

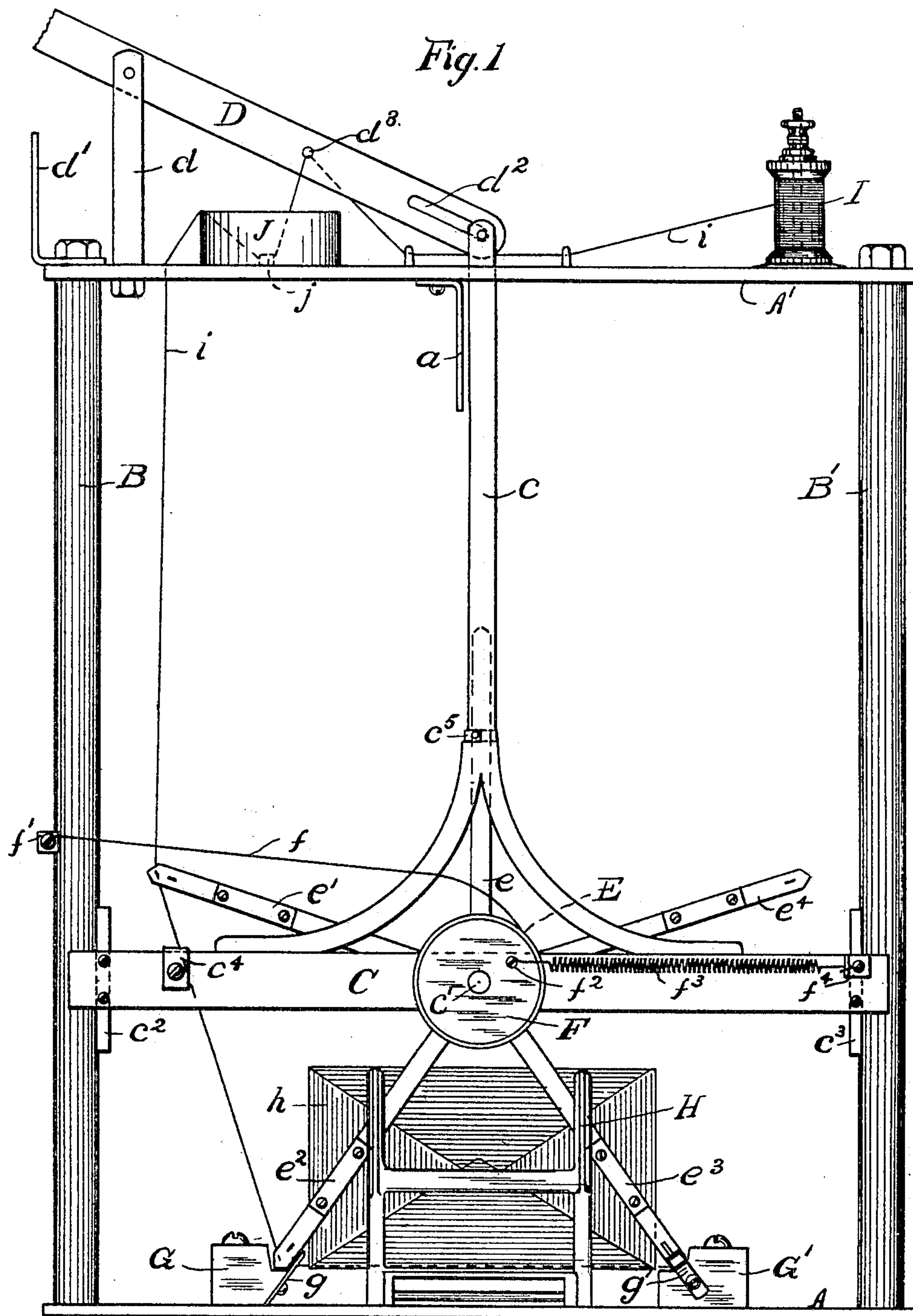
No. 781,579.

PATENTED JAN. 31, 1905.

E. M. WILCOX.
ATTACHMENT FOR ENVELOP MACHINES.

APPLICATION FILED MAY 5, 1898.

4 SHEETS—SHEET 1.



Witnesses:

