

No. 614,657.

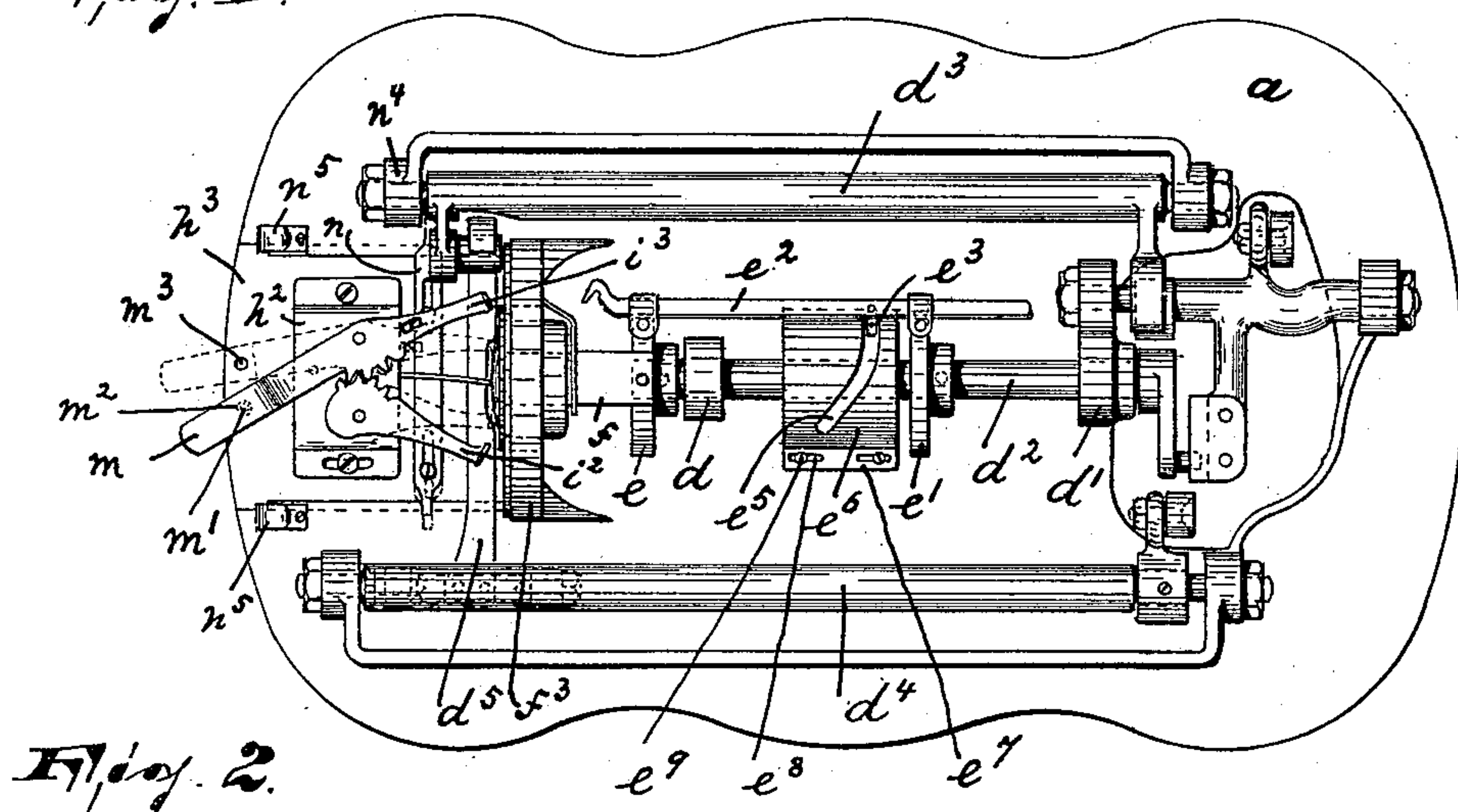
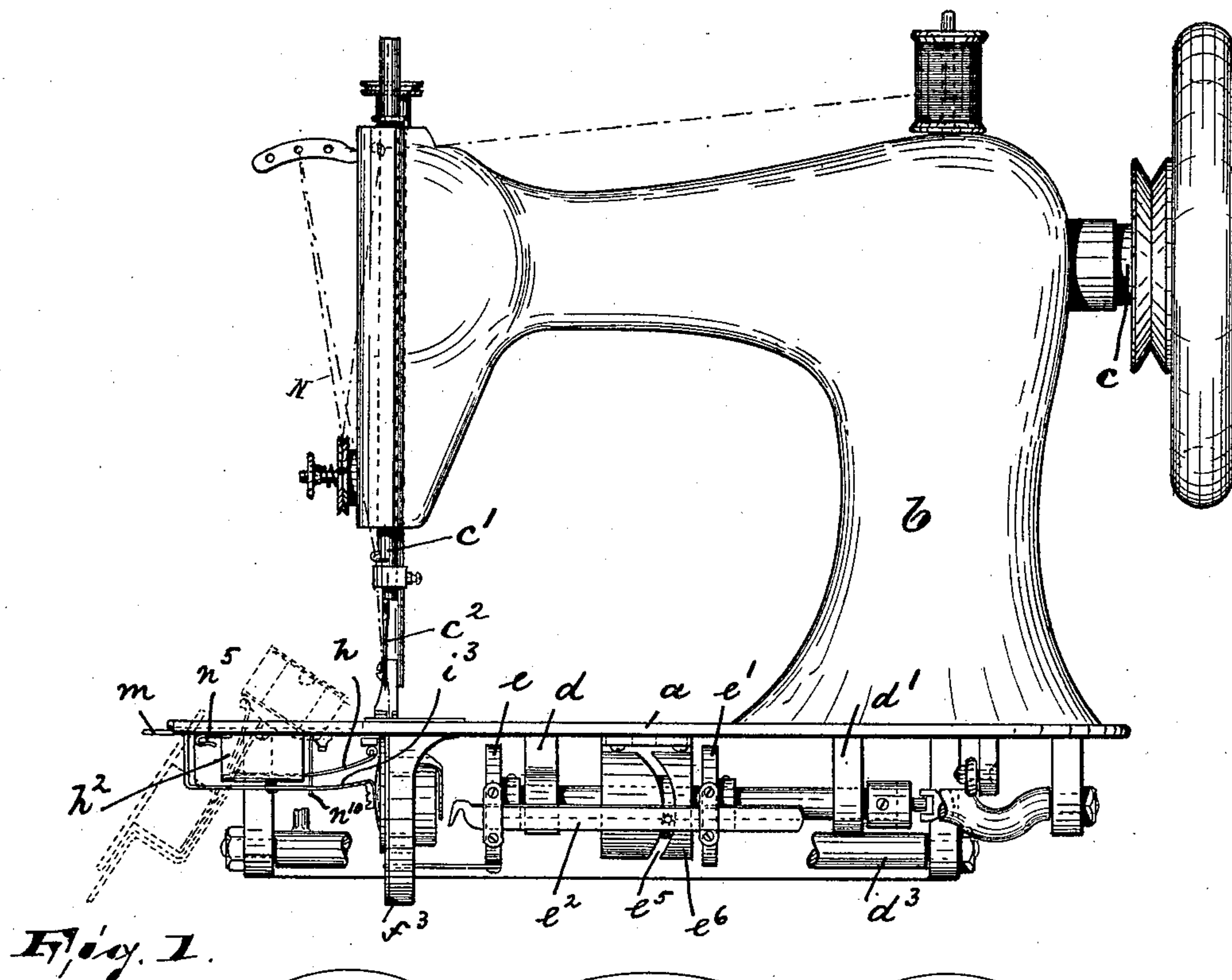
Patented Nov. 22, 1898.

