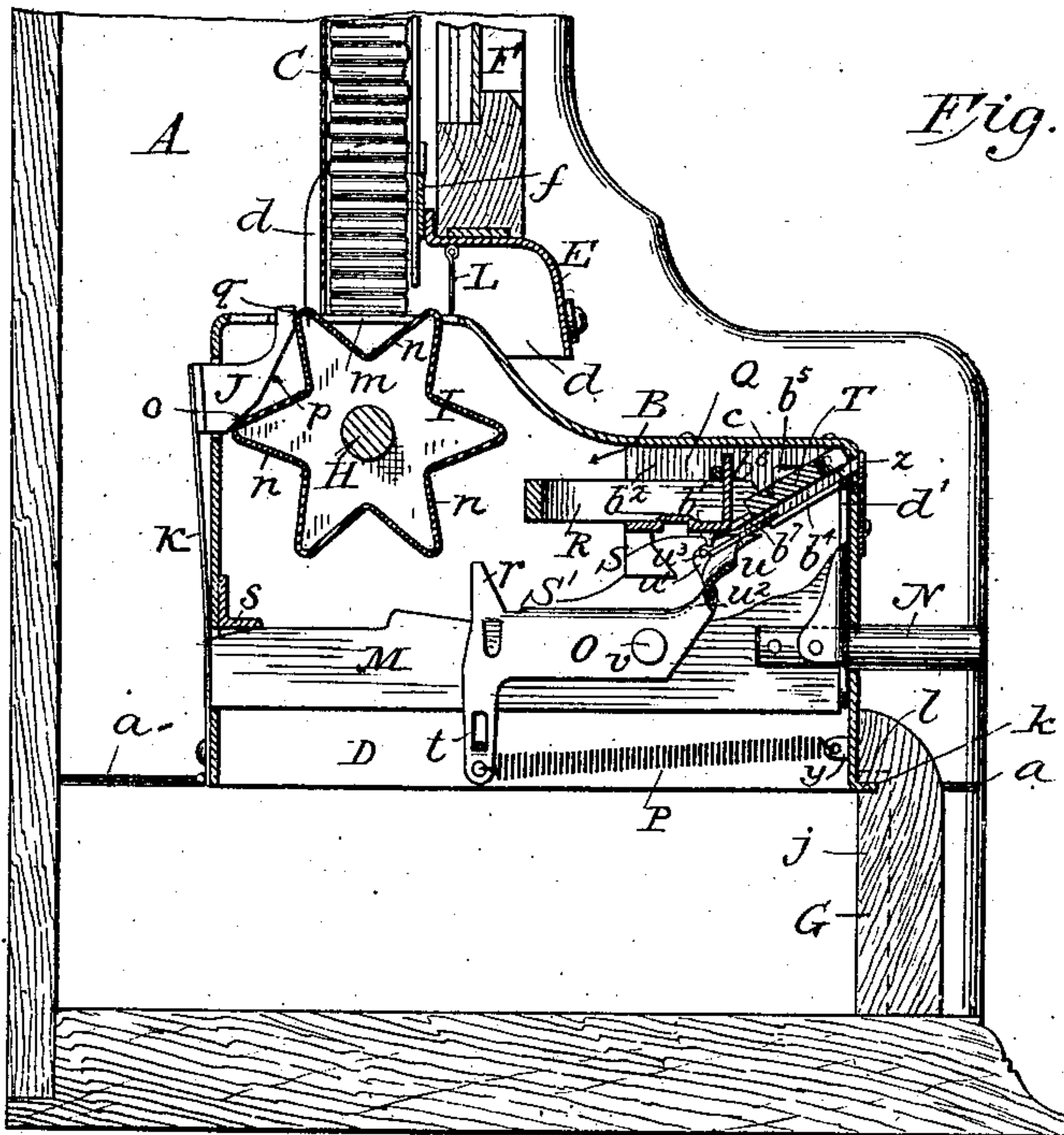
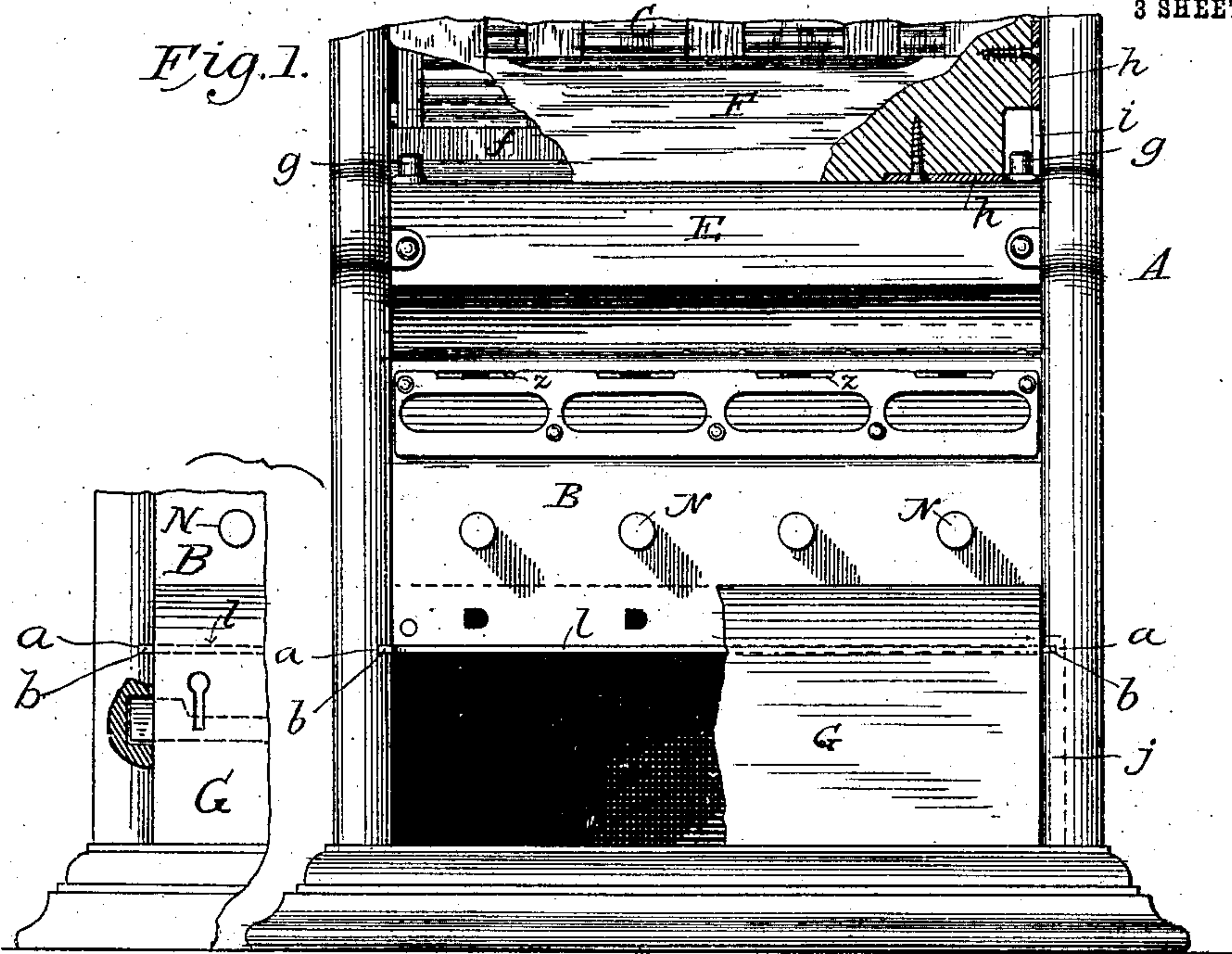


No. 845,324.

