

**No. 646,340.**

**Patented Mar. 27, 1900.**

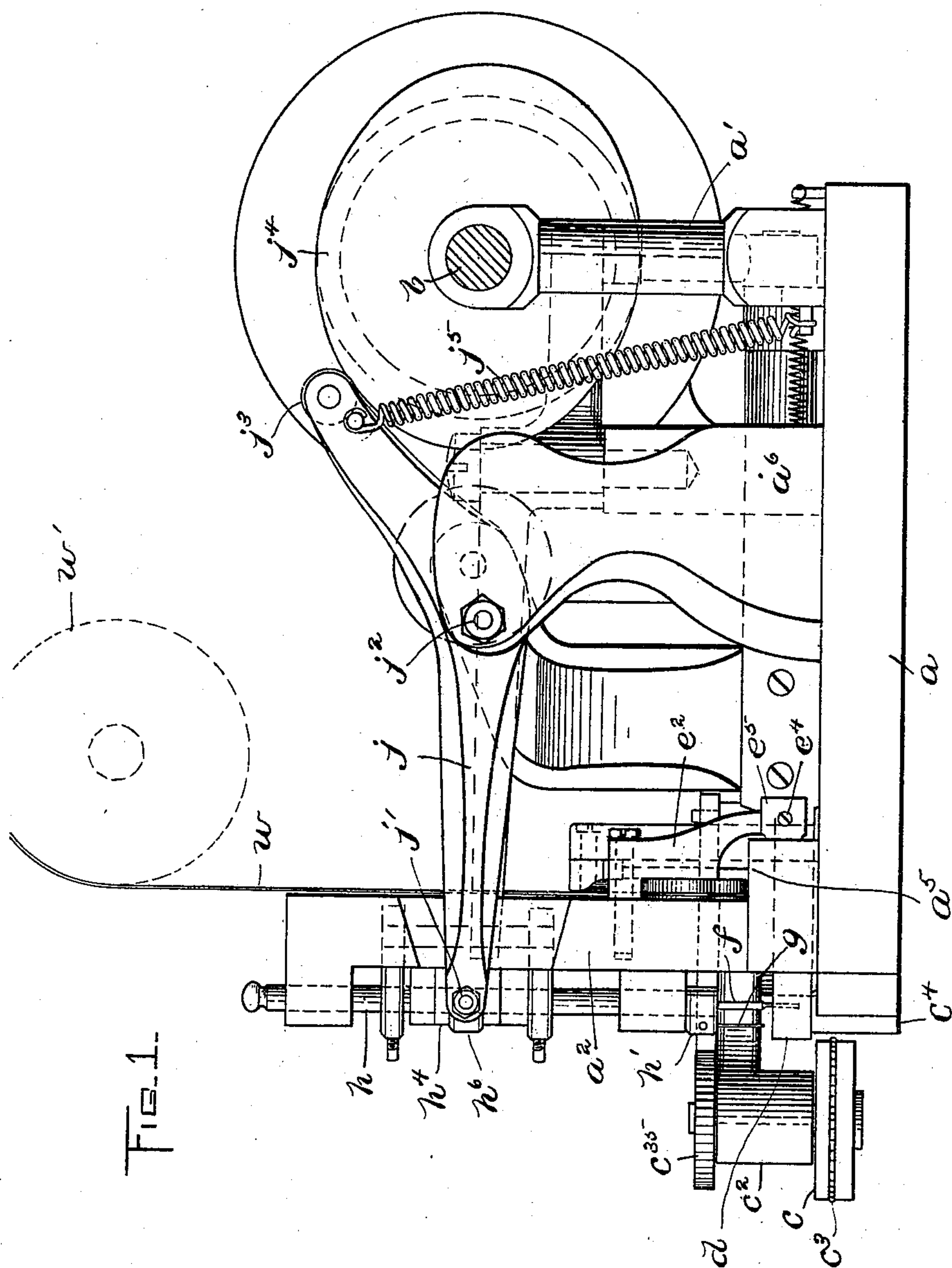
**J. V. ALLEN.**

**MACHINE FOR APPLYING STIFFENING PINS TO INNER SOLES.**

(Application filed May 15, 1899.)

(No Model.)

**6 Sheets—Sheet 1.**



File 1

WITNESSES:

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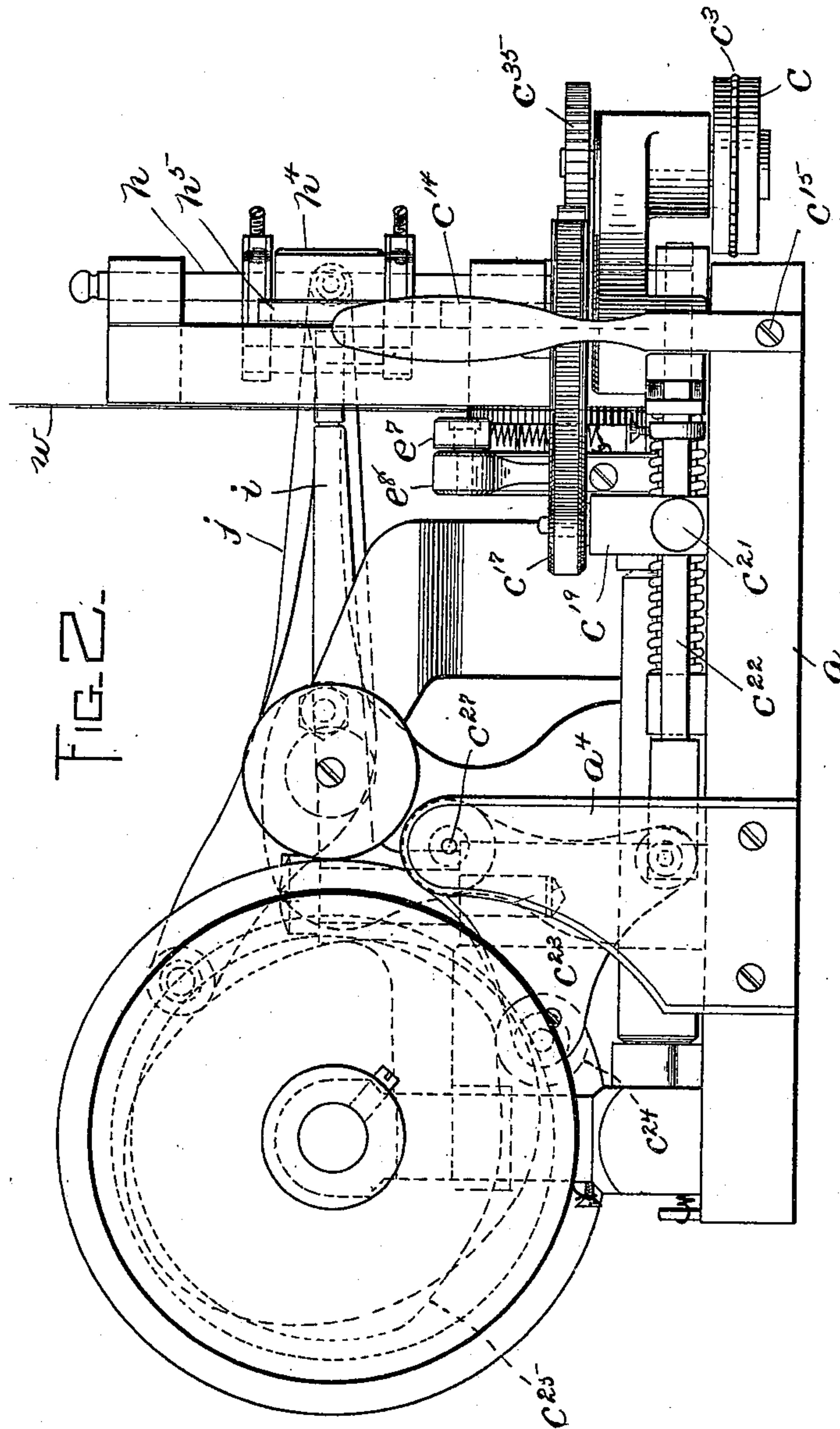
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WITNESSES:

