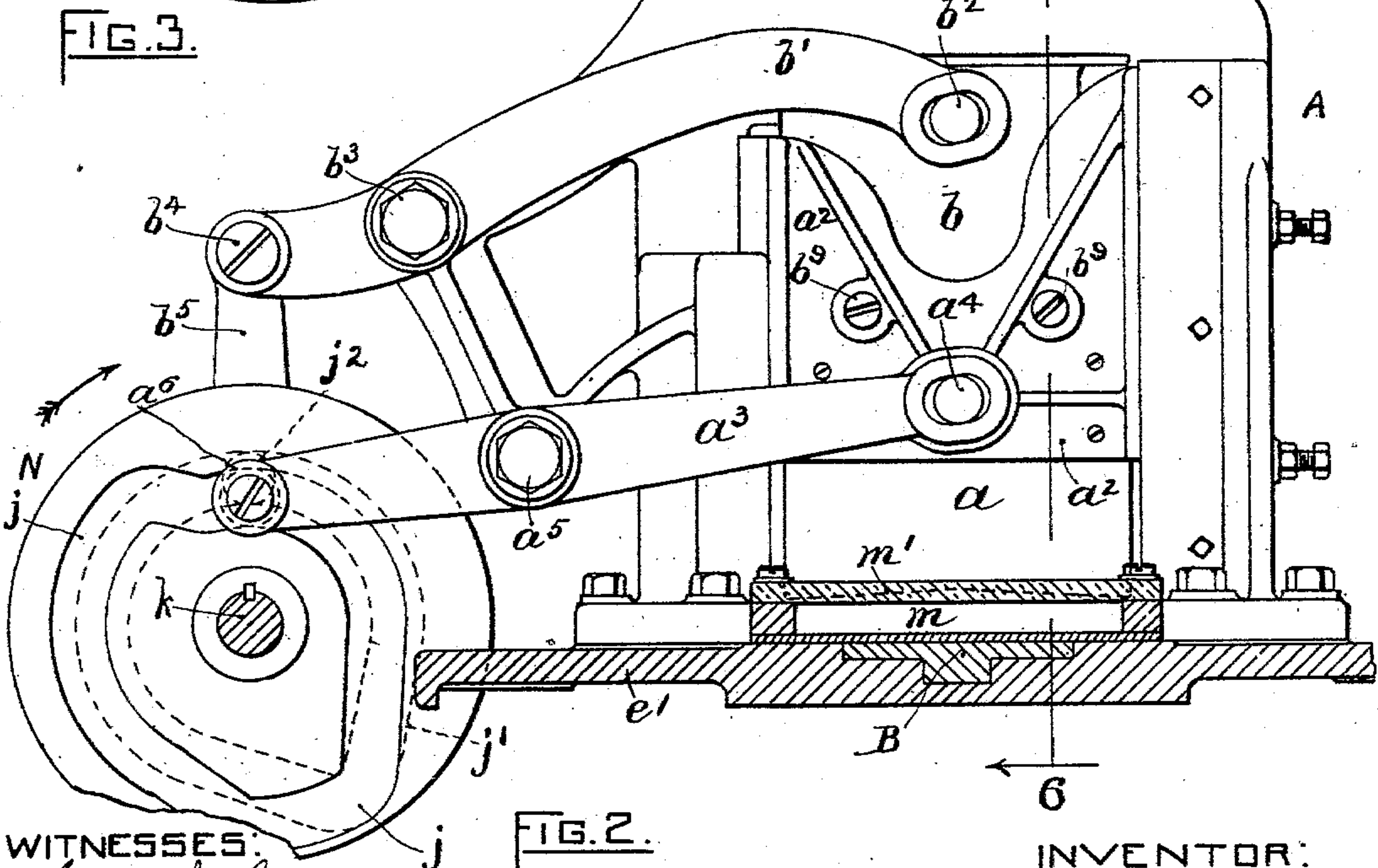
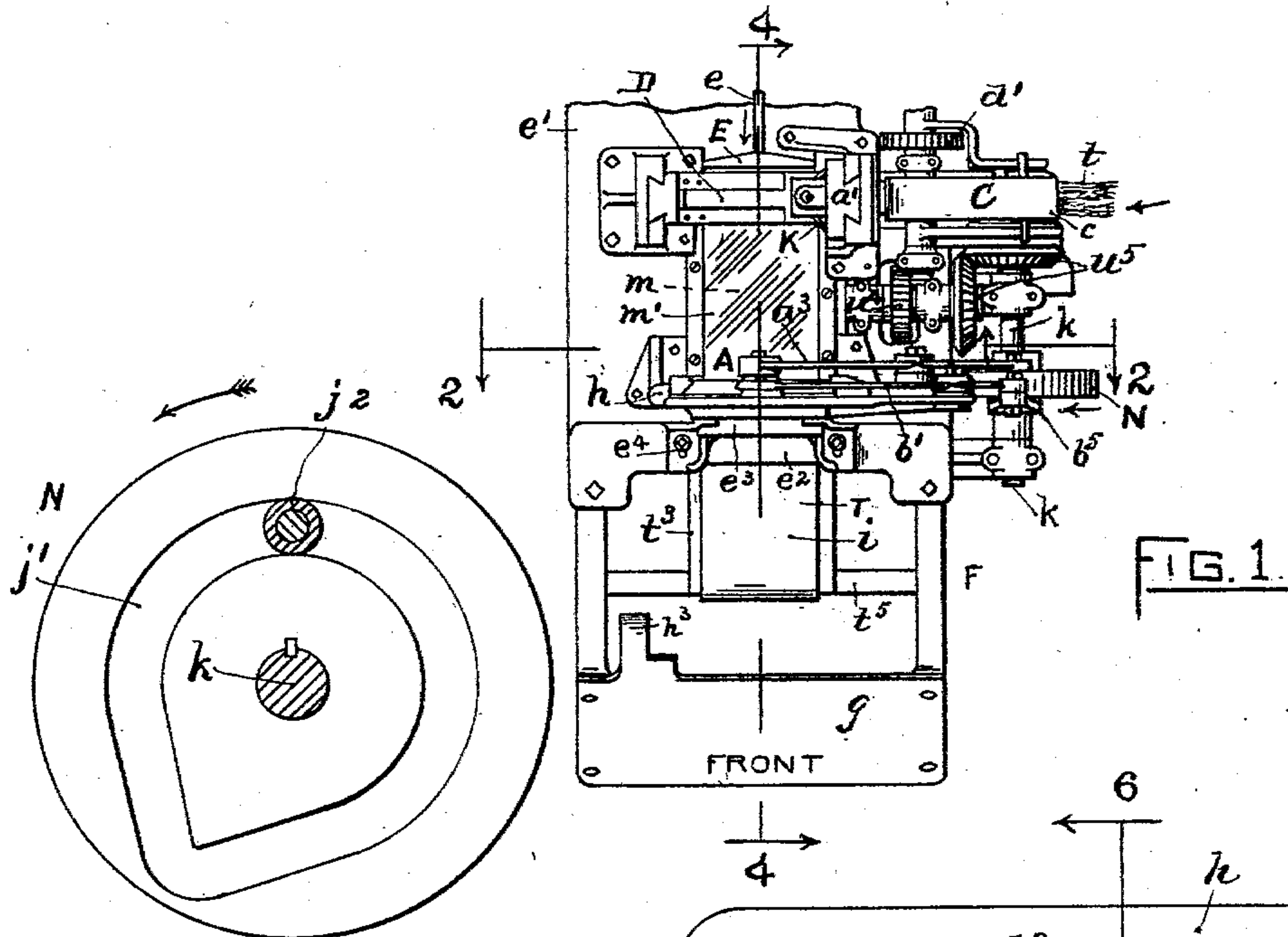


M. M. GARDNER.  
CIGAR BUNCHING MACHINE.

(Application filed Aug. 17, 1901.)

(No Model.)

5 Sheets—Sheet 1.



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M. M. GARDNER.  
CIGAR BUNCHING MACHINE.

(Application filed Aug. 17, 1901.)

5 Sheets—Sheet 2.

(No Model.)