PATENTED FEB. 26, 1907.

J. A. WILLIAMS.  
VENDING APPARATUS.  
APPLICATION FILED FEB. 17, 1896.

3 SHEETS--SHEET 1.



Witnesses  
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 R. E. Burdine

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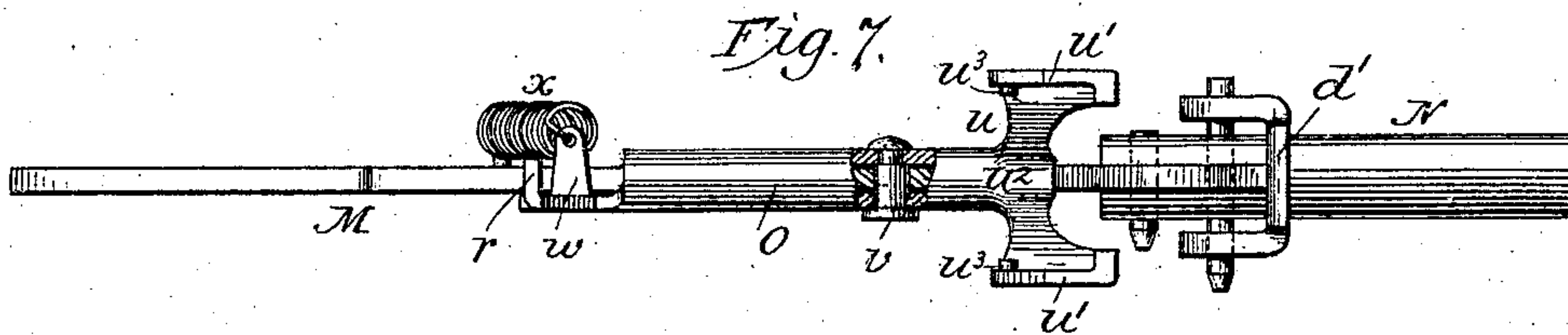
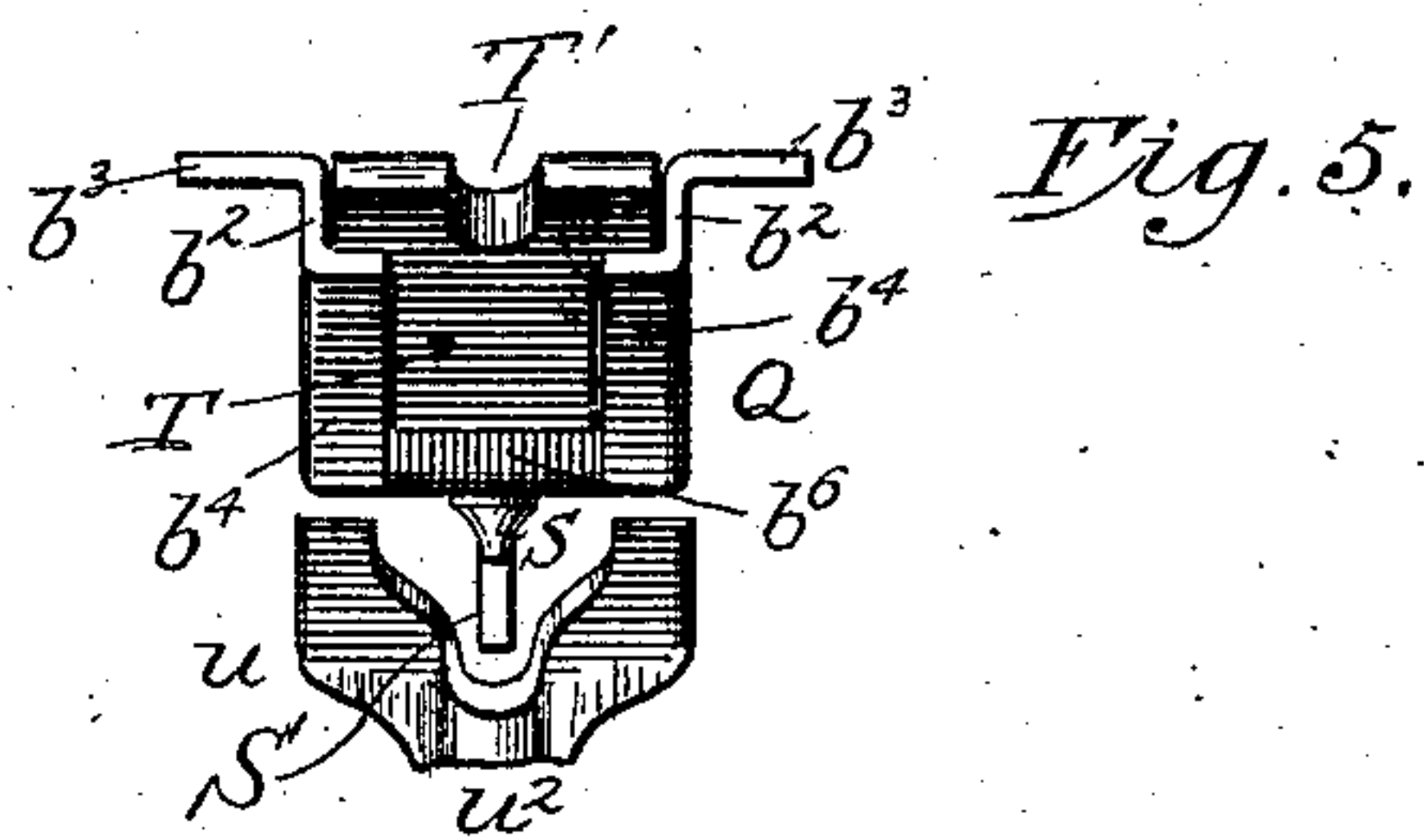
