

No. 631,017.

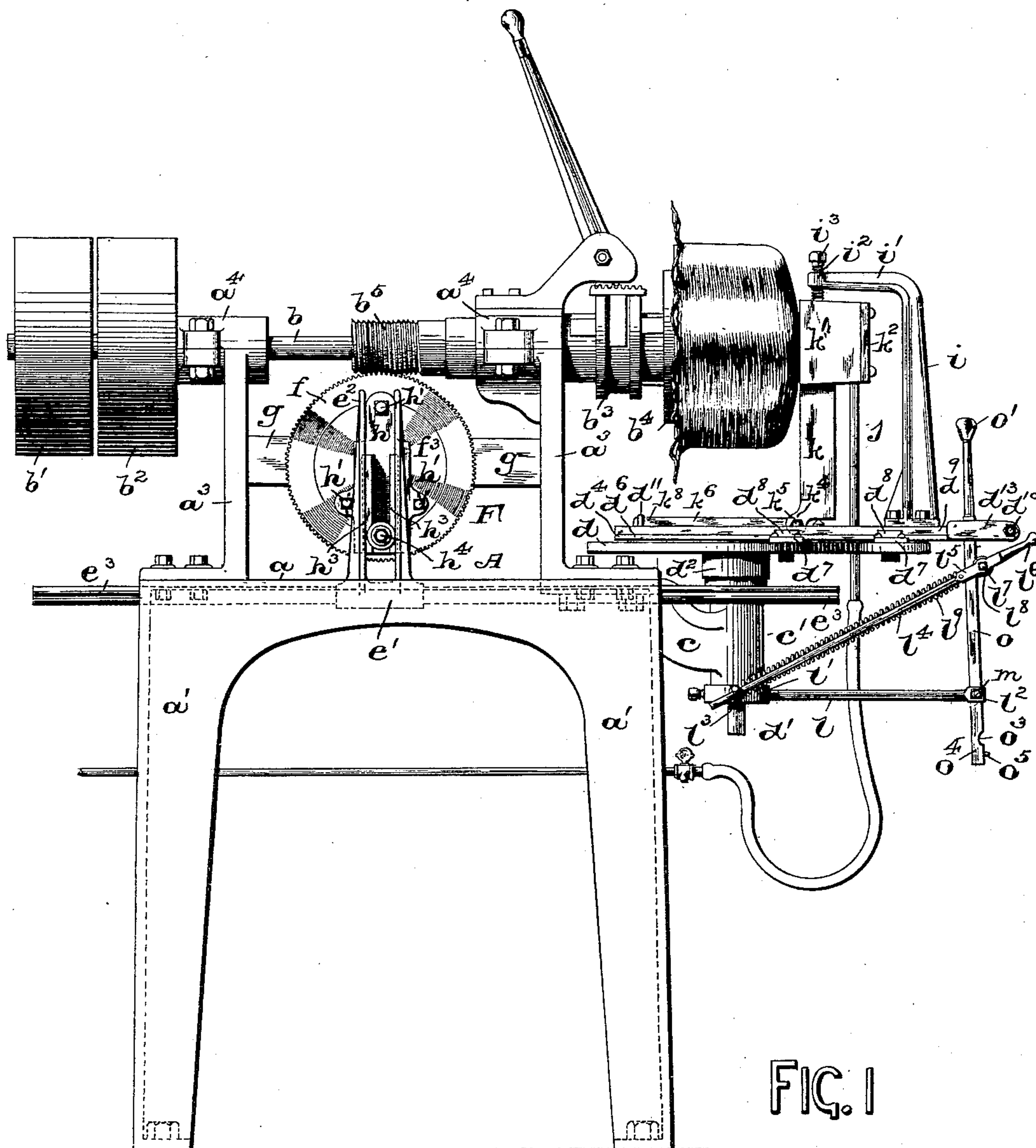
Patented Aug. 15, 1899.

**G. F. LARKIN.**  
**HAT IRONING MACHINE.**

(Application filed Jan. 26, 1899.)

(No Model.)

5 Sheets—Sheet 1.



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5 Sheets—Sheet 2.

