

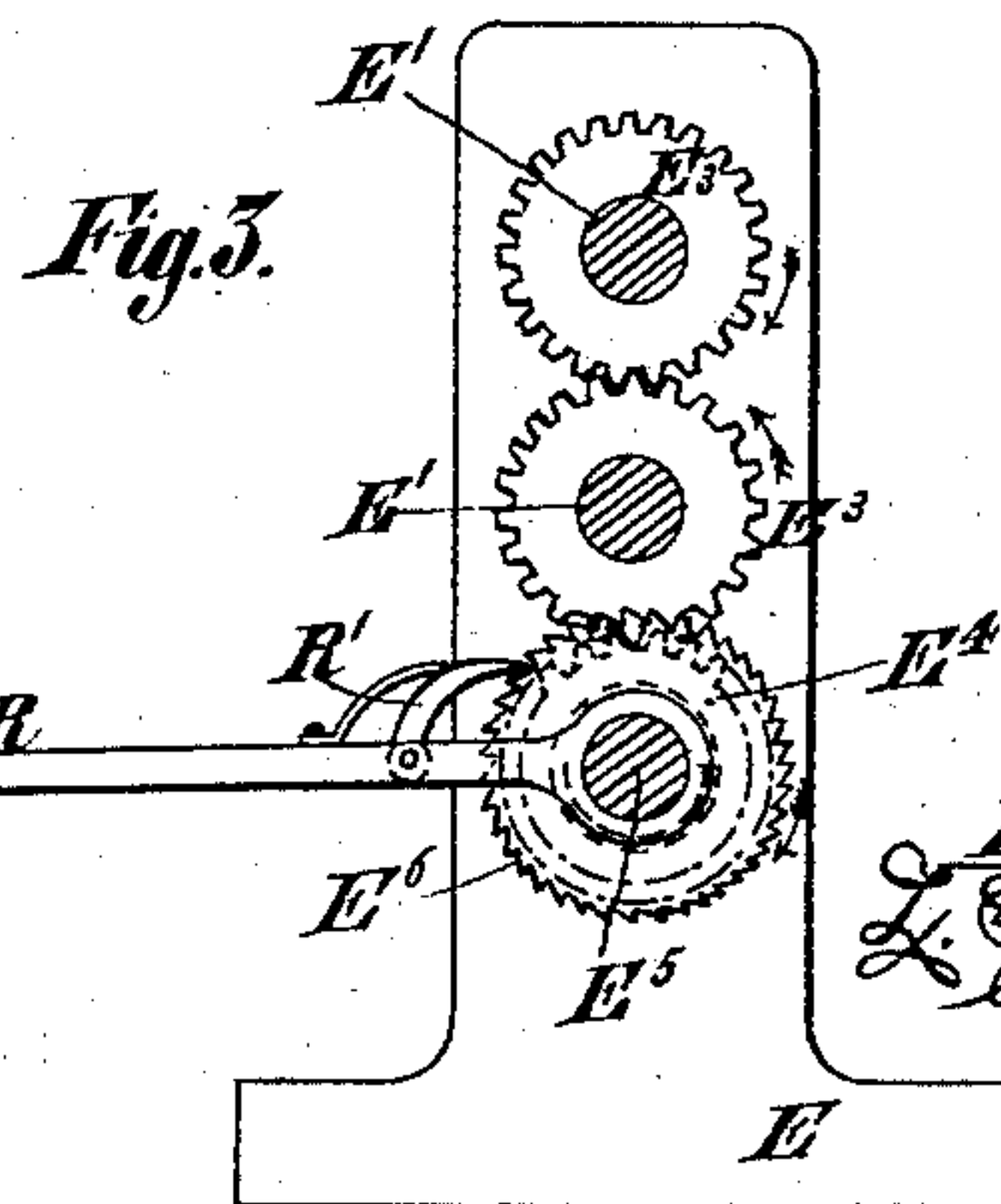
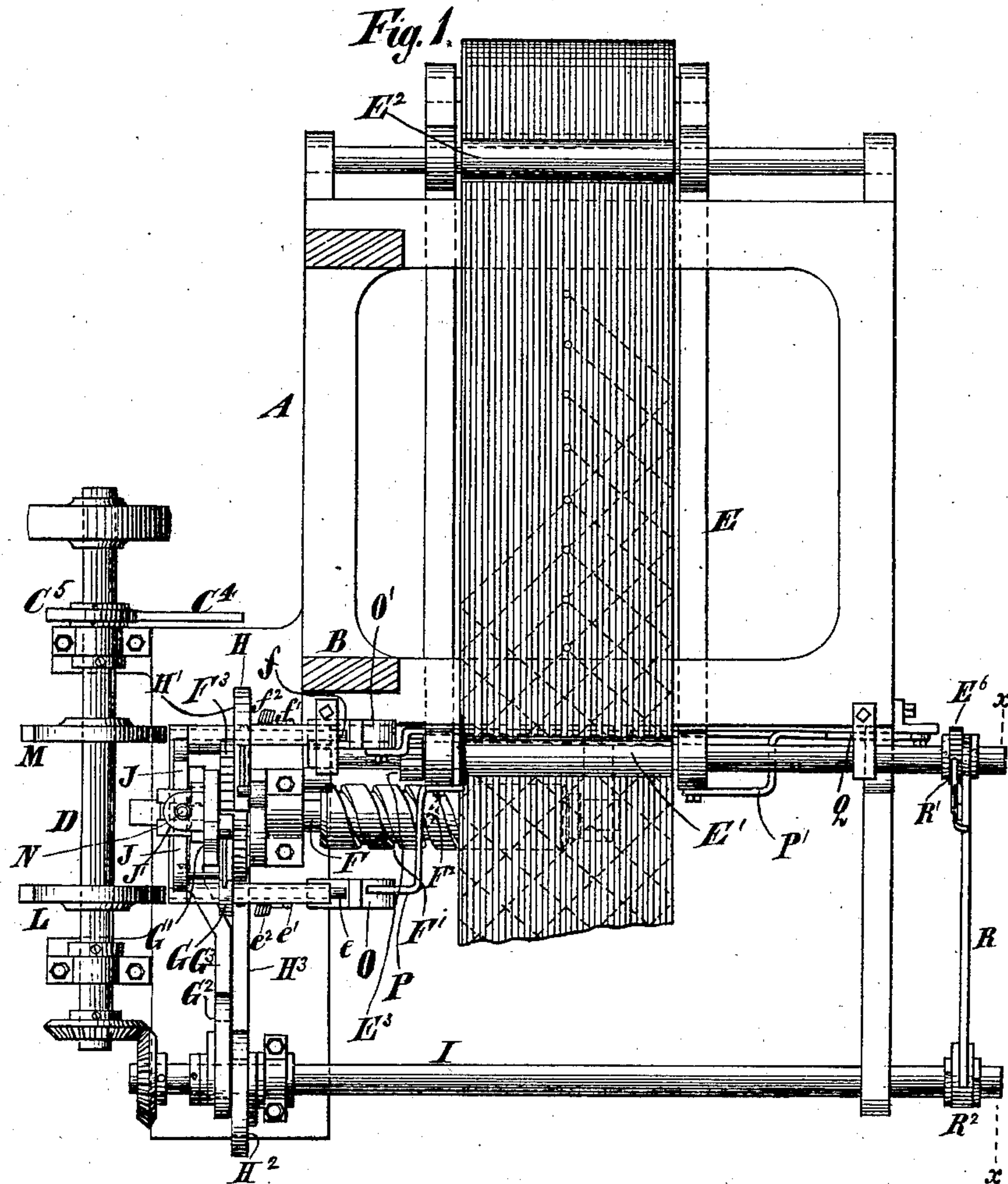
(No Model.)