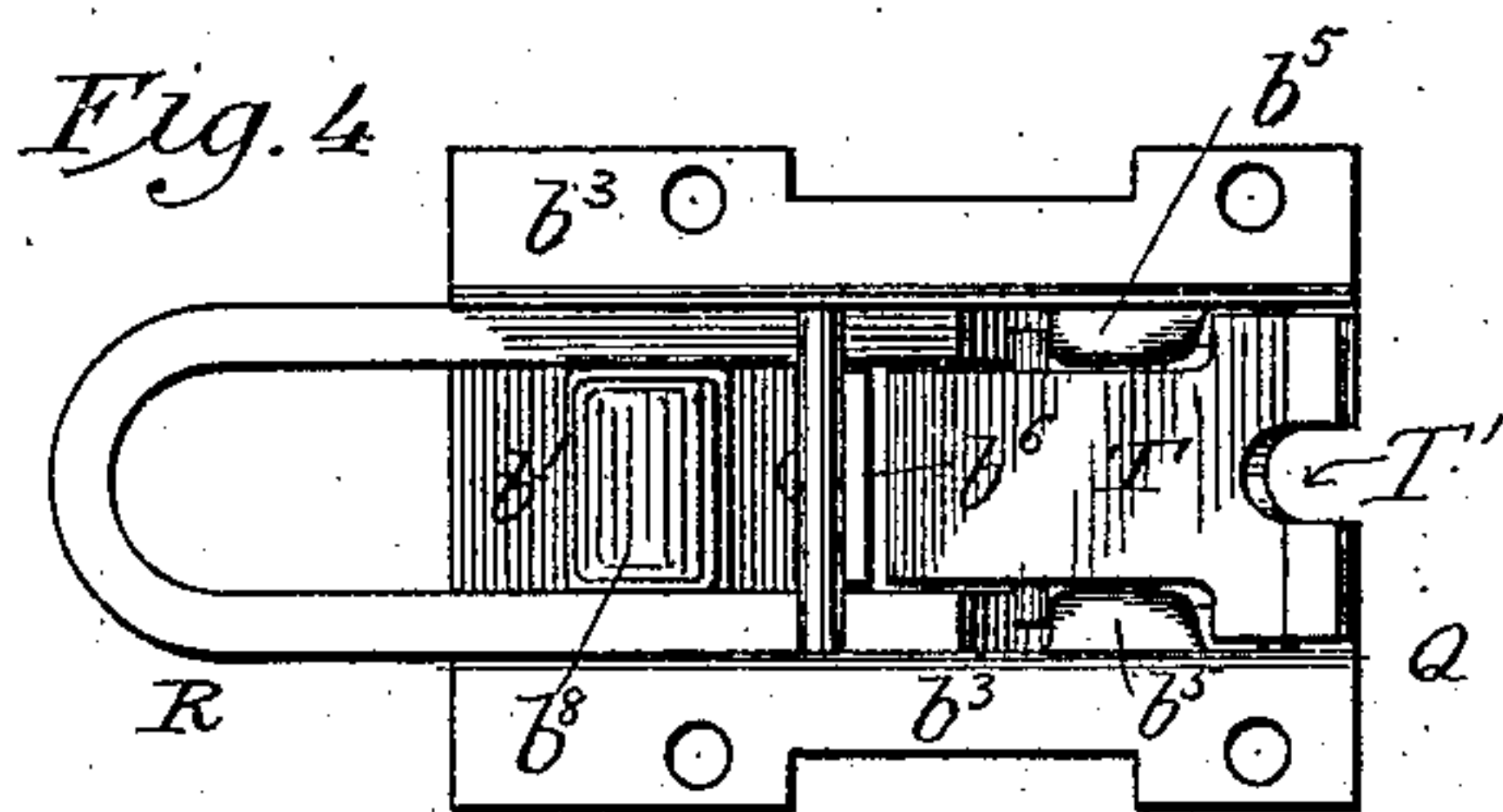
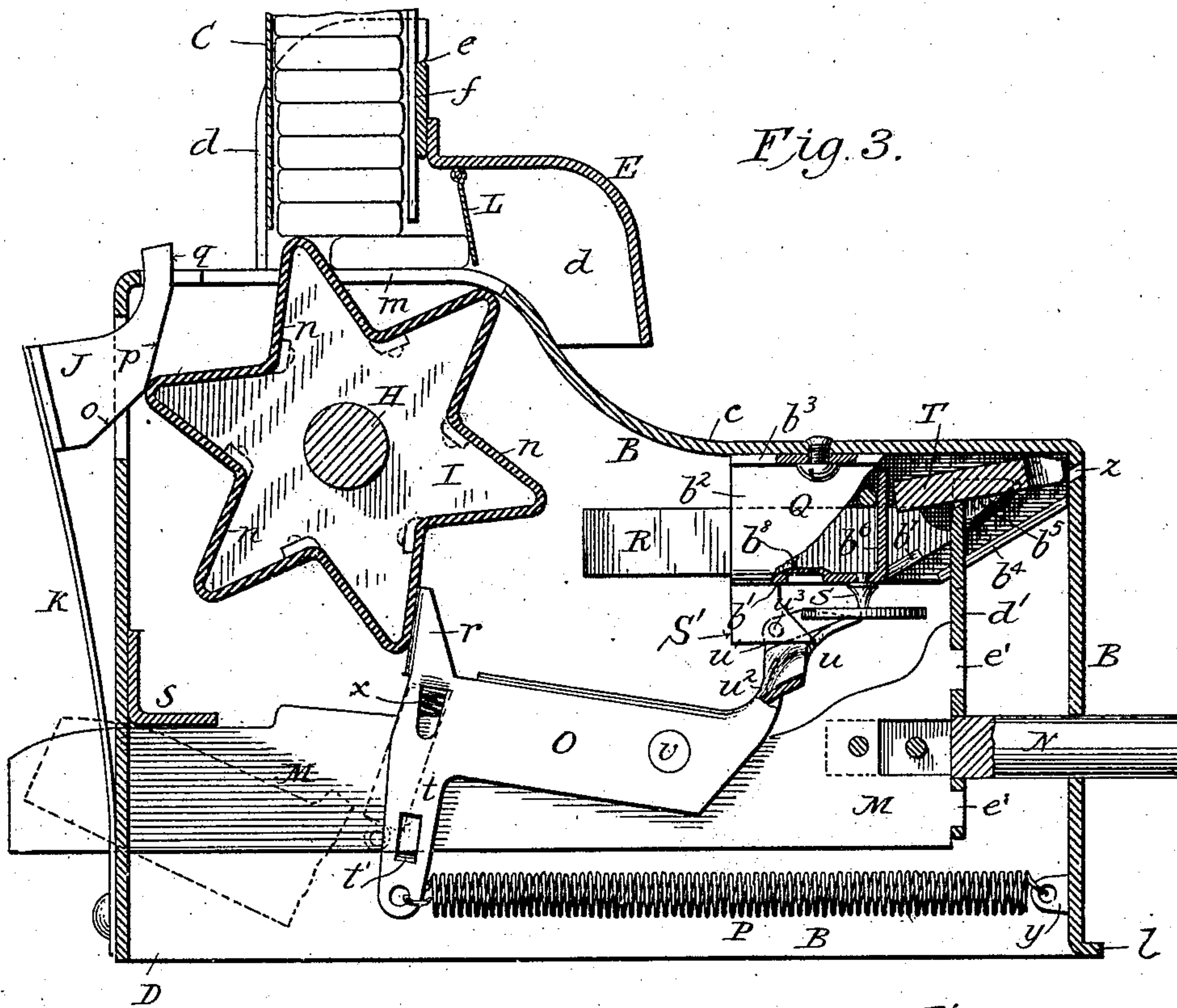
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3 SHEETS—SHEET 2.



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No. 845,324.

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3 SHEETS—SHEET 3.

Fig. 6.