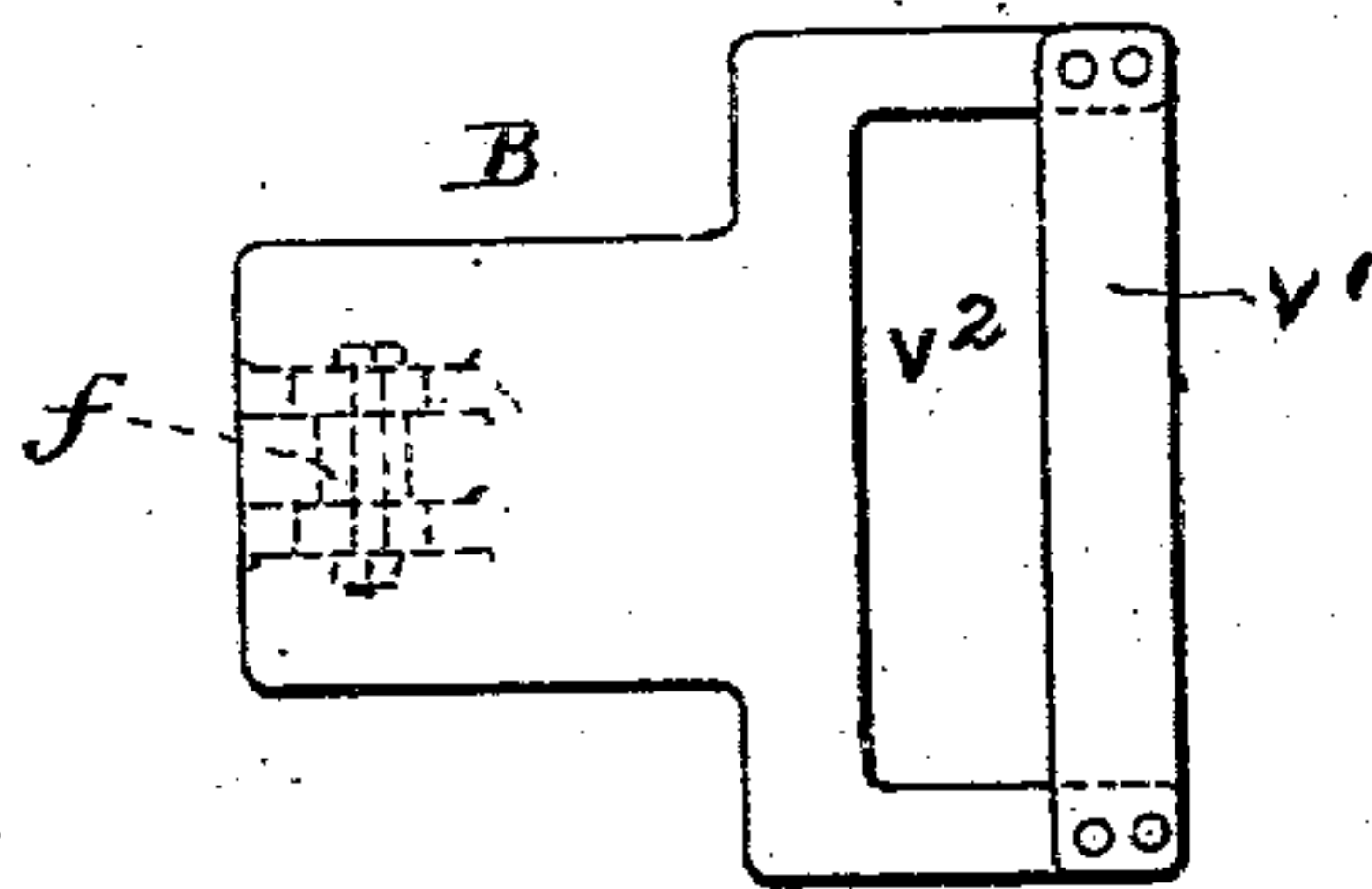
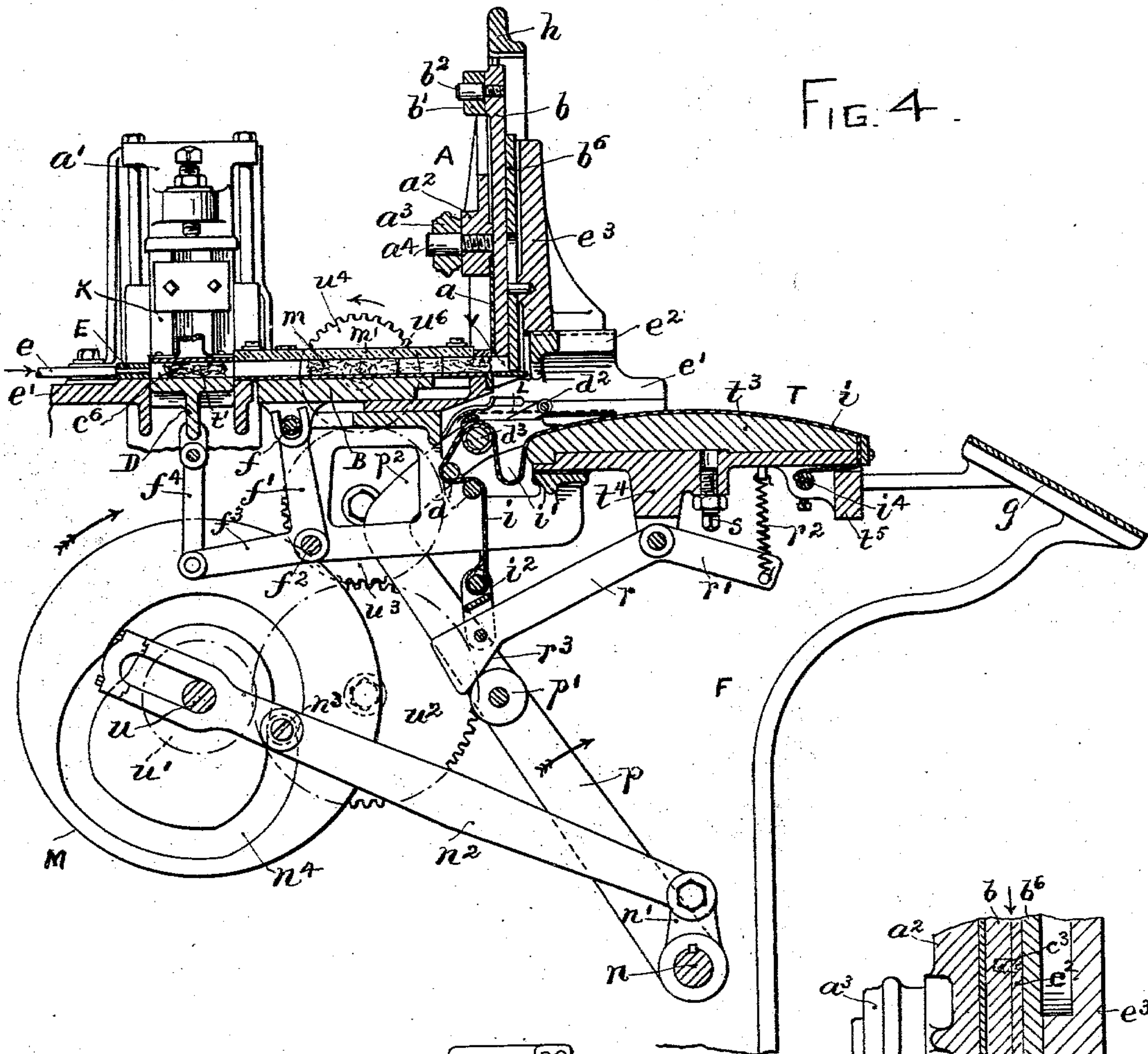


FIG. 5.

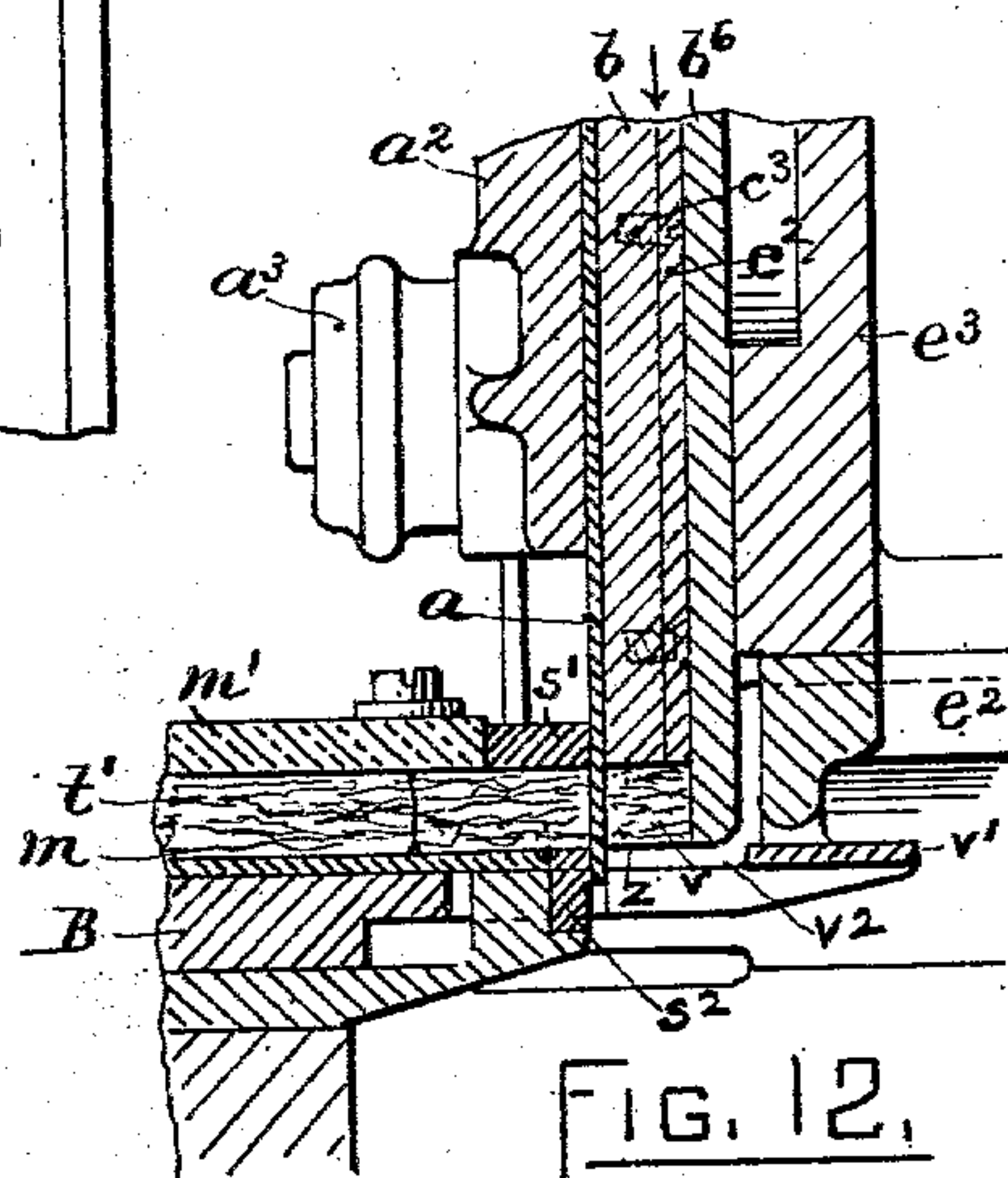


FIG. 12.

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CIGAR BUNCHING MACHINE.

(Application filed Aug. 17, 1901.)

5 Sheets—Sheet 3.

(No Model.)

