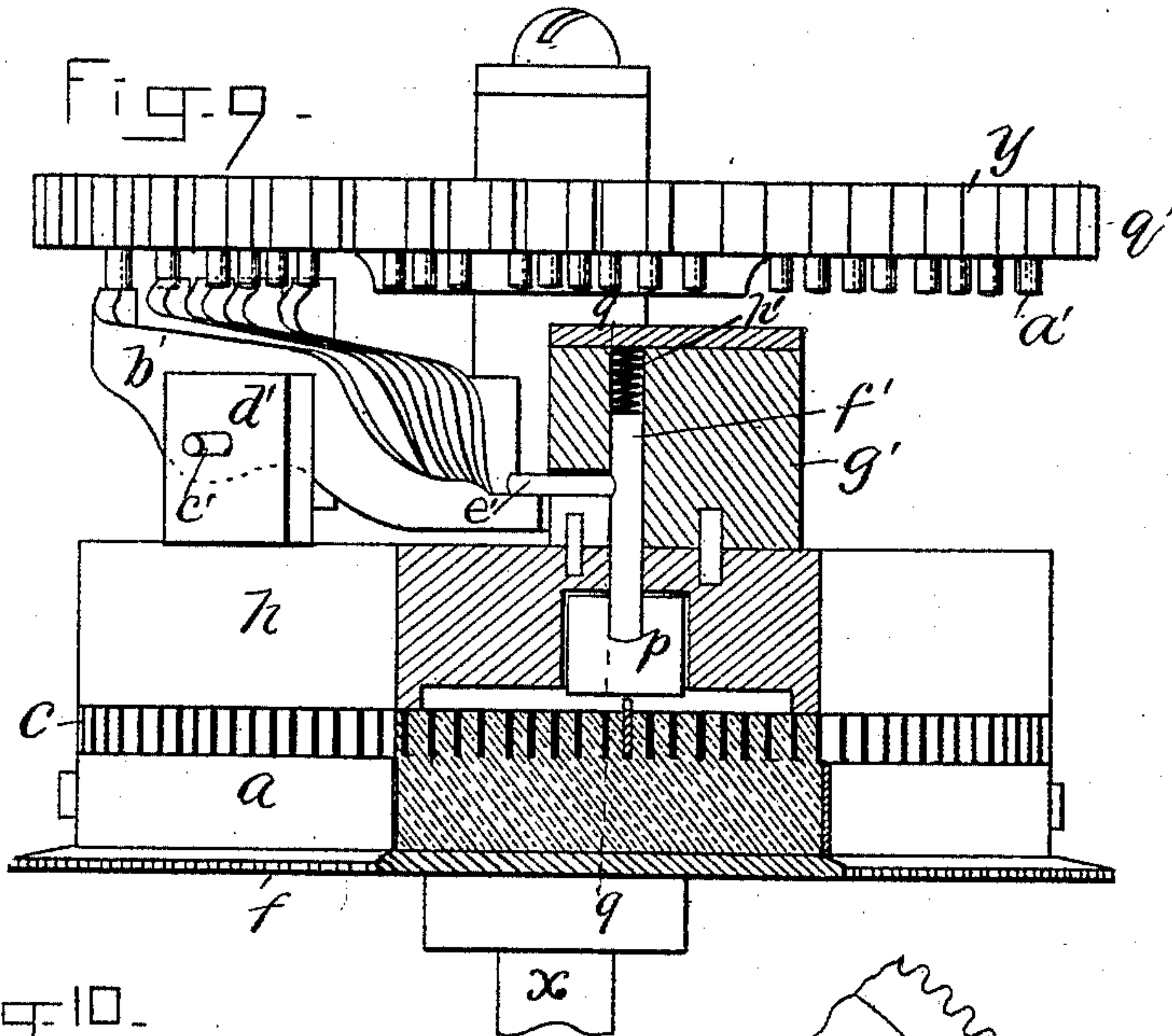
(No Model.)

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F. L. WIGGIN.
PRESSER WHEEL FOR KNITTING MACHINES.

No. 464,907.

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UNITED STATES PATENT OFFICE.

FRANK L. WIGGIN, OF LOWELL, MASSACHUSETTS.

PRESSER-WHEEL FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 464,907, dated December 8, 1891.

Application filed September 15, 1890. Serial No. 365,113. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. WIGGIN, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Presser-Wheels for Knitting-Machines, of which the following is a specification.

It is the object of my invention to provide such improvements in spring-beard-needle knitting-machines as will enable the Jacquard or pattern principle to be applied to tuck-presser wheels, so that a single presser, in conjunction with other adjunctive devices necessary to the operation of knitting, may be rendered capable of producing substantially any design within the range of tuck-stitch knitting.

My invention consists of a presser-wheel embracing independently-movable presser-bits so arranged and operated as to regularly engage or oppose the needles and press or mispress the beards of the same in a predetermined order, a pattern device being employed to control the presser-bits to render the same operative or inoperative as pressers.