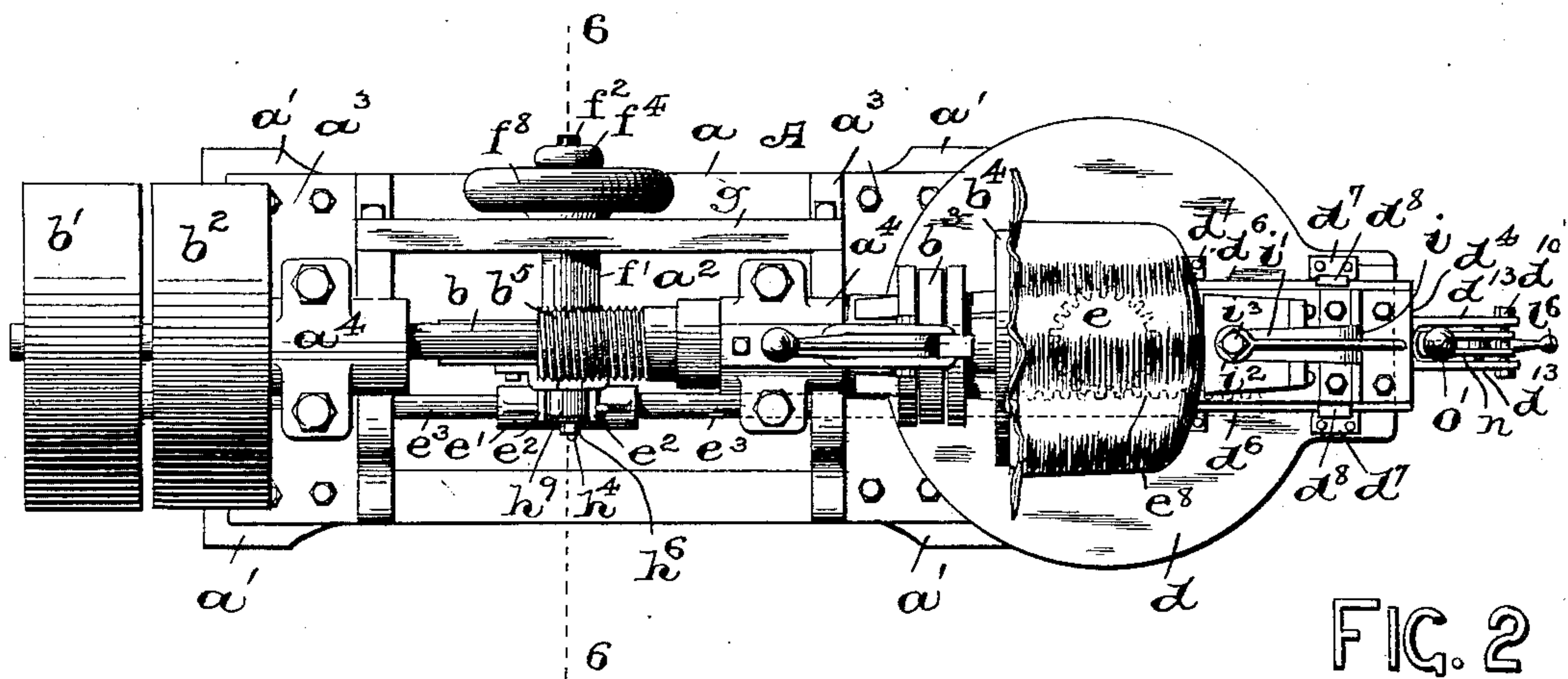


FIG. 2

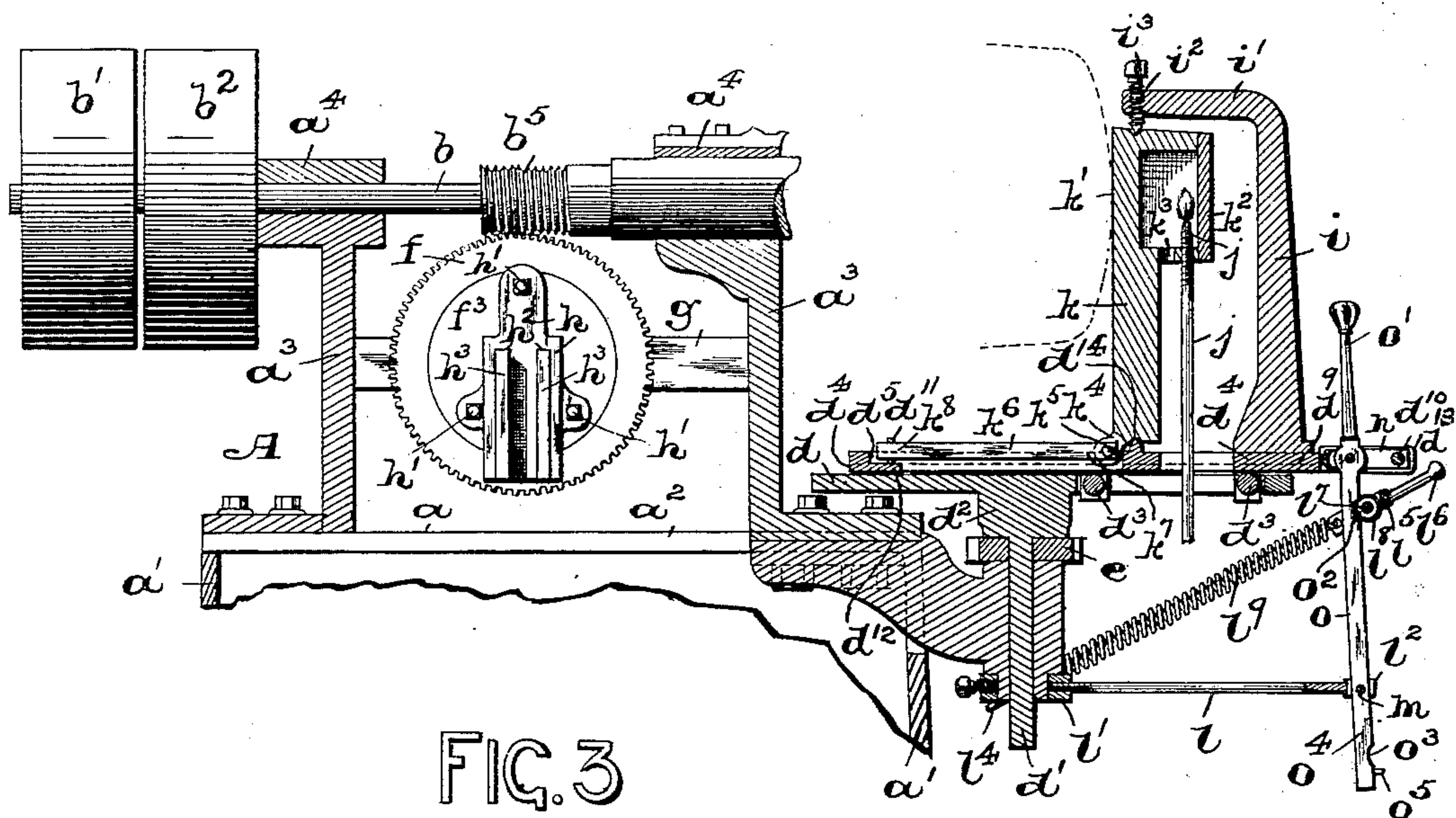


FIG. 3

WITNESSES:

Wm. H. Campfield, Jr.  
Walter H. Tralmage.

INVENTOR:

GEORGE F. LARKIN,  
BY  
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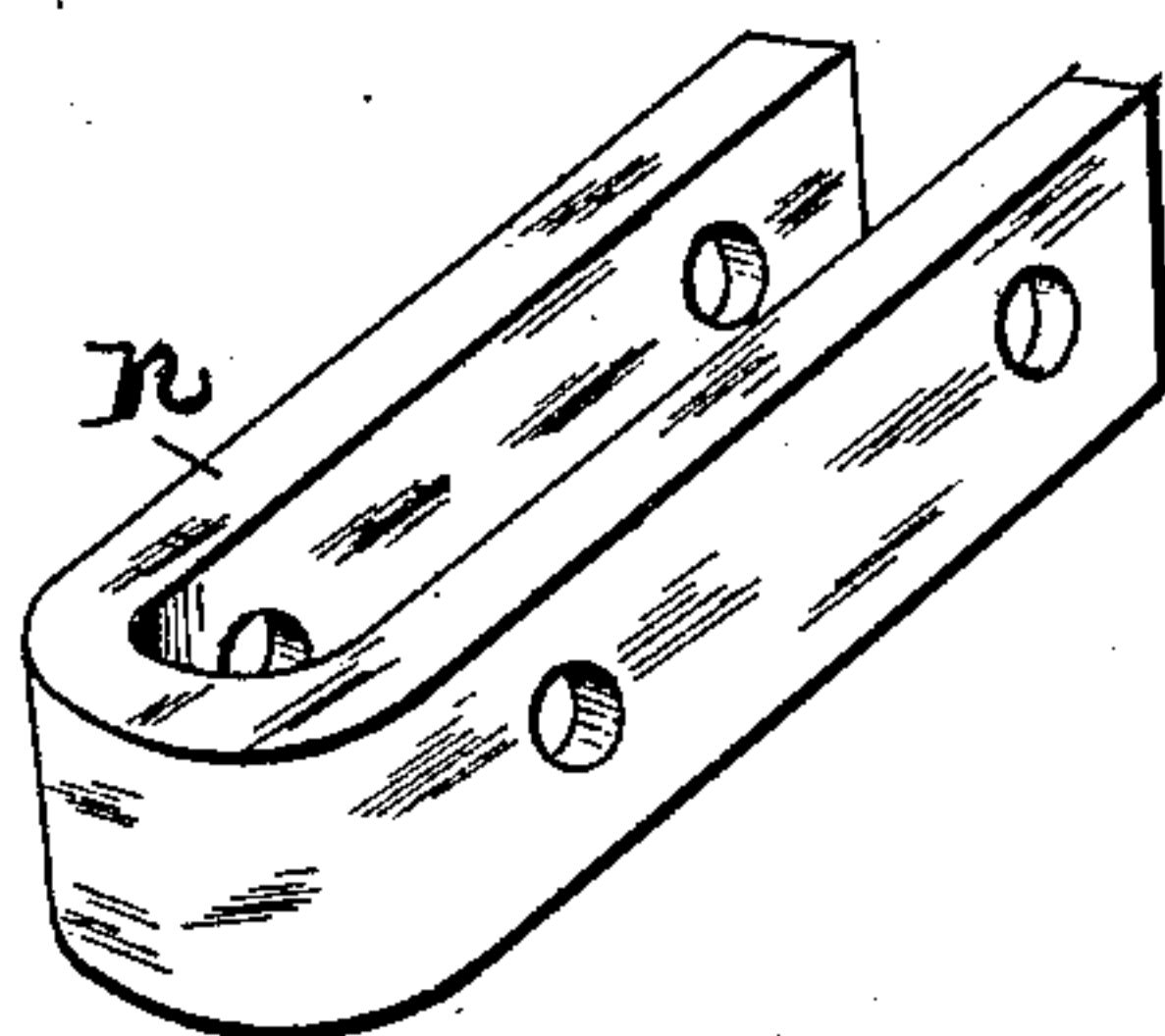
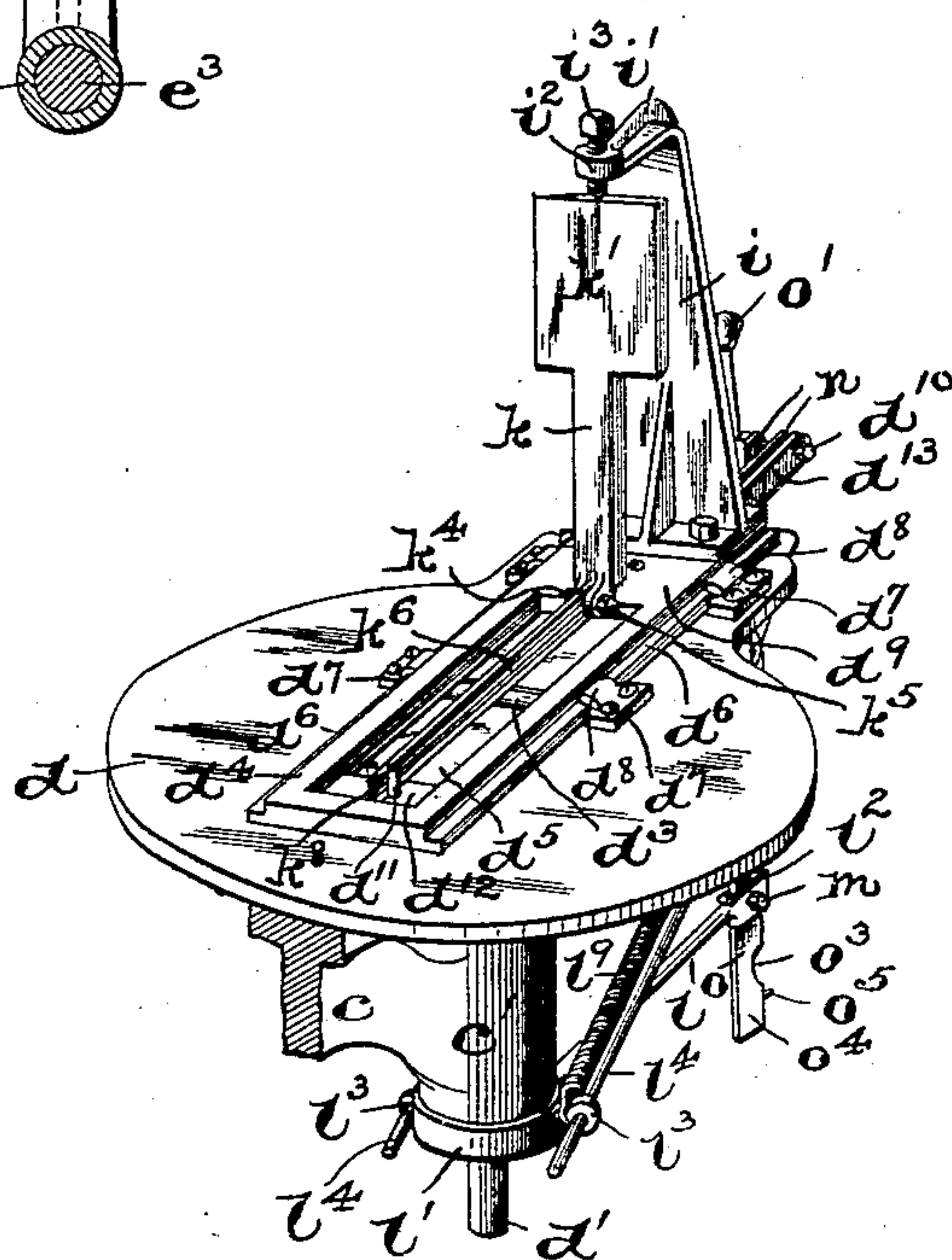
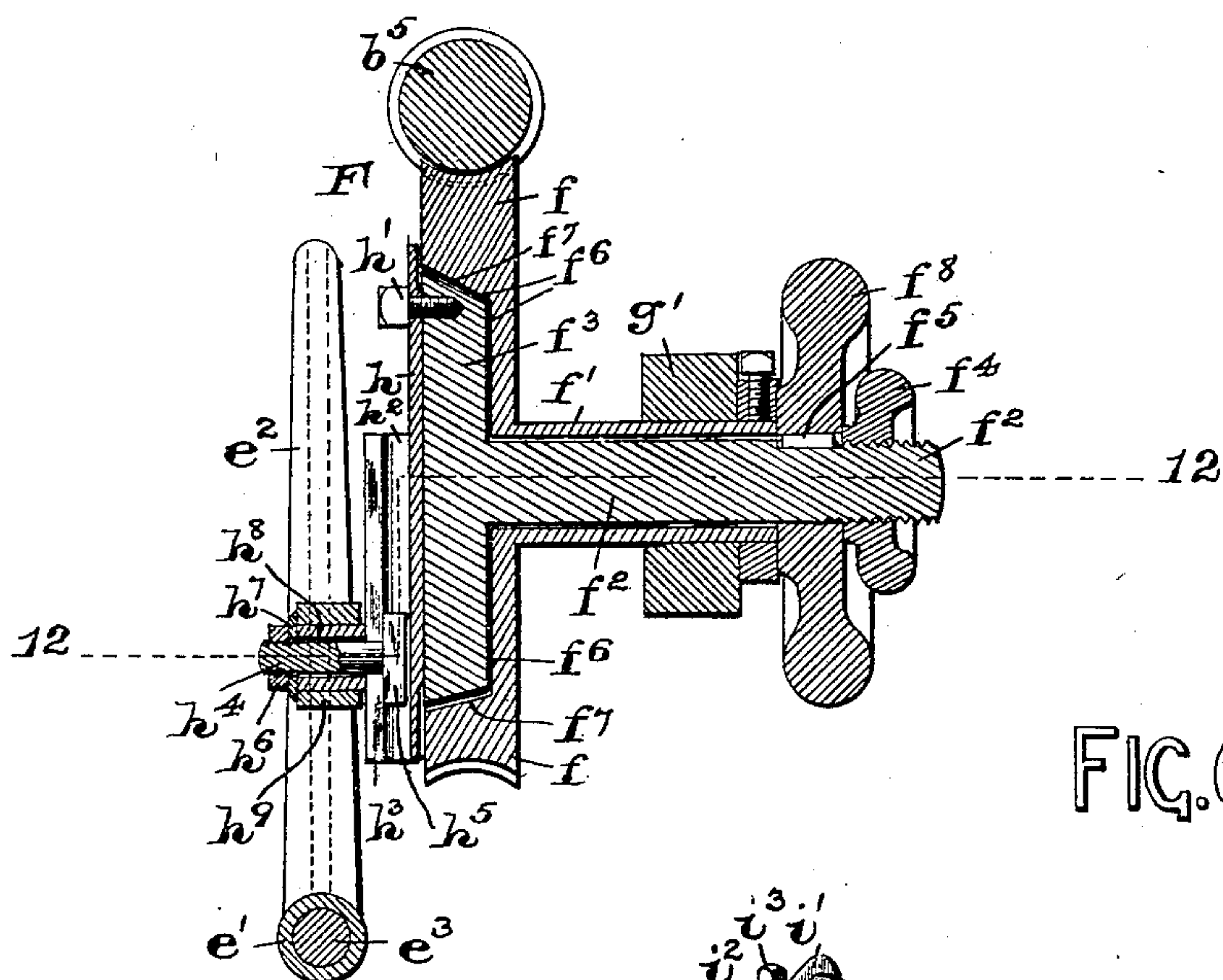
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5 Sheets—Sheet 4.



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5 Sheets—Sheet 5.