G. S. Noble

H. M. Henderson

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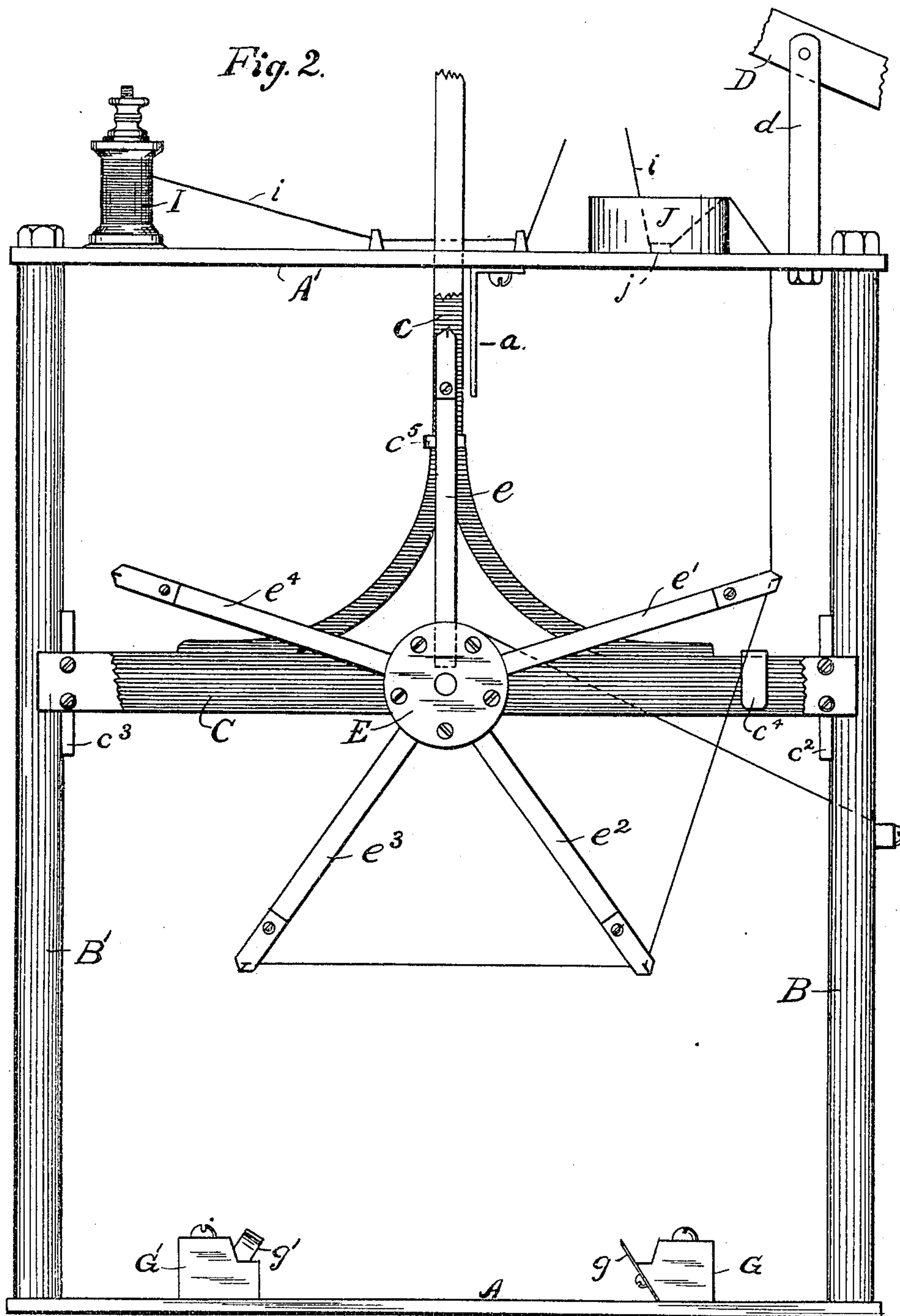
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4 SHEETS—SHEET 3.