My invention also consists of parts and combinations of parts entering into the contrivance as a whole, as above mentioned.

The invention will first be described in connection with the annexed drawings and the letters of reference marked thereon, forming a part of this specification, and then be set forth with particularity in the appended claims.

Of the drawings, Figure 1 is a perspective view of my improved presser-wheel, its adjuncts, and so much of a knitting-machine as it is necessary to show in order to explain my improvements. Fig. 2 is a rear view, and Fig. 3 a top plan view, of the same. Fig. 4 is a vertical sectional view of the presser and pattern wheels and immediately adjunctive parts. Fig. 5 is a top plan view of the presser-bit disk or bed, some of the presser-bits being shown as removed and an inoperative bit being shown in connection with its opposing needle. Fig. 6 is a bottom plan view of a portion of the cam disk or dial and co-operating devices for controlling the action of the presser-bits. Fig. 7 is a side view, partially in section, of the parts shown in Fig. 6, and showing also the levers and their supports

and some adjunctive parts, illustrating the manner in which the presser-bits may be held in operative position, or left so as to be inoperative. Fig. 8 is a top plan view of Fig. 7. Fig. 9 is a side view of the invention, looking, as it were, from the center of the needle-cylinder, parts being represented in section and but a single presser-bit being shown. Fig. 10 is a sectional detail taken on the line 10 10 of Fig. 8. Fig. 11 is a diagram illustrative of the means whereby the presser is operated regularly with respect to the needles. Fig. 12 is a perspective view of a presser-bit. Fig. 13 is a perspective view of a presser-bit holder. The same letters designate the same parts or features, as the case may be, wherever they occur.

The form of my improved presser-wheel which I have chosen to illustrate herein comprises a disk *a*, provided in its upper face with radial grooves *b*, in which are arranged the presser-bits *c*, so that they may be moved longitudinally to a limited extent. The presser-bits *c* consist of thin strips of steel and are provided with one or more nibs or heels *d*, their forward ends *e*, which project slightly beyond the periphery of the bed *a*, being broadened and notched or otherwise suitably constructed to adapt them to engage and press the beards of the needles when brought into proper position to accomplish this function. The disk or bed *a* is provided with a toothed rim *f*, which may be an integral part of said disk or be formed as here shown—that is, as consisting of a disk having teeth formed in its periphery in such manner as to be engaged by the stems of the needles of the knitting-machine in regular order, which disk *f* is secured to the lower face of the bed *a* by means of screws *g*.

h designates a dial arranged above the bed *a* and provided on its lower face with a cam-ring *i*, which ring at the point *j* is adapted, as the bed is rotated, to engage the offset *k* of the presser-bits, near the heel of the latter, and move said bits outward to the position in which all save one are shown in Fig. 5 should they, from a reason which will presently appear, have been moved back or inward, as shown at *l* in said last-mentioned figure.

m designates a hub secured to the bed *a*

and provided with a groove *n* in its periphery, into which the tails *o* of the presser-bits may extend, which contrivance affords a desirable means for guiding and keeping the bits *c* in proper position.

p designates holders or controllers arranged in the dial *h* opposite the point at which the presser-bits are engaged by the needles, said holders or controllers being movable in the dial *h*, so as to be passed down behind the nibs *d* of the presser-bits and hold the latter against backward movement in their slots *b*. I have herein shown the dial *h* as equipped with five holders or controllers *p*, and each of the bits *c* as provided with a nib or heel *d* at a point, so that when the bit is moved outward by the cam-ring *i* the said nib will pass in front of one of the holders or controllers, or if the bit be provided with more than one nib all will pass in front of certain of the holders.

The normal position of the holders *p* is that in which they are shown in Figs. 6 and 7, so that they may pass behind the nibs *d* and hold the bits *c* against backward movement. Should any of the holders be raised, as represented in Figs. 9 and 10, the presser-bits having only heels which pass on a line in front of such raised holders will be moved back by contact with the beards of the needles, as will presently be described, without pressing the same.

As my device is contrived to press or mispress the beards of the needles in the performance of tuck-stitch knitting, it will be seen that when it is arranged to engage the needles, as hereinbefore stated and as is represented in Figs. 1, 2, and 3 and as shown at *l* in Fig. 5, such presser-bits only as are held against backward movement by the holders or controllers *p* will operate to press the beards of the needles so as to allow the stitch on such needle to be "landed."

Without further description it will now be obvious to those skilled in the art of knitting that by an arrangement of the bits *c*, having respect to the position and number of the nibs *d* thereon and the raising of the holders *p* in a predetermined order, my improved presser may be employed in knitting a practically endless variety of tuck-stitch designs, and, further, that a Jacquard or pattern mechanism may be readily applied to the presser to raise the holders or controllers in any order that might be desired.