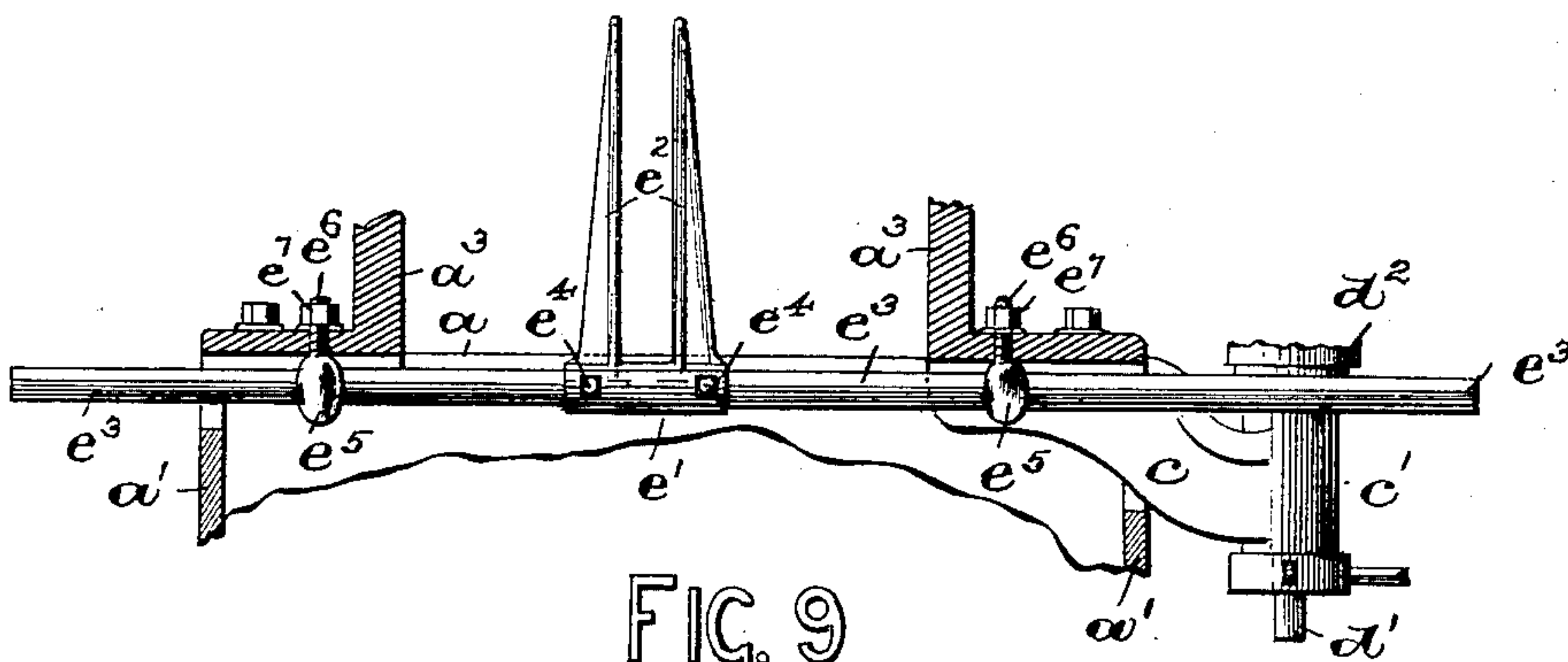


FIG. 9

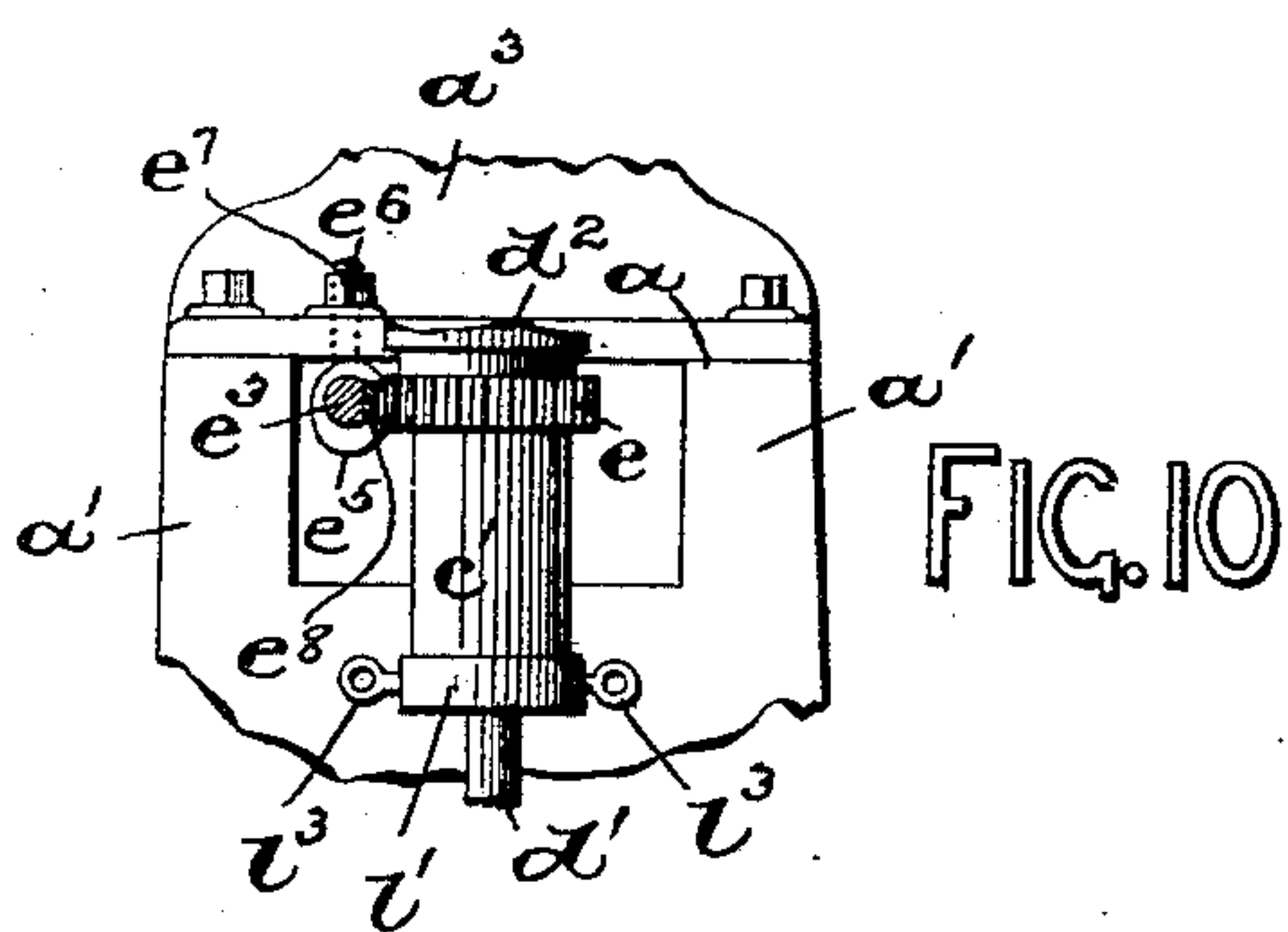


FIG. 10

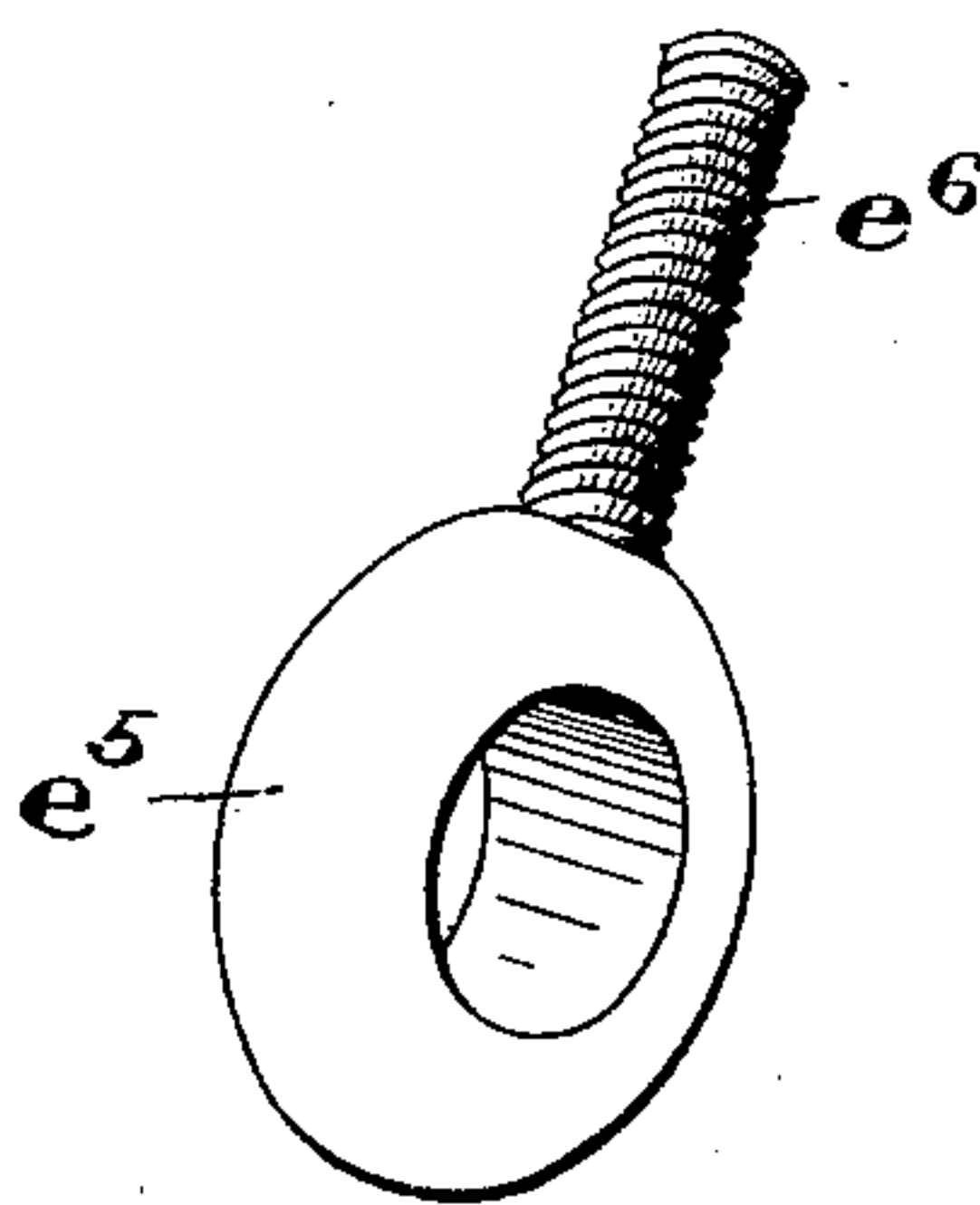


FIG. 11

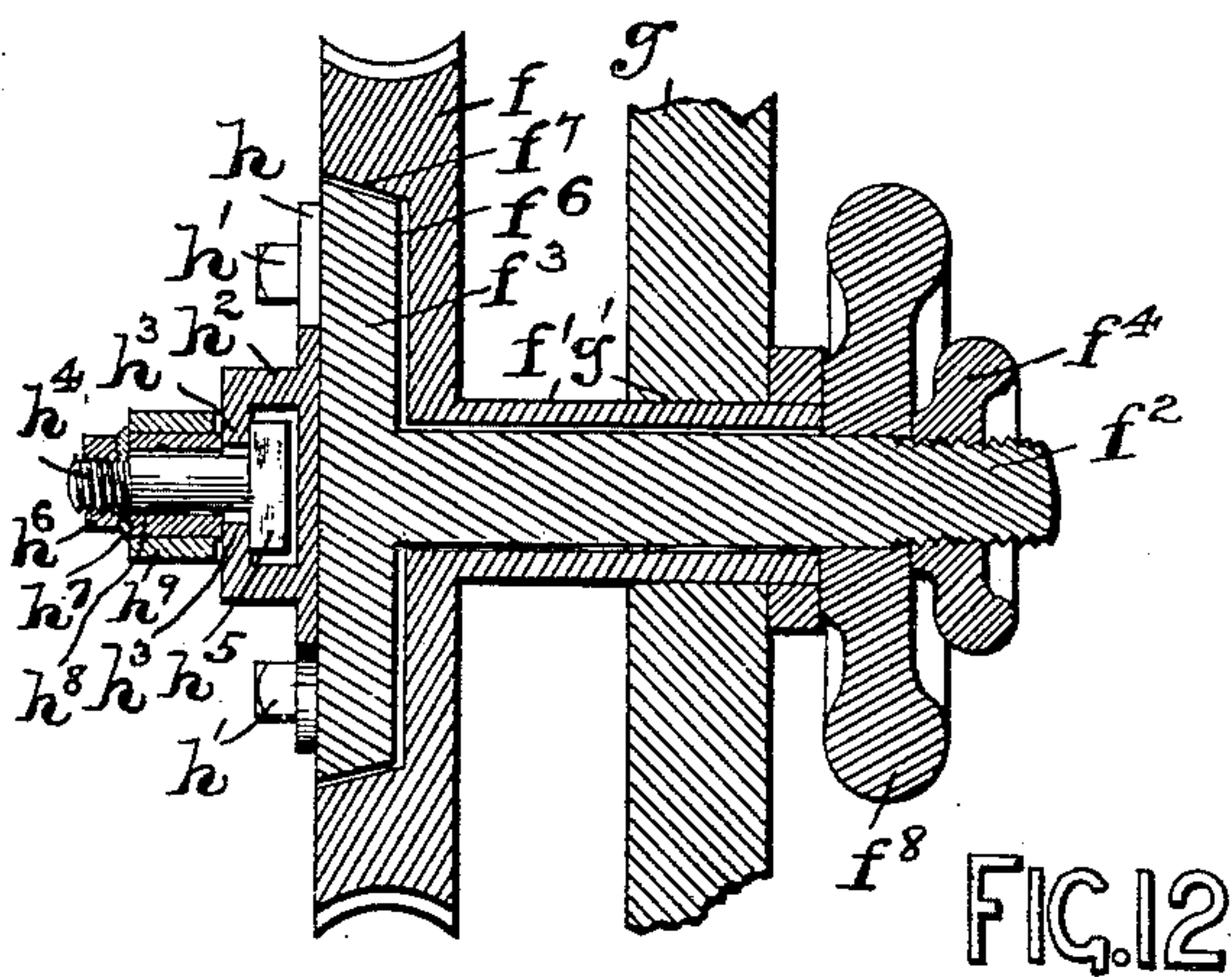


FIG. 12

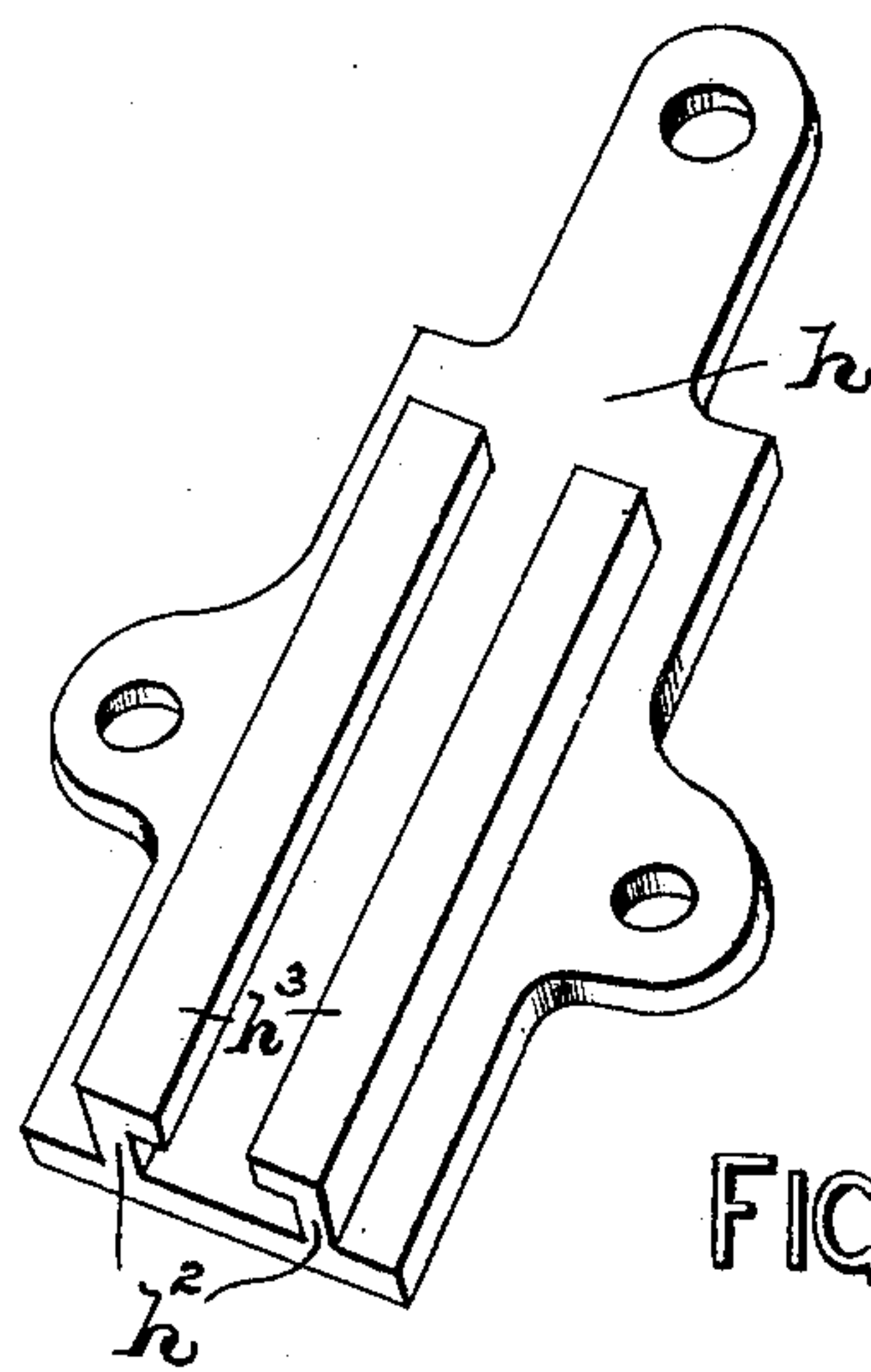


FIG. 13

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# UNITED STATES PATENT OFFICE.

GEORGE F. LARKIN, OF NEWARK, NEW JERSEY.

## HAT-IRONING MACHINE.

SPECIFICATION forming part of Letters Patent No. 631,017, dated August 15, 1899.

Application filed January 26, 1899. Serial No. 703,411. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE F. LARKIN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hat-Ironing 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.

This invention has reference to improvements in hat-ironing machines; and the main purpose of my present invention is to provide a machine for the ironing of hat-bodies placed upon a hat-block in which the movement of the iron upon the hat-body is automatic, the mechanism for controlling the motion of the iron and for pressing the same tightly against the hat-body being such that the iron lingers on the sides of the hat-body and passes quickly over the tip of the hat-body, whereby a very beneficial result is obtained in that the surface of the hat-body is more evenly finished.

A further object of this invention is to provide a machine of the character stated which shall be of a simple, compact, and effective construction and in which the several mechanisms of the machine shall be under the complete control of the operator.

A further object of this invention is to provide, in connection with the machine of the nature above set forth, a novel construction of clutch device and means connected therewith for actuating the iron-supporting table.

With these several objects in view my present invention consists in the novel construction of a hat-ironing machine to be hereinafter described and also in the novel arrangements and combinations of the several parts thereof, as well as in the details of construction of such parts, all of which will be more fully set forth in the accompanying specification and finally embodied in the clauses of the claim.

The invention is clearly illustrated in the accompanying sheets of drawings, in which—

Figure 1 is a side view of a machine embodying the principles of my invention. Fig. 2 is a plan or top view of the same, and Fig.