Fig. 3

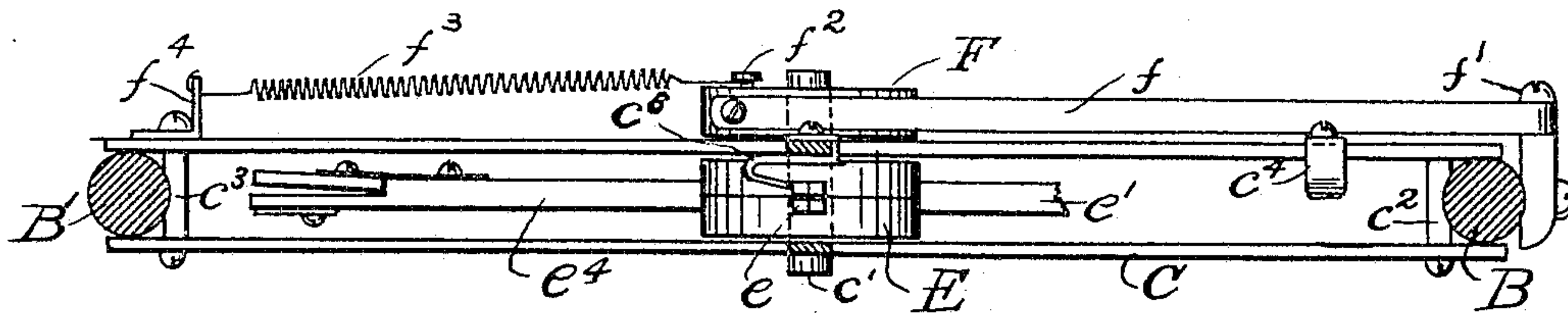


Fig. 4

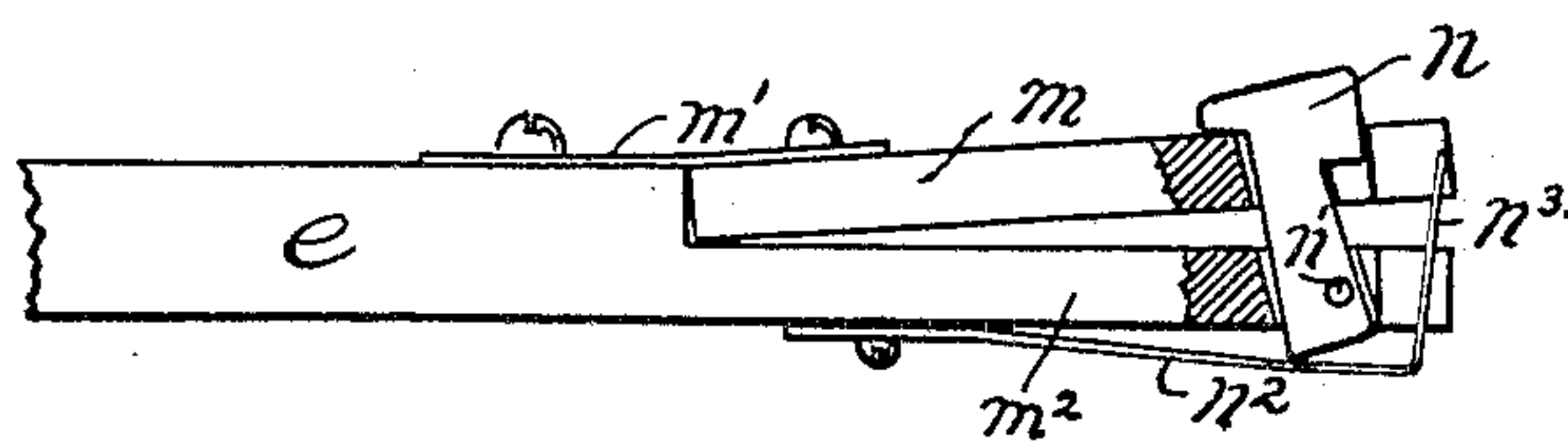


Fig. 5.