F. JACOB.
SEWING MACHINE.

(Application filed Aug. 21, 1897).

(No Model.)

3 Sheets--Sheet 1.



WITNESSES:

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L. Snyder

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ATTORNEYS

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3 Sheets—Sheet 2.

Fig. 3.

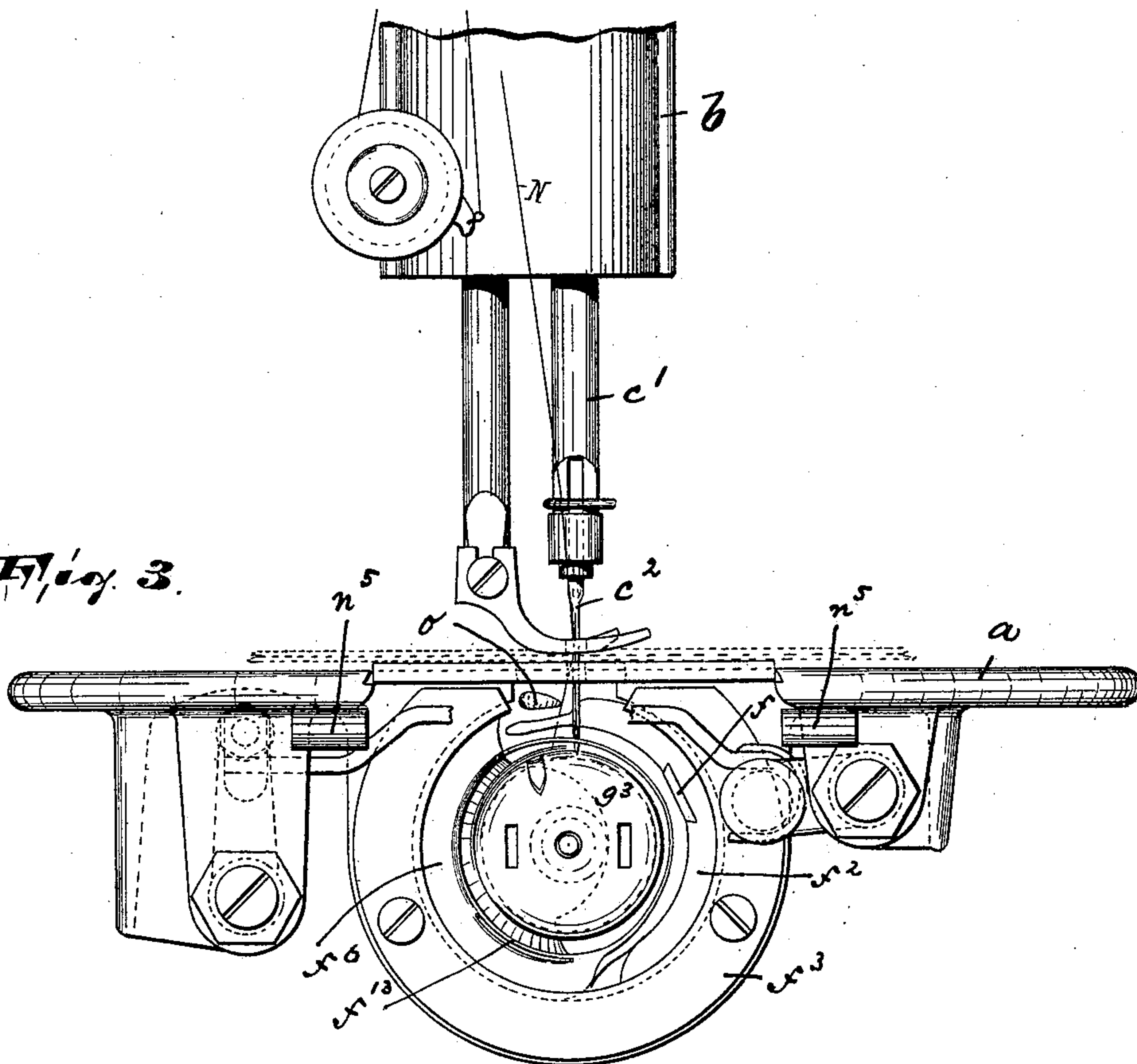
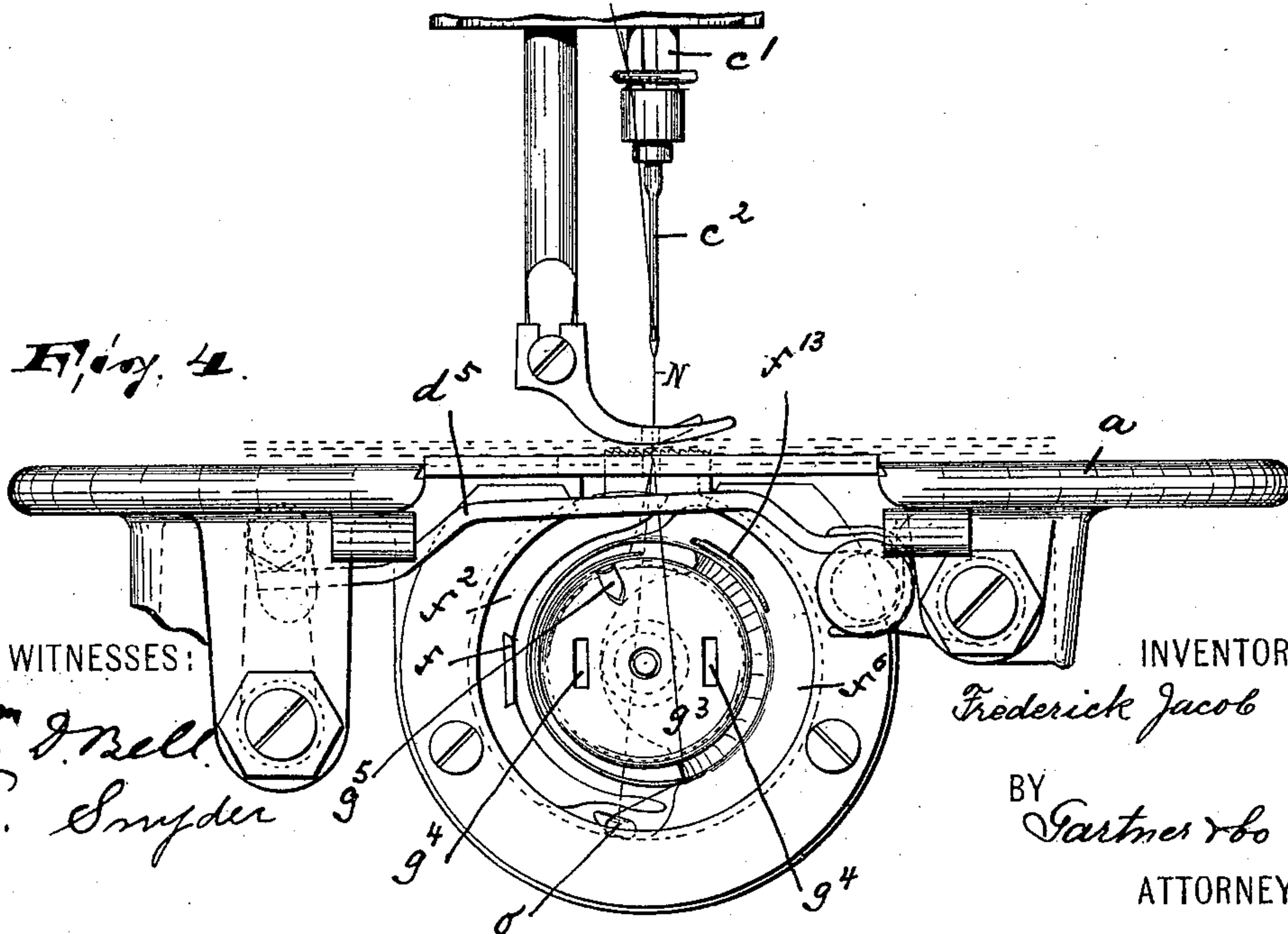