6 Sheets—Sheet 1.

L. SCHULTZ.
QUILTING MACHINE.

No. 281,732.

Patented July 24, 1883.



Witnesses:
James R. Bowen
Alfred L. Brown

Inventor:
L. Schultz
by his atty.
Edwin H. Brown

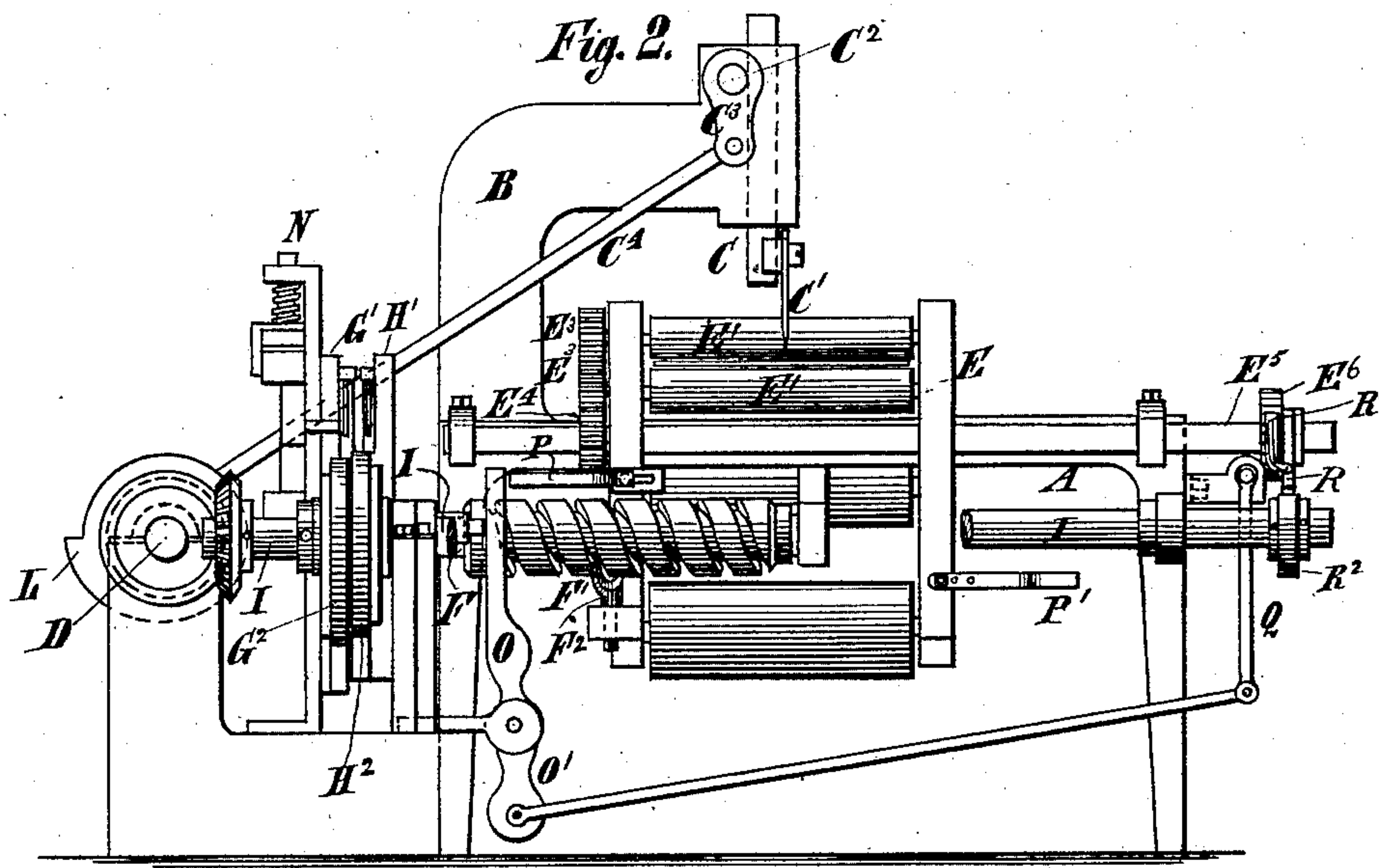
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Inventor:

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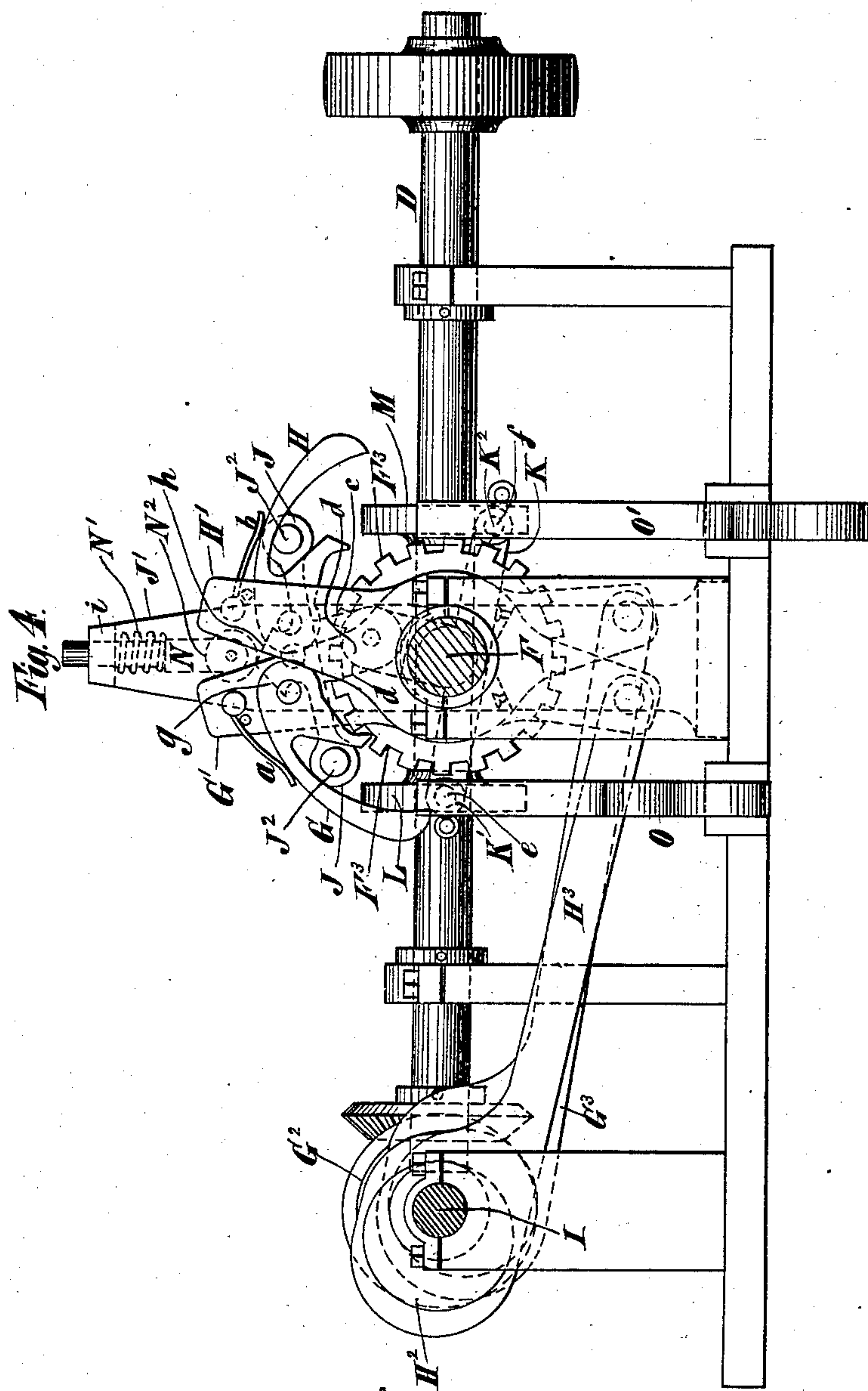
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