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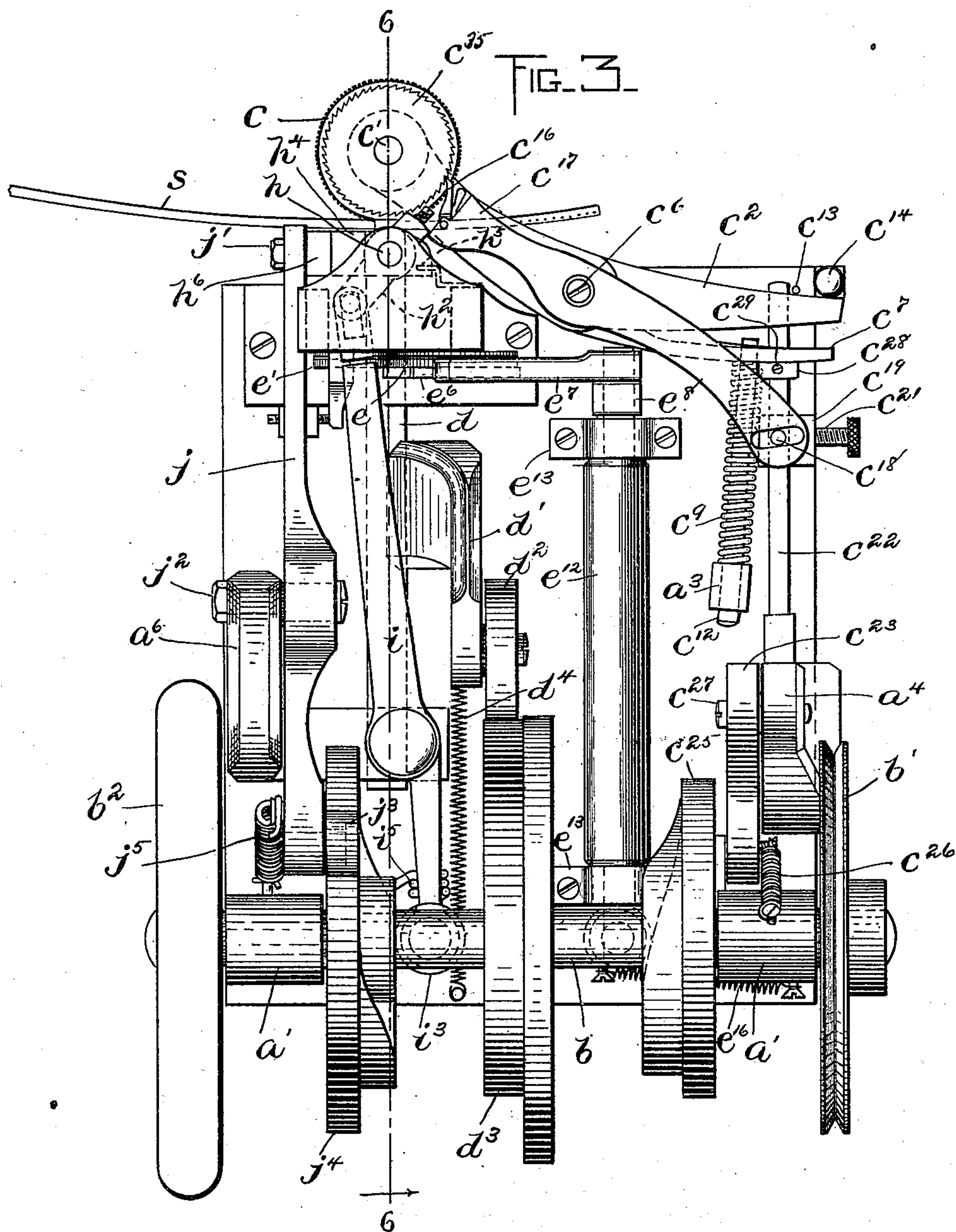
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**6 Sheets—Sheet 3.**



WITNESSES:

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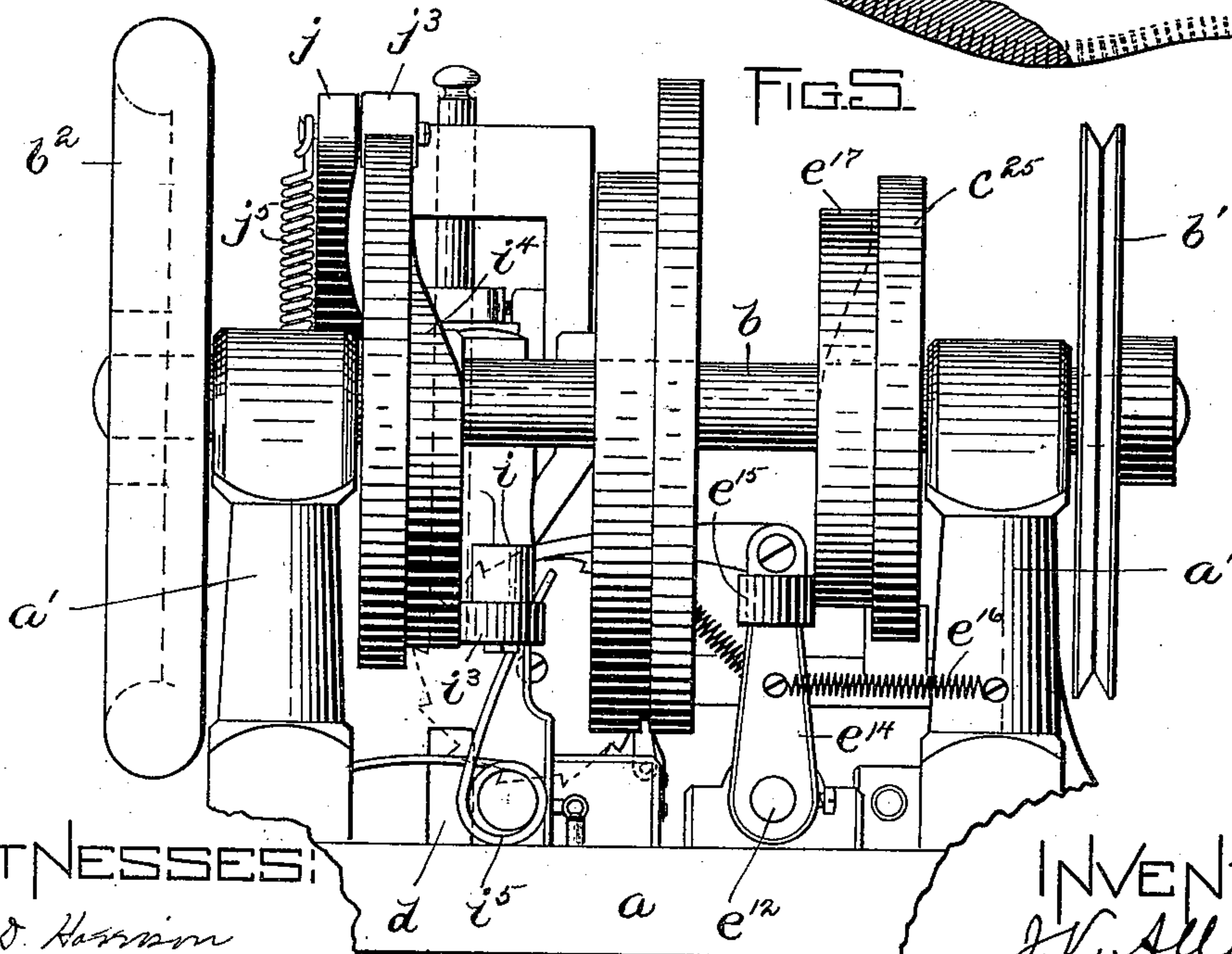
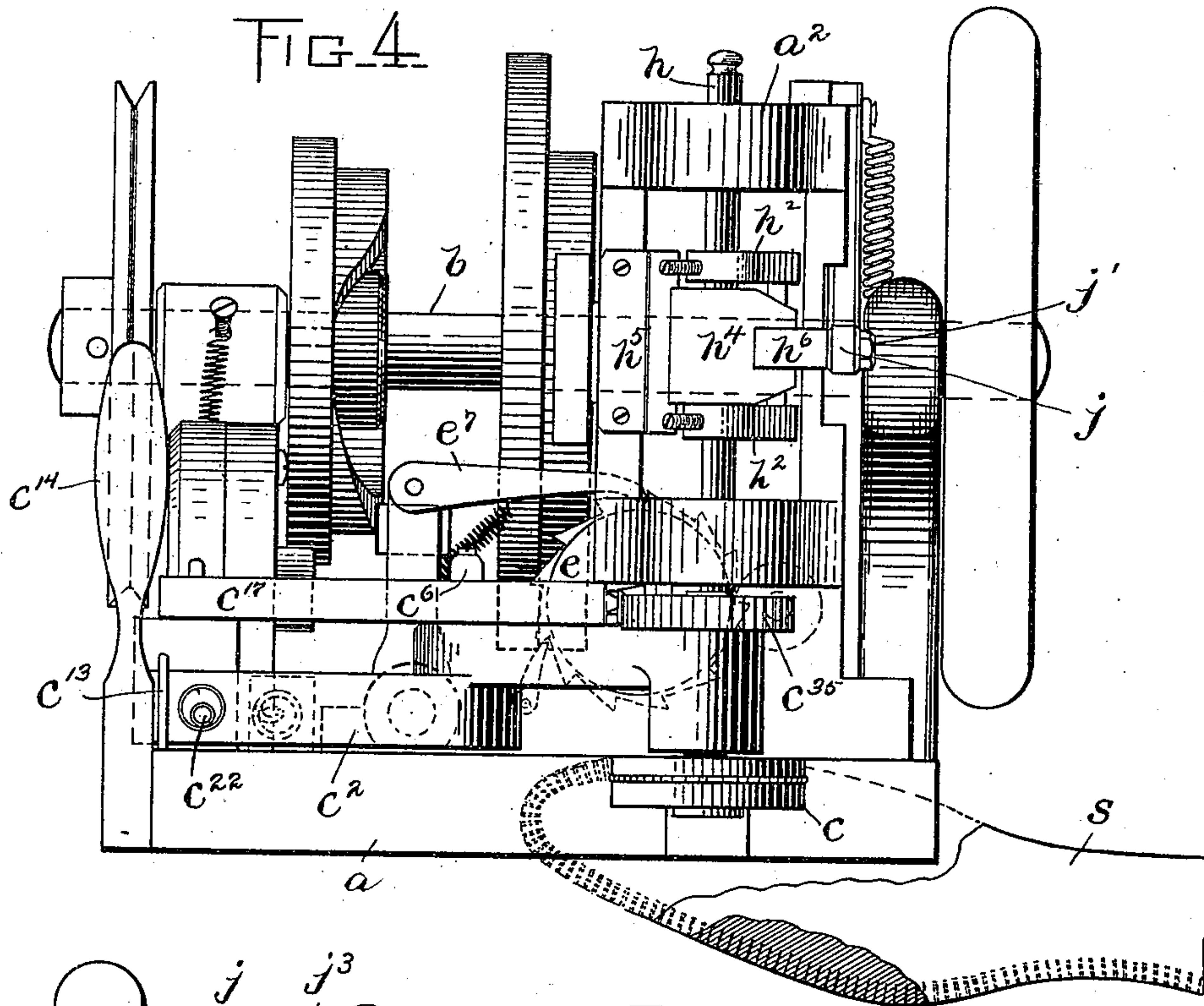
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6 Sheets—Sheet 4.



WITNESSES:

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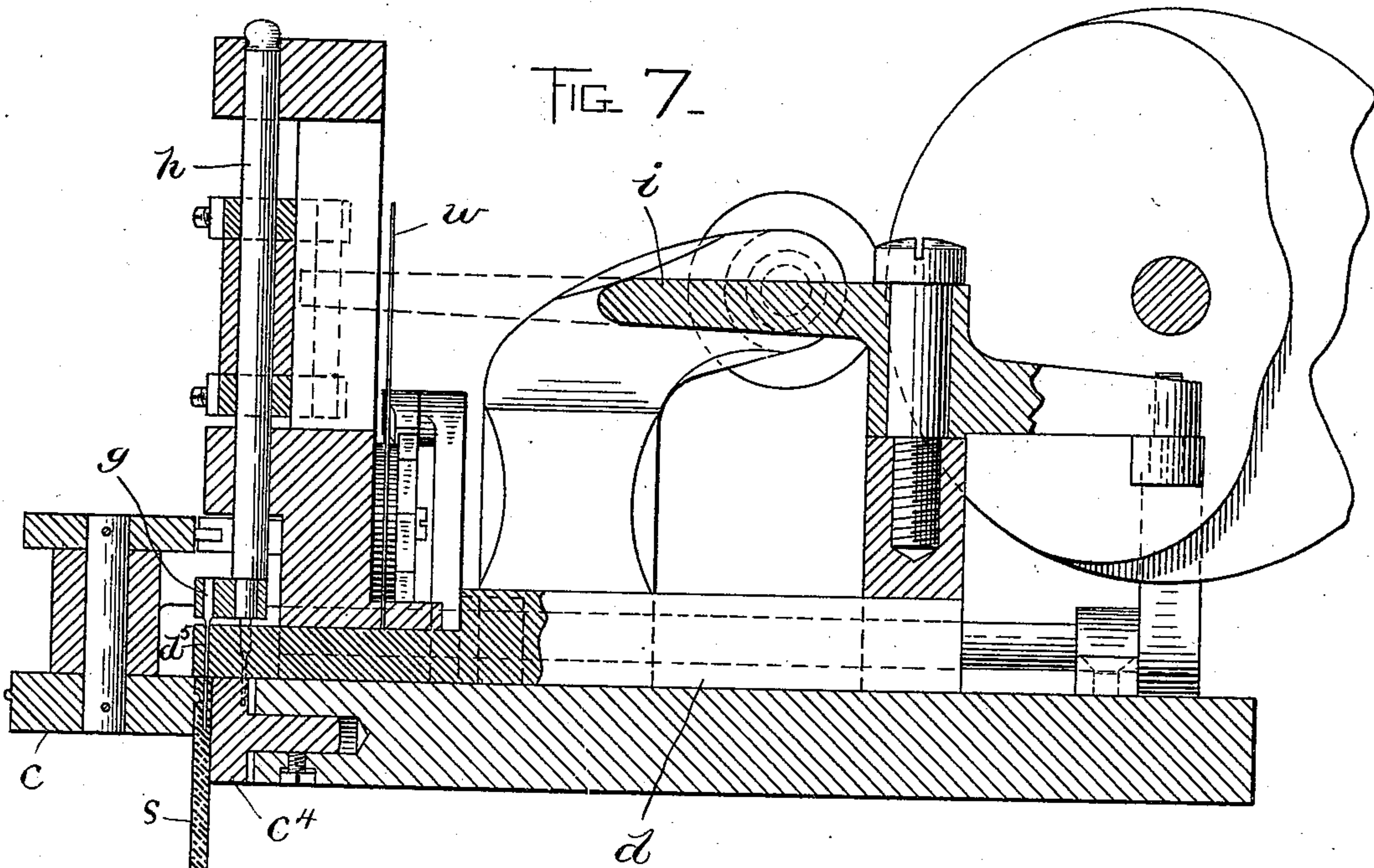
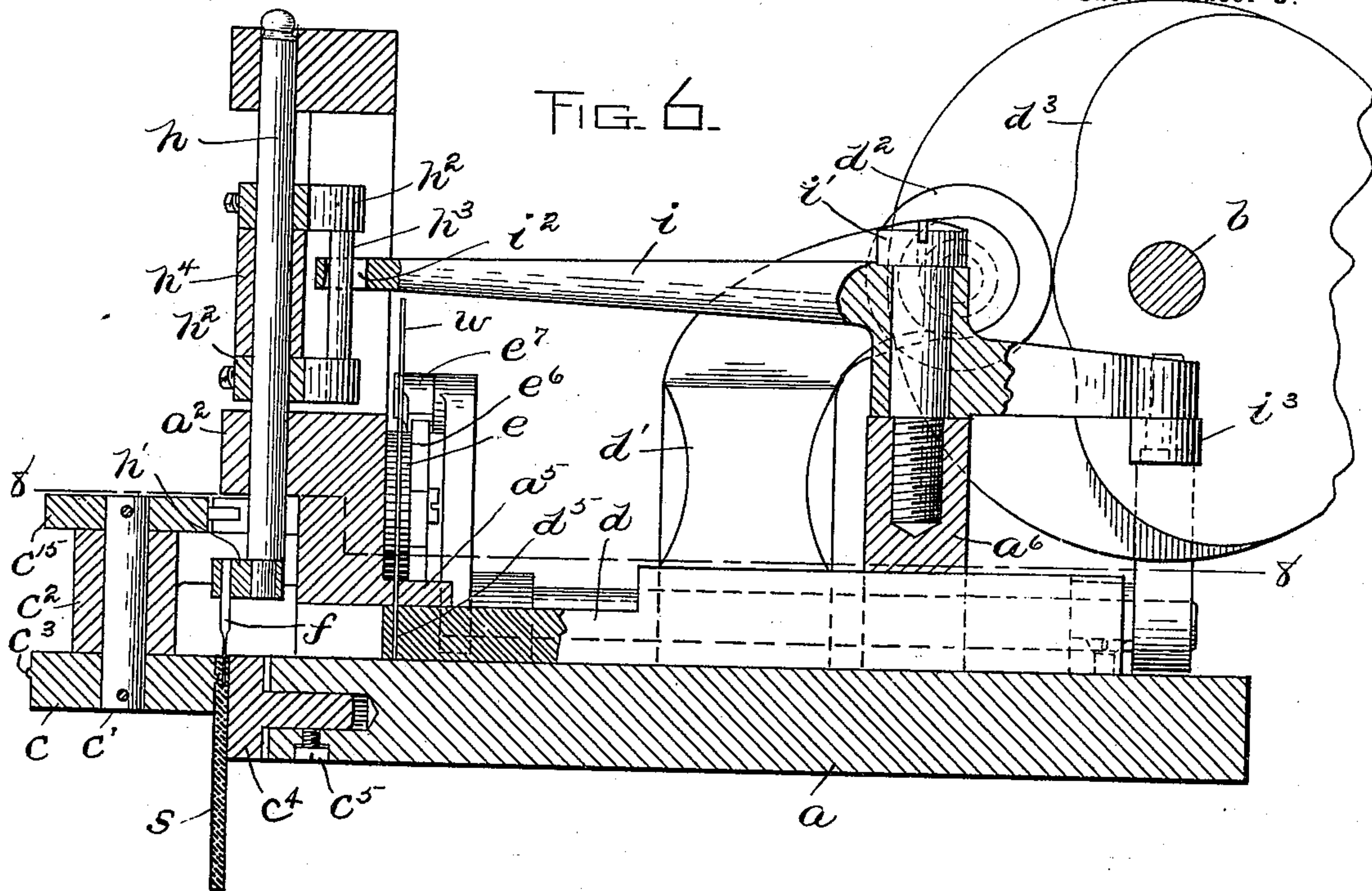
J. V. ALLEN.

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(Application filed May 15, 1899.)

(No Model.)

6 Sheets—Sheet 5.



WITNESSES:

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No. 646,340.

Patented Mar. 27, 1900.