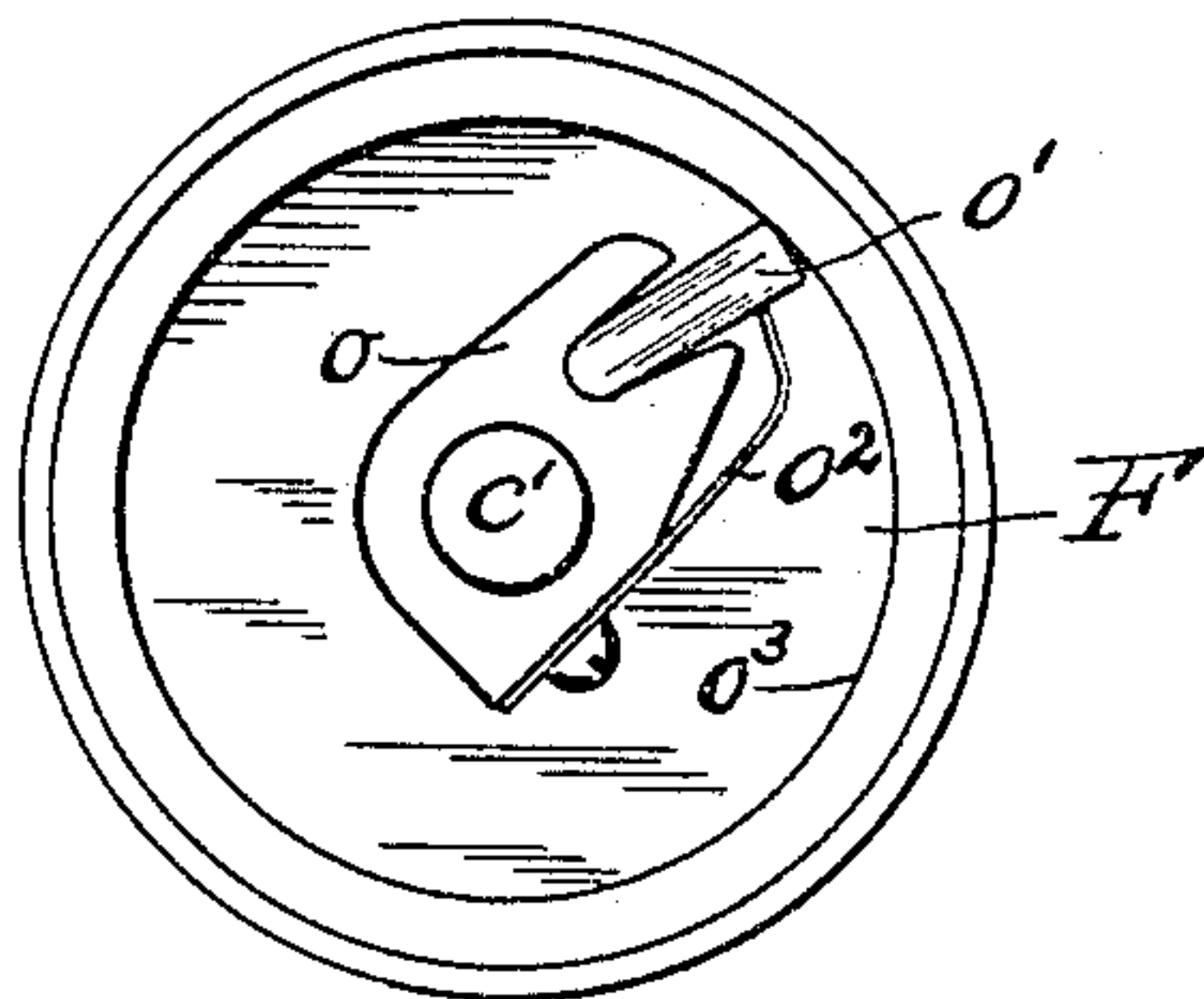


Fig. 6.