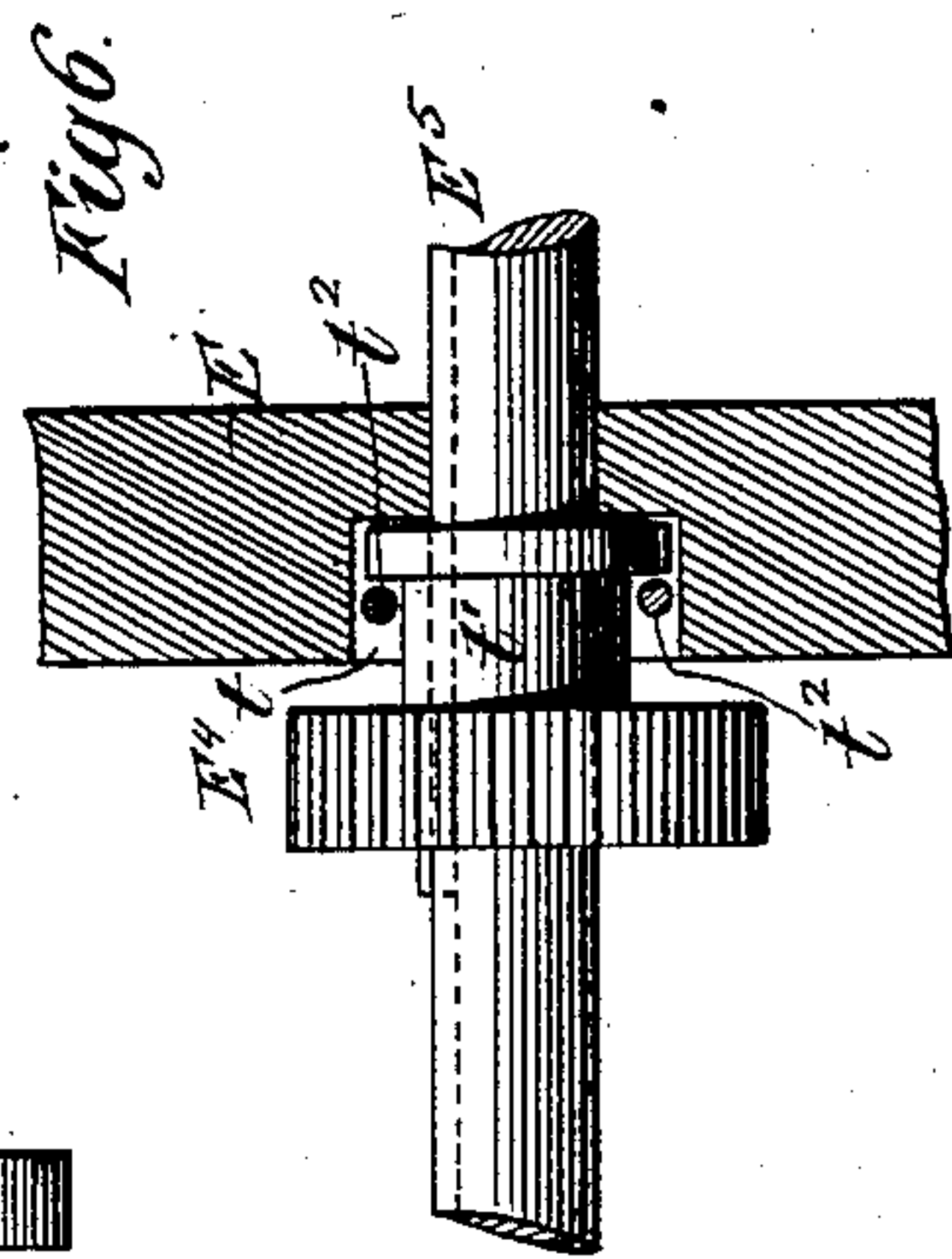
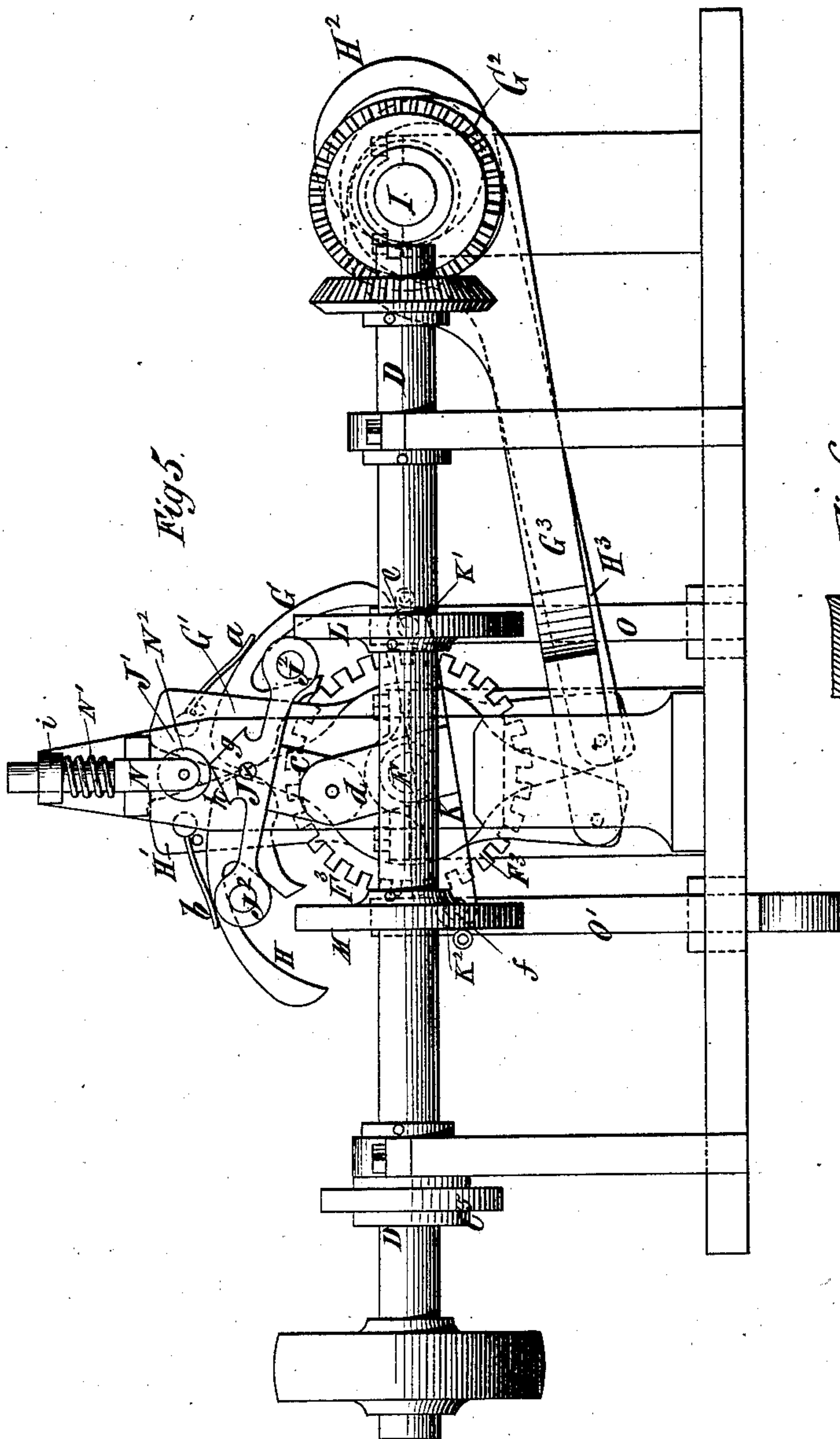
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Patented July 24, 1883.