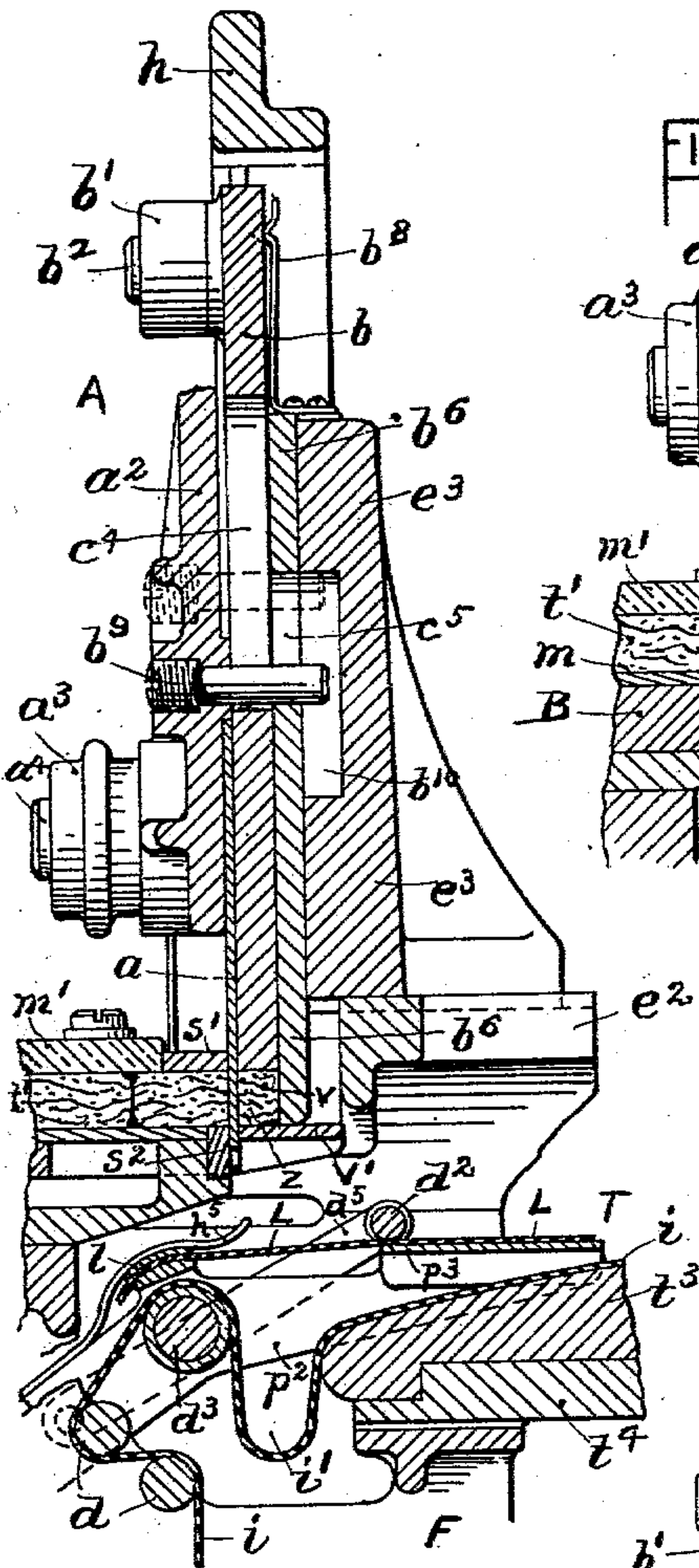


FIG. 6.

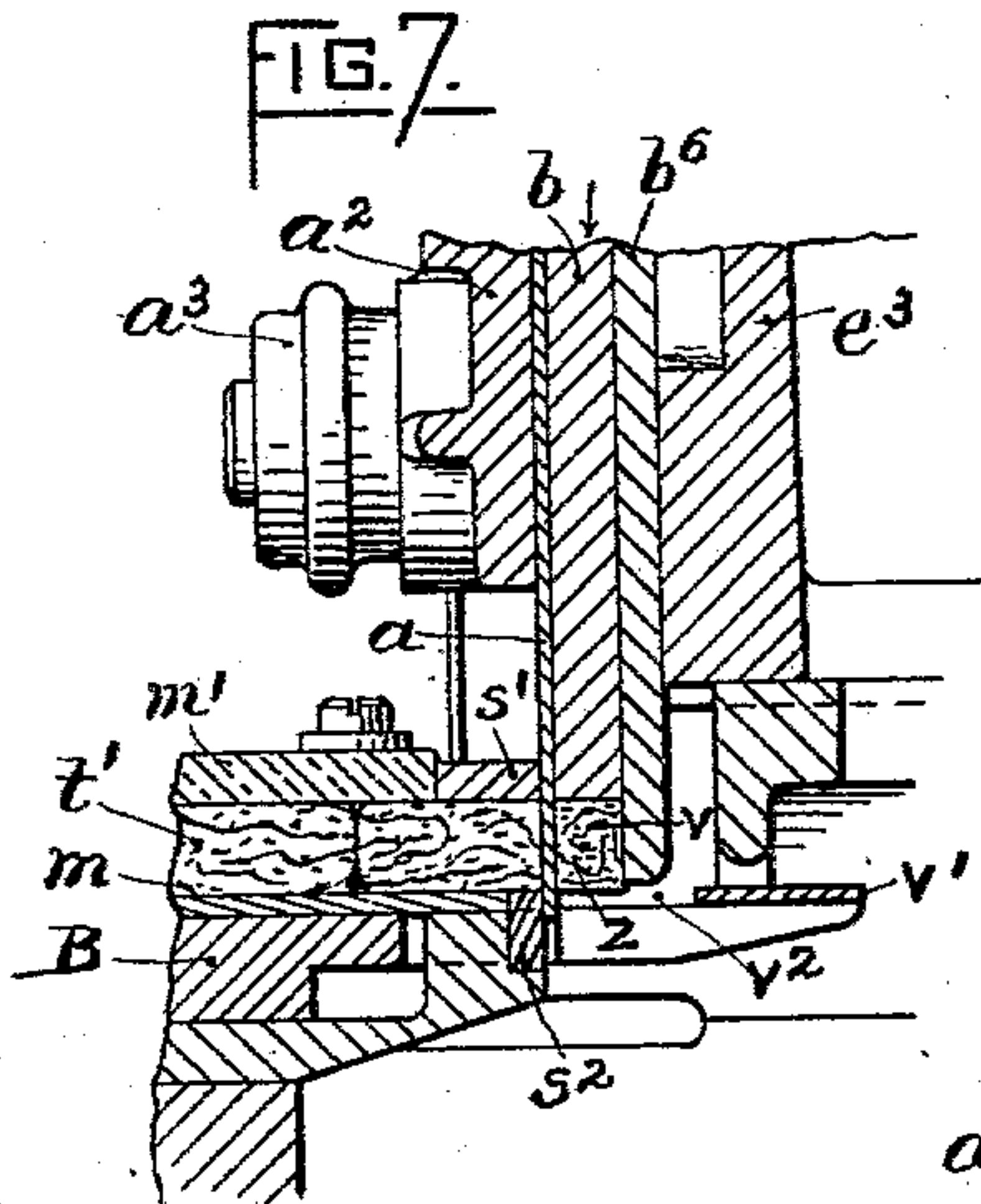


FIG. 7.

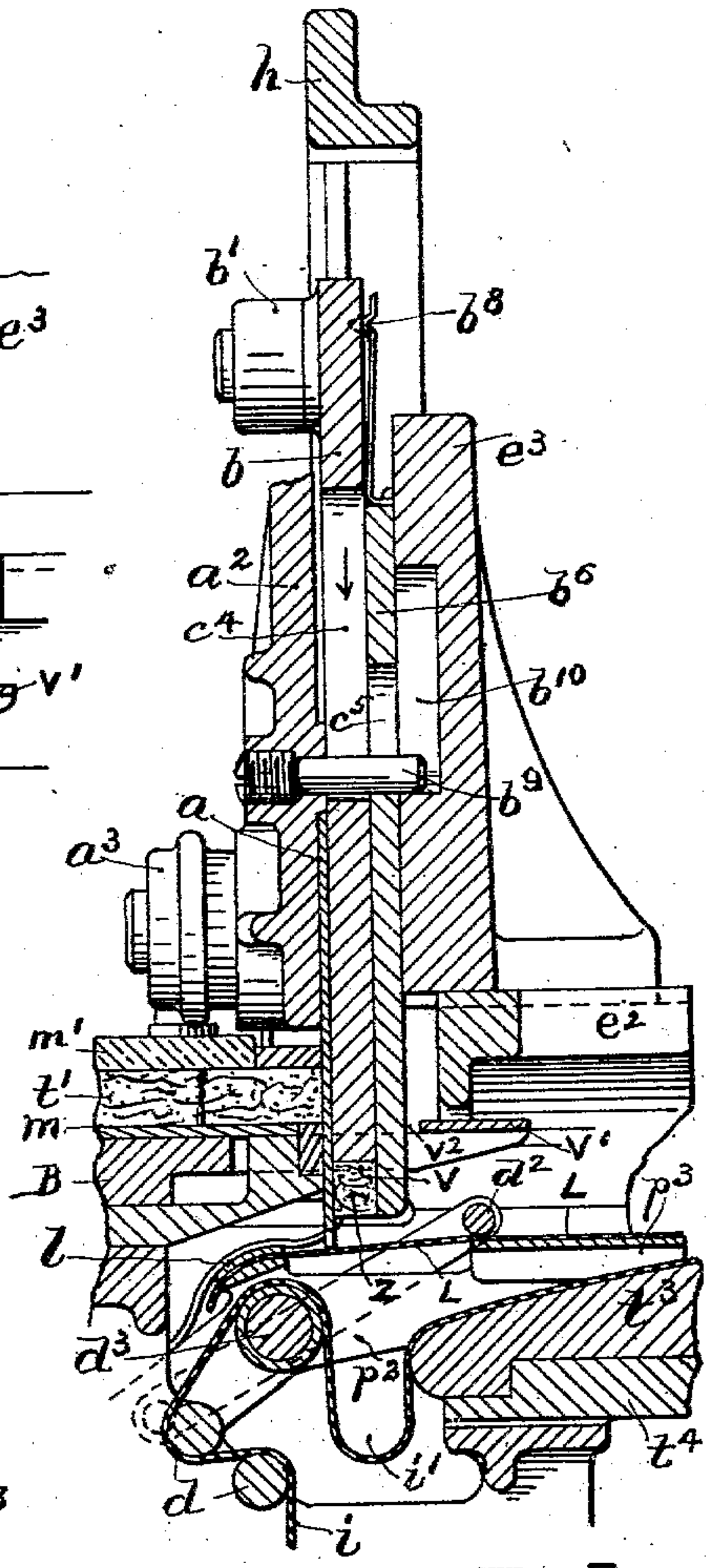


FIG. 8.