Fig. 4.



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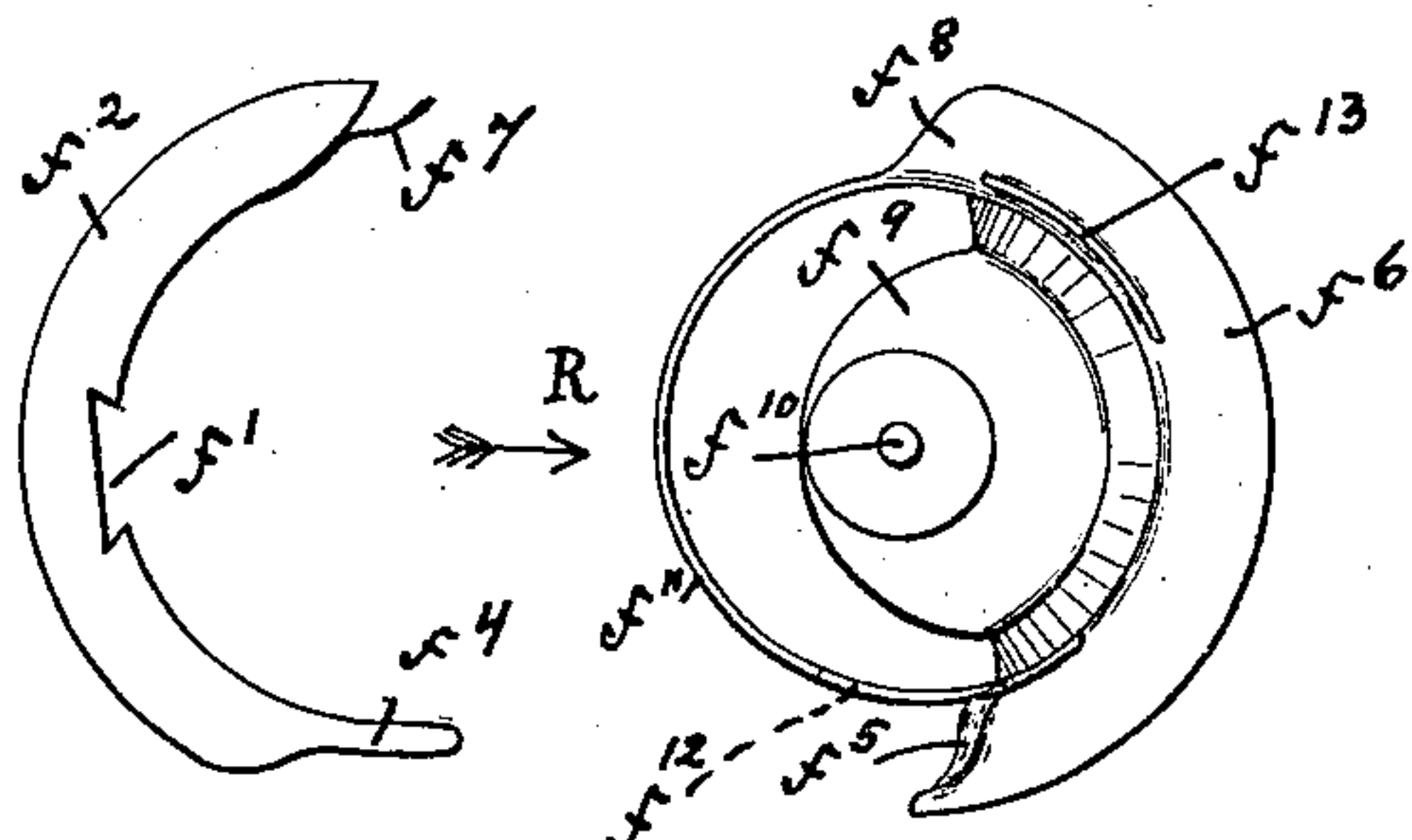


Fig. 7.

Fig. 8.