3 is a central longitudinal section taken through the upper portion of the machine. Fig. 4 is a side elevation of the iron-supporting table and a portion of a bracket connected with the machine-frame in which the said table is rotatively arranged, and Fig. 5 is a plan or top view of the same. Fig. 6 is a longitudinal vertical section of the clutch mechanism, said section being taken on line 6 6 in Fig. 2. Fig. 7 is a perspective view of the ironing-table and parts connected therewith, and Fig. 8 is a similar view of a link employed in connection with the said table. Fig. 9 is a horizontal section of the machine-frame, the bracket for supporting the ironing-table, and a pair of brackets or bearings in which a rod for actuating the gear mechanism for oscillating said table is slidably arranged; and Fig. 10 is an end view of the said parts represented in said Fig. 9. Fig. 11 is a perspective view of one of the said bearings. Fig. 12 is a horizontal section of the clutch mechanism represented in Fig. 6, said section being taken on line 12 12 in said Fig. 6. Fig. 13 is a perspective view of the guide-plate employed in connection with the clutch mechanism.

Similar letters of reference are employed in all of the said above-described views to indicate corresponding parts.

In said drawings, A indicates a suitable machine-frame, comprising a table *a*, supported on the legs *a'* and having an opening *a<sup>2</sup>*. Secured in the desired positions on said table are the brackets *a<sup>3</sup>*, which are provided with the usual bearings *a<sup>4</sup>*, in which is rotatably arranged the driving shaft or spindle *b*. Said spindle is provided with a loose pulley *b'* and a fast pulley *b<sup>2</sup>* for driving the same and has arranged thereon, at its opposite end, any suitable form of hat-block chuck *b<sup>3</sup>* for retaining a hat-block *b<sup>4</sup>* in position during the operation of ironing a hat-body on said block. The said table *a* is also provided with a suitable bracket *c* at the one end thereof, said bracket having a bearing portion *c'*. Rotatively arranged in said bearing portion *c'* is a stem or post *d'* of a suitable table or disk *d*, said stem being connected with a hub *d<sup>2</sup>* of said table or disk, and *e* is a gear-wheel which is secured on said stem or post *d'* in any suitable manner and is arranged in a position



above the said bearing portion  $c'$ , substantially as illustrated in the several figures of the drawings. In order that the said table or disk  $d$  may receive an oscillating motion, I have provided the shaft or spindle  $b$  with a suitable worm  $b^5$ , which is in constant mesh with the teeth of a worm-wheel  $f$  of a clutch mechanism  $F$ . Said clutch mechanism consists, essentially, of the said worm-wheel  $f$ , which has a tubular shaft  $f'$  arranged to rotate in the bearing portion  $g'$  of a frame or cross-bar  $g$ , secured to or connected with the