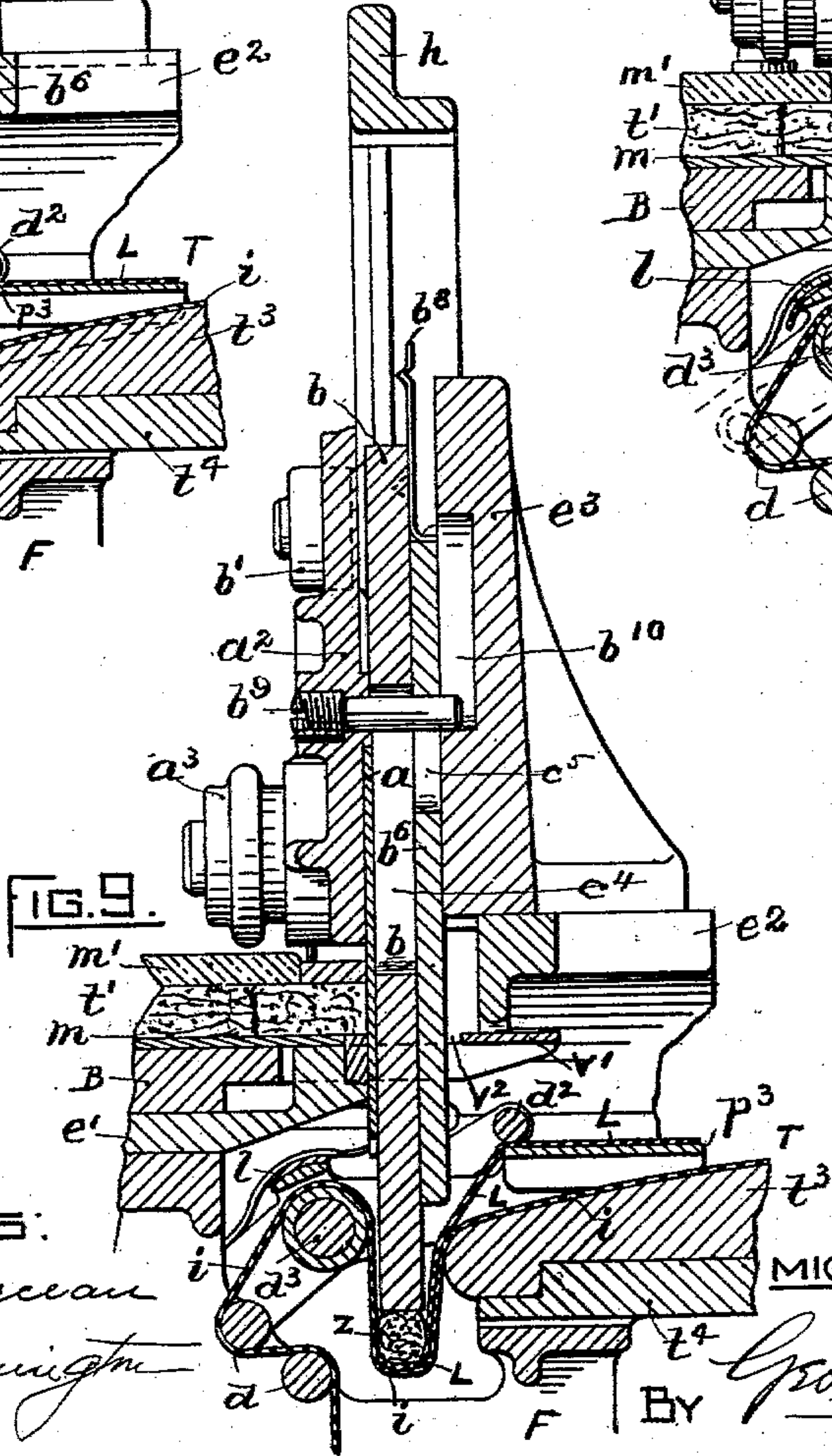


FIG. 9.

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**No. 704,742.**

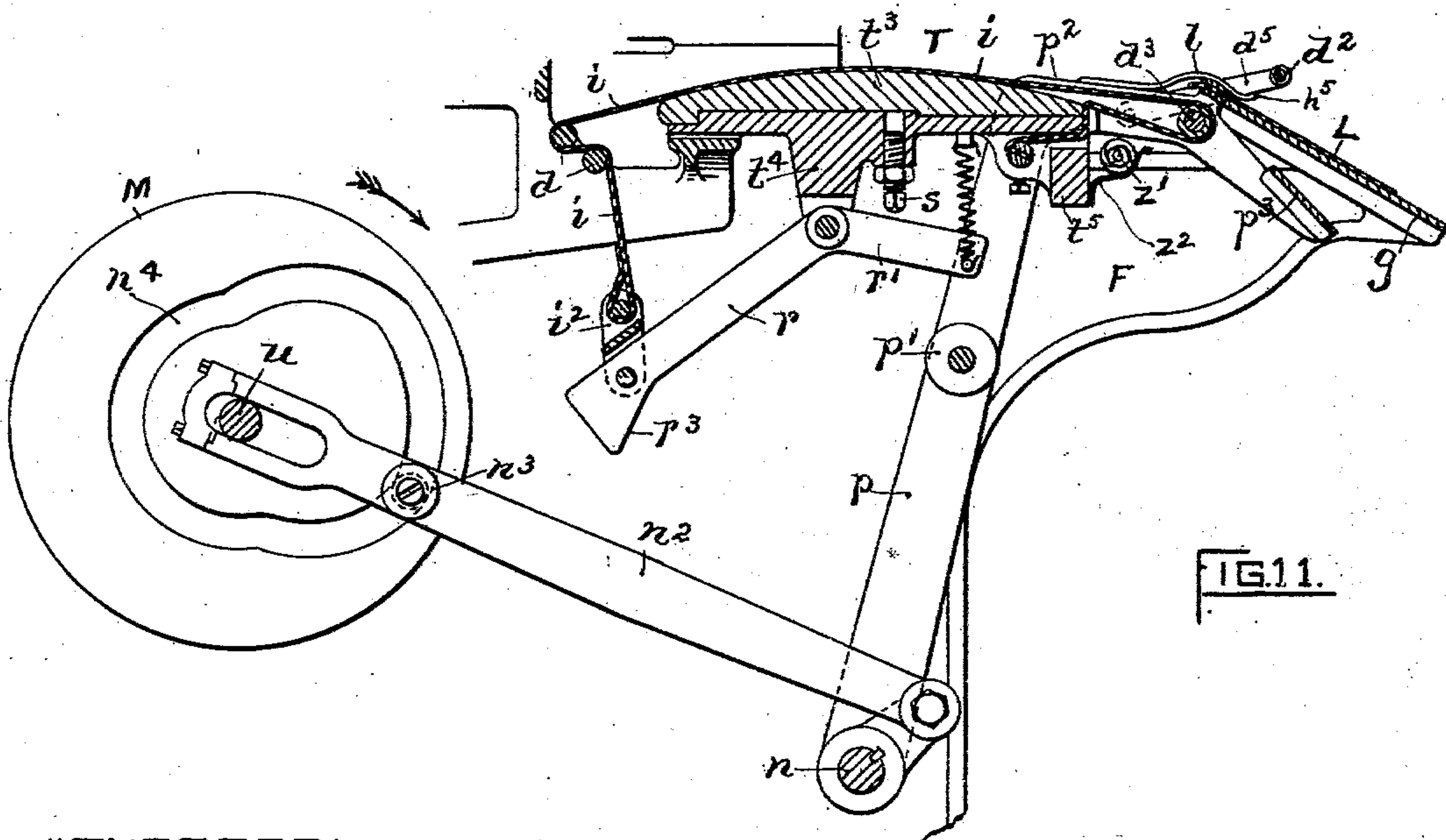
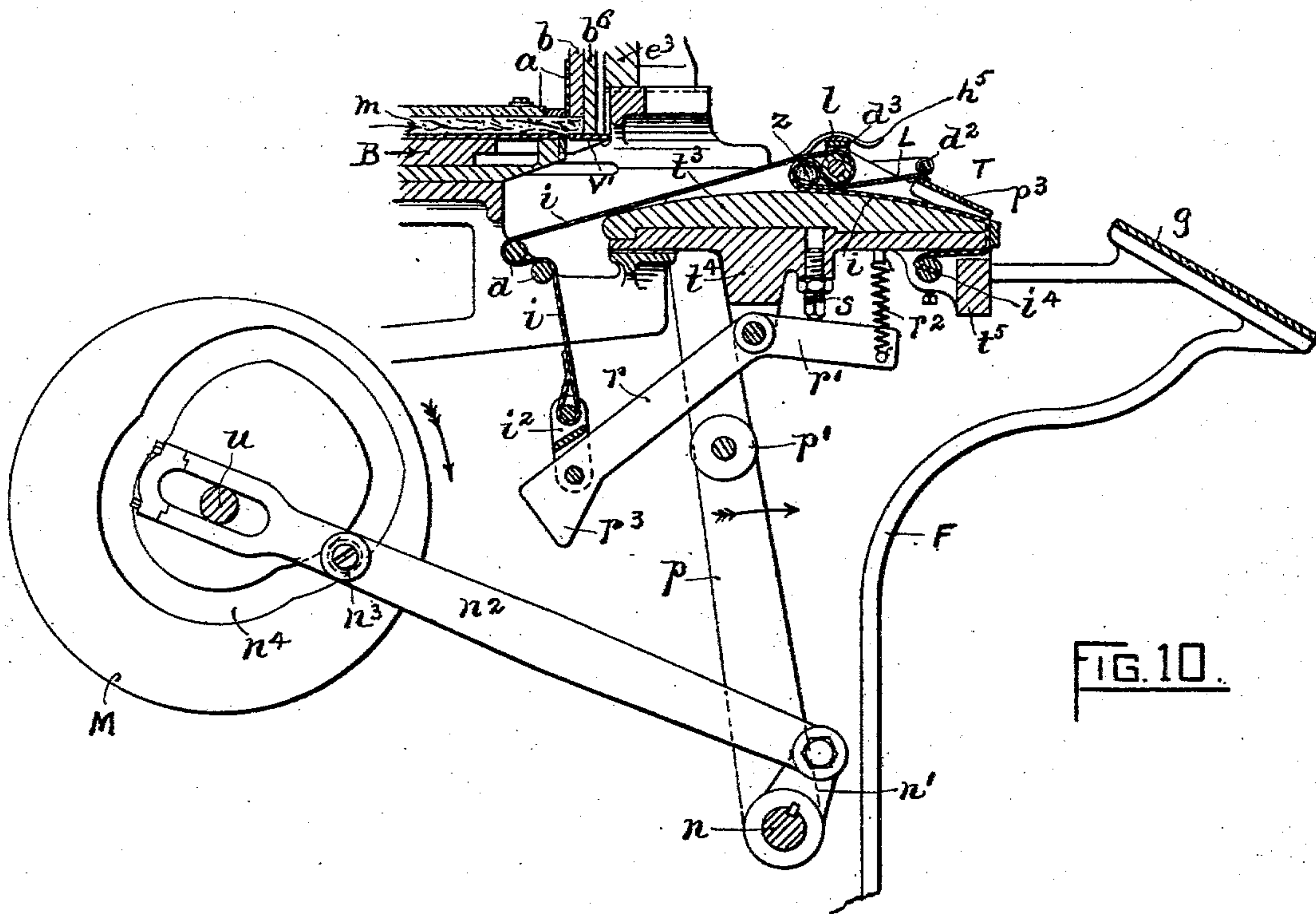
**Patented July 15, 1902.**

**M. M. GARDNER.**  
**CIGAR BUNCHING MACHINE.**

(Application filed Aug. 17, 1901.)

(No Model.)

**5 Sheets—Sheet 4.**



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No. 704,742.

Patented July 15, 1902.

M. M. GARDNER.  
CIGAR BUNCHING MACHINE.

(Application filed Aug. 17, 1901.)

(No Model.)

5 Sheets—Sheet 5.

FIG. 13.