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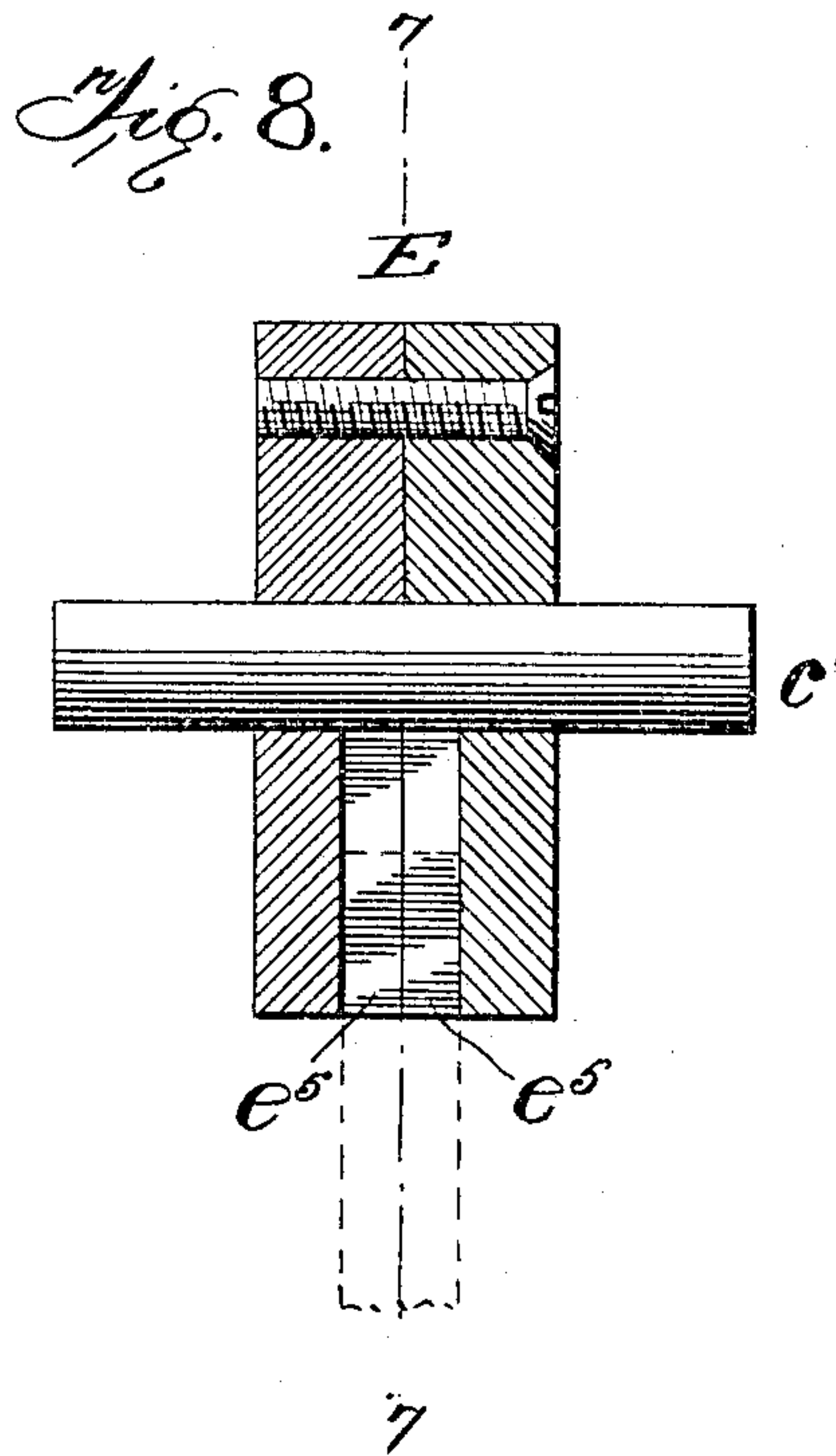
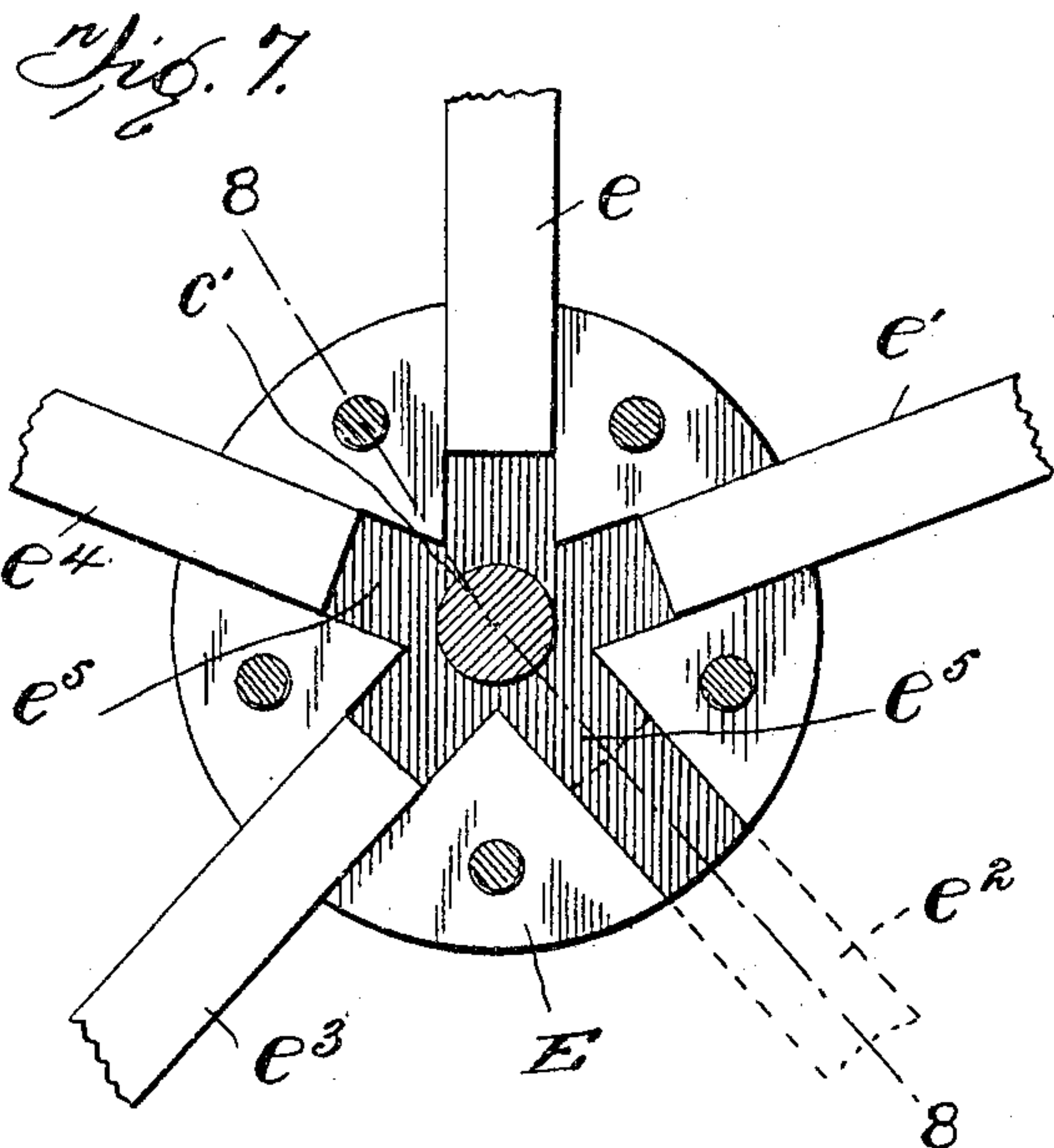
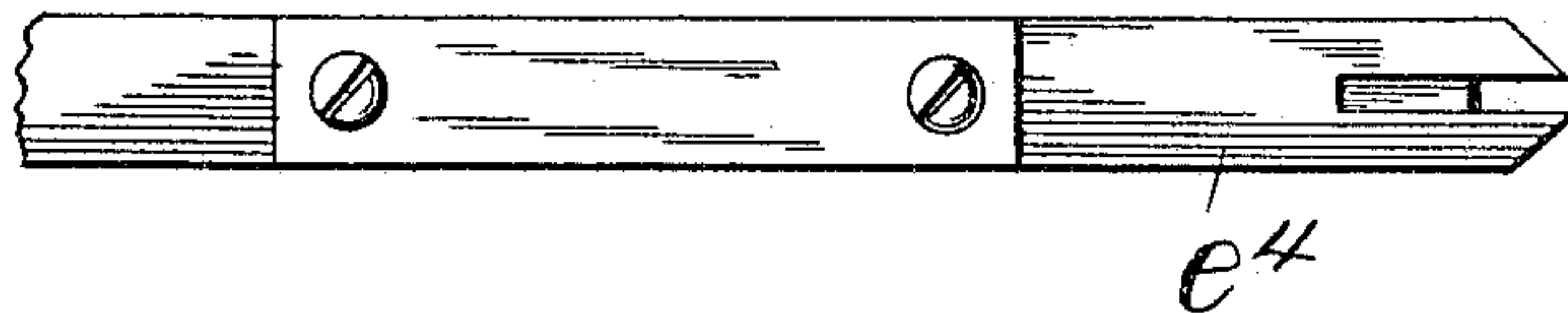


Fig. 9.