brackets  $a^3$  in any well-known manner, and rotatively arranged in the tubular shaft  $f'$  is a spindle  $f^2$ , which has a disk  $f^3$ , provided with a conical peripheral surface at the one end and a screw-thread at its other end, on which there is a hand-wheel  $f^4$ . The said disk  $f^3$  is loosely fitted in a depression or recess  $f^6$  in the worm-wheel  $f$ , said depression or recess having an inner conical surface  $f^7$ , with which the conical peripheral edge of the disk  $f^3$  can be brought in operative frictional contact when the hand-wheel  $f^4$  is turned on the threaded portion of the spindle  $f^2$  and against the outer surface of a second hand-wheel  $f^8$ , which is slidably arranged on a feather  $f^5$  in the shaft or spindle  $f^2$ , thereby bringing said wheel  $f^8$  tightly against the edge of the tubular shaft  $f'$ . In this manner said disk  $f^3$  can be operated to cause an intermediately-placed connecting mechanism, between said disk and the gear-wheel  $e$ , hereinabove mentioned, to engage said gear and actuate the said table or disk  $d$  upon the bearing portion  $c'$ . Said second hand-wheel  $f^8$  is loosely arranged on said shaft or spindle  $f^2$  and is also to be used for the turning of said shaft  $f^2$  independent of the shaft  $f'$  for the purpose to be hereinafter set forth more in detail. Said friction-disk  $f^3$  has on its outer face, as shown more especially in Figs. 1, 3, and 6, a plate  $h$ , preferably held in position on said disk by means of bolts or screws  $h'$ . Said plate  $h$  has a pair of parallel ribs  $h^2$ , provided with overlapping edges  $h^3$ , whereby a suitable guide is provided for a stud-bolt  $h^4$ , the head  $h^5$  of which is arranged beneath said edges  $h^3$  and the body of which extends between said edges and projects beyond the same, as shown. Said stud-bolt is adjustably held in position on said plate  $h$  by means of a nut  $h^6$ , which is screwed up tight against a washer  $h^7$  and sleeve on said bolt, substantially as illustrated in Figs. 6 and 12 of the drawings. Rotatively arranged on said sleeve  $h^8$  is a suitable roller  $h^9$ , which is capable of a rotative and a reciprocating movement vertically between two posts or uprights  $e^2$ , connected with a sleeve  $e'$ , which is secured on a horizontal rod  $e^3$  by means of set-screws  $e^4$ . Said rod  $e^3$  is slidably arranged beneath the table  $a$  of the machine-frame in suitable holes in the sides of the legs of the frame, which form bearings therefor, as indicated in Fig. 1, or it may be slidably arranged in perforated hangers  $e^5$ , (see Fig. 11,) each hanger having a screw-