Witnesses:
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(No Model.)

6 Sheets—Sheet 5.

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Fig. 7.

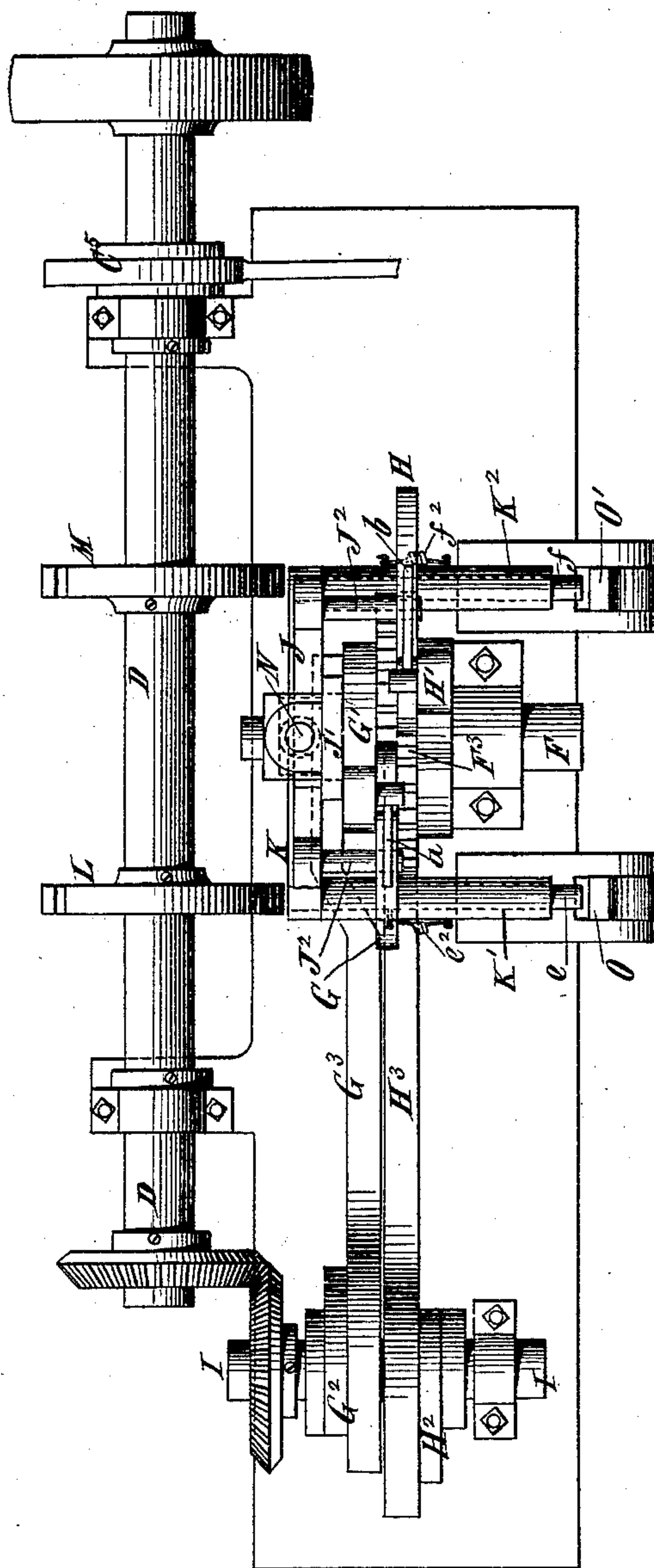
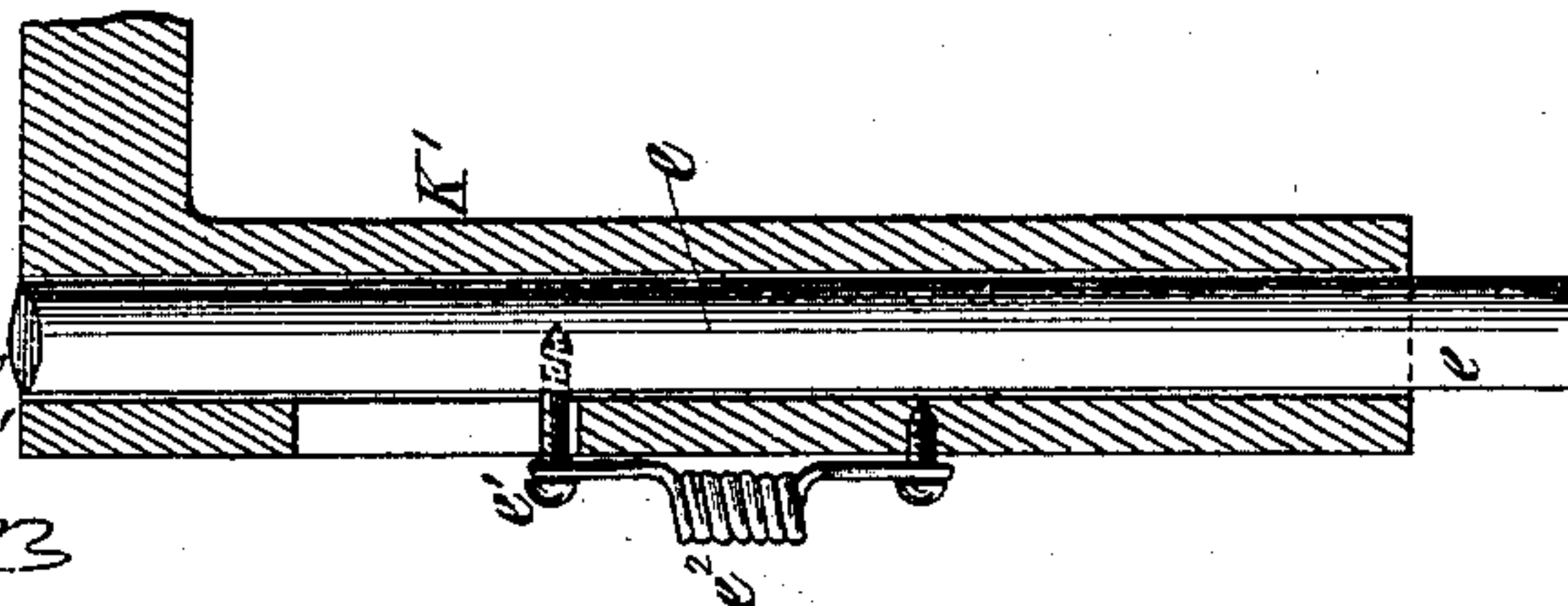