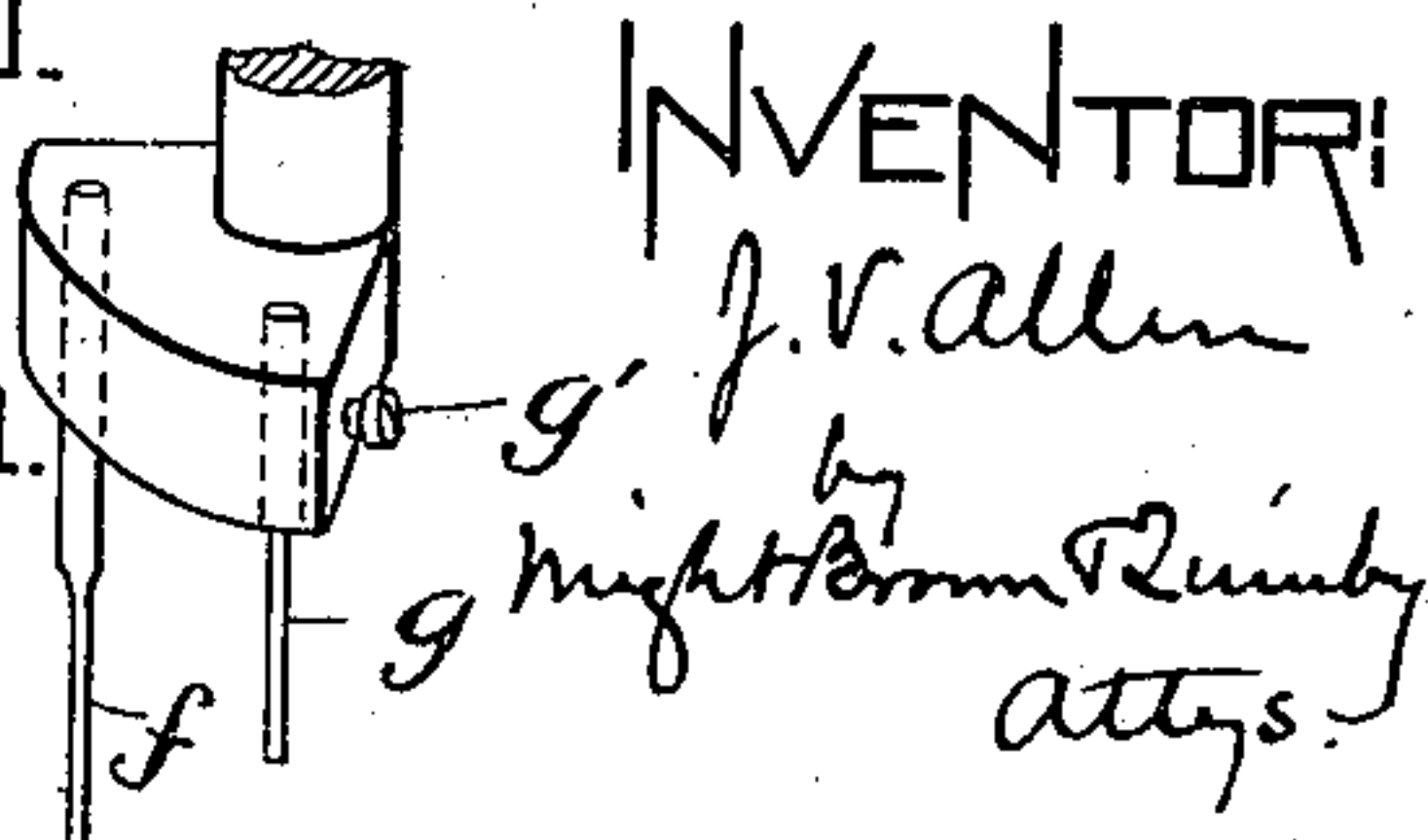
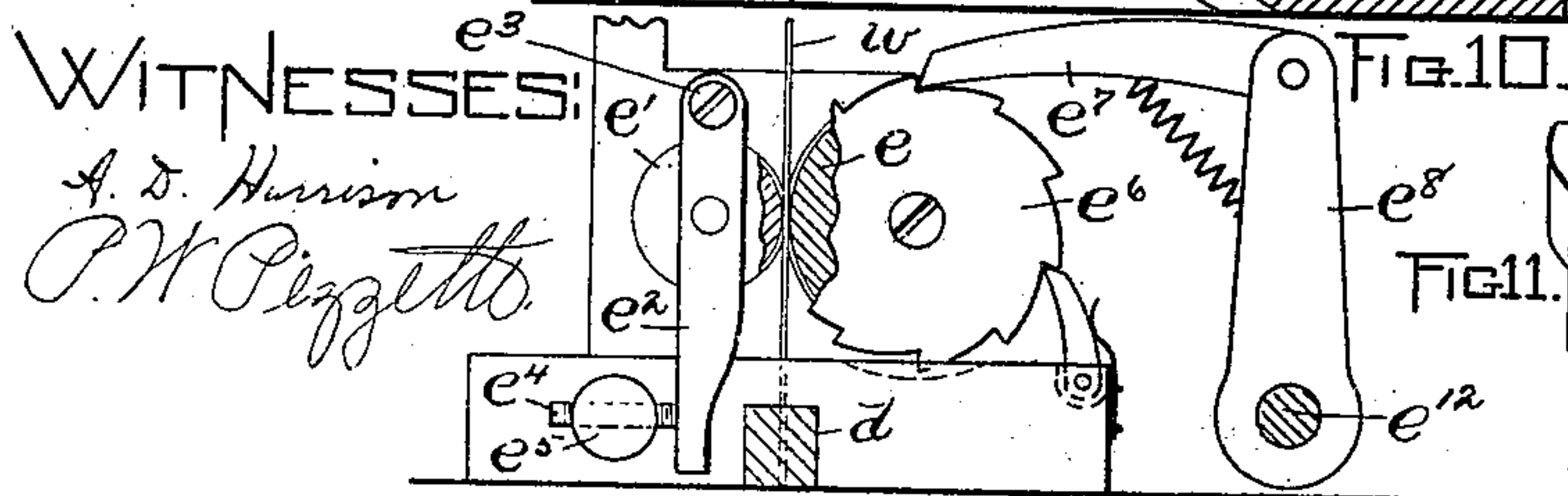