threaded stem  $e^6$ , which can be passed through a proper hole in the table  $a$  and the hanger secured in position by means of the nuts  $e^7$ , substantially as illustrated in Fig. 9. The said rod  $e^3$  has a rack  $e^8$  at its forward end, as indicated more especially in Fig. 2, the teeth of which are in operative mesh with the teeth of the gear  $e$ . Thus it will be evident that the continuous rotary motion of the friction-disk  $f^3$ , when engaged by the worm-wheel  $f$ , will cause a reciprocating sliding motion of the rod  $e^3$ , which in turn causes an oscillatory motion of the said table or disk  $d$ . From an inspection of Figs. 1 and 6 it will be evident that by changing the position of the stud-bolt  $h^4$  the throw of the rod  $e^3$  may be suitably changed to vary the oscillatory motion of the said table or disk  $d$ . It will thus be seen that whether the said disk  $f^3$  is in operative or inoperative engagement with the worm-wheel  $f$  the teeth of the latter are in constant mesh with the worm on the shaft or spindle  $b$ , and there is no wearing out or breaking off of teeth, as in the clutch mechanisms heretofore employed in connection with hat-ironing machines. As clearly indicated in Figs. 3, 5, and 7, the said table or disk  $d$  may be provided with one or more rollers  $d^3$ , arranged in a suitable opening or openings in said table, and slidably arranged on said roller or rollers is a bed-plate  $d^4$ , having an opening  $d^5$  and longitudinally-arranged projections or ribs  $d^6$ , which are movably placed beneath the holding or guiding lips  $d^8$  of suitable plates  $d^7$ , secured in position upon said table or disk  $d$  by means of screws or in any other suitable manner. The end  $d^9$  of said bed-plate  $d^4$  has an upwardly-extending post  $i$  and an arm  $i'$ , provided with a screw-threaded eye portion  $i^2$ , in which there is a set-screw  $i^3$ , substantially as illustrated. Said bed-plate  $d^4$  also has a pointed stud  $d^{14}$ . Arranged between the pointed ends of said stud and the set-screw  $i^3$ , so as to be capable of a partial rotative motion between the said points of support, is a bar  $k$ , having an enlarged and hollow portion  $k'$ , provided with a cover  $k^2$ , the whole forming a chamber in which there is a suitable jet or burner  $j'$ , connected with a gas-supply pipe  $j$ . In the portion  $k'$  there is an opening  $k^3$  for the insertion of a lighted match to ignite the gas at the jet  $j'$ . The said enlarged portion  $k'$ , which can thus be sufficiently heated, forms the iron for ironing the hat-body on the block  $b^4$ , against which it is pressed by the mechanism to be directly described. Said bar  $k$ , as will be seen from Fig. 7, has a pair of perforated lugs or ears  $k^4$ , in which there is a pin  $k^5$  for securing the end  $k^7$  of a flat spring  $k^6$  between said ears. The opposite end  $k^8$  of said spring is movably arranged between a pair of pins  $d^{11}$ , secured in the cross-piece  $d^{12}$  of the bed-plate  $d^4$ , as clearly illustrated in the several figures of the drawings. The purpose of the said spring  $k^6$  is that the iron, no matter in which position the ironing-block



is brought against the round surface of the hat-block, will at all times present its flat surface for proper ironing contact with the hat-body at any portion thereof. In order  
 5 that the iron be forced against the hat-body upon the hat-block during the revolutions of the latter, the bed-plate  $d^4$  is made to slide between the said plates  $d^7$  on the table or disk  $d$ , as above mentioned, the iron being constantly forced into operative engagement with  
 10 the hat-body on the block by means of a spring-actuated mechanism, which presses against the end of said bed-plate and forces the parts connected therewith normally against the hat-  
 15 body on the block, and the latter during the revolution thereof and owing to its peculiar shape will cause the said bed-plate and iron thereon to reciprocate in its guides on the table  $d$ . It will thus be evident that while a  
 20 rotary motion is imparted to the hat-block by means of the main shaft or spindle  $b$  and an oscillatory motion in a horizontal plane is imparted to the table or disk  $d$  by the mechanism above described, the iron, which is constantly held against the hat-body on the rotating block, will move in a horizontal plane  
 25 to the extent of the oscillating motion of the table or disk  $d$ , according to the throw of the parts connected with the friction-disk  $f^3$ , as will be clearly understood. Said spring mechanism consists, essentially, of a rod  $l$ , which is connected with a collar  $l'$ , suitably secured to the bearing portion  $c'$ , and has a bifurcated end  $l^2$ , in which there is a pin or bolt  $m$ . Piv-  
 30 otally arranged on said pin or bolt  $m$  is an upwardly-extending lever or rod  $o$ , which has a handpiece  $o'$  and is pivotally connected with a link  $n$ . Said link in turn is pivoted to a bolt or pin  $d^{10}$ , secured in perforations in the projections  $d^{13}$ , extending from the back of said bed-plate  $d^4$ . Said lever or rod  $o$  is thus slidably arranged between the arms of said projection  $d^{13}$  and can be used by the operator for causing the disengagement of the  
 45 iron from the work on the hat-block. The collar  $l'$  has a pair of eye portions  $l^3$ , in each of which I have arranged a rod  $l^4$ . Said rods  $l^4$  are connected at the top by a bifurcated piece  $l^5$ , having a handle  $l^6$  and a pin or bolt  $l^7$ , on which there is a roller  $l^8$ , and connected with said piece  $l^5$  and the eyes  $l^3$  are a pair of coiled springs  $l^9$ , the normal tendency of which is to force the said roller  $l^8$  into a notch  $o^2$  in the lever or rod  $o$ , substantially as illustrated in Figs. 1 and 3. This action is the  
 55 cause of bringing the iron in constant operative contact with the work upon the hat-block, the several parts of the mechanism working against the tension of said springs, as will be understood.  
 60

When it is desired to disengage the iron from its contact with the hat-body upon the block to remove the said hat-body, the operator takes hold of both handpieces  $o'$  and  $l^6$ ,  
 65 connected, respectively, with the lever  $o$  and the piece  $l^5$ , and forces the roller  $l^8$  from the notch  $o^2$  to another notch  $o^3$  in the portion  $o^4$

of the lever or rod  $o$  below its pivotal support  $m$ , whereby the bed-plate  $d^4$  and its parts connected therewith will be moved from their  
 70 operative positions (indicated in Figs. 1, 2, and 3) to the disengaged positions illustrated in Figs. 4 and 5. To prevent the roller  $l^8$  being forced beyond the notch  $o^3$ , owing to the great tension of the springs  $l^9$ , a stop-  
 75 piece  $o^5$  may be provided, as shown in Figs. 1 and 4.

The operation of the machine will be evident from the above description and an inspection of the several figures of the drawings  
 80 and needs no further explanation. Suffice it to say, however, that while the hat-block is rotating in a vertical plane against the iron the latter oscillates in a horizontal plane to the extent of more than a half-circle—that is,  
 85 from band to band and over the tip of the hat-body on the hat-block and back again to properly and perfectly iron the hat-body.

Of course it will be evident that by changing the position of the stud bolt or pin  $h^4$ ,  
 90 connected with the plate  $h$ , the stroke and movement of the rod  $e^3$  can be variously changed, so that the iron can be used in connection with hat-blocks of different sizes or that the iron can be made to pass from the  
 95 band to the tip and back again instead of passing over the entire surface of the hat-body.