Fig. 8.



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Inventor:

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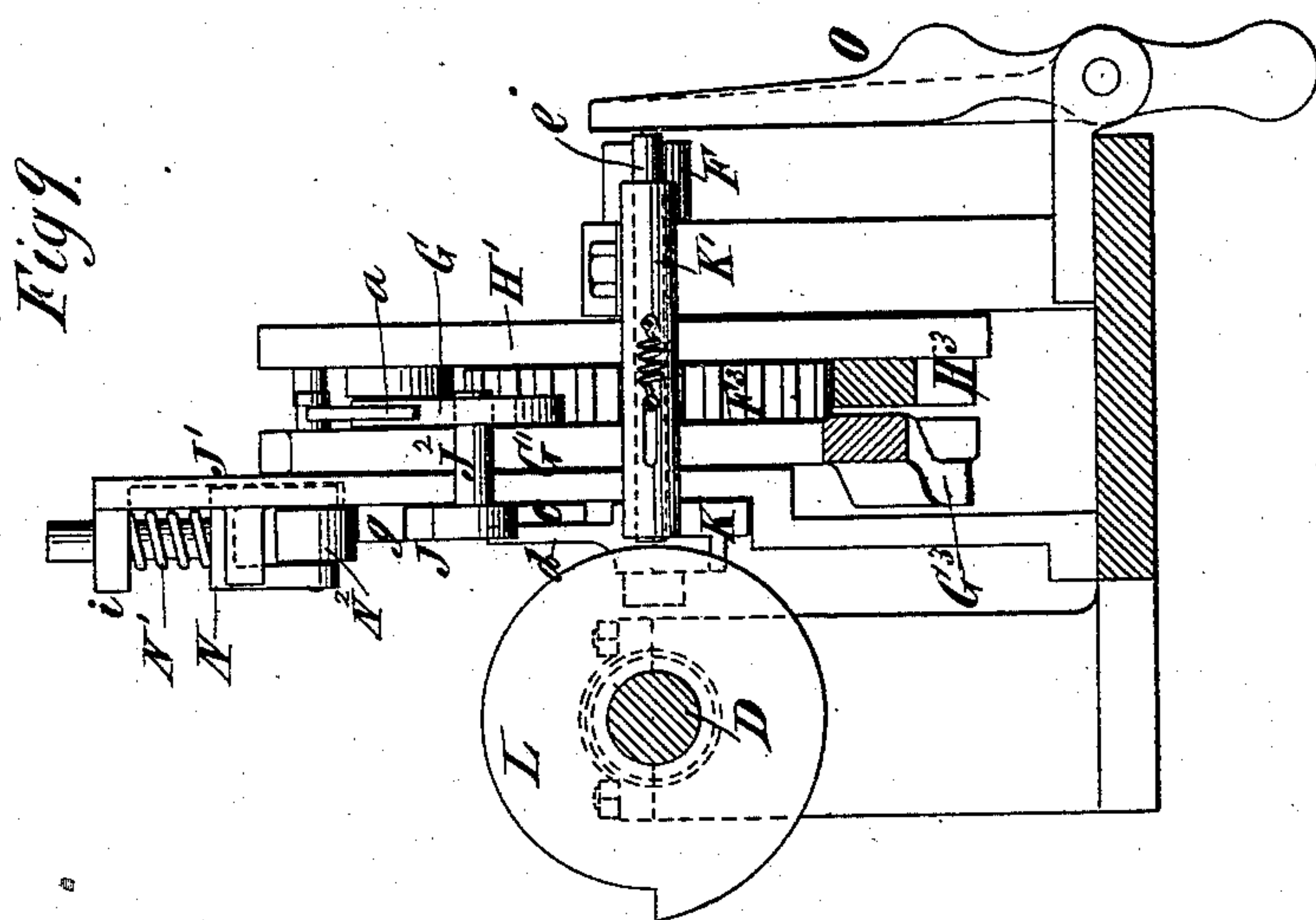
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6 Sheets—Sheet 6.