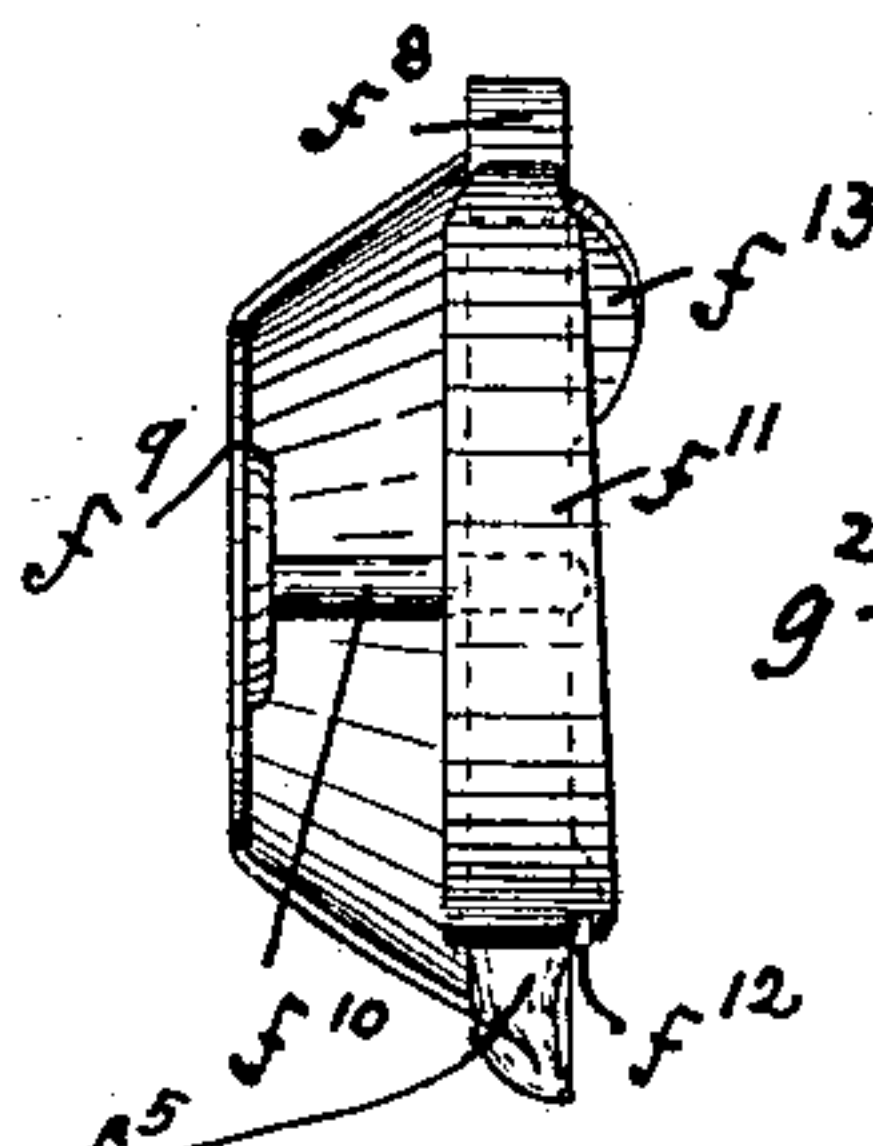


Fig. 9.

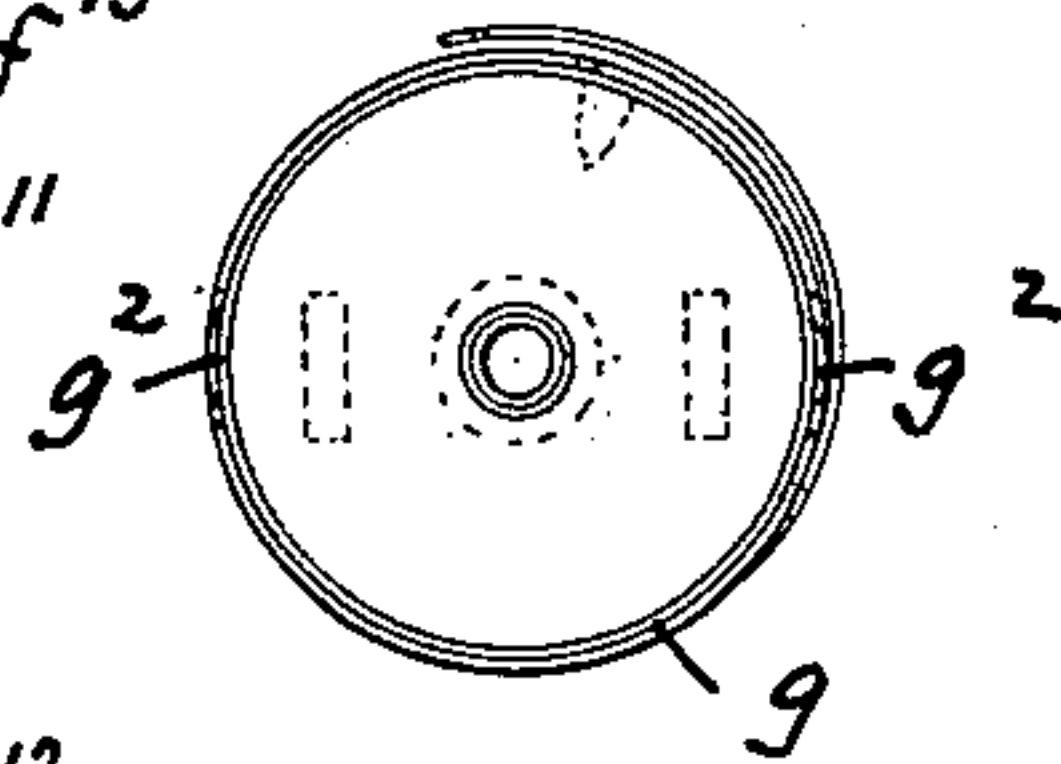


Fig. 10.