The hand-wheel  $f^8$ , hereinabove mentioned, is more especially for the purpose of bringing the iron into a position at or near the  
 100 bend of the hat-body before causing the operative engagement of the friction-disk  $f^3$  and the worm-wheel for operating the same, for by turning the said wheel by hand the operator causes the rod  $e^3$  to move the table or  
 105 disk  $d$  to any desired position, and in consequence he can bring the iron against the desired part of the hat-body on the block before starting the ironing operation.  
 110

I am fully aware that many changes may be made in the various arrangements and combinations of the mechanism and parts thereof, as well as in the details of the construction of the same, without departing from  
 115 the scope of my present invention. Hence I do not limit my invention to the exact arrangements and combinations of the various mechanism as herein described and illustrated, nor to the exact details of construction thereof.  
 120

Having thus described my invention, what I claim is—

1. In a hat-ironing machine, the combination, with a hat-block, and means for rotating  
 125 the same, of a table or disk oscillating in a horizontal plane, mechanism for operating the same, a reciprocating bed-plate on said table or disk, a bar or post arranged on said bed-plate, an iron on said bar or post, and  
 130 means in engagement with said bed-plate for causing the iron to press against the work on said hat-block, consisting, essentially, of a rearwardly-extending projection on said bed-



plate, a link pivotally connected therewith, and a spring-actuated lever or arm pivotally connected with said link and a portion of the frame of the machine, substantially as and for the purposes set forth.

2. In a hat-ironing machine, the combination, with the frame of the machine, a rotary hat-block thereon, and means for rotating the same, of a bracket having a bearing portion connected with said frame, a table having a stem arranged in said bearing portion, a reciprocating bed-plate on said table, a bar or post arranged on said bed-plate, an iron on said bar or post, means engaging with said bed-plate for causing the iron to press against the work on said hat-block, and mechanism for causing an oscillating motion of said table in a horizontal plane, substantially as and for the purposes set forth.

3. In a hat-ironing machine, the combination, with the frame of the machine, a rotary hat-block thereon, and means for rotating the same, of a bracket having a bearing portion connected with said frame, a table having a stem arranged in said bearing portion, a reciprocating bed-plate on said table, a bar or post arranged on said bed-plate, an iron on said bar or post, means engaging with said bed-plate for causing the iron to press against the work on said hat-block, and mechanism for causing an oscillating motion of said table, comprising, a gear connected with said table, a rod having a rack in mesh with said gear, and means connected with said rod for causing a backward-and-forward motion of said rod in bearings in the machine-frame, substantially as and for the purposes set forth.

4. In a hat-ironing machine, the combination, with the frame of the machine, a rotary hat-block, and means for rotating the same, of a bracket having a bearing portion, an oscillating table connected with said bracket, means for operating the same, a reciprocating bed-plate on said table, a bar or post arranged on said bed-plate, an iron on said bar or post, a rearwardly-extending projection on said bed-plate, a link pivotally connected therewith, a rod  $l$  connected with said bracket, and a spring-actuated lever or rod pivotally connected with said link and said rod  $l$ , substantially as and for the purposes set forth.

5. In a hat-ironing machine, the combination, with the frame of the machine, a rotary hat-block, and means for rotating the same, of a bracket having a bearing portion, an oscillating table connected with said bracket, means for operating the same, a reciprocating bed-plate on said table, a bar or post arranged on said bed-plate, an iron on said bar or post, a rearwardly-extending projection on said bed-plate, a link pivotally connected therewith, a rod  $l$  connected with said bracket, a rod or lever  $o$  pivotally connected with said link and said rod  $l$ , notches in said rod  $o$ , a pair of eyes on said bracket, rods  $l^4$  sliding in said eyes, a piece  $l^5$  connecting said rods  $l^4$ ,

springs  $l^9$  and a roller  $l^8$ , all arranged, substantially as and for the purposes set forth.

6. In a hat-ironing machine, the combination, with a hat-block and a spindle for rotating the same, and means for operating said spindle, of a bracket having a bearing portion and an oscillating table on said bracket, a bar or post arranged on said table, an iron on said bar or post, and an operative means between said table and spindle, consisting, essentially, of a gear  $e$ , a rod  $e^3$ , a sleeve  $e'$  having uprights or posts, a friction-clutch operated from said spindle, and a pivotal connection between said clutch and the uprights or posts of said sleeve  $e'$ , substantially as and for the purposes set forth.

7. In a hat-ironing machine, the combination, with a hat-block and a spindle for rotating the same, and means for operating said spindle, of a bracket having a bearing portion and an oscillating table on said bracket, a bar or post arranged on said table, an iron on said bar or post, and an operative means between said table and spindle, consisting, essentially, of a gear  $e$ , a rod  $e^3$ , a sleeve  $e'$  having uprights or posts, a friction-clutch operated from said spindle, a plate  $h$  connected with said clutch, guide-bars on said plate, a stud-bolt between said bars, and a roller on said bolt, movable between said uprights or posts of said sleeve, substantially as and for the purposes set forth.

8. In a hat-ironing machine, the combination, with the frame of the machine, a hat-block thereon, and a spindle for rotating the same, and means for operating said spindle, a bracket  $c$  having a bearing portion, an oscillating table on said bracket, a bar or post arranged on said table, an iron on said bar or post, a gear-wheel connected with said machine-frame, perforated hangers  $e^5$  having screw-threaded portions for securing said hangers to said machine-frame, a rod  $e^3$  slidably arranged in said hangers, and means between said gear-wheel and said rod, for actuating said rod, substantially as and for the purposes set forth.

9. In a hat-ironing machine, the combination, with the frame of the machine, a hat-block thereon, and a spindle for rotating the same, and means for operating said spindle, a bracket  $c$  having a bearing portion, an oscillating table on said bracket, a bar or post arranged on said table, an iron on said bar or post, a gear-wheel connected with said machine-frame, perforated hangers  $e^5$  having screw-threaded portions for securing said hangers to said machine-frame, a rod  $e^3$  slidably arranged in said hangers, and means between said gear-wheel and said rod for actuating said rod, comprising, a sleeve  $e'$  having uprights or posts, a friction-clutch operated from said spindle, a plate  $h$  connected with said clutch, guide-bars on said plate, a stud-bolt between said bars, and a roller on said bolt, movable between said uprights or posts



on said sleeve, substantially as and for the purposes set forth.

10. In a hat-ironing machine, the combination, with a hat-block and a spindle for operating the same, and means for rotating said spindle, of an oscillating ironing-table, and means between the table and the spindle for actuating said table, consisting, essentially, of a worm on said spindle, a recessed worm-wheel in operative mesh therewith, a tubular shaft connected with said worm-wheel, a friction-disk  $f^3$  and a shaft on said disk, arranged in said tubular shaft, a pair of hand-wheels on the shaft of said disk  $f^3$ , a rod operatively connected with said ironing-table, and a pivotal connection between said rod and the friction-disk  $f^3$ , and an intermediate means between said worm-wheel and rod for actuating the latter, substantially as and for the purposes set forth.

11. In a hat-ironing machine, the combination, with a hat-block and a spindle for rotating the same, and means for rotating said spindle, of an oscillating ironing-table, means for actuating the same, a reciprocating bed-plate on said table, a pair of pivots connected with said bed-plate, a rod or bar arranged between said pivots and an iron on said rod or bar, substantially as and for the purposes set forth.

12. In a hat-ironing machine, the combina-

tion, with a hat-block and a spindle for rotating the same, and means for rotating said spindle, of an oscillating ironing-table, means for actuating the same, a reciprocating bed-plate on said table, a pair of pivots connected with said bed-plate, a rod or bar arranged between said pivots, and a spring connected with said rod or bar and an iron on said rod or bar, substantially as and for the purposes set forth.

13. In a hat-ironing machine, the combination, with a hat-block and a spindle for rotating the same, and means for rotating said spindle, of an oscillating ironing-table, means for actuating the same, a reciprocating bed-plate on said table, a pair of pivots connected with said bed-plate, a rod or bar arranged between said pivots, an iron on said rod or bar, a pair of ears or lugs on said rod or bar, a pair of pins on said bed-plate, and a flat spring  $k^6$  connected at one end with said ears or lugs, and at the other end being arranged between said pins, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 21st day of January, 1899.

GEORGE F. LARKIN.

Witnesses:

FREDK. C. FRAENTZEL,  
WALTER H. TALMAGE.