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EDWARD M. WILCOX, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO JOSEPH H. KNIGHT, OF CHICAGO, ILLINOIS.

ATTACHMENT FOR ENVELOP-MACHINES.

SPECIFICATION forming part of Letters Patent No. 781,579, dated January 31, 1905.

Application filed May 5, 1898. Serial No. 679,818.

To all whom it may concern:

Be it known that I, EDWARD M. WILCOX, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Attachments for Envelop-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved automatic attachment for envelop-machines, and has for its object to provide a simple and efficient device for laying and securing a thread or strand in the folding-crease of the sealing-flap of envelops without in the least interfering with the full working capacity of the machine to which it may be attached.

The object of inserting a thread, strand, or the like in one of the folding-creases of envelops is to provide a practical means for conveniently opening the same.

The idea of inserting an opening thread or strand in an envelop is an old one; but the great difficulty has been in the want of suitable mechanism that would successfully accomplish the desired object without interfering with or delaying the working of the envelop-machine, as the price at which the product is retailed makes it necessary that the operation of laying the thread be done at some step in the process of making the envelops, and thus avoiding a second handling of the same.

In the manufacture of envelops it is necessary that the gum applied to the sealing-flap shall be dried before the envelops are bunched. To accomplish the drying process, envelop-machines are provided with a mechanism termed the "drying-carrier," which carries from three hundred to five hundred envelops at a time in the process of drying. The usual capacity of the ordinary envelop-machine is one hundred or more per minute, and my attachment is so constructed and connected with the drying-carrier that it will successfully lay the thread in each envelop as fast as they are made.

In the accompanying drawings, Figure 1 is a front elevation of my improved attachment, showing the thread-carrier and its reciprocating support in their lowermost position. Fig. 2 is a rear elevation showing the thread-carrier and its support in their highest position. Fig. 3 is a transverse plan section. Fig. 4 is a broken-away plan of one of the gripper-arms. Fig. 5 is a detached detail of a friction clutch-pulley, and Fig. 6 is a detail of a thread-cutting device. Fig. 7 is a detached sectional detail of the thread-carrier hub on line 7, Fig. 8, the gripper-arms being broken away; and Fig. 8 is a section on line 8, Fig. 7. Fig. 9 is a broken side elevation of the outer end of one of the thread-carrier arms.

A represents a base-plate. B B' are side framing-posts, the lower ends of which are secured in the base-plate and the upper ends connected by a transverse cap-plate A'. These parts together form a stationary frame for the proper support of the working mechanism. A sliding frame having a vertical reciprocating movement is mounted in the stationary frame and consists of the two transverse side plates C C, the bearing-blocks c^2 c^3 , rigidly fixed between and secured to the respective ends of the transverse side plates and adapted to have a sliding bearing with the inner sides of the frame-posts B B', and the upright connecting guide-bars $c c$, having their lower ends secured to the transverse plates C C near their longitudinal center and their upper ends inserted loosely through slots in the cap-plate A' and connecting with the inner end of an operating-lever D. This lever is fulcrumed in the upper end of a standard λ , which provides for a rocking movement, the outer end being adapted to engage with suitable mechanism for operatively connecting the same with some moving part of an envelop-machine.

Within the sliding reciprocating frame-support is mounted mechanism forming a revolvable thread-carrier adapted to grip, carry, and lay the threads or strands in the envelops. The thread-carrier consists of a spider comprising an axial hub E and a number of radially-disposed arms $e e' e^2 e^3 e^4$. The inner ends

of these arms are adjustably inserted endwise in their axial hub and the outer ends bifurcated to provide gripper-jaws and positioned to correspond to the successive angles of a polygon.

5 The gripper-jaws have a closing and opening action in gripping and releasing the thread at the proper time. The hub E is made in two parts and is separable on a line through the center, as shown in Fig. 8. The inner join-
10 ing faces of the two parts are grooved at intervals to a depth corresponding approximately to one-half the thickness of the gripper-arms and provide socket-apertures e^5 for the reception of the inner ends of the gripper-arms. The hub parts are joined together
15 by a number of screws e^6 , disposed at intervals between the gripper-arms. By slacking back on these screws the pressure on the arms is relaxed and they may be shortened or
20 lengthened, as required. By tightening up on the screws the arms are clamped rigidly in the position to which they have been adjusted.