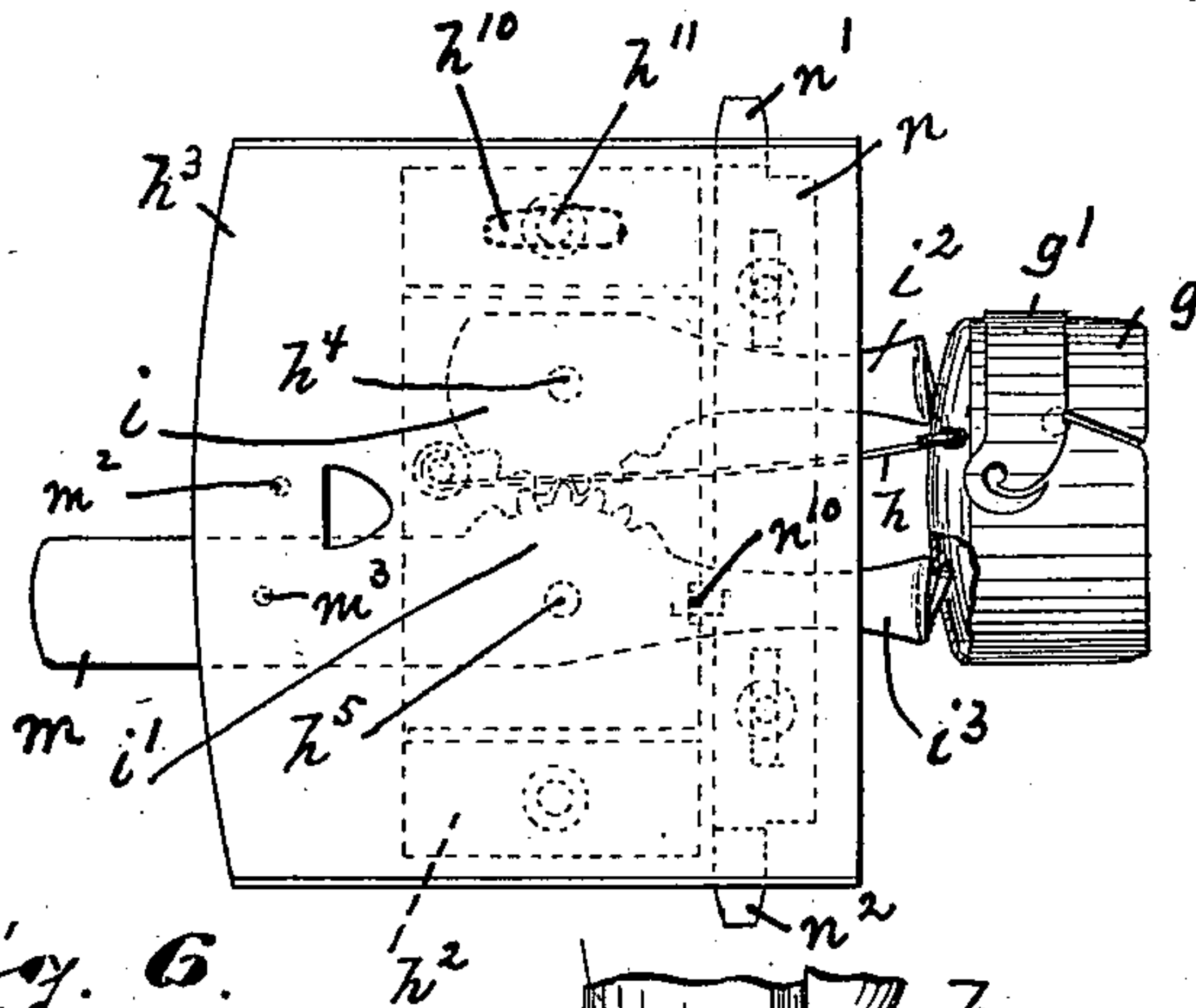


Fig. 6.

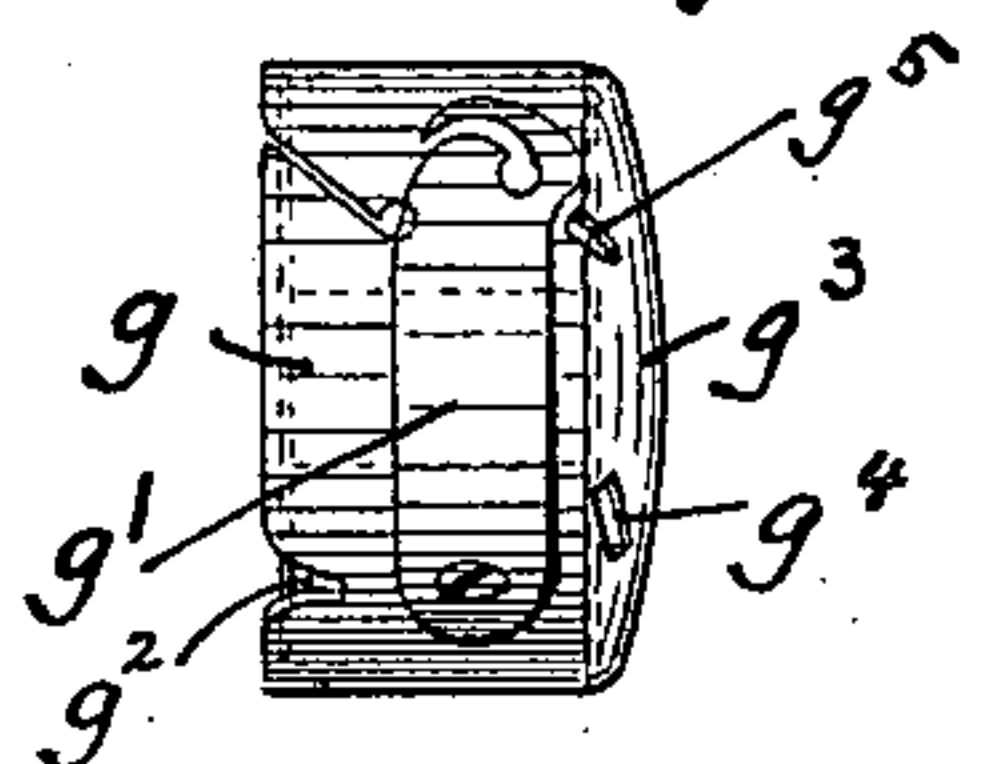


Fig. 11.