L. SCHULTZ.
QUILTING MACHINE.

No. 281,732.

Patented July 24, 1883.



Witnesses:

Charles Hall.
Ed. Sundgren

Inventor:

Louis Schultz
by his Attorney
Edwin A. Brown

UNITED STATES PATENT OFFICE.

LOUIS SCHULTZ, OF NEW YORK, N. Y.

QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 281,732, dated July 24, 1883.

Application filed October 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHULTZ, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Mechanical Movements, of which the following is a specification.

My improvement consists in a novel mechanical movement, especially adapted for use in quilting-machines, and involving the combination, with a worm or screw and a nut or fork to which it transmits motion, of a mechanism for rotating the worm or screw alternately in opposite directions. When such mechanical movement is employed to reciprocate the work-carriage of a quilting-machine, its reversal will preferably be controlled by the carriage.

The improvement also consists in the combination, in a quilting-machine, with a work-carriage, of mechanism whereby motion will be transmitted thereto alternately in reverse directions, and adjustable means for varying the range of movement imparted to the carriage.

In the accompanying drawing, Figure 1 is a plan or top view of a quilting-machine embodying my improvement. Fig. 2 is an end view of the same. Fig. 3 is an enlarged sectional view taken as indicated by the dotted line *x x*, Fig. 1, and illustrating the mechanism whereby motion is imparted to the feed-rollers. Fig. 4 is an enlarged end view of the mechanism for driving the carriage. Fig. 5 is a view of the driving mechanism on the same scale as Fig. 4, but looking toward the opposite side thereof. Fig. 6 is a detail view hereinafter described. Fig. 7 is a plan of the driving mechanism on the same scale as Figs. 4 and 5. Fig. 8 is a detail view hereinafter described, and Fig. 9 is a transverse vertical section of the parts shown in Fig. 7.

Similar letters of reference designate corresponding parts in all the figures.

A designates the frame of the machine, and B designates an arm extending therefrom and supporting a needle-bar, C. The needles C', attached to this needle-bar, are shown as arranged in a single row. The needle-bar derives an up-and-down reciprocating motion from a rock-shaft, C². This rock-shaft has an arm, C³, with which is connected a rod, C⁴,

that derives motion from an eccentric, C⁵, arranged upon a shaft, D. The shaft D may constitute the driving-shaft of the machine.

E designates a carriage over which the work or material to be quilted is passed by means of feed-rollers E' and guide-rollers E², arranged upon the carriage. These feed-rollers have an intermittent rotary movement. The carriage has an intermittent sliding movement in a direction at right angles to the direction in which the feed-rollers move the work. The resultant movement of the work is oblique to the length of the row of needles.

I will first explain the mechanism whereby the carriage is operated.

F is a shaft, on which is arranged a worm or screw, F', engaging with a nut or fork, F², on the carriage.

F³ designates a wheel affixed to the shaft F, and having flat-sided teeth capable of being moved in opposite directions by means of reversely-arranged pawls G H. These pawls G H are pivoted to arms G' H', which are loosely mounted on the shaft F, and rocked or oscillated to and fro by means of eccentrics G² H² on a shaft, I.

As here shown, these eccentrics are reversely set, and they are provided with rods G³ H³, which are connected to portions of the arms G' H', extending below the shaft F. Springs *a b* are employed to hold the pawls G H against the wheel F³.

J designates a reversing-beam consisting of a bar pivoted between the ends to a standard, J', extending from the frame of the machine. It is provided near the ends with pins J², which extend below the pawls G H. When this beam is rocked in one direction, it raises one of the pawls out of contact with the wheel F³, so as to render it inoperative, and lowers the other onto the wheel, so that it becomes operative to impart motion to the wheel. As here shown most clearly in Fig. 5, the reversing-beam is provided with an arm, *c*, which is pivotally connected to an arm, *d*, extending upward from a bar, K, which, as here shown, is mounted loosely on the shaft F. Therefore when the bar K is rocked in one direction the reversing-beam J is rocked in the other direction. The bar K, near its ends, is provided with tubular arms K' K², in which are arranged sliding bars *e f*.