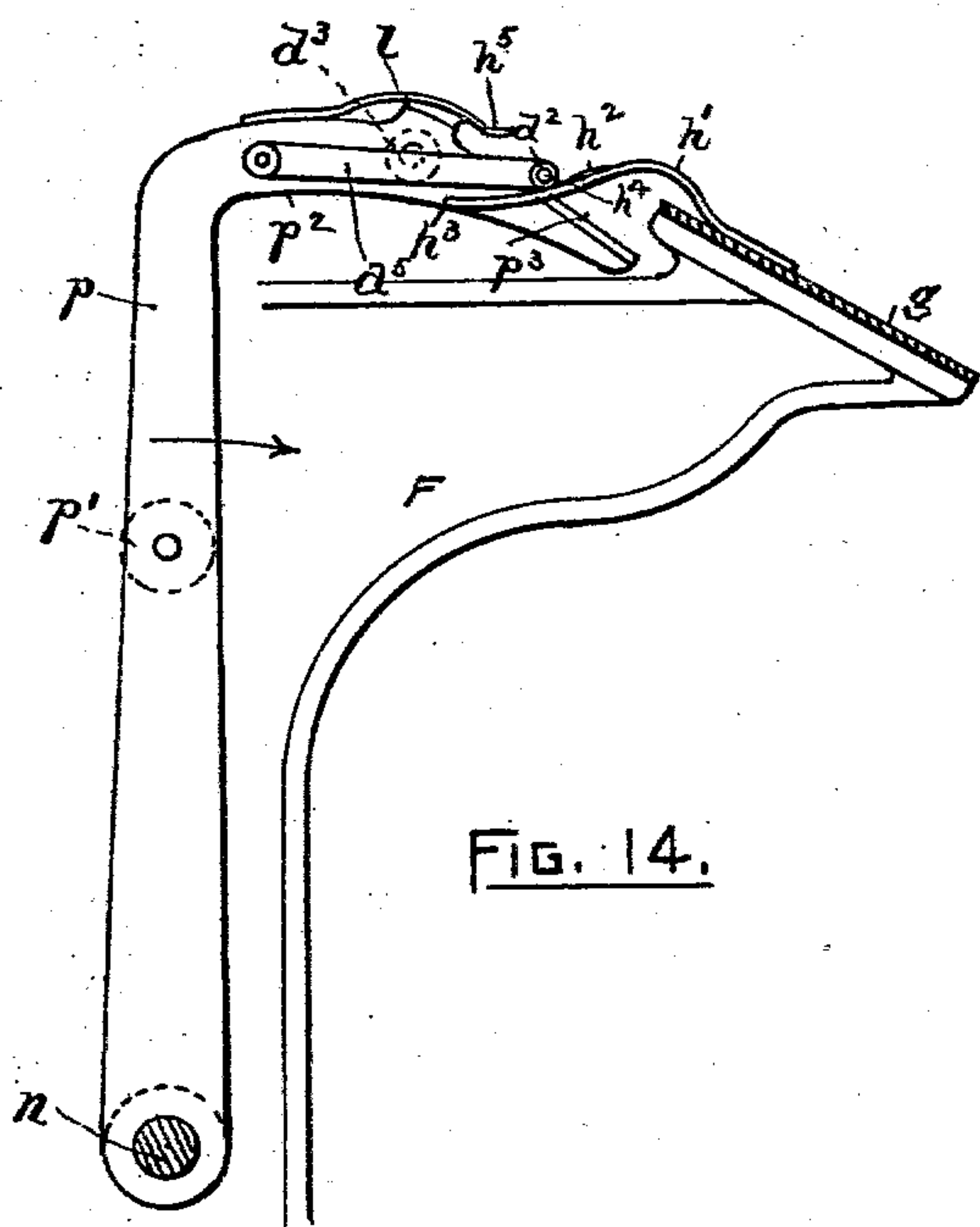
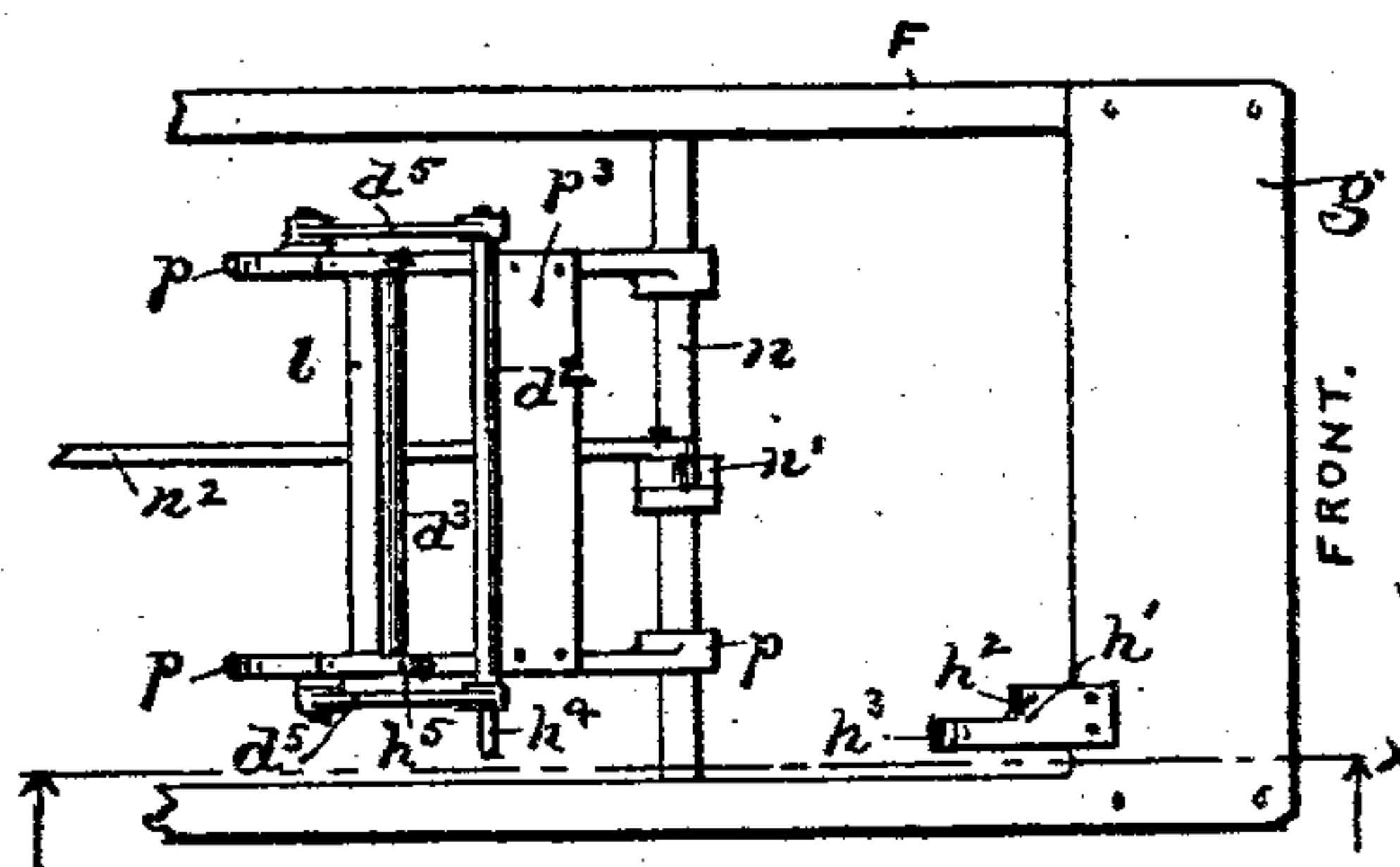


FIG. 14.

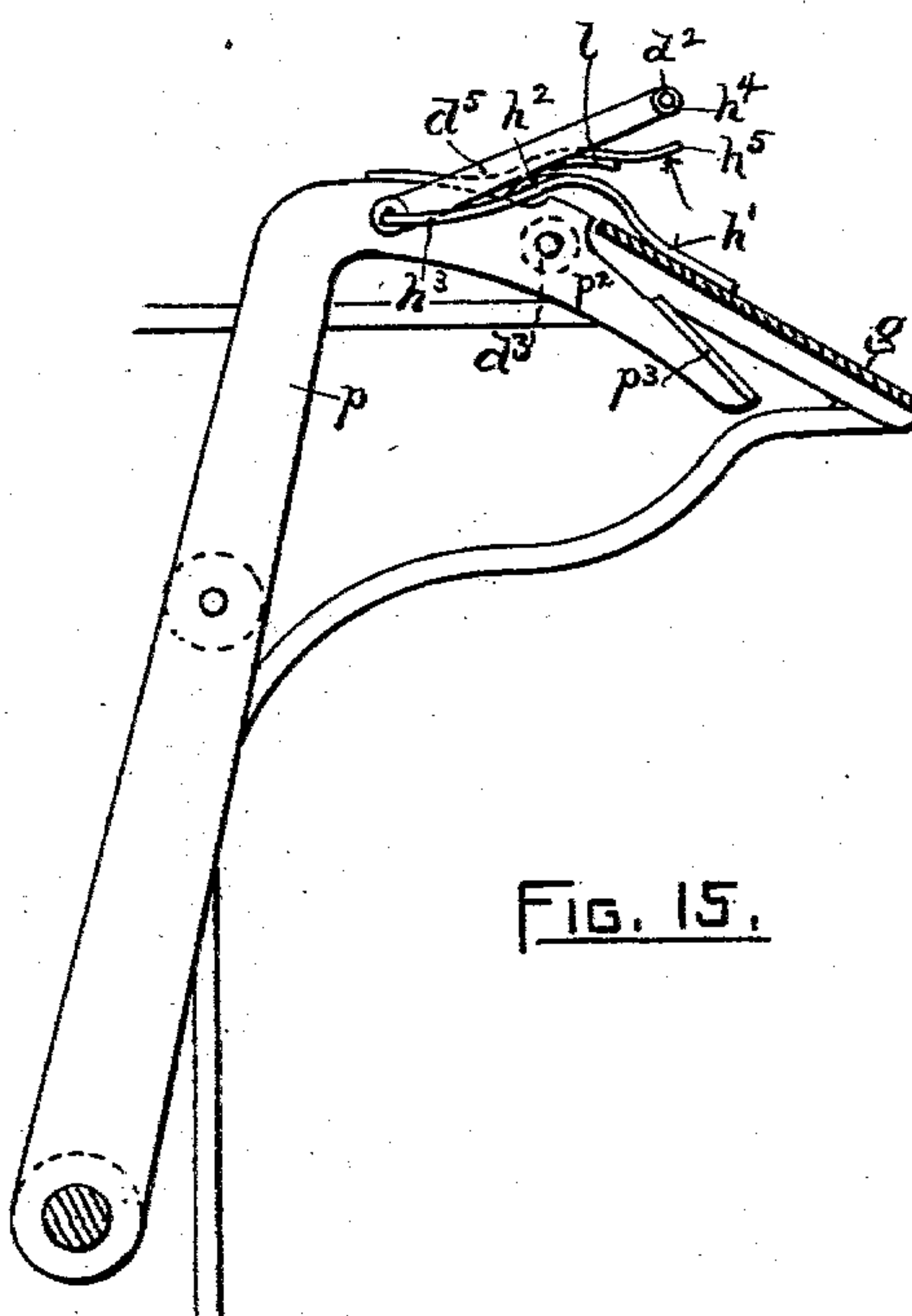


FIG. 15.