I may employ various forms of pattern mechanisms for controlling the positions of the holders *p*; but it will be sufficient to explain that form which I have chosen to illustrate herein.

q designates a rotary needle-cylinder provided with spring-beard needles *r*.

s is the push-back, *t* the landing-wheel, and *u* the knocking-over wheel.

v is a bracket secured upon a standard *w* or other suitable support connected with the bed of the machine. To the inner end of the

bracket *v* there is connected a stud or spindle *x*, upon which the bed or disk *a* is adapted to rotate and to which the dial *h* is secured.

y is a pattern-disk arranged so that it may be rotated on the spindle *x*, and provided with a circular series of holes *z* concentric with the axis of the said pattern-disk. The holes *z* are adapted to receive pattern-pins *a'*, so that the same may extend down from the lower face of the disk *y*, and as the said disk is rotated be brought into contact with the free ends of the levers *b'*, fulcrumed upon a rod *c'* in a bracket or comb-block *d'*, secured to the upper face of the dial *h*, and so depress said free ends of said levers and raise the opposite ends, each of which extends to a point just below a pin *e'*, projecting laterally from a rod *f'*, connected at its lower end with one of the holders or controllers *p*. The rods *f'* of the holders are arranged to be moved vertically in guideways formed in a block *g'*, secured to the dial *h*, and have springs *h'* arranged thereabove and bearing thereon, so as to press the holders down to normal position, as has been explained.

i' designates a cam on the needle-cylinder, adapted to engage the free end of the lever *j'*, which at its opposite end is rigidly connected with the lower end of a short shaft *k'*, having a bearing at its upper end in the outer end of an oscillatory arm *l'*, connected with a sleeve or collar *m'*, surrounding standard *w*. To the upper end of the shaft *k'* there is connected one end of an oscillatory arm *n'*, similar to arm *l'*, (see Fig. 2,) the opposite end of which is connected with the lower end of a shaft *o'*, on the upper end of which is a spring-pressed pawl *p'*, adapted to engage the ratchet-teeth *q'* on the periphery of pattern-disk *y*.

By this construction and arrangement of parts it will be seen that the pattern-disk *y* may be rotated at each rotation of the needle-cylinder to the extent of the distance between one ratchet-tooth *q'* and that next adjacent thereto, and so operate the levers *b'*, or certain of them, by contact of their free ends with the pins *a'* to raise the corresponding holders *p*, whereby such presser-bits *c* as may not be held against rearward movement by the holders *p* will fail to press the beards of the needles with which they engage and be moved rearward in their slots *b*, as is clearly shown at *l* in Fig. 5. I do not, however, confine myself to the form of pattern mechanism shown nor to the form and arrangement of the holders illustrated and described herein, since it is obvious that these may be varied without departing from the nature or spirit of the invention.

Fig. 11 illustrates the manner in which the toothed wheel *f*, connected with the bed *a*, may be engaged by the stems of the needles to rotate the said bed.

I have shown the devices as equipped with five holders or controllers adapted to operate upon the nibs of the presser-bits arranged in five circular lines; but a greater or less number of these parts and features may be em-

ployed, it being necessary only to adapt the pattern mechanism thereto.

Having thus explained the nature of my invention and described a way of constructing and using the same, I declare that what I claim is—

1. A presser-wheel for knitting-machines, embracing independently - movable presser-bits, a support therefor, movable holders or controllers for the said presser-bits, and a pattern mechanism to control said holders, as set forth.

2. A presser-wheel for knitting-machines, embracing independent radially - movable presser-bits, a support therefor, movable holders or controllers for the said presser-bits, and a pattern mechanism to control said holders, as set forth.

3. A presser-wheel for knitting-machines, embracing independent radially - movable presser-bits, each bit being provided with one or more nibs, holders or controllers to engage the said nibs, and a pattern mechanism to control said holders, as set forth.

4. A presser-wheel for knitting-machines, embracing a radially - grooved bed or disk, movable bits provided with nibs arranged in said grooves, holders or controllers to engage said nibs, and a pattern device to control said holders, as set forth.

5. A presser-wheel for knitting-machines, embracing a radially - grooved bed or disk, movable bits provided with nibs arranged in

said grooves, a cam dial or disk to engage the bits and move the same outward into operative position, holders to engage the nibs of the bits to render the latter operative, and a pattern device to control said holders, as set forth.

6. A presser-wheel for knitting-machines, embracing a radially-grooved bed or disk provided with a notched or toothed rim to engage the shanks of the needles, movable bits provided with nibs arranged in said grooves, a cam dial or disk to engage the bits and move the same outward into operative position, holders to engage the nibs of the bits to render the latter operative, and a pattern device to control said holders, as set forth.

7. The combination, with the needle-cylinder and needles, of a presser-wheel having independently-movable presser-bits, a support therefor, movable holders or controllers for said bits, a pattern mechanism to control said holders, and means intermediate of the needle-cylinder and pattern mechanism to actuate said pattern mechanism, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 30th day of August, A. D. 1890.

FRANK L. WIGGIN.

Witnesses:

ARTHUR W. CROSSLEY,
A. D. HARRISON.