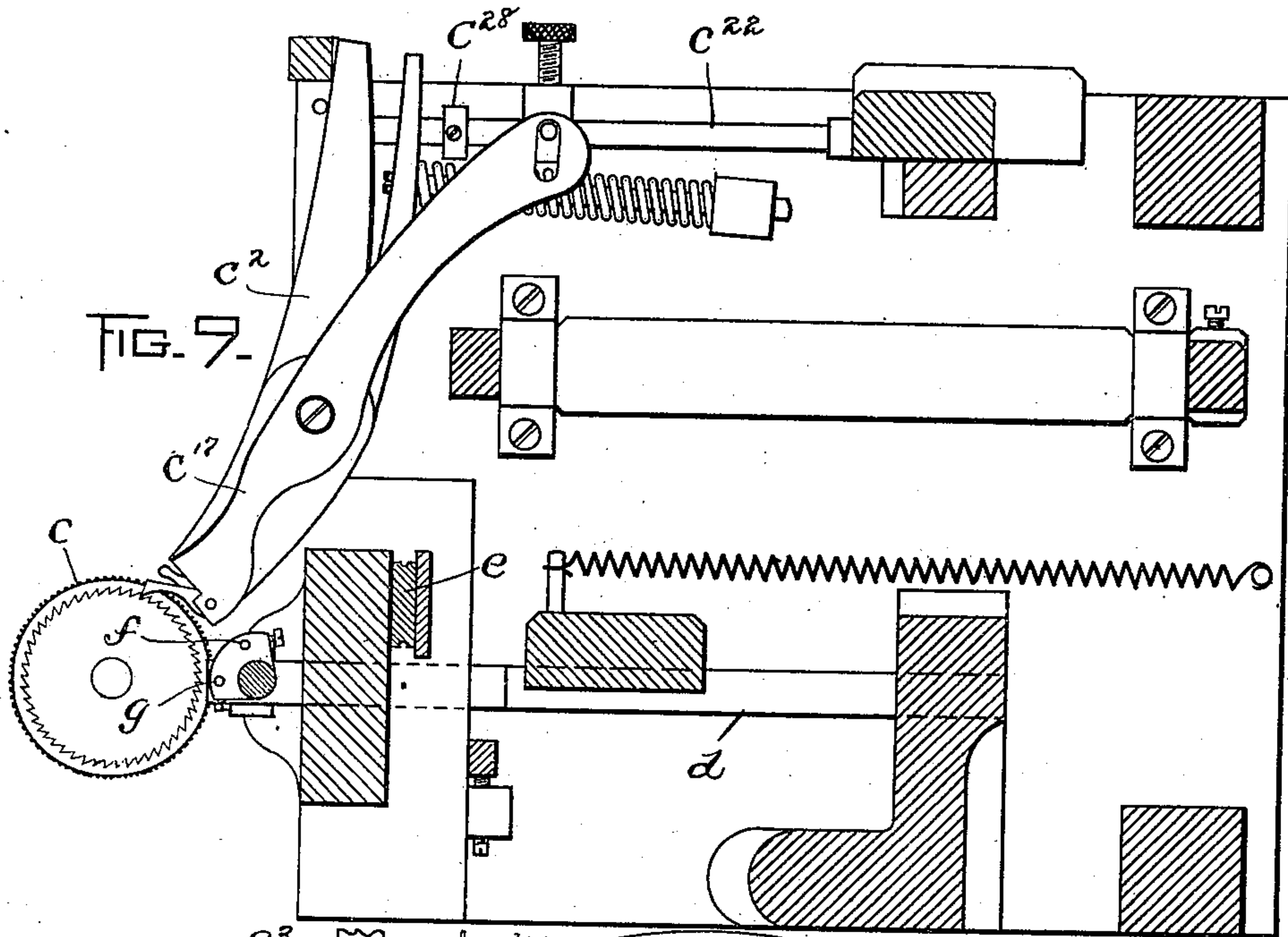
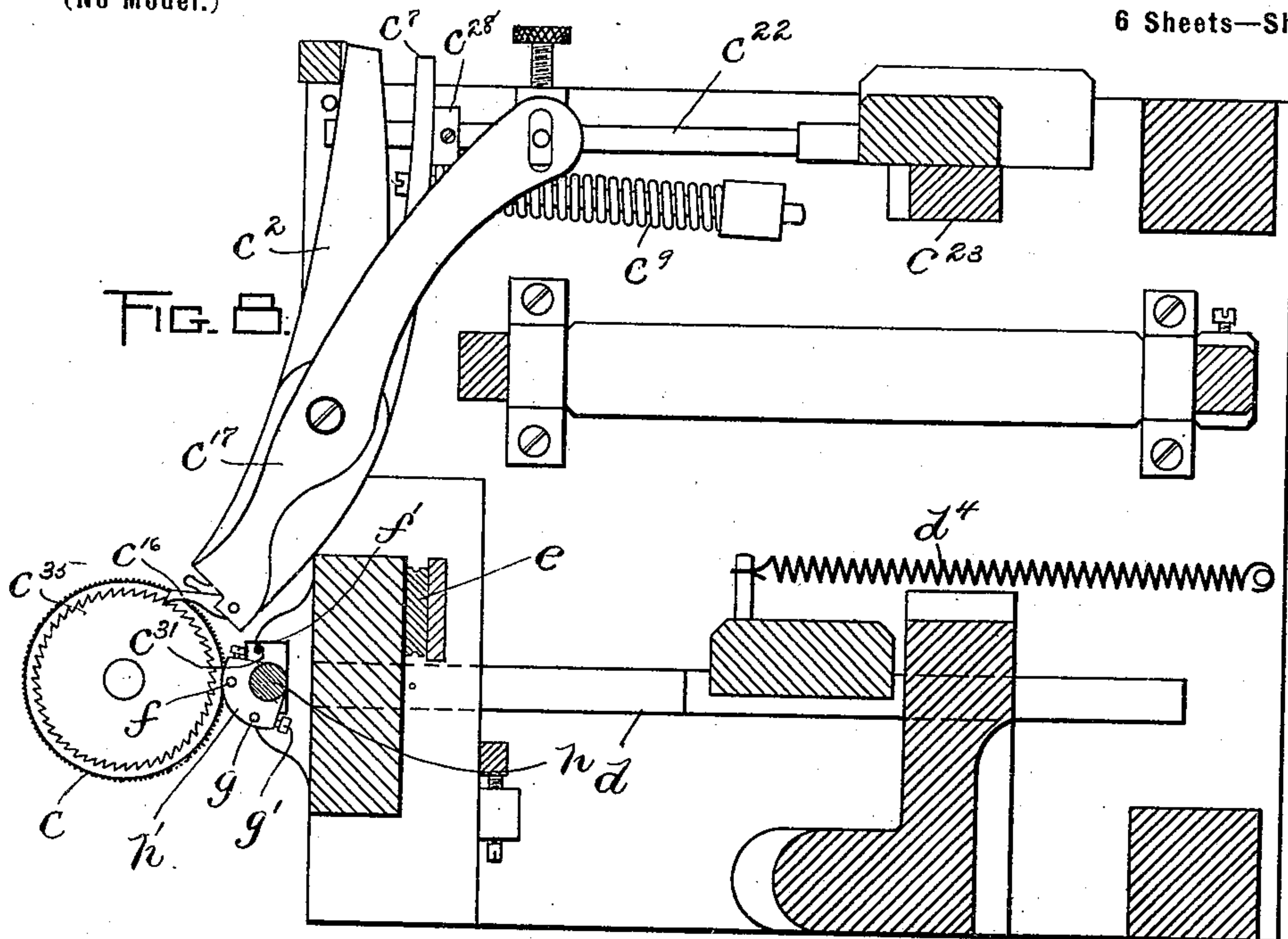
J. V. ALLEN.