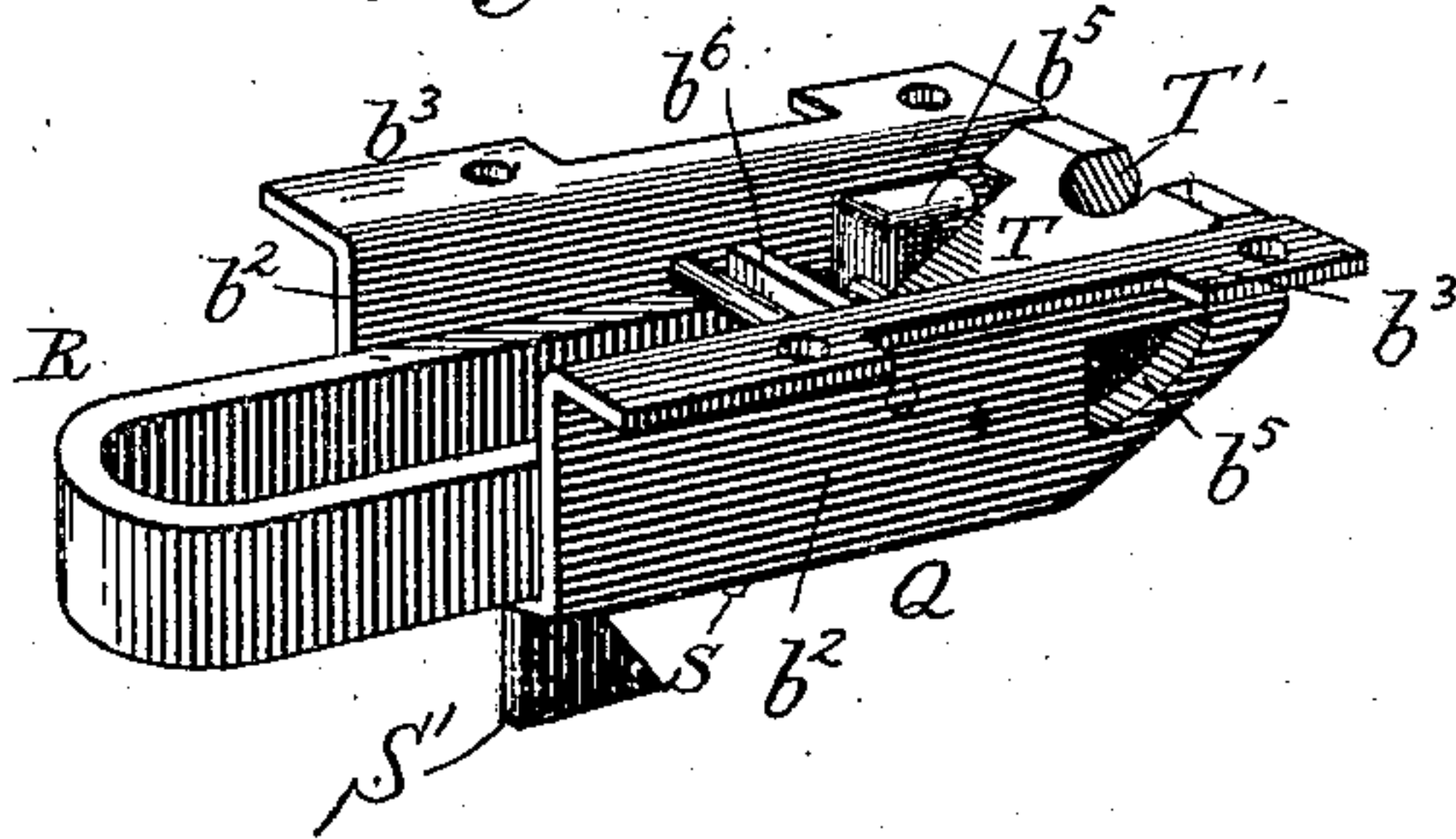


Fig. 8.

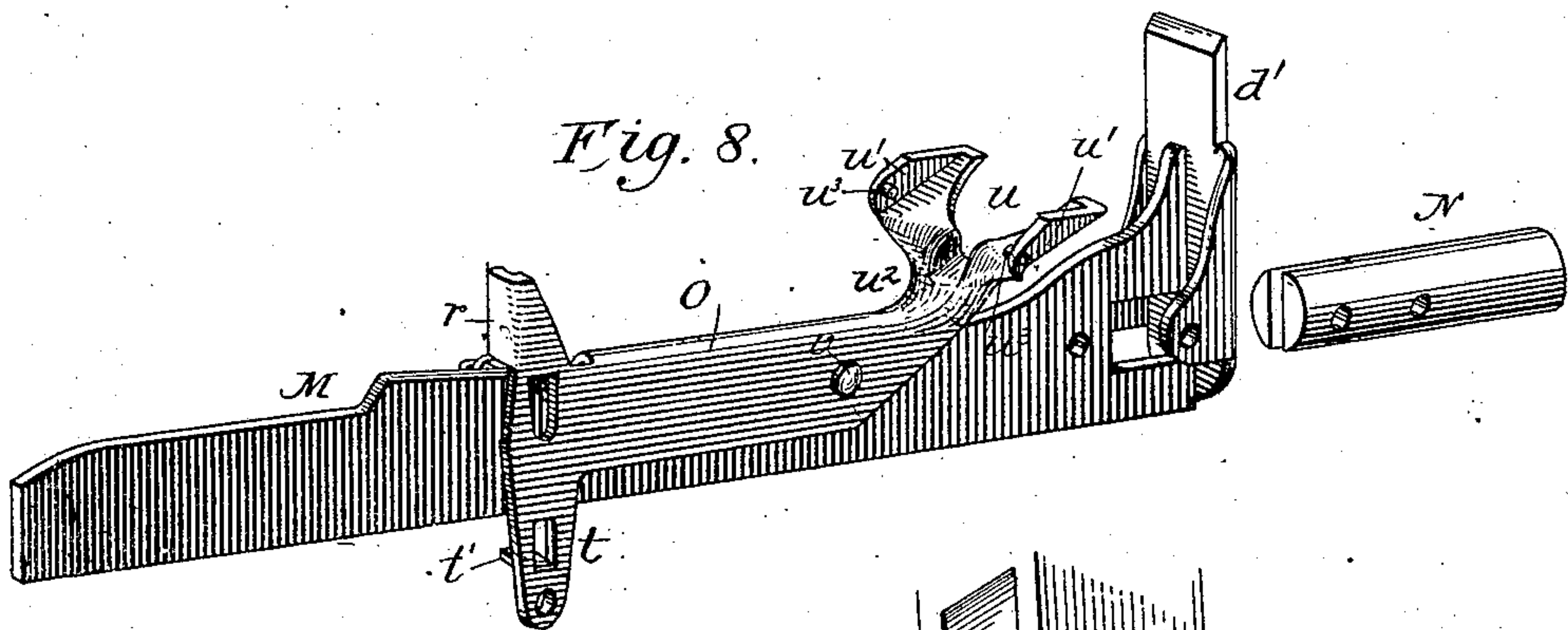


Fig. 10.