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# UNITED STATES PATENT OFFICE.

MICHAEL M. GARDNER, OF EDGEWOOD, RHODE ISLAND.

## CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 704,742, dated July 15, 1902.

Application filed August 17, 1901. Serial No. 72,369. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL M. GARDNER, a citizen of the United States of America, and a resident of Edgewood, in the town of Cranston, Providence county, and State of Rhode Island, have invented certain new and useful Improvements in Cigar-Bunching Machines, of which the following is a specification.

My invention herewith relates to cigar-bunching machines, and more particularly to improvements in mechanism for severing the fillers fed into the charging-pocket from the adjacent magazine combined with means for ejecting the charge from the pocket into the open bight or depression formed in the rolling apron or belt preparatory to covering the charge with a binder-leaf of tobacco. It further relates to improved means for holding the binder in position to receive said charge and also for rolling the binder around the same, thus completing the bunch.

In United States Patent No. 528,903, granted to Henry K. Gardner November 6, 1894, is clearly illustrated and described an organized cigar-bunching machine. In that machine the suitably-prepared leaves of tobacco are superposed in a traveling trough, so as to form a comparatively thick layer or continuous strip or ribbon, which is fed to a yielding ironing device adapted to flatten out or iron the strip of tobacco-leaves, so that the latter will lie straight and even and at the same time being substantially uniform in thickness. The thus-treated strip is intermittently fed into a contiguous magazine a suitable distance, corresponding with the length of cigar to be produced therefrom, and severed. The severed portion or filler-section is then advanced in said magazine-chamber, together with other previously-severed sections then lying side by side therein, by means of a yieldingly-mounted plunger, so as to press the front portion of the horizontal column of fillers or sections into a suitably-shaped open chamber or charging-pocket, followed by severing or shearing off the charge of fillers in the pocket from the said column of filler-sections in the magazine. The charge of fillers is then discharged from the pocket into the usual bight formed in the bunch-rolling apron, the action of the latter being to prop-

erly roll the binder around the charge of fillers, thus completing the bunch.

In a pending application for United States Letters Patent Serial No. 65,273 I have shown and described improved means for severing into filler-sections a continuous strip or ribbon of superposed leaves of tobacco and for transferring the sections singly into a contiguous magazine to be subsequently converted into bunches. In another pending application, Serial No. 70,868, I have shown and described improved instrumentalities for feeding the strip of tobacco to the action of the cutting device, for regulating or controlling the length of the sections as desired, and for automatically rendering the feeding mechanism temporarily inoperative in case the quantity of filler-sections introduced into the magazine exceeds a predetermined amount, while at the same time the other parts of the machine are working normally.

In my present invention the object sought to be attained is to provide means for facilitating the production of bunches from the charges, the bunches thus produced being more uniform in size as well as possessing greater homogeneity.

To that end it consists of a separable chamber or charging-pocket in normal communication with the magazine containing the fillers, having its upper, lower, and front side walls arranged to be actuated independently by suitable means and having the rear side of the pocket consisting of a thin flat blade or vertically-reciprocating knife adapted in its descent to readily sever the fillers in the then open pocket from the column of fillers lying in the magazine, the binder and apron meanwhile being in the normal position below the pocket. After severing the charge, the lower side member is then gradually advanced, thereby uncovering the pocket, followed by mechanically depressing the pocket and its contained charge to a point contiguous to the binder, at which instant the knife movement ceases, while the continued downward action of the front and upper members or ejector gently withdraws the rear edge or tip of the binder from the clip and presses the whole into the bight of the apron, the final movement carrying the charge of fillers directly to the bottom of the bight. The sev-



eral members comprising the charging-pocket quickly return to the normal position, while at the same time the action of the charge-rolling mechanism operates to roll the charge and simultaneously envelop it with the binder-leaf of tobacco, thereby practically completing the bunch, all as will be more fully hereinafter set forth and claimed.

I would state that while the binders may be fed to the machine or placed in position mechanically to receive the charges the drawings do not represent such a device. As drawn, it is assumed that an attendant places a binder in position in the yielding swinging jaws or clip at each revolution of the machine.

In the accompanying five sheets of drawings, Figure 1 is a plan view of a portion of a cigar-bunching machine, in reduced scale, embodying my improvements. Fig. 2 is a transverse sectional view, enlarged and viewed from the rear side, taken on line 2 2 of Fig. 1, the charging-pocket being in direct open communication with the magazine. Fig. 3 is a front view of the cam shown in Fig. 2. Fig. 4 is a partial longitudinal sectional view taken on line 4 4 of Fig. 1, the parts being in the normal position to receive a charge of fillers and corresponding with Fig. 2. Fig. 5 is a plan view of the movable bottom member of the charging-pocket. Fig. 6 is a transverse section taken on line 6 6 of Fig. 2. In this figure, however, the knife is represented as having closed the pocket, the latter containing a charge of fillers. Fig. 7 shows the bottom plate or cover advanced, thus uncovering the pocket. Fig. 8 shows the charge still retained in its pocket depressed to a point contiguous to the binder. Fig. 9 shows the relation of the several parts with the charge and binder in the bottom of the bight of the charge-rolling apron, corresponding to the maximum or lowest position of the ejector, &c. Fig. 10 is a sectional view corresponding with Fig. 4, (some of the parts of the latter being omitted,) showing the action of the charge-rolling mechanism. Fig. 11 shows the extreme forward position of the rolling device after having completed its bunch and also showing a new binder in place preparatory to being transferred to the rear or normal position shown in Fig. 4. Fig. 12 is a sectional view of the ejector, &c., substantially as represented in Fig. 7, but showing a manner of increasing the depth or thickness of the charging-pocket, so as to produce correspondingly larger bunches. Fig. 13 is a plan view of the front portion of the machine, in reduced scale, showing parts of the charge-rolling mechanism, the apron and its table being omitted, the position of the rolls and levers being substantially as represented in Fig. 4. Fig. 14 is a corresponding side elevation in partial section, enlarged, taken on line *x x* of Fig. 13, showing the apron-operating mechanism advanced and the friction or drag roll in the act of being automatically lifted from the binder-supporting plate; and

Fig. 15 is a similar view showing said mechanism in its extreme forward position, the drag-roll being elevated and the clip-jaw separated to receive a binder.

I have not deemed it necessary to illustrate herewith an organized cigar-bunching machine, since my present improvements have relation to means for cutting off the charge of fillers in the charging-pocket and discharging it therefrom, means for yieldingly holding the binder-leaf of tobacco and transferring it rearwardly from the front of the machine to a position over the bight formed in the rolling-apron, and means for rolling the charge and at the same time enveloping it with the said binder. In machines of this class it has been usual heretofore, so far as I am aware, for the attendant to place the binder on the charge-rolling apron after the latter has been retracted to its normal position, the bight or depression in the apron then being directly under the charging-pocket to receive the charge therefrom.

While, as just stated, I have not shown a complete cigar-bunching machine, I have, however, in Fig. 1 shown a portion of a machine embodying some of the devices illustrated in said Patent No. 528,903, wherein superposed leaves of tobacco forming a continuous strip or ribbon *t* is fed between belts *c* and pressed by an ironing device *C*, which flattens out and reduces the ribbon to a substantially uniform thickness. The forward end of the strip passes into a chamber *c*<sup>6</sup> of a transferring device *D*, communicating with the glass-covered magazine *m*, and is severed by means of an initial knife *K*, mounted in a vertically-reciprocating holder *a*'. The severed pieces or filler-sections are advanced in the magazine by means of a yieldingly-mounted plunger *E*, which presses the fillers into an open charging-pocket, and are severed from the column of fillers by another knife. This latter, however, as well as the devices for covering the charge with the binder and rolling it into a bunch form the subject-matter of my present application, as before stated.

In the construction of my combined cutting-off and discharging device *A* for the charges *z* power is transmitted from the continuously-revolving driving-shaft *u*, Fig. 4, through a train of gears *u*<sup>1</sup>, *u*<sup>2</sup>, *u*<sup>3</sup>, and *u*<sup>4</sup>, (indicated by broken and full lines.) To the shaft *u*<sup>6</sup> of the upper or last-named gear *u*<sup>4</sup> is secured a bevel-gear *u*<sup>5</sup>, Fig. 1, meshing into a similar gear in turn secured to and driving a short shaft *k*, carrying a double cam *N*, which actuates the said device *A*.

The magazine *m* containing the column of severed filler-sections *t'* is secured to the upper side of the flat table or bed *e'* of the machine and is located between the initial knife *K* and the secondary or charge-severing knife *a*, about to be described. The latter consists of a thin flat plate of suitable metal, as steel, secured to the face of the vertically-guided holder *a*<sup>2</sup>. (See Figs. 2, 6, &c.) The knife *a*



is arranged to pass across the mouth or front end of the magazine, thereby, in conjunction with the upper and lower contiguous shear-plates  $s'$   $s^2$ , adapting it to sever the fillers projecting from the magazine, the knife at the same time effectually closing the magazine-chamber temporarily against further advance of the fillers therein.

The knife  $a$  is actuated by a suitable cam-shaped groove  $j$ , formed in the rear face of said continuously-revolving cam  $N$  by means of a roll  $a^6$ , working in said groove and mounted on the free end of a pivoted lever  $a^3$ , the opposite end of the lever engaging a pin  $a^4$  of the knife-holder  $a^2$ .

The charging-pocket  $v$ , Figs. 6, 7, 8, &c., is located immediately in front of the knife  $a$  and when in the normal position is in direct open communication with the magazine. (See also Fig. 4.) The charging chamber or pocket  $v$  is separable, and as drawn is composed of four mechanically and intermittingly movable members or sides—viz., the knife  $a$  forms the rear side, the endwise slidable horizontal carriage  $B$ , having an extension flat plate  $v'$  in front, forms the bottom member, the vertically-guided plate  $b^6$  forms the front side member, while the ejector proper or vertically-movable member  $b$ , interposed between said front and rear sides  $b^6$   $a$ , respectively, constitutes the upper side. The said four members when in the normal position form a closed pocket  $v$ , containing a charge  $z$  of fillers, separated from the column of fillers  $t'$  in the magazine. (See Fig. 6.) Obviously the movements of the said members are timed so that the knife  $a$  will not descend until they become stationary, the chamber  $v$  then registering exactly with the mouth of the magazine, after which the fillers are fed directly into the chamber and severed from the magazine by the descending knife  $a$ . The said ejector or upper member  $b$  is actuated by a cam-shaped groove  $j'$ , formed in the front face of said cam  $N$ , the arrangement being similar to that for operating the knife  $a$ —that is, a pivoted lever  $b'$  has jointed to its outer end  $b^4$  a vertical link  $b^5$ , carrying a roll  $j^2$ , in turn working in said groove  $j'$ . The opposite end of lever  $b'$  has an eye fitted to receive a pin  $b^2$  of the ejector. By referring to Fig. 2 it will be seen that the cam action will cause the knife to sever the fillers in the pocket from the column of fillers in the magazine some time in advance of the ejector's downward movement. During this delayed action the mechanism for uncovering the bottom of the pocket acts. I may state in passing that the said carriage  $B$ , Figs. 4, 5, &c., is fitted to slide endwise in the bed of the machine. Its front portion is provided with two arms to which is secured the thin plate  $v'$ , which forms the base member of the charging-pocket and also forms a continuation of the bottom of the magazine, its rear edge lying contiguous to the face of the lower stationary shear-plate  $s^2$ . In order to provide for

the passage of the knife, &c., the member  $B$  has an opening  $v^2$ , located at the rear of the plate  $v'$ , the size of said opening being such as to permit the members  $a$   $b$   $b^6$  to freely pass downwardly therethrough.