On the shaft D are arranged trip-wheels L M. When the bar *e* is made to protrude through the tubular arm K', the wheel L will engage with it and rock the bar K over, and
 5 when the bar *f* protrudes through the tubular arm K² the wheel M will engage therewith and rock the bar K in the opposite direction. In this way the pawls G H are severally thrown into and out of action. The bars *e f* are provided with pins *e' f'*, which extend through
 10 slots in the tubular arms K' K², and are attached to the ends of springs *e² f²*, which at the other ends are attached to the said tubular arms, as shown in Fig. 8, and tend to draw
 15 the said bars away from the trip-wheels L M. These bars *e f* never protrude except when forced outward against the resistance of the springs *e² f²*.

I preferably employ, in conjunction with the
 20 reversing-beam J, a device for precluding it from being accidentally shifted. For this purpose I provide the middle portion of the upper face of the beam with cam-faces *g h*, (see Fig. 5,) and combine therewith a locking-bolt,
 25 N, which slides in a bearing, *i*, and is impelled toward the said cam-face by means of a spring, N'. Preferably the end of the bolt which acts on the cam-faces is provided with an anti-friction roller, N², as shown in Fig. 5.

30 It will be readily understood that when the worm or screw is rotated in one direction by the action of the pawl G on the wheel F³ the carriage will be caused to move in one direction, and that when the worm or screw is rotated in the other direction by the action of
 35 the pawl H on the wheel F³ the carriage will be caused to move in the reverse direction. In each case the motion of the carriage will be intermittent.

40 O O' designate levers fulcrumed to the frame of the machine and extending up adjacent to the inner ends of the bars *e f*, so as to force the outer ends toward the trip-wheels L M. These levers are operated by arms P P', extending from the carriage. When the carriage moves in one direction, the arm P acts upon the lever O and causes it to force the bar
 45 *e* toward the trip-wheel L, so as to enable the latter to shift the reversing-beam. When the carriage moves in the other direction, it acts on a lever, Q, which is fulcrumed at the upper end and connected at the lower end to the lever O', below its fulcrum. Thus the upper end of the lever O' is caused to force the bar *f*
 55 out toward the wheel M, so that the latter can shift the reversing-beam. The arms P P' are detachably connected to the carriage, so that they can be secured in different positions. By this means the extent of the traverse of the carriage may be varied.

Any suitable means may be employed for operating shuttles when such devices are employed.

65 The feed-rollers E' of the carriage are geared together by wheels E³, and the lower of these gear-wheels derives motion from a gear-wheel, E⁴, which is mounted on a shaft, E⁵, and fitted

thereto by a feather or groove, so that it may be moved along the same, and yet will rotate therewith. This gear-wheel E⁴ is connected
 70 with the carriage so that it will slide along its shaft in accordance with the traverse of the carriage. The means shown for connecting it consists of a hub upon the gear-wheel fitting in a recess, *t*, in one of the side frames of the carriage, and having a circumferential groove,
 75 *t'*, on that portion which extends into the recess, and serving to receive pins *t²*, which pass through the recess and enter the groove. This connection is shown clearly in Fig. 6. 80

On the shaft E⁵ is a ratchet-wheel, E⁶. A lever, R, is hung on the said shaft, and provided with a pawl, R', that engages with the ratchet-wheel. The lever extends to a cam or eccentric, R², which is mounted on the shaft
 85 I and derives motion therefrom. In this way the feed-rollers receive an intermittent rotary movement. The shaft I derives motion by bevel-wheels from the shaft D.

The mechanism above described for rotating
 90 the feed-rolls is like that shown and described in my application No. 75,383, filed October 28, 1882, and is not here claimed.

The wheel F³ constitutes a driver-wheel for the worm or screw, and, instead of being a
 95 ratchet-wheel, may have a plain periphery. In such case dogs will be employed in lieu of pawls for imparting motion to it.

The bar K may in some cases be dispensed with, and the reversing-beam J provided with
 100 the tubular arms K' K², the bars *e f*, and their appurtenances.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a worm or screw
 105 and a nut or fork to which it imparts movement, of a driver-wheel mounted on the shaft of the worm or screw, pawls or dogs adapted to actuate the driver-wheel, and carried by arms mounted loosely on the shaft of the worm
 110 or screw, mechanism for vibrating the pawls or dogs, a reversing-beam, and means for operating it independently of the means whereby the pawls or dogs are vibrated, to cause it to lift either pawl or dog and to simultaneously
 115 lower the other, thereby rendering one operative and the other inoperative, substantially as specified.

2. The combination, with a worm or screw and a nut or fork engaging therewith and connected to a device to be reciprocated, of a
 120 driver-wheel mounted on the shaft of the worm or screw, pawls or dogs adapted to actuate the driver-wheel, a rocking bar adapted to move one pawl or dog away from the driver-wheel
 125 and simultaneously allow the other to act on the driver-wheel, tubular arms K' K², arranged on the said bar, the bars *e f*, and the trip-wheels L M, substantially as specified.

3. The combination, with a worm or screw
 130 and a nut or fork engaging therewith and connected to a device to be reciprocated, of a driver-wheel mounted on the shaft of the worm or screw, pawls or dogs adapted to actuate the

driver-wheel, a rocking bar adapted to move one pawl or dog away from the driver-wheel and simultaneously allow the other to act on the driver-wheel, tubular arms $K' K^2$, arranged
5 on the said bar, the bars ef , the trip-wheels LM , and the levers OO' , substantially as specified.

motion may be transmitted thereto alternately in reverse directions, and adjustable means for varying the range of movement imparted to the carriage, substantially as specified.

LOUIS SCHULTZ.

Witnesses:

T. J. KEANE,
JAMES R. BOWEN.

4. In a quilting-machine, the combination, with a work-carriage, of mechanism whereby