The hub E of the thread-carrier is mounted on the shaft c' and has suitable bearings in the
25 side plates C C. The shaft c' passes through both side plates and projects on one side. Upon this projection of the shaft c' and outside of the side plate is a friction clutch-pulley F, as shown in Fig. 5. Attached at one
30 end and engaging the face or rim of the clutch-pulley F is a steel band or ribbon f , having its other and outer end suitably attached to the fixed arm f' on the post B, as shown in Figs. 1 and 3, and on the outer side of the clutch-
35 pulley F, as at f^2 is attached one end of a coil tension-spring f^3 , the other end being attached to the fixed arm f^4 on the side plate C at its extremity, as shown in Fig. 3, and serves to return the clutch-pulley F to its normal po-
40 sition. In construction the friction clutch-pulley F, as shown in Fig. 5, consists of a circular hollow casing having a plain or grooved face, as a pulley, which revolves loosely upon the projecting end of the shaft c' , bearing upon
45 the outside of the side plate C. Within this hollow casing and rigidly fixed to the shaft c' is a bifurcated dog o , carrying a pawl o' and a lock-spring o^2 , engaging the pawl o' , the said casing being closed by a movable plate on its
50 outer side. As the sliding reciprocating frame moves upwardly the friction-clutch F, by means of the band or ribbon f , is made to engage the shaft c' and imparts one-fifth of a revolution to the thread-carrier or spider.

55 This rotary movement of the thread-carrier is intermittent, with a distinct interval of rest between each movement, and is in a plane transverse to the path of the drying-carrier of the envelop-machine. Each intermittent
60 rotary movement of the thread-carrier brings one of the gripper-arms into position to seize the thread and the next two arms in advance thereof into position to cut, release, and lay so much of the thread as is held therebetween,

the intermediate arm of the three arms grip- 65 ping the thread at the same time and retaining its hold of the end of the thread from which the last segment has been severed.

The horizontal end of a spring-stop a is secured to the under side of the cross top plate 70 A', the vertical disengaged drop end stopping short in the path of the gripper-arms. A movable latch c^5 is inserted in one of the upright guide-bars and projects inwardly far enough to let the gripper-arms in the order 75 of succession strike the beveled end and force the same outwardly and pass by. As the arms pass out of contact the spring c^6 forces the latch back to its normal position for the contact of the next following arm. The latch c^5 80 is straight on the back side and limits the back movement of the arms as the thread-carrier moves downwardly. The intermittent rotation of the thread-carrier or spider takes place on the up movement thereof, the arm 85 first in contact with the spring-stop a turning far enough to clear the same and give place to the next succeeding arm to come in contact therewith as the thread-carrier reaches the limit of its stroke on the up movement. This 90 spring-stop serves to relieve the concussion as the thread-carrier comes to a full stop and forces the particular arm in contact back against the latch c^5 and holds said arm in an exact vertical position for the down move- 95 ment. The gripper-arms are so disposed that when one arm rests in a vertical position the ends of the two lowermost arms holding the thread are in the same horizontal plane and in position to lay the thread when the down 100 movement is completed.

H represents a section of the envelop or drying carrier, Fig. 1, of an envelop-machine, showing the relative position of the thread-laying attachment when in a working posi- 105 tion. The stationary frame of the attachment is so positioned that the drying-carrier travels over the base-plate A thereof and directly under the thread-carrier, bringing each envelop into position for the engagement of the 110 thread-laying mechanism.

The thread-gripping ends of the spider-arms are bifurcated to form the gripper-jaws and consist of, Fig. 4, a movable jaw m , a flat spring-hinge m' , and a rigid jaw m^2 , which is 115 an integral part of the arms. The jaw m is movably retained in place by means of the spring-hinge m' . These jaws are mortised or slotted in their outer ends for the insertion of an operating-latch n , having a projecting head 120 with shoulders adapted to engage the outside of the movable jaw m and is pivoted in the mortise of the rigid jaw, as at n' . A flat spring n^2 is attached to the outer side of the rigid jaw m^2 and bears with its free end 125 against the heel of the latch n , as is more particularly shown in Fig. 4. The extreme free end of the spring n^2 terminates in a spring-

tongue bent at right angles and extending into recesses in the ends of both gripper-jaws, as shown at n^3 .

The stop-blocks G G' are secured to the base-plate A of the supporting stationary frame and are located in a horizontal plane and placed a certain distance apart in the plane of the gripper-jaws. A cutting device g is attached to the block G and is adapted to engage with and sever the thread-segment on the advancing side of the gripper-arm c^2 , the supply end of the thread being retained in the grippers of this and the succeeding arms. At the same time that the length of thread to be inserted in the next envelop is cut off a tripping-lug g' , secured to the stop-block G' , engages the latch n and opens the gripper-jaws, releasing this end of the thread-segment simultaneously with the severing of the opposite end as the thread is laid. The gripper-jaws so opened remain open until they get around approximately to the position of arm c' , where the thread i is reengaged by the grippers, which as they continue to advance come in contact with a spring c^4 , secured to one of the transverse bars C in the path of the revolving arms, the pressure of this spring operating to close the gripper-jaws and clamp the thread, so that the operation of opening and closing the jaws is entirely automatic. The sides or space between the gripper-arms spanned by the thread-segment will be somewhat greater than the length of an envelop, so that one or both ends of the measured thread after it is laid will project far enough to be conveniently grasped by the fingers in the operation of opening the envelop.