In Fig. 4 I have indicated the initial knife  $K$ , a transferring member  $D$ , having a chamber  $c^6$  therein, adapted to receive the filler-sections from the knife, and a plunger or piston  $E$  in alinement with the magazine  $m$ . These members or devices, however, form no part of my present application. I would add that the function of the member  $D$  is to transfer each filler-section carried in its chamber  $c^6$  downwardly from the knife  $K$  to the position indicated in said figure, so that it (the section) may be forced direct therefrom by the advancing plunger  $E$  into the magazine. Thus it is obvious that the chambered member  $D$  will have an intermittent vertical movement, mechanism therefor not being shown, and since the movement of the said carriage  $B$  may properly be substantially coincident and concurrent with that of the member  $D$ , although in a different plane, I have introduced a bell-crank lever pivoted at  $f^2$  to a suitable bracket having its horizontal arm  $f^3$  jointed to a link  $f^4$ , in turn jointed to the member  $D$ . The other arm  $f'$  of the lever has an open eye in which is fitted a roll  $f$ , mounted on an extension formed on the under side of the carriage  $B$ . Thus it is clear that the latter will be actuated forth and back in unison with the vertical movements of the transferring member  $D$ , the action of the mechanism being to open and close the bottom of the charging-pocket  $v$  at the proper time.

The ejector  $b$  is suitably mounted and guided in the frame or housing  $h$  and has vertically-slotted openings  $c^4$  therethrough, through which extend horizontal stop-pins  $b^9$ , screwed into the knife-holder  $a^2$ . These pins also pass through shorter openings  $c^5$ , formed in the front plate  $b^6$ , and into similar openings  $b^{10}$ , formed in the rear face of the end bracket  $e^3$ , located at the front of the machine and above the charge-rolling mechanism. The said plate  $b^6$  is detachably secured to the adjacent face of the ejector by means of a spring-catch  $b^8$ , arranged to spring into a suitably-arranged notch formed in the upper portion of the ejector, the normal relation of the several members being substantially as shown in Fig. 6, except that the knife  $a$  in its downward stroke has cut off from the adjacent filler-section  $t'$  in the magazine a quantity sufficient to fill the pocket  $v$  and forming the charge  $z$ . The dotted lines in said figure indicate the position of the stop-pins  $b^9$  when the knife is at the end of its upward stroke.

The action of the several parts constituting the separable charging-pocket  $v$  and the manner of ejecting the charge therefrom are as follows: Assuming the knife, ejector, &c., to be elevated, as shown in Fig. 4, the forward movement of the plunger  $E$  next forces the



last-cut filler-section from the chamber  $c^6$  of the transferring member D into the magazine  $m$  and against the column of fillers lying therein, thereby advancing the latter and filling the open charging-pocket  $v$ . A short quick downward movement of the knife  $a$  then severs the fillers in the pocket from the magazine, or to the position shown in Fig. 6. The plunger is next retracted, the knife meanwhile remaining stationary, and the member D elevated to receive another section  $t'$  from the knife K. This latter upward movement operates through the said bell-crank lever, &c., to advance the connected carriage B, thereby correspondingly advancing the bottom plate  $v'$  and uncovering the lower side of the charged pocket  $v$ , as shown in Fig. 7. The continuously-revolving double cam N now forces the members  $a$   $b$   $b^6$  and the contained charge  $z$  downwardly through the opening  $v^2$  of the carriage to the position shown in Fig. 8, and being practically the end of the knife action, the stop-pins  $b^9$  at the same time engaging the bottom of the slots  $b^{10}$  of the front bracket  $e^3$ . At substantially the same instant, too, the cam action depresses the ejector  $b$  and its front plate  $b^6$ , thereby discharging the charge of fillers into the open bight of the rolling-apron  $i$ , soon to be described. (See Fig. 9.) While the members are being thus depressed, the plate  $b^6$  will be arrested by the then stationary pins  $b^9$ , so that the continued movement of the ejector forcibly withdraws the latter from the yielding spring-latch  $b^8$ , as clearly shown. I would state that while the two cams  $j$   $j'$  have approximately the same "throw," (see Fig. 2,) the stroke of the ejector considerably exceeds that of the knife  $a$ , owing to the difference in leverages or fulcrum-centers  $b^3$   $a^5$  of the respective oscillating levers  $b'$   $a^3$ . The upward stroke of the several members comprising the side walls of the pocket  $v$  will again return them to the normal position preparatory to receiving therein the succeeding charge of fillers. During this latter movement of the ejector the latch  $b^8$  will automatically spring into the notch, thereby carrying upwardly with it the front plate  $b^6$ .

The charge-rolling mechanism T illustrated herewith employs certain parts or members common to other cigar-bunching machines—such, for example, as the slack apron  $i$ , the fixed rolls  $d$ , a movable forming-roll  $d^3$ , and a curved stationary table  $t^3$ , located at the front end of the machine. In my invention, however, the forming-roll  $d^3$  is mounted on a rod secured to and uniting the bent upper end portions  $p^2$  of a pair of levers  $p$ , secured to a rocker-shaft  $n$ , in turn actuated by a crank  $n'$  and a link  $n^2$ , jointed thereto, having a roll  $n^3$  working in the cam-groove  $n^4$  of the cam M, secured to the continuously-revolving driving-shaft  $u$ , as clearly shown in Fig. 4. The forward end of the levers extends beyond the roll  $d^3$  and carries a connecting table or plate  $p^3$ , adapted to support the

binder-leaf L of tobacco. It is also provided with a swinging friction-roll  $d^2$ , arranged to press lightly upon the binder resting on the table  $p^3$ . Located above and contiguous to the said roll  $d^3$  is mounted a light spring-clip  $l$ , adapted to hold between its jaws or faces the rear portion or tip of the binder. This latter member as well as the said rolls  $d^2$   $d^3$  and table  $p^3$  are practically a part of the levers  $p$  and move to and fro therewith. The said flexible apron  $i$  is secured at  $i^4$  to the under side of the table-holder  $t^4$ , its rear portion passing around the fixed rolls  $d$  and being secured to a link  $i^2$ , jointed to the long arm of the apron tension-lever  $r$   $r^1$ , fulcrumed to the under side of the said holder or frame  $t^4$ , the latter in turn being supported in front by the transverse tie  $t^5$ , uniting the side frames F. The short arm  $r'$  of said lever has a spring  $r^2$ , adapted to maintain suitable tension upon the apron, an adjustable stop  $s$  being used for limiting the lever's movement in one direction as well as for regulating the degree of apron tension. It will be seen, referring to Fig. 4, that when the operating-lever  $p$  is in the rearward or normal position a roll or dog  $p'$  of the lever is in engagement with a beveled or cam-shaped surface  $r^3$  of the tension-lever, thereby automatically swinging the latter from the stops  $s$  and correspondingly elevating the opposite end, thus slackening the apron  $i$  and producing therein a somewhat-deeper open bight  $i'$  for the reception of the filler charge  $z$ . (See Fig. 4.)

By referring to Figs. 4, 6, and 8 it will appear that the binder L is held mechanically in a flat position by means of the spring-clip  $l$  and friction or drag roll  $d^2$ , the binder, in fact, bridging the space over the open bight  $i'$  of the rolling-apron. Now upon depressing the ejector, &c., as hereinbefore described, the parts carrying the filler charge engage the binder and forcibly withdraw the tip portion of it from the jaws of the clip  $l$ . The thus-released portion of the binder then drops into the open bight, followed immediately thereafter or concurrently therewith by the filler charge, the ejector itself descending still farther, so as to insure that the charge is deposited practically intact in the apron's cavity, as indicated in Fig. 9. By means of this arrangement it will be seen that the adjacent side walls of the bight are substantially parallel, while the bight-opening is practically the same width or thickness as the filler charge and its downwardly-pressing ejector. An advantage resulting from this construction is that the charge is maintained in proper position therein. After the ejector has advanced sufficiently on its return stroke the action of the cam M will advance the lever  $p$ , the initial movement of the latter being to release the lever  $r$  therefrom, at which instant the spring  $r^2$  swings it into engagement with the stop  $s$ , thereby depressing the rear end of the apron and correspondingly elevating the bight and its con-



tained charge. The continued forward movement of lever  $p$  closes the bight-opening, while the forming-roll  $d^3$  as it correspondingly advances causes the charge to be gradually enveloped by the binder  $L$  and rolled into shape, the binder-holding or drag roll  $d^2$  meanwhile yielding sufficiently for the purpose, (see Fig. 10,) wherein the binder is in the act of leaving said roll. When the levers, &c., have completed their forward movement, as shown in Fig. 11, the apron will have discharged the then rolled and completed bunch  $z'$  therefrom into a suitable receptacle or holder  $z^2$ , thus completing the operation.

In the last-named figure a new binder is represented as being held between the clip-jaws  $l$  and resting upon an inclined stationary table  $g$  preparatory to being transferred therefrom by the lever  $p$ , &c., to the rearward normal position. (Shown in Figs. 4 and 6.)