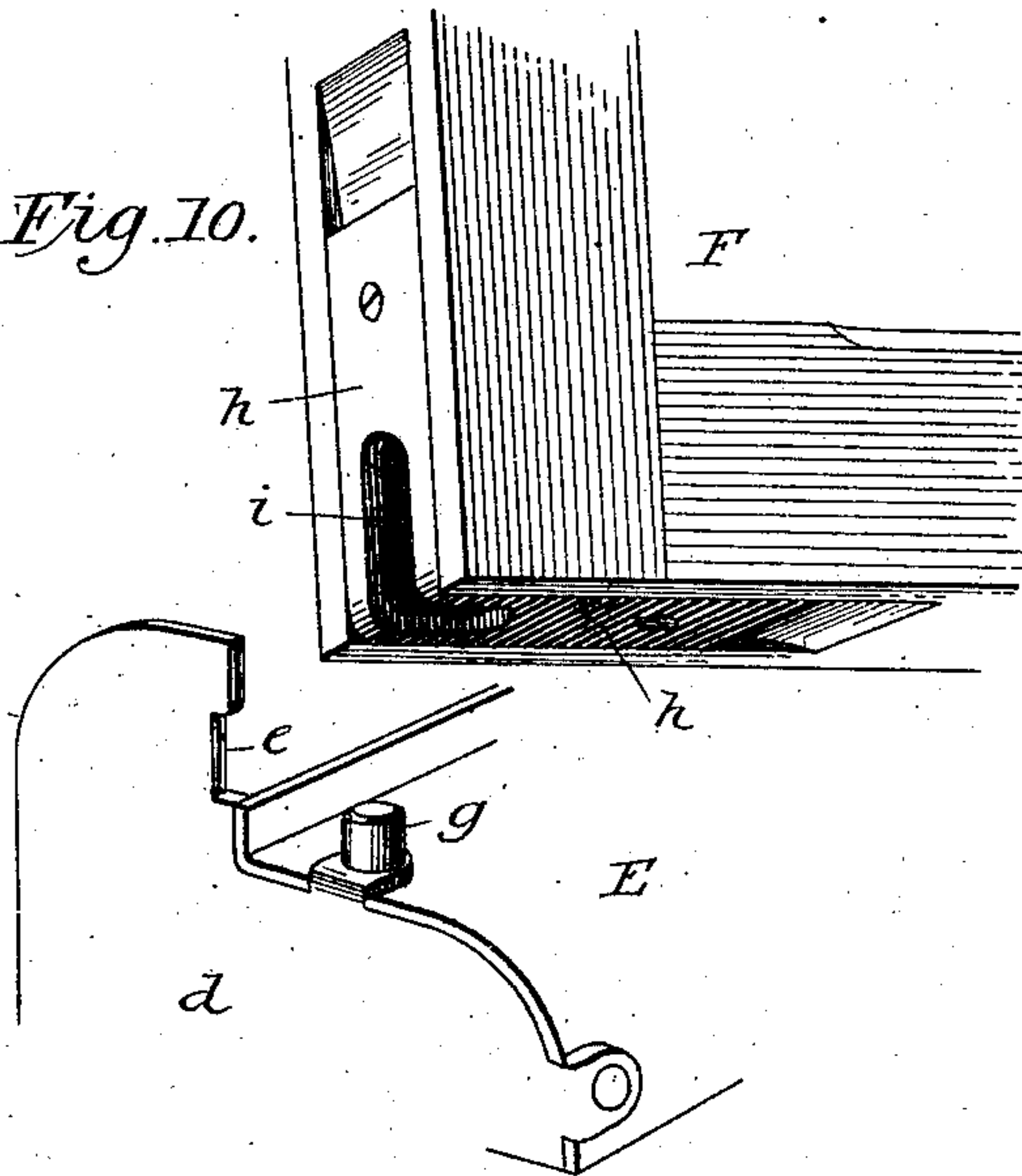
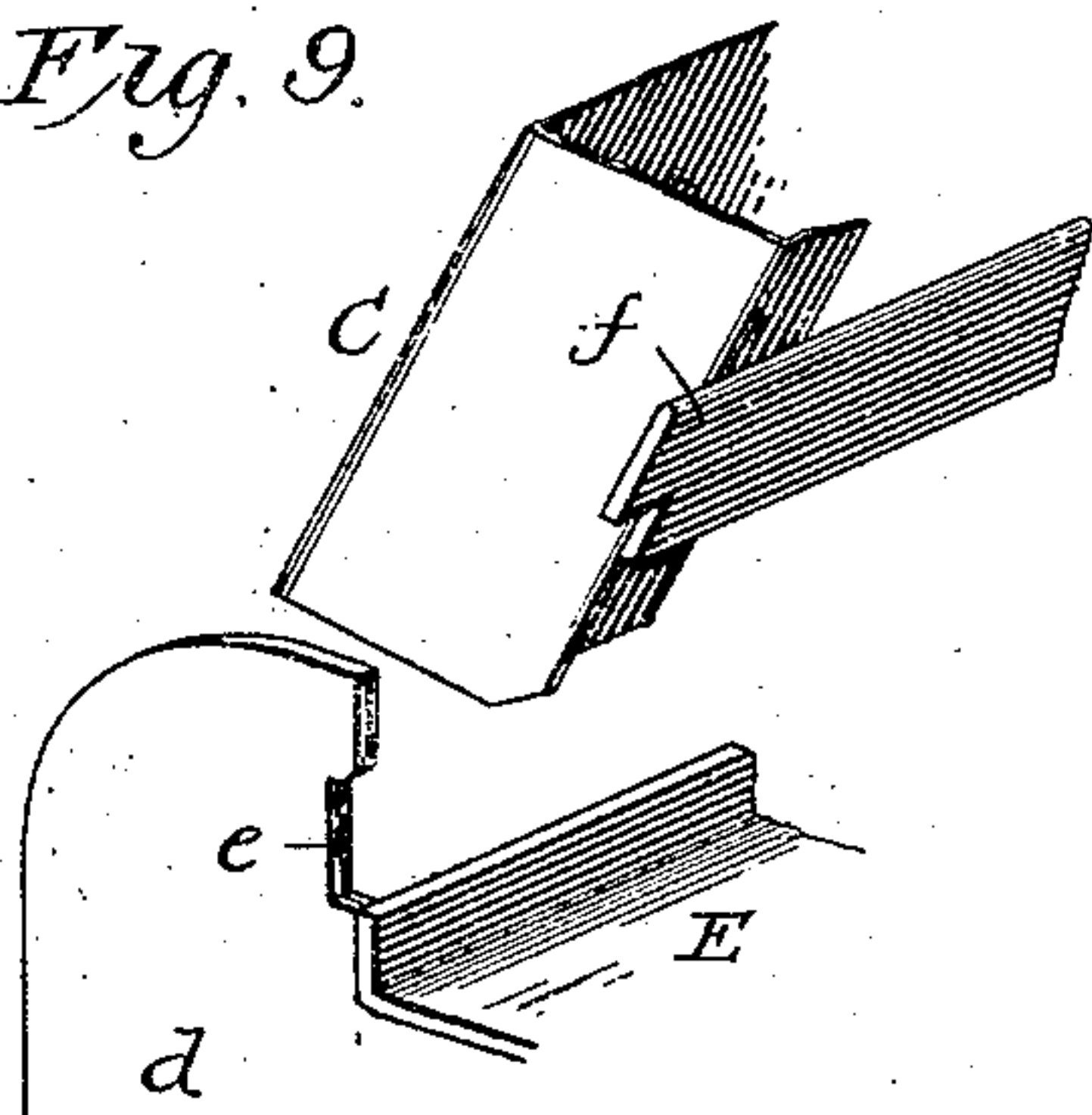


Fig. 9.