Provision is made for threading envelops of different lengths by shortening or lengthening the gripper-arms and changing the relative distance between the stop-blocks G G' .

On the cap-plate A' and directly under the lever D is fixed a gum-vat J , also on the cap-plate A' . Near its connection to the post B' is a thread supply or spool I , having suitable tension-screws, from which the thread i passes through two eyeways on the cap-plate A' , through an eye d^3 in the lever D into the vat J , through an eye in the bottom thereof, and out over its edge and downwardly through an eye in the cap-plate A' , extending downwardly in the path of and where it is gripped and carried by the gripper-arms, as shown in Figs. 1 and 2. By this means the thread is coated with an adhesive composition to insure its sticking in the envelops.

The attachment will ordinarily be connected to the drying-carrier frame of an envelop-machine and is so positioned that the drying-carrier will travel over the base-plate A of the attachment, and as each link of the carrier holding an envelop passes underneath the thread-laying mechanism the thread-carrier moves down at the proper time, lays a thread in the envelop in position to receive it, and is

moved away bodily from the path of the drying-carrier and is rotated far enough to bring another thread-segment into position and again move down in time to engage the next succeeding envelop, and so on continuously.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with an envelop-carrier, of a thread-carrier mounted to rotate in a plane transverse to the envelop-carrier's path, and means for moving the thread-carrier periodically toward and away from that path.

2. The combination with an envelop-carrier of a thread-carrier mounted to rotate in a plane transverse to the path of the envelop-carrier and provided with a series of arms each having at its end a thread-gripper, and means for moving the thread-carrier bodily toward and away from that path.

3. The combination with an envelop-carrier, of a revolvably-mounted thread-carrier arranged to move bodily toward and away from the envelop-carrier, a series of grippers upon the thread-carrier for holding thread at points corresponding to the successive angles of a polygon having the thread-carrier's axis within it, whereby the thread is carried around said axis, means for imparting intermittent rotation to the thread-carrier, and means for actuating said grippers during the intervals of such rotation.

4. The combination with a stationary frame, of a thread-carrier revolvably mounted upon a support reciprocating in said frame, and devices borne by the frame in position to resist direct advance of the carrier with its reciprocating support and thus to compel rotation of said carrier.

5. The combination with an envelop-carrier, of a reciprocating frame, a thread-carrier mounted upon said frame to rotate in a plane transverse to the path of the envelop-carrier and provided with a series of arms, grippers borne at the ends of the arms, respectively, and means whereby the rotation of the thread-carrier causes said grippers to open and close at certain intervals.

6. The combination with an envelop-carrier, of a thread-carrier mounted to move bodily toward and away from the envelop-carrier, to rotate in a plane transverse to the path of the envelop-carrier, and provided with a series of arms bearing grippers at their ends, and means for delivering thread to the grippers in the plane and direction of their rotation.

7. In apparatus for the purpose set forth, the combination with a thread-carrier having a series of thread-grippers spaced about an axis of rotation, and means whereby the distance of the grippers from that axis may be changed at will.

8. The combination with a rotary thread-

- carrier having grippers arranged to hold the thread at points more than an envelop's length apart and corresponding in location with the successive angles of a polygon whose center is the carrier's axis of rotation, means for rotating the carrier step by step to bring the thread-segments successively into a certain fixed position, and means for moving the carrier back and forth.
9. The combination with an envelop-carrier, of a revolubly-mounted thread-carrier, a series of grippers borne by the thread-carrier and located as if at all the angles of a polygon whose center is the axis of rotation of the thread-carrier and whose sides are slightly longer than an envelop, means for intermittently rotating the thread-carrier to bring the thread-segments, between successive grippers, one after the other to the same position upon the side next the envelop-carrier, and means for causing one of the carriers to approach the other while the thread-carrier is not rotating.

10. A rotary thread-carrier having arms whose ends are located as if at all the angles, respectively, of a regular polygon whose center is the axis of rotation and whose sides are slightly longer than an envelop, automatic thread-grippers mounted at the ends of the arms, respectively, means for rotating the carrier step by step through angles corresponding to the angular distance between successive grippers, and automatic means for opening each gripper as it reaches a certain point in its rotary path.

11. A rotary thread-carrier having a series of grippers located as if at all the angles, respectively, of a regular polygon having its center in the axis of rotation.

In witness whereof I have signed this specification, in the presence of two subscribing witnesses, this 3d day of May, 1898.

EDWARD M. WILCOX. [L. s.]

Witnesses:

JAMES H. WESTCOTT,
K. M. HENDERSON.