The arrangement and manner of operation of the apron-rolls, &c., may also be seen in Figs. 13, 14, and 15. The forwardly-bent portion  $p^2$  of the double lever  $p$  has outer arms  $d^5$  pivoted thereto, in which is journaled the said drag-roll  $d^2$ , normally resting upon the flat transverse plate  $p^3$ , uniting the front ends of the levers  $p$ . To the latter at a suitable point—say midway between the roller  $d^2$  and its pivot—is located the freely-turning forming-roll  $d^3$ . Immediately above the latter roll extends a transverse bar secured to the levers  $p$ , the same forming the lower member of the jaws of the said clip  $l$ . A space is formed between the under side of said jaw and the roll  $d^3$ , through which opening passes the apron  $i$ . (See Figs. 6, 10, &c.) The upper member of the clip is secured to light spring-arms, in turn fastened to the top of levers  $p$ , the forward end of said arms being suitably bent, as at  $h^5$ . To the left of the said inclined table  $g$  is secured a tripping device  $h'$ , the same having its rear portion  $h^8$  suitably bent, so that upon the engagement therewith of the advancing drag-roll, or rather the extension  $h^4$  thereof, (see Figs. 13 and 14,) the roll will be automatically swung upwardly from the plate  $p^3$ , the continued movement causing the lever-arm  $d^5$  to ride upon the shoulder  $h^2$ , as indicated in Fig. 15. While the parts are in the forward stationary position the attendant has ample room and time to place the succeeding binder  $L$  in place between the jaws of the clip  $l$ , at the same time with the thumb of her left hand pressing upwardly the front end  $h^5$  of the spring-arm, thereby opening the jaws for the purpose. Upon releasing the member  $h^5$  the jaws will then retain the tip of the binder between them and also being supported by the table  $g$ . The lever  $p$  in its rearward movement carries the plate  $p^3$  past the rear edge of table  $g$ , the drag-roll  $d^2$  meanwhile gradually passing beyond the influence of the tripping device  $h'$ , at which instant the said roll will have engaged the binder, then

also supported by the plate  $p^3$ , so that the continued movement of the operating-lever  $p$  draws the binder from table  $g$ , the end of the movement carrying the parts to the normal stationary position represented in Figs. 4 and 6, the binder then bridging the bight-opening, as hereinbefore described.

The bracket or frame  $e^3$ , located at the front end of the machine, is adjustably secured to the slightly-elevated portion  $e^2$  of the bed  $e'$  and forms a support or guide for the ejector members  $b b^6$ . The base of the frame  $e^3$  has slotted openings  $e^4$  therethrough, through which pass the holding-down bolts. (See Fig. 1.) By means of this construction the position of the guide-frame may be nicely adjusted with respect to the ejector, so as to produce more or less frictional resistance upon the latter.

Now in order to adapt the machine to produce bunches having a greater thickness, and consequently an increased amount of fillers, I may in such case interpose a suitable space-plate  $c^2$ , as indicated in Fig. 12, the same being removably secured by screws  $c^3$  to the face of the ejector  $b$ , the frame  $e^3$  being moved ahead or toward the front end of the machine a corresponding distance and resecured in position. I may add that the width of the opening  $v^2$  of the carriage  $B$  permits the passage therethrough of the ejector, &c., even when carrying the maximum charge of fillers.

While I have hereinbefore described the action of the instrumentalities or devices singly, it is to be understood that they are so combined, arranged, and timed with respect to one another that during certain parts of each revolution of the machine or cycle of operations several of them may be working concurrently and also at different rates of speed, corresponding with the form and relative position of the cams and their connections.

I claim as my invention—

1. In a cigar-bunching machine, the combination with a magazine for containing the suitably-prepared fillers and a charging-pocket in normal open communication therewith to receive fillers therefrom, of a mechanically-actuated knife interposed between the mouth of said magazine and pocket for severing the fillers into charges, a mechanically-slidable plate forming the lower side of the charging-pocket, and a vertically-actuated ejector consisting of two members having different degrees of movement arranged to discharge the filler-charge after the said bottom plate has uncovered the pocket, substantially as described.

2. In a cigar-bunching machine, the combination with a suitable magazine containing the previously-prepared tobacco or fillers adapted to be successively divided into charges and be converted into bunches, of a normally open separable pocket communicating with the magazine, a knife for severing the fillers contained in the pocket and at the same time closing the latter from the maga-



zine, a plate forming the bottom of the pocket, an ejector consisting of two vertically-movable detachably-connected members forming the front and upper sides of the pocket, and mechanisms for actuating said knife, plate and ejector members.

3. In a cigar-bunching machine, the charge-severing knife *a*, an ejector located contiguous thereto consisting of independently-movable members, *b*, *b'*, and forming two sides of the normally open charging-pocket *v*, means for feeding the fillers of tobacco into said pocket, and mechanism for actuating said knife to sever the fillers thereby at the same time closing the adjacent side of the pocket, in combination with the mechanically-slidable bottom plate *v'* forming the lower side of the charging-pocket, and means for depressing the ejector and discharging the charge of fillers downwardly from said pocket after the bottom plate has uncovered the latter, substantially as described.

4. In a cigar-bunching machine, the combination with the charging-pocket arranged to receive the charge of fillers, and a mechanically-actuated charge-rolling apron *i* having an open bight therein arranged below and substantially in alinement with said pocket, of a binder-holding device, means for yieldingly retaining the binder in position thereby forming a bridge across the bight-opening, and means for opening said pocket and discharging the charge of fillers therefrom onto the apron, the action of this latter mechanism also being to force the material or tobacco against the binder, whereby an end of the latter is drawn out from the said retainer, the thus-released portion of the binder falling onto the apron substantially with or slightly in advance of the charge, substantially as described.

5. In a cigar-bunching machine, the combination of a mechanically-actuated charge-rolling device provided with an apron having an open bight, mechanism for discharging the suitably-prepared charge of fillers into the bight and a yielding binder-holding device, connected with and moving in unison with said charge-rolling means, frictionally retaining both ends of the binder, whereby the latter is maintained under suitable tension across the apron's bight until released by the action of said discharging mechanism, substantially as described.

6. In a cigar-bunching machine, the combination with a stationary table *t*<sup>3</sup>, and a charge-rolling apron *i* supported by said table arranged to receive the charge of fillers in a bight formed therein, of a pair of vibrating levers *p*, a forming-roll mounted in and actuated by said levers and in engagement with the apron, and a drag-roll and clip also mounted in said levers and forming a binder-holding device, substantially as described.

7. In a cigar-bunching machine, a suitably-mounted charge-rolling apron *i*, means for actuating the apron, a binder-retaining de-

vice in frictional engagement with both ends of the binder, whereby the latter is maintained flatwise under suitable tension with respect to the apron, and means for discharging the charge of fillers onto the apron, in combination with a spring-pressed lever connected with one end of said apron, means for actuating the lever and a stop for limiting its angular movement, substantially as described and for the purpose hereinbefore set forth.

8. In a cigar-bunching machine, the combination of an apron *i*, a forming-roll in engagement with the apron, mechanically-actuated levers or arms carrying said roll, a spring-pressed lever *r* connected with the rear end of said apron, said lever *r* being actuated in one direction by the roll-carrying arms to temporarily slacken the apron to increase the depth of the bight, and a stop *s* for limiting the lever's movement in the other direction so as to control the normal depth of the bight, substantially as described.

9. In charge-rolling mechanism for cigar-bunching machines, the combination of an apron *i*, a forming-roll *d*<sup>3</sup> in engagement with the apron, means for actuating the roll to and fro, a binder-supporting plate *p*<sup>3</sup> arranged in front of and moving in unison with said roll, a clip for holding an end of the binder, a drag-roll for holding the other portion of the binder flatwise upon said plate *p*<sup>3</sup>, and a stop or dog located in the path of the movable drag-roll, whereby the latter is automatically elevated so as to permit the introduction of a new binder, substantially as described.

10. In a cigar-bunching machine having a stationary rolling-table *t*<sup>3</sup> and an inclined binder-supporting table *g* at the front or delivery end of the machine, the combination therewith of the charge-rolling apron *i*, the oscillating lever *p* for actuating said apron having its upper portion provided with a plate *p*<sup>3</sup> adapted to pass between the said stationary tables *t*<sup>3</sup> and *g*, means consisting of a spring-clip *l* and drag-roll *d*<sup>2</sup> adapted to hold the binder between them, whereby after introducing the binder into the clip the rearward movement of the lever *p* uncovers the plate *p*<sup>3</sup> and at the same time permits the roll *d*<sup>2</sup> to frictionally engage the binder and draw it rearwardly from its table preliminary to returning the apron, to the normal position to receive the succeeding charge.

11. In a cigar-bunching machine, the combination with the magazine *m* containing the fillers, and a charging-pocket *v* communicating therewith and adapted to receive the fillers therefrom, of the charge-severing knife *a*, means for uncovering the lower side of said pocket, a reciprocating ejector *b*, the front plate *b*<sup>6</sup>, mechanism for actuating said members *b* and *b*<sup>6</sup> for ejecting the charge of fillers from the pocket, means for stopping the downward movement of said plate while the ejector continues its downward action and means for



detachably connecting the ejector and said plate whereby the same becomes automatically detached therefrom during such movement, substantially as described.

5 12. In a cigar-bunching machine, the combination with the filler-containing magazine, a charging-pocket  $v$  adapted to receive a charge of fillers therefrom, upper and lower shear-plates located at the mouth of said maga-  
10 zine, and an adjustably-secured front member or bracket  $e^3$ , of the reciprocating knife  $a$  arranged to coact with said shear-plates in severing the charge of fillers, an ejector interposed between said knife and bracket mem-  
15 bers having its lower portion adapted to form two sides of the charging-pocket, and means for opening the pocket and actuating said ejector whereby the fillers are discharged, substantially as described.

20 13. In a cigar-bunching machine, the combination of an ejector member, a front plate relatively movable longitudinally and detachably connected thereto and when in its normal position extending a short distance below  
25 the end of the ejector, a bottom plate, a knife  $a$  mounted contiguous to and capable of movement independently of said ejector, and mechanisms, substantially as described, for actuating all the said members in a predetermined  
30 order for the purpose hereinbefore set forth.

14. In a cigar-bunching machine, the combination with a magazine for containing the

fillers of tobacco, and an endwise-movable plate member  $v'$  forming a continuation of the lower side of the magazine, of a filler-sev- 35  
ering knife  $a$  arranged at right angles to said magazine, an ejector located contiguous to and parallel with the knife, a front plate relatively movable longitudinally and detachably connected to the corresponding face of the 40  
ejector, and mechanisms for actuating and controlling the movements of all the said members independently of one another and in a prearranged order, substantially as described.

15. In a cigar-bunching machine, the com- 45  
bination with a magazine for containing the fillers of tobacco and means for feeding the fillers therein, of the knife  $a$ , the ejector  $b$ , the front plate  $b^6$  relatively movable longitudinally and detachably connected to said 50  
ejector, the bottom plate member  $v'$ , the said members,  $a$ ,  $b$ ,  $b^6$ ,  $v'$ , forming a separable charging-pocket  $v$  in direct communication with the front end of the magazine, and mech- 55  
anisms for actuating said members in a prearranged order, substantially as hereinbefore described and for the purpose set forth.

Signed at Providence, Rhode Island, this 15th day of August, 1901.

MICHAEL M. GARDNER.

Witnesses:

GEO. H. REMINGTON,  
CHAS. C. REMINGTON.