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# UNITED STATES PATENT OFFICE.

JOHN A. WILLIAMS, OF BROOKLYN, NEW YORK, ASSIGNOR TO UNITED STATES SLOT MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## VENDING APPARATUS.

No. 845,324.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed February 17, 1896. Serial No. 579,574.

*To all whom it may concern:*

Be it known that I, JOHN A. WILLIAMS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Vending Apparatus, of which the following is a specification.

This invention pertains to vending-machines, and is in the nature of an improvement upon that set forth in Letters Patent of the United States granted to me December 4, 1894, and numbered 530,148.

The present invention is designed to simplify and cheapen the construction of the machine, to give it greater strength, to facilitate the assembling and dismounting of its parts, and to guard against fraudulent or unauthorized abstraction of its contents.

Certain features here illustrated are, under requirement of the Patent Office, presented in separate applications to accord with its arbitrary sub-classification. The complete machine is shown and described, however, in order that the law may be complied with, that there may be shown a full operative machine capable of performing the functions in view, and that the description may be so full and complete as to enable those skilled in the art to practice the invention.

In the drawings I have represented a machine suitable for dispensing chocolate, gum, and other articles put up in small flat packages, and I have shown four compartments and slides, as the machines are commonly built with this number; but obviously I may use one or more at pleasure and adapt the mechanism to delivery of other articles or different packages.

Figure 1 is a front view of the lower portion of a vending-machine embodying my invention, the upper portion of the cabinet being omitted and the front board of the money-box being broken away to show the interior space; Fig. 2, a vertical section through the same with the parts in normal position; Fig. 3, a similar section on a larger scale, but with the parts in the position they assume when the machine is being operated; Figs. 4, 5, and 6, detail views of the coin-guide and cut-off, Figs. 4 and 6 showing also the magnet for stopping washers or disks of magnetic metal; Fig. 7, a top plan view of a slide, push-rod, and coin-holder; Fig. 8, a

perspective view of the same, with the push-rod detached to illustrate the manner of uniting parts; Fig. 9, a perspective view showing the method of holding the magazine in position, and Fig. 10 a perspective view showing how the upper door is attached to the case or mechanism.

In the practical use of machines made in accordance with my former patent above noted it has been found that while in the main their working has been highly satisfactory they were susceptible of being made somewhat simpler and stronger and more positive and certain in action, while in the matter of guarding against fraudulent manipulation there was also chance of improvement. The present invention is a result of these observations.

Under the improved construction the machine comprises a case or cabinet A, the side walls of which are provided in their inner faces with horizontal saw kerfs or grooves *a*, to receive lateral flanges *b*, formed upon the end plates of the metallic shell or body B of the operative mechanism. This shell is of construction similar to that shown and described in my prior patent above referred to, though in the present instance I have shown it of a width to contain four delivery devices side by side; but, as stated, I may make the shell to accommodate but one or to contain several such devices, as desired.

Shell B is formed of a sheet of metal bent to form a front and a back wall with an intervening bed or table *c*, having two different levels, upon the higher of which rests the magazine C, while the articles dispensed are delivered upon the lower level. This shell is provided with end plates D, which being riveted to the shell keep the front and rear walls thereof in proper position and relation, and which, as above mentioned, are provided with flanges *b* to enter the grooves *a* of the cabinet.

Rising above the upper level of the bed or table *c* are two supplemental end plates *d*, one at either end of the shell B, formed with forwardly-projecting arms to support a curved guard plate or shield B and provided in their forward edges above the inner edge of said shield with notches *e*. These notches are designed to receive the projecting ends of a cross-bar *f*, extending across the front of the magazine C a short distance above the



lower end of the latter and serving to hold the lower end of the magazine in place, the lower edge of the cross-bar *f* dropping in behind the rear edge of the shield or guard *E*, which thus prevents the magazine from moving in any direction after being once placed in position.

To insert the magazine, its top is inclined forward, so that its lower end and the lower edge of cross-bar *f* may pass behind the rear edge of guard *E*, as in Fig. 9, and when dropped to a point where the projecting ends of bar *f* rest upon the lower walls of the notches *e* the magazine is swung up to its proper vertical position against suitable stops or supports.

To prevent access being had to the magazine, a cover or protecting-front *F* is provided. To secure this front in position, I provide studs *g* upon the top of shield or guard *E*, and I mortise the lower corners of the front *F* (which is preferably in the form of a glazed sash or frame) and seat in the mortise angle-plates *h*, provided with slots or openings *i* to receive or to fit over the studs *g*. The plates serve also to give strength to the frame or sash *F* and to prevent its being broken open, except by the application of very considerable force. The upper end of the front or frame *F* enters between the walls of the cabinet and below the top board thereof and is secured in place by a lock of any suitable character. By simply unlocking the front it may be removed, thus permitting the magazine to be tipped forward or withdrawn for refilling, and then the parts may be quickly restored to place.

The shell *B* is prevented from being withdrawn from the cabinet by a removable front board or door *G*, one end of which is formed with a tenon *j* to enter a mortise in one of the side walls of the cabinet, as shown by dotted lines in Figs. 1 and 2, while the other end is furnished with a lock, the bolt of which shoots into a cavity or engages with a keeper secured to the opposite wall of the cabinet. The upper edge of the front board or door *G* rises above the lower edge of shell *B* and is provided with a groove or saw-kerf *k* to receive a flange *l*, formed upon the lower front edge of the shell *B*, as shown in Figs. 2 and 3.

The magazine *C* rests at its lower end upon the upper level of table *c* of the shell *B*, and beneath each compartment there is formed an opening *m* in said table extending from a point in front of the magazine to a point in rear thereof and of a measurement at right angles to that just given somewhat less than the distance between the partition-walls of the magazine *C*. By thus making the openings of less width or measurement than the magazine-compartments ledges are formed upon which the lowermost package or article may rest and by which the weight of the col-

umn will be supported, as explained in my former patent.

Extending through the shell *B*, parallel with its front and rear walls, is a horizontal shaft *H*, upon which are mounted ejector or delivery wheels *I*, of star form, as shown in Figs. 2 and 3. These wheels occupy the same position and perform the same function as the delivery-wheel of the aforesaid patent, but differ therefrom in that instead of being composed of two star-shaped disks connected by cylindrical cross-bars it is now formed with a continuous plate or strip of metal *n*, reaching from one star-shaped disk to the other and conforming thereto in outline, as clearly shown in Figs. 2 and 3. This modification of the wheel is rendered desirable by the fact that the cross-bars of the former wheels afforded a hold for hooked wires and like devices and enabled dishonest persons to operate the carriers occasionally without first depositing the proper coin.