MACHINE FOR APPLYING STIFFENING PINS TO INNER SOLES.

(Application filed May 15, 1899.)

(No Model.)

6 Sheets—Sheet 6.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

JOHN V. ALLEN, OF WEYMOUTH, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO E. H. STETSON & CO., OF SAME PLACE.

## MACHINE FOR APPLYING STIFFENING-PINS TO INNER SOLES.

SPECIFICATION forming part of Letters Patent No. 646,340, dated March 27, 1900.

Application filed May 15, 1899. Serial No. 716,802. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN V. ALLEN, of South Weymouth, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Applying Stiffening-Pins to Inner Soles, of which the following is a specification.

This invention relates to the manufacture of inner soles of the character described in Letters Patent of the United States No. 621,198, granted to me March 14, 1899. The said patent shows an inner sole having a series of stiffening-pins inserted in its margin parallel to the plane of the inner sole and extending across the channeled portion thereof, whereby said portion is stiffened.

The present invention has for its object to provide a machine for applying the stiffening-pins to an inner sole of this character; and it consists in the novel features of construction and arrangement which I shall now proceed to describe and claim.

Of the accompanying drawings, Figures 1 and 2 represent side elevations of a machine constructed in accordance with my invention looking at opposite sides of the machine. Fig. 3 represents a top plan view thereof. Fig. 4 represents a front elevation. Fig. 5 represents a rear elevation. Figs. 6 and 7 represent sections on the line 6 6 of Fig. 3. Figs. 8 and 9 represent sections on the line 8 8 of Fig. 6. Fig. 10 represents a detail view in elevation and section of the wire-feeding mechanism. Fig. 11 represents a detail perspective view of the awl and driver and their holder.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, *a* designates the base of the machine, and *a' a'* designate standards located near the rear edge of the base and having bearings at their upper ends for the main shaft *b*, upon which are mounted a belt-pulley *b'*, a hand-wheel *b''*, and the various cams for operating the mechanism of the machine. The inner sole to be operated upon is supported and fed between a stationary abutment *c'*, adjustably affixed in the front edge of the base *a* by means of a set-screw *c''* engaging its stem, and a feed wheel or roll *c*, having a vertical shaft or pintle *c'*,

carried in a bearing at the end of an arm *c''*, which is pivoted on a stud *c'''* to the base *a*. The feed-roll *c* is yieldingly actuated in the direction of the abutment *c'* by the action of a spring *c''''*, interposed between a fixed lug *a'''* on the base *a* and a stiff spring-arm *c'''''*, which is attached to the arm or lever *c''* and extends in a slightly-divergent relation to the heel or rear end of said lever. The spring *c''''* surrounds a guide-rod *c''''''*, attached to the spring-arm *c'''''*. A pin *c'''''''*, projecting upwardly from the base *a* and adapted to engage the heel of the lever *c''*, limits the movement of the feed-roll *c* in the direction of the abutment *c'*, and a hand-lever *c''''''*, pivoted at *c''''''''* to the side edge of the base *a* and engaging the heel of the lever *c''*, provides a means for moving the feed-roll *c* away from the abutment *c'* to insert or remove the work. The feed-roll *c* is provided on its periphery with a milled rib *c'''*, by means of which it may obtain a firm supporting and driving hold on the inner sole, and said feed-roll is rotated step by step to feed the inner sole by mechanism, including a ratchet-wheel *c''''''*, secured to the upper end of its pintle, a spring-pressed pawl *c'''''''*, engaging said ratchet-wheel and carried by a lever *c''''''''*, pivoted on the stud *c'''*, and a pin *c'''''''''*, engaged with the slotted rear end of the lever *c''''''''* and carried by a block *c'''''''''*, which is secured by a set-screw *c''''''''''* to a reciprocating bar *c''''''''''*. The rear end of said bar is pivoted to one arm of a bell-crank lever *c''''''''''*, which is fulcrumed at *c'''''''''''* to a standard *a''* on the base *a*, and is provided on its other arm with a roll *c''''''''''''*, engaging the edge of a cam *c'''''''''''''* on the shaft *b*. Said roll is held in contact with said cam by means of a spring *c'''''''''''''*, attached to the lever *c''''''''''''* and to one of the standards *a''*. The front end of the bar *c''''''''''''* is guided by being passed through an aperture in the heel of the lever *c''*. The revolution of the cam *c'''''''''''''* rocks the bell-crank lever *c''''''''''''* on its fulcrum and reciprocates the bar *c''''''''''''*, causing the lever *c''''''''''''* to be oscillated and the feed-roll *c* to be rotated in a step-by-step manner.

The pins which are driven into the margin of the inner sole are cut off one at a time from the end of a wire strip *h*, which may unwind from a reel *w'*, Fig. 1, mounted on or near the machine, and which passes be-



tween wire-feeding rollers  $e$   $e'$ , mounted to rotate in a vertical plane on the back of the standard  $a^2$ , attached to the base  $a$ . The two rollers have their peripheries slightly grooved to firmly engage the wire, and the roller  $e$ , which is mounted on a fixed stud, is rotated step by step to feed the wire. For this purpose said roll  $e$  is provided with a ratchet-wheel  $e^6$ , engaged by a spring-pawl  $e^7$ , pivoted to the upper end of an oscillatory arm  $e^8$ . The latter is attached to a rock-shaft  $e^{12}$ , having at its rear end an arm  $e^{14}$ . A roll  $e^{15}$  on said arm is held in contact by a spring  $e^{16}$  with a cam  $e^{17}$  on the shaft  $b$ . When said cam revolves, it is obvious that the shaft  $e^{12}$  will be rocked and the feed-roll  $e$  rotated. The roll  $e'$ , which acts as a presser, is mounted on an arm  $e^2$ , pivoted at  $e^3$  to the standard  $a^2$ , and its pressure against the wire is regulated by means of a screw  $e^4$ , mounted in a stationary lug  $e^5$  and engaging the lower end of the arm  $e^2$ .

As the wire  $w$  is fed it passes through a hole in a horizontal flange  $a^5$  at the base of the standard  $a^2$  and is cut off in short lengths to form the stiffening-pins by means of a reciprocating slide  $d$ , having at its front end a hole  $d^5$ , which registers with the hole in the flange  $a^5$  when the slide reaches its rearmost position, as represented in Fig. 6, and which is brought into vertical alinement with the space between the feed-roll  $c$  and the abutment  $c^4$  when said slide is in its foremost position, as represented in Fig. 7. The slide  $d$  is reciprocated by means of a cam  $d^3$  on the shaft  $b$  engaging a roll  $d^2$ , carried by an arm  $d'$ , offset from the slide  $d$ , said slide having a retracting-spring  $d^4$ , which holds said roll in contact with said cam. The slide is guided by passing through an aperture in the standard  $a^2$  and another aperture in the standard  $a^6$ , mounted on the base  $a$ . It will be observed that the rear edge of the hole in the slide  $d$ , through which the wire  $w$  passes, and the front edge of the hole in the flange  $a^5$ , through which said wire passes, constitute shear edges, which cut off the wire  $w$  when the slide  $d$  starts to move forward from its rearmost position. The cutting edges may be formed on hardened-steel plates attached to the standard  $a^2$  and the slide  $d$ , respectively, or said slide and standard may be hardened on their contacting faces to insure the preservation of the cutting edges.

$f$  represents an awl mounted to reciprocate vertically into and out of the space between the feed-roll  $c$  and the abutment  $c^4$  to make holes in the edge of the inner sole, into which the stiffening-pins cut from the end of the wire  $w$  may be driven, and  $g$  represents a driver for driving said pins into the inner sole. The awl  $f$  and driver  $g$  are secured by set-screws  $f'$   $g'$  in a quadrant-shaped holder  $h'$ , attached to the lower end of a vertical reciprocating bar  $h$ . The latter is mounted in guides or bearings on the standard  $a^2$ , and between its upper and lower bearings there

are attached to it two short arms or collars  $h^2$ , connected by a vertical elongated wrist-pin  $h^3$ . Said pin occupies a slot  $i^3$  in the end of a lever  $i$ , pivoted on a vertical stud  $i'$  at the top of the standard  $a^6$  and having a roll  $i^3$  on its rear end engaged by a cam  $i^4$  on the shaft  $b$ . A spring  $i^5$  holds said roll in engagement with the cam. The revolution of the cam  $i^4$  oscillates the lever  $i$  in a horizontal plane and turns the bar  $h$  in its bearings, so as to bring either the awl  $f$  or the driver  $g$  into operative position in alinement with the space between the feed-roll  $c$  and the abutment  $c^4$ . The bar  $h$  is reciprocated to impart an operative stroke to either the awl or driver by means of a lever  $j$ , pivoted at  $j^2$  to the standard  $a^6$  and having a cam-roll  $j^3$  at its rear end, held in engagement by a spring  $j^5$  with a cam  $j^4$  on the shaft  $b$ . The said arm  $j$  is pivotally connected at  $j'$  with a block  $h^6$ , fitted loosely into a recess formed in a collar  $h^4$ , which is held between the collars  $h^2$   $h^2$  on the bar  $h$  and is guided in its vertical movements by a stationary plate  $h^5$ , whose edge occupies a vertical groove in the said collar  $h^4$ .