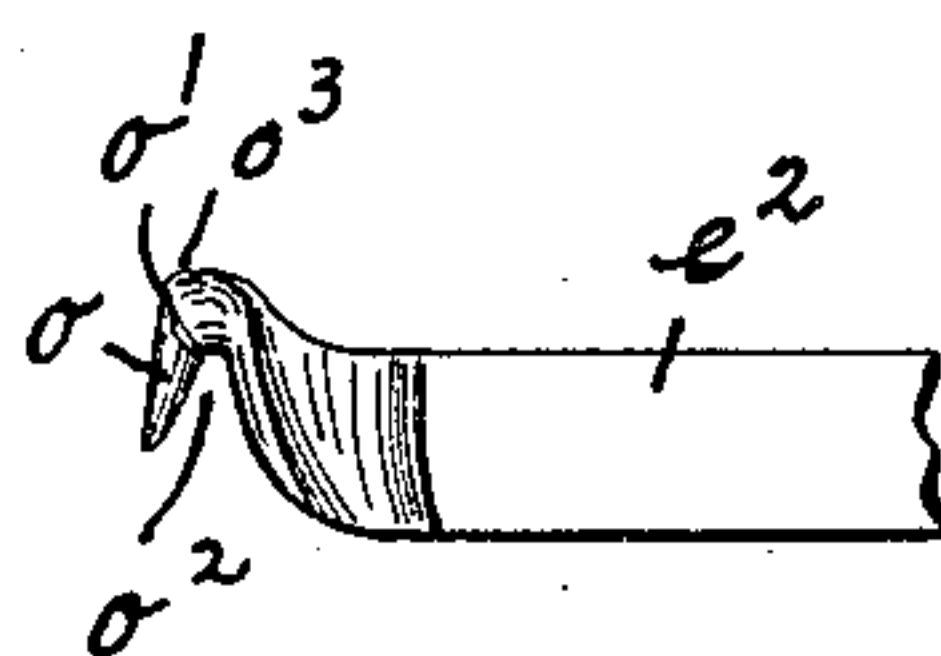
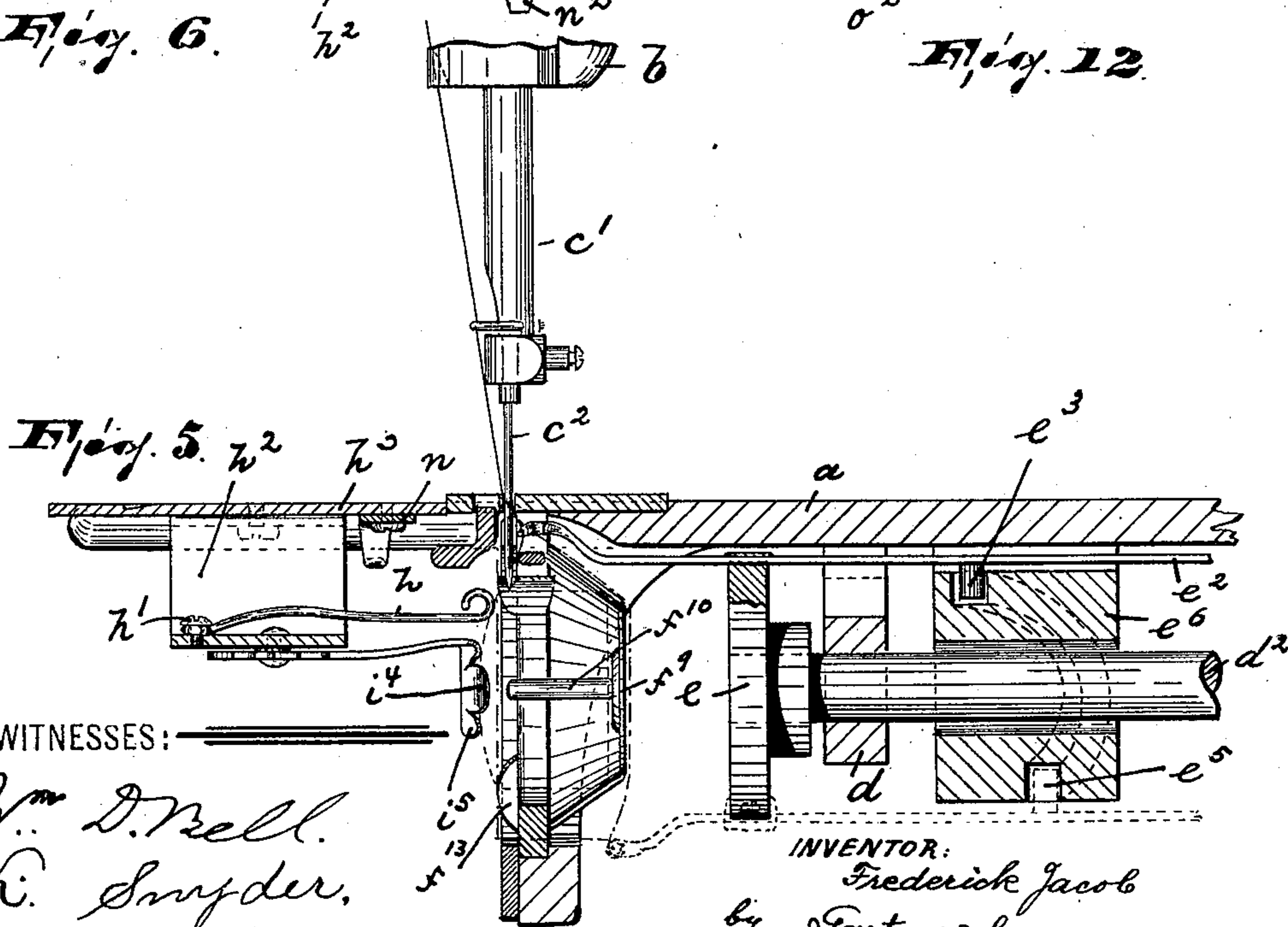


Fig. 12.



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UNITED STATES PATENT OFFICE.

FREDERICK JACOB, OF NEWARK, NEW JERSEY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 614,657, dated November 22, 1898.

Application filed August 21, 1897. Serial No. 648,980. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK JACOB, a citizen of the United States, residing in Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Sewing-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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my present invention is to provide a center-bobbin sewing-machine of simple, strong, and durable construction, reliable in operation, and having a bobbin of increased size, which bobbin, together with the bobbin-casing, can be quickly and readily moved into a position for conveniently removing and replacing the bobbin.

The invention consists in the improved center-bobbin sewing-machine and in the means for engaging or clamping the bobbin-casing and for moving the same, together with the bobbin, out of the looper into a position for conveniently removing the bobbin. It further consists in the means for operating and controlling the loop-catcher and in the combination and arrangements of the various parts, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of a center-bobbin sewing-machine provided with my improvements; Fig. 2, an underneath view of Fig. 1; Figs. 3 and 4, enlarged front elevations of Fig. 1, illustrating two different operative positions, certain portions being broken away and others removed to better illustrate the nature of my said invention; Fig. 5, a central sectional view of Fig. 3, also illustrating the clamping or engaging means for the bobbin-casing, the latter being shown in dotted lines; Fig. 6, a top plan view of the bobbin-casing and its engaging and clamping means; Fig. 7, a detail view of the driver; Fig. 8, a detail front elevation of the looper;

Fig. 9, a detail side elevation of Fig. 8, looking in the direction of the arrow R; Fig. 10, a rear elevation of the bobbin and bobbin-casing; Fig. 11, a side elevation of the bobbin-casing; and Fig. 12, a detail view of the loop-catcher, hereinafter more clearly and fully described.