Under the former construction the delivery-wheel or ejector carried a spring-pawl having a V-shaped nose or spur, which entering one or another of a series of notches in the shaft or axle about which the wheel turned served to hold the wheel against accidental rotation and to cause the latter part of its movement to be performed suddenly and with certainty. Owing, however, to the fact that the spring was necessarily of quite limited strength and that the pawl acted near the center of the wheel, the available force for holding the wheel or for completing its throw was not as great as deemed desirable. I have therefore substituted for the pawl a spring-pressed cam-plate *J* of the form shown in Figs. 2 and 3—one for each carrier or ejector-wheel. As shown in said figures the cam-plate has three bearing-faces *o*, *p*, and *q*, the first and last of which bear against opposing faces of two proximate arms of the wheel when the latter is at rest, as indicated in Fig. 2, thus holding the wheel quite strongly against rotation.

When power sufficient to turn the wheel is applied, the upper arm of the wheel leaves contact-face *q*, and the succeeding arm rides upward over face *o*, forcing back the cam-plate *J* until said arm passes the angle or meeting-point of faces *o* and *p*, whereupon the supporting-spring *K* of the cam-plate, placed under strain by the outward movement of the latter, suddenly forces the cam-plate inward and carries the wheel forward until said plate bears between the succeeding pair of arms of the wheel. This cam-plate, acting at the circumference of the wheel and being carried by a strong but elastic spring, gives a very reliable and efficient action.

It will be observed that when the wheel *I* is at rest one arm stands in front and another in rear of the lowermost package of the column in the magazine, and hence an ad-



vance of one space or the distance from one arm to another will cause the rear one of said arms to carry before it said bottom package or article, and to eject it through the opening  
5 left for the purpose in the lower part of the front wall of the magazine, whence it passes down beneath the guard to the lower level of the table.

To further prevent the wheel from being  
10 surreptitiously turned, I place in front of each delivery-opening of the magazine and beneath the shield or guard E a pendulous gate or guard L, which assists in excluding wires or other devices used to turn the de-  
15 livery-wheel or to withdraw packages.

To actuate the delivery-wheels, I employ for each a sliding bar M, provided with a push-rod N and with a lever O, having a nose or projection *r*, which when the lever is prop-  
20 erly rocked or tipped engages with the delivery-wheel and causes it to make a partial revolution in essentially the same manner as in my former machine. The sliding bars M are rounded off at their inner ends to facili-  
25 tate their entrance beneath a retaining and guiding bar or angle-plate *s*, secured to the rear wall of the shell and their passage through openings in said rear wall, through which they slide as the push rods or stems  
30 are pressed inward or returned.

The lever O of each sliding bar is preferably of the form shown in Figs. 2, 3, 7, and 8—that is to say, it is longitudinally folded to straddle the upper edge of the sliding bar  
35 M, to which it is pivoted, and is formed with an upwardly-projecting nose *r* and a depending arm *t* at the inner end and with an upwardly-inclined fork-shaped coin-holder *u* at the forward end.

To pivot the lever to the sliding bar, I employ a shouldered rivet *v*, the shoulder of which prevents the compression or drawing together of the two walls or leaves of the folded lever, and thus precludes binding of  
45 the lever upon the sliding bar, the body of the rivet being tightly driven into its hole in one of the walls. This is found of some considerable importance in practice, as it is essential that all parts work freely.

To limit the descent of the inner end of lever O, so that it shall not bind upon the upper edge of bar M, and to constitute a means of attaching a spring, I punch or cut from the body of the lever a tongue *w*, Fig. 7, bending  
55 the same at right angles, as indicated. To this spur is or may be attached one end of a coiled spring *x*, the other end of which is attached to the bar M, as shown in Fig. 7 and indicated by dotted lines in Fig. 3. To pre-  
60 vent the lever O from tipping too far upwardly at its rear end, a lug *t'* is cut out of the arm *t* and bent at right angles thereto, engaging against the under face of the sliding bar M when the rear end of said lever O is in its  
65 highest position.

To the lower end of arm *t* of lever O is attached one end of a long and elastic spiral spring P, the other end of which is made fast to a perforate tongue *y*, punched from the front wall of shell B and turned inward, as  
70 shown in Figs. 2 and 3. Any other convenient means of attachment may be adopted, through this is simple, cheap, and efficient. The spring P serves the double purpose of drawing and holding lever O down upon slide  
75 or bar M, or assisting to do so, and of drawing and holding said bar forward, its normal position being indicated in Fig. 2.

The coin-holder *u* at the forward end of lever O is formed integral with other parts of  
80 said lever and comprises a bifurcated plate with upturned edges or side walls *u'* and a grooved or channeled shank or neck *u''*. Each side wall *u'* is provided with a short inwardly-projecting stud *u'''*, the distance between the  
85 inner ends of which is such as to preclude the passage between them of the coin for which the machine is designed. Space is left beneath the studs or between them and the up-  
90 per face of the coin-holder sufficient to permit coins, tokens, or disks thinner than the proper coin to pass beneath them, but insufficient to permit the passage of one of proper  
95 thickness. So, too, coins and the like of proper thickness but of smaller diameter than the proper coin will pass between the studs.

The front wall of the shell B is provided with a slot or opening *z* for coins, in line with each coin-holder *u*, said slots being cut ob-  
100 liquely through the metal, as shown in Figs. 2 and 3, for purposes explained in my prior patent. Within the shell B and in alinement with each slot or opening *z* is a coin chute or  
105 guide consisting of inwardly-turned lips or flanges *b''*, formed upon the beveled walls of a box-like sheet-metal shell Q of the form shown in Figs. 2, 3, 4, 5, and 6. This consists  
110 of a horizontal lower plate or bed *b'*, side walls *b''*, provided at their upper edges with lateral flanges *b'''*, the side walls being beveled, as shown, and provided with intumed flanges  
115 *b''''*, which constitute the coin-chute proper, and with inwardly-pressed bosses *b'''''*, the lower faces of which are parallel with but separated somewhat from the flanges *b''''*, thus  
120 leaving a channel or passage-way for the coin between them, but preventing the entrance of the coin otherwise than at the angle of the slot and flanges.

The forward part of the bottom *b'* of the shell Q is bent upward to form a guard *b''*,  
125 Figs. 2, 3, 4, 5, and 6, to prevent wires or other implements being passed back through the shell, two small ears *b'''* being also cut from the bottom and turned upward, as  
130 shown in Fig. 3, to form abutments, over which the hooked or notched ends of a permanent magnet R engage, as shown. The magnet rests upon the bottom *b'* of shell Q



and abuts against the rear walls of the bosses  $b^5$ , so that it cannot move forward. A pin passing over the top of the magnet and through the walls  $b^2$  of the shell precludes its lifting up, and the ears  $b^7$  prevent its backward withdrawal, so that it is held firmly in place. The forward ends or poles of the magnet-arms under this arrangement form continuations of the upper walls of the coin-channel, and any magnetic disk or article introduced into the coin chute or channel will adhere to said poles.

The ears  $b^7$ , which are of brass or other non-magnetic material, not only serve to aid in holding the magnet in place, but they also serve, in conjunction with the arm  $d'$ , as a stripper for magnetic objects inserted in the machine. If, for instance, an iron washer or disk be inserted, it will be held by the magnet, and as the arm  $d'$  is pressed inwardly it will force the disk along off the ends of the magnet and onto the ears  $b^7$ , where the disk will drop off or be forced against a stud  $S'$  and ride off. Non-magnetic material is necessary to this action of the ears  $b^7$ .