During the operative strokes of the awl  $f$  and driver  $g$  the pressure of the feed-roll  $c$  upon the inner sole is increased to more firmly support said inner sole by reason of the engagement of a collar  $c^{28}$ , secured by a set-screw  $c^{29}$  to the reciprocating bar  $c^{22}$ , with the spring-arm  $c^7$  on the lever  $c^2$ , which carries the feed-roll when said bar makes its forward stroke. When the bar  $c^{22}$  is retracted, as represented in Fig. 2, the collar  $c^{28}$  moves out of engagement with the spring-arm  $c^7$ , and there is then only the tension of the spring  $c^9$  to hold the feed-roll  $c$  in contact with the work; but when said bar  $c^{22}$  is projected forwardly, as represented in Fig. 3, the collar  $c^{28}$  presses against the arm  $c^7$ , and thereby forces the feed-roll  $c$  with an increased yielding pressure against the work. The hand-lever  $c^{14}$  may be utilized at any time during the operation of the machine to release or insert the work.

From the foregoing description the operation of the machine becomes apparent. The inner sole  $s$  to be operated upon is placed between the feed-roll  $c$  and the abutment  $c^4$ , with its edge presented vertically to the awl  $f$ . The operator starts the machine, and the awl  $f$  descends and makes a hole in the edge of the inner sole, parallel to the general plane of the latter, as represented in Fig. 6. The awl is then retracted, and the slide  $d$ , starting forward, severs a short length of wire from the end of the strap  $w$  and carries the severed portion forward into alinement with the inner sole  $s$ . The holder  $h'$  has meanwhile been oscillated from the position shown in Figs. 6 and 8 to that shown in Figs. 7 and 9, so as to bring the driver  $g$  into operative position. The bar  $h$  now descends and the driver  $g$  enters the hole  $d^5$  in the end of the slide  $d$  and drives the pin contained therein down into the hole formed by the awl



*f* in the inner sole. The driver *g* and the slide *d* are then retracted in succession, and the inner sole is fed forward to bring a fresh portion of its edge into position to be operated upon, and the aforesaid cycle of operations is repeated. When the driver *g* takes its operative stroke, the awl *f* passes down on one side of the slide *d*, as will be evident upon an inspection of Fig. 9. A hole *c*<sup>31</sup>, Fig. 8, is made in the abutment *c*<sup>4</sup> to receive the awl during said downward stroke of the driver. During the operation of the machine the inner sole is guided by the operator.

I do not confine myself to the exact details of construction and arrangement hereinbefore set forth, as the same may be variously modified without departing from the spirit of my invention. For instance, it is obvious that path-cams may be substituted for the cams and springs shown in the drawings for operating the parts of the machine.

Having thus explained the nature of my invention and described a way of constructing and using the same, although without having attempted to set forth all the forms in which it may be embodied or all the modes of its use, I declare that what I claim is—

1. In a machine of the character specified, the combination of a holder mounted to oscillate on a center or axis of oscillation, an awl and a driver affixed to said holder, means for imparting an oscillatory movement to said holder to alternately aline the awl and driver with the work, and means for imparting a reciprocatory movement to said holder at right angles to the plane of its oscillatory movement to produce the operative strokes of the awl and driver.

2. In a machine of the character specified, the combination of an awl, a driver, a bar supporting the two and having suitable guiding-bearings, means for oscillating said bar in its bearings to alternately aline the awl and driver with the work, and means for reciprocating said bar in its bearings to produce the operative strokes of the awl and driver.

3. In a machine of the character specified, the combination of an awl and driver supporting bar, a guide therefor, a lever connected with said bar and pivoted to oscillate in a plane parallel to the bar, means for oscillating said lever to impart a longitudinal reciprocatory movement to the bar, a second lever connected with the bar and pivoted to oscillate in a plane at right angles to the bar, and means for oscillating said second lever to impart an oscillatory movement to the bar.

4. In a machine of the character specified, the combination of a feed-roll and a cooperating member adapted to receive the edge of an inner sole between them, means for intermittently rotating said feed-roll to feed the inner sole, an awl, and means for reciprocating said awl in a direction substantially at right angles with the plane of rotation of the feed-roll and into the space between it and

the cooperating member, whereby a series of holes are made in the edge of the inner sole, parallel to the plane thereof.

5. In a machine of the character specified, the combination of a feed-roll and a cooperating member adapted to receive the edge of an inner sole between them, means for intermittently rotating said feed-roll to feed the inner sole, a driver, and means for reciprocating said driver in a direction substantially at right angles with the plane of rotation of the feed-roll and in alinement with the space between it and the cooperating member, whereby a series of pins may be forced into the edge of the inner sole, parallel to the plane thereof.

6. In a machine of the character specified, the combination of a feed-roll and a cooperating member adapted to receive the edge of an inner sole between them, means for intermittently rotating said feed-roll to feed the inner sole, an awl, means for reciprocating said awl in a direction substantially at right angles with the plane of rotation of the feed-roll and into the space between it and the cooperating member, whereby a series of holes are made in the edge of the inner sole, parallel to the plane thereof, means for bringing a pin into alinement with each hole after it is made, and means for driving said pin into the hole.

7. In a machine of the character specified, the combination of a roll and a cooperating member yieldingly pressed together and adapted to receive and support an inner sole between them, an awl arranged to drive a hole in the edge of the inner sole so supported, substantially in the plane of said sole, means for reciprocating said awl, and means for increasing the pressure of said roll and member on the sole during the operative stroke of the awl.

8. In a machine of the character specified, the combination of a roll and a cooperating member yieldingly pressed together and adapted to receive and support an inner sole between them, an awl arranged to drive a hole in the edge of the inner sole so supported, substantially in the plane of said sole, a driver arranged to drive a stiffening-pin into the hole made by the awl, means for reciprocating said awl and said driver, and means for increasing the pressure of said roll and member on the sole during the operative strokes of the awl and driver.

9. In a machine of the character specified, the combination of a roll and a cooperating member adapted to receive and support an inner sole between them, a spring connected with one of said parts and adapted to press the same yieldingly toward the other of said parts, a second spring connected with the first said part, an awl arranged to drive a hole in the edge of the inner sole supported between said parts, substantially in the plane of said sole, means for reciprocating said awl, and an intermittently-acting presser adapted to press



against the said second spring during the operative stroke of the awl, thereby increasing the pressure of said roll and member on the sole during the operative stroke of the awl.

- 5 10. In a machine of the character specified, the combination of a feed-roll and a cooperating member yieldingly pressed together and adapted to receive and support an inner sole between them, a ratchet connected with the  
10 feed-roll, a pawl for rotating the same, a pawl-carrying lever, a lever carrying the feed-roll and provided with a spring-arm, a reciproca-

tory bar having provisions for engaging and oscillating the pawl-carrying lever, and for pressing against said spring-arm to increase 15 the pressure of the feed-roll against the inner sole, and means for operating said bar.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN V. ALLEN.

Witnesses:

QUINCY L. REED,  
NOAH F. VINING.