In said drawings, *a* represents an ordinary sewing-machine bed-plate, and *b* the machine-arm, having the usual driving-shaft *c* for operating the needle-bar *c'* and needle *c''*. In the downwardly-projecting brackets *d* and *d'* of the bed-plate *a* is supported the oscillating shaft *d''*, to which motion is imparted from the driving-shaft *c* by any ordinary well-known means. The motion-transmitting means illustrated in the drawings are those covered by United States Letters Patent No. 208,838, dated October 8, 1878, which means also transmits motion to the rocking shafts *d'''* and *d''''*, which in turn operate the feed-bar *d'''''* in the usual and well-known manner. On the shaft *d''* are securely mounted the collars *e* and *e'*, forming guides for the loop-catcher bar *e''*, which latter is provided with a projecting pin *e'''*, engaging a cam-groove *e''''*, arranged in the cam or cylinder *e'''''*, which latter is secured to the bed-plate *a* and is penetrated by the shaft *d''*.

For the purpose of securing the cylinder or cam *e'''''* to the bed-plate it is provided with a projecting flange *e''''''*, having a series of elongated slots *e'''''''*, penetrated by set-screws *e''''''''*, as clearly illustrated in Figs. 1 and 2 of the drawings.

Forwardly projecting from and secured to the disk or collar *e* in any desired manner is the horizontal arm *f*, engaging with its free end a recess *f'*, arranged on the inner periphery of the driver *f''*, which latter is revolvably mounted in a groove arranged in the downwardly-projecting frame or race *f'''*, as in the usual manner. The reduced portion *f''''* of said driver bears against the inwardly-curved portion *f'''''* of the looper *f''''''*, while a flat spring *f'''''''*, secured to the other end of said driver, bears against the outwardly-curved portion *f''''''''* of said looper. Said looper is also arranged in the groove of the race or frame *f'''* and is provided with a rearwardly-projecting plate *f''''''''*, carrying the center-pin *f''''''''''*, which latter is adapted to receive the bobbin-casing

in the usual and well-known manner. An additional guide or protecting plate f^{11} is carried by the looper, and thus forms with the latter a complete circular chamber for the reception of the bobbin-casing, as hereinafter described. Said protecting-plate f^{11} is provided in its flattened periphery with an elongated slot f^{12} , adapted to be penetrated by the point of the needle when the latter is moved downward, to thus separate the thread in the needle from the thread in the bobbin and to prevent its intermingling with the same. On the front face of the looper is also arranged a curved projection f^{13} for a purpose hereinafter described.

On the pin f^{10} and within the looper f^6 is loosely arranged the bobbin-casing g , carrying the tension device g' and provided at its open side with diametrically oppositely arranged recesses g^2 for the purpose of facilitating the engaging of the flanges of the bobbin when the latter is to be removed from said casing.

The cover or front g^3 of the bobbin-casing is provided with diametrically oppositely arranged slots or recesses g^4 and with a recess g^5 , which latter is in engagement with the curved end of a spring h , secured, as at h' , to a bridge h^2 , projecting downward from the slide h^3 , arranged and guided in the usual manner in the bed-plate a of the sewing-machine. On said bridge are pivotally secured, as at h^4 h^5 , disks i and i' , provided at their inner edges with teeth and notches meshing with each other and carrying rearwardly-projecting arms i^2 and i^3 , respectively, each of which arms is provided at its outer end with prongs i^4 i^5 , adapted to engage, respectively, the slot or recess g^4 and the adjoining portions of the front or cover g^3 of the bobbin-casing g , thus furnishing a firm connection between said arms i^2 i^3 and the bobbin-casing when the latter is to be withdrawn, together with the bobbin, for the purpose of removing and replacing the bobbin, as will be manifest. One of the disks, i' , is provided with an arm or handle m , projecting beyond the edge of the slide h^3 and provided with an upwardly-projecting pin m' , adapted to engage sockets m^2 and m^3 , respectively, which sockets are arranged in the under side of the slide h^3 and serve to lock the arm m in its normal or operative position.

It must be remarked that the bridge h^2 is adjustably secured to the under side of the slide, and for that purpose one of its securing-flanges is provided with an elongated slot h^{10} , which latter is penetrated by a set-screw h^{11} , as clearly illustrated in Fig. 6 of the drawings. On the under side of the slide h^3 is slidably arranged a locking-bar n , provided with outwardly-projecting lugs $n' n^2$, adapted to engage when in normal position a downwardly-extending pin or projection, (in the drawings the bearing n^4 for the rocking shaft d^3), and when in operative position to engage within the looped brackets $n^5 n^5$, projecting

downward from the bed-plate a and on each side of the slide h^3 , said lugs $n' n^2$ in the latter case serving as a fulcrum for the slide and for the bobbin-casing engaging and clamping means. The locking-bar n is operated from the arm i^3 , and for that purpose is provided with a downwardly-extending pin or projection n^{10} , engaging a slot in said arm i^3 .

The loop-catcher bar e^2 , Fig. 12, is provided at its front portion with a hook-shaped loop-catcher o , having on its outer face a groove o' , communicating with the open space o^2 and extending from the latter to the rear point o^3 of the hook-shaped loop-catcher o . The groove o' is adapted to retain the upper or needle thread during certain stages of the operation of the machine, as will be hereinafter described.

In operation when the needle is being moved downward to its lowermost position—that is to say, into the position illustrated in Fig. 3—the point of the needle having entered the slot f^{12} of the guide-band f^{11} of the looper the said looper is rotated about one hundred and eighty degrees in the arc of a circle. When the needle starts on its return or upward movement, the loop-catcher, with its hooked portion o , engages the upper thread N and forms a loop in the latter. The looper has now started to return to its former position and engages with its inwardly-curved portion f^5 the said loop of the upper thread and holds the same against said curved portion f^5 , while said loop is spread or enlarged and carried over the rear and front portions of the looper. This spreading or enlarging of the loop is accomplished by the rotating of the looper in coöperation with the backward and downward movement (in an arc) of the loop-catcher by means of the cam-groove e^5 . As the curved portion f^5 of the looper approaches its lowermost position the loop-catcher is moving forward, and upon attaining its most forward position the spreaded loop of the upper thread N (which during the above-described operation has been held within the groove o' of the said loop-catcher) is slackened and slides off from the hooked portion o of said loop-catcher, and the spreaded loop is then taken up by the take-up of the sewing-machine in the usual manner. The moment the take-up of the machine reaches its uppermost position the curved lug f^{13} of the looper f^6 presses against the bobbin-thread, (which is in looped connection with the needle-thread and is carried by the same,) by which pressing the loop of the needle-thread is slightly drawn downward by the loop of the bobbin-thread, thereby finishing the elastic lock-stitch, as will be manifest to those familiar with the art of sewing.

When the bobbin is to be removed, the projecting arm or handle m , with its pin m^3 , is moved into the position indicated in Fig. 6, its pin m' engaging the socket m^3 , and thus locking said arm in that position. The front or cover of the bobbin-casing, or, better, its

recesses or slots g^4 , are thus engaged by the prongs i^4 of the arms i^2 and i^3 and, as herein-after described, firmly clamp said bobbin-casing to and between the said arms. Simultaneously the locking-bar n , with its projecting lugs n' and n^2 , is shifted—that is to say, the projecting portion n^2 moved out of the path of its respective locking pin or projection—in the drawings n^4 , Fig. 2. The slide h^3 is then moved outward until the projecting lugs n' n^2 engage their respective looped brackets n^5 n^5 and is then turned (said lugs serving as fulcrums for the slide) until the bobbin-casing and bobbin reach a position above the plane of the bed-plate, whereby the operator is enabled to conveniently remove the bobbin from the casing. After the bobbin has been replaced the slide h^3 is returned to its normal position and the handle m , with its pin m' , is again operated—that is to say, said pin m' moved into the socket m^2 —whereby the arms i^2 i^3 release the bobbin-casing, the latter being held by means of the spring h into normal operative position.

It must be remarked that any well-known center-bobbin machine can be readily provided with my improved bobbin, bobbin-casing, and bobbin-casing clamping or engaging means without materially altering the construction and castings of the machine, thus furnishing a machine which will embody the advantages obtained with the machine heretofore described—that is to say, providing a bobbin of increased size and means for readily and easily replacing the bobbin when desired.

I do not intend to limit myself to the precise construction shown and described, as various alterations can be made without changing the scope of my invention; but

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

1. In a center-bobbin sewing-machine, the combination with the bed-plate furnishing a fulcrum-support, the slide and the bobbin-casing, of means carried by the slide for engaging and clamping said bobbin-casing, and means also carried by said slide and serving as a fulcrum for said slide after having been withdrawn from its normal position, substantially as described.

2. In a center-bobbin sewing-machine, the combination with the bed-plate furnishing a fulcrum-support, the slide and the bobbin-casing, of means carried by said slide for engaging and clamping said bobbin-casing, a sliding bolt suitably guided on and carried by the slide and serving as a fulcrum for said slide when the latter has been withdrawn from its normal position, and mechanism for connecting said sliding bolt with the bobbin-casing engaging and clamping means, substantially as and for the purposes described.

3. In a center-bobbin sewing-machine, the combination with the bed-plate, a fulcrum-support, the slide and with the looper, of a bobbin-casing within said looper and pro-

vided with diametrically oppositely arranged grooves or recesses, two arms suitably fulcrumed on the slide and coöperating with each other and provided at their inner ends with a series of prongs adapted to engage the bobbin-casing and its grooves or recesses respectively, and a sliding bolt controlled by one of said arms and adapted to lock the slide when in normal position and to form a fulcrum for the same when in operative position, substantially as and for the purposes described.

4. In a center-bobbin sewing-machine, the combination with the bed-plate, the slide and the looper, of a bobbin-casing in said looper and provided with diametrically oppositely arranged grooves or recesses, of two arms suitably fulcrumed on the slide and coöperating with each other and provided at their free ends with a series of prongs adapted to engage the bobbin-casing and its grooves or recesses respectively, a spring for normally holding the bobbin-casing in position, and a sliding bolt carried by the slide and operated from one of said fulcrumed arms, substantially as and for the purposes described.

5. The combination, in a center-bobbin sewing-machine, with the bed-plate, the slide and the looper, of a bobbin-casing in said looper and provided with diametrically oppositely arranged grooves or recesses, of two arms suitably fulcrumed on the slide and coöperating with each other and provided at their free ends with a series of prongs adapted to engage the bobbin-casing and its grooves or recesses respectively, and means for locking said arms in normal and operative positions, substantially as and for the purposes described.

6. The combination, in a center-bobbin sewing-machine, with the bed-plate, the slide provided in its under side and front portion with two sockets, and with the looper, of a bobbin-casing in said looper and provided with diametrically oppositely arranged grooves or recesses, of two arms suitably fulcrumed on the slide and coöperating with each other and provided at their free ends with a series of prongs adapted to engage the bobbin-casing and its grooves or recesses respectively, a handle projecting from one of said fulcrumed arms and provided with an upwardly-projecting pin adapted to engage the sockets in the slide, substantially as and for the purposes described.

7. The combination, in a center-bobbin sewing-machine, with the bed-plate and the race, of the looper in said race, a driver also in said race and bearing with its ends against said looper and provided on its inner periphery with a groove or recess, an oscillating shaft suitably fulcrumed on the under side of said bed-plate, a sleeve or collar carried by said shaft, and an arm carried by said sleeve or collar and engaging the groove or recess in the driver, substantially as shown and described.

8. The combination, in a center-bobbin sewing-machine, with the bed-plate and the race,

of the looper in said race, a driver also in said race and provided on its inner periphery with a groove or recess and at one end with a flattened spring, said flattened spring and the
5 other end of the driver bearing against the opposite ends of said looper, an oscillating shaft suitably fulcrumed on the under side of said bed-plate, a sleeve or collar carried by
10 or collar and engaging the groove or recess in the driver, substantially as shown and described.

9. The combination with the bed-plate of a center-bobbin sewing-machine, of an oscillating shaft suitably fulcrumed on the under
15 side of the bed-plate, a series of collars mounted on said oscillating shaft, a sliding bar suitably guided and supported by said collars, a pin projecting from said bar, a cam or cylinder
20 suitably supported by the bed-plate and provided with a cam-groove engaging said projecting pin, and a loop-catcher carried by said sliding bar, substantially as and for the purposes described.

25 10. In a center-bobbin sewing-machine, the

combination with the bed-plate and the race projecting therefrom, of a looper in said race, a driver also in said race and operating said looper, an oscillating shaft suitably supported
30 on the under side of the bed-plate, a series of collars on said oscillating shaft, an arm carried by one of said collars and engaging the driver and adapted to operate the same, a horizontal bar slidingly arranged in and
35 supported by the collars, a pin projecting from said bar, a stationary cam or cylinder adjustably secured to the under side of the bed-plate and provided with a cam-groove engaging the projecting pin of the sliding bar,
40 and a loop-catcher on the inner end of said sliding bar, all said parts, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of August, 1897.

FREDERICK JACOB.

Witnesses:

WM. D. BELL,

ALFRED GARTNER.