$S$  indicates a stud, preferably made of iron or steel, projecting downward from the bottom  $b'$  of shell  $Q$  near the forward end of the latter and in such position as to engage any coin, token, or disk held by the coin-holder as the latter moves inward.

To preclude the insertion of a coin when the slide and coin-holder are moved inward, I provide a gravitating gate or cut-off  $T$ , which is hinged or pivoted in the forward ends of the side walls of shell  $Q$ , as shown in Figs. 2, 3, 4, 5, and 6, and I provide the sliding bar  $M$  with an upright arm  $d'$ , which as the slide moves inward rides beneath the rear end of said gate or cut-off, thereby elevating it and depressing the front end, causing the latter to swing across the coin-slot and to close it, as in Fig. 3. The arm  $d'$  also serves the further purpose of carrying from the magnet-poles anything that may adhere to them; but the relative positions of the coin-holder and the arm  $d'$  are such that the coin-holder will move out of the way of the detached article and permit it to drop into the coin-receptacle.

In Figs. 3, 7, and 8 I have illustrated a simple and preferred way of connecting the sliding bar  $M$ , push-rod  $N$ , and arm  $d'$ . As shown, bar  $M$  is provided with tenons  $e'$  to enter mortises in the body of plate or arm  $d'$ . It is also provided with an opening to receive the inner end of rod  $N$ , which latter is slotted to straddle bar  $M$  and is passed through an opening in plate or arm  $d'$ . When the parts are duly assembled, as in Figs. 2, 3, and 7, two pins or rivets are passed through the rod and the bar, one of which passes also through ears of plate  $d'$ , as in Figs. 2 and 7, thus binding all together.

The manner of introducing the sliding bars

$M$  is indicated by dotted lines in Fig. 3. Being too long to enter directly, they are started at an angle and afterward raised to proper level, as shown. It will be noted that the cam-plate  $J$  enters the shell  $B$  through an opening in the rear wall of the latter and that its upper extremity projects through an opening in the top of said shell, the end of which opening limits the rearward movement of the cam-plate. Sliding rod  $M$  is provided with a stop to limit its movement and prevent straining of spring  $P$ .

The operation of the apparatus is as follows: If a proper coin be passed through the coin-slot, it will glide down the flanges of ways  $b^4$  and into the coin-holder  $u$ , descending therein until its edges are arrested by the studs. The push-rod  $N$  is then pressed inward, and the coin coming into contact with stud  $S$  causes lever  $O$  to rock upon its pivot, thus throwing its inner end upward and causing its nose  $r$  to engage with an arm of wheel  $I$  and to partially rotate said wheel. As the coin-holder moves beneath the stud  $S$  the support of the coin passes beyond the stud, which consequently rocks the coin upon the edge of the holder and effects its discharge therefrom. Before this occurs, however, the arm of wheel  $I$ , which at the outset bore against face  $o$  of cam-plate  $J$ , rides off said face and passes the angle or meeting-point of faces  $o$  and  $p$ , whereupon the cam throws the wheel quickly forward, ejecting the lowermost package or article quickly and certainly. If a magnetic disk instead of a coin be inserted, it is first caught by the poles of the magnet and later swept therefrom into the coin-receptacle, and the same is true of a magnetic washer. If a washer of non-magnetic material and of due thickness be introduced, it will be withdrawn from the coin-holder by the stud  $S$ , which enters its central opening, and consequently presents no bearing-surface between the end of said stud and the end of lever  $u$ . Disks or washers thinner than the proper coin and not magnetic will pass beneath the studs  $u^3$  and fall into the coin-receptacle without causing the engagement of the actuating-slide and ejecting-wheel. Disks of lead, paper, glass, and other materials not possessing the necessary stiffness and strength will be bent, broken, or indented by the stud  $S$  and drawn out of the holder, so that it will be impracticable to operate the device without using a proper coin or a metal disk of practically equal or greater intrinsic value, as brass, copper, or the like.

Upon reference to Figs. 2, 5, and 6 it will be seen that the box or shell  $Q$  is provided on its under face  $b'$  at its rear end with an arm or clearer  $S'$ , extending downwardly therefrom, its front face being beveled, as shown in Fig. 6. The toe or point of the beveled portion extends beneath a rounded or upwardly-extending recess  $b^8$ , formed in the



shell Q. This recess provides a greater clearance-space for the coin when tipped than would be the case were the under face extended straight across. The toe and beveled face of arm S' clear the fork *u* as it is pushed rearwardly of any paper which may be inserted therein, which is oftentimes done. When paper is inserted in the machine, it tends to elevate the rear end of the gate T, and consequently close the slot *z*, and to provide for its withdrawal said gate is formed with a recess T' to permit the insertion of a wire or rod by which it can be picked out. The arm *d'* passes between the poles of the magnet every time the machine is operated and acts when in such position as a keeper for the magnet. This feature of the machine is of the greatest importance, for, as is well known, if a magnet is left without its keeper it will soon lose its magnetic action. The bar M and the arm *d'* are of course formed of magnetic material.

In Fig. 3 I have shown in dotted lines a construction of the delivery-wheel I made up in sections, the different sections being riveted together to form the wheel.

It is obvious that details may be varied more or less within the scope of my invention, as by using castings or forgings for parts here described, as of sheet metal bent to shape, or by proportioning the ejector-wheel to handle articles of a different character, form, or size, by making the same solid, or by connecting the slide and push-rod in a different manner, &c. I do not, therefore, mean to limit myself strictly to details herein shown and described.

The construction of the cabinet or casing of the vending-machine illustrated in Figs. 1, 2, 9, and 10 is not specifically claimed in this application, but is made the subject-matter of a divisional application, Serial No. 136,695, filed in my name on the 26th day of December, 1902. So, too, the fraud-preventing devices illustrated more particularly in Figs. 3 to 8, inclusive, are made the subject-matter of a divisional application, also filed on the 26th day of December, 1902, Serial No. 136,696.

Having thus described my invention, what I claim is—

1. In combination with a delivery-wheel, an actuating-slide therefor; and a lever carried by said slide for engaging the wheel, and comprising in one piece a main body, a nose *r*, a depending arm *t* below said nose, and a tongue *w*, projecting laterally over the actuating-slide, all at one end of said lever, and a coin-holder *u* at the opposite end thereof.

2. In a vending-machine, the combination of a delivery device, a slide or bar for actuat-

ing the same, and a lever carried by said bar to engage the delivery device and provided with a coin-holder comprising a bifurcated plate having raised side walls or edges and inwardly-projecting studs, substantially as shown and described.

3. In a vending-machine of the character described, a coin-holder comprising a bifurcated plate *u* having upturned edges *u'*, a grooved or channeled shank *u''* and inwardly-projecting studs *u'''*.

4. In a vending-machine, the combination of a shell or casing provided with a coin slot or opening; a coin-holder within said casing; and an intermediate shell or casing provided with flanges to support the edges of the coin while the latter is sliding on its flat side from the coin-slot to the coin-holder, and provided further with inwardly-projecting bosses above said flanges to prevent the coin from rising from said flanges.

5. In a vending-machine, a coin chute or guide consisting of walls *b''* provided with flanges or inclined guides *b'''*, and bosses *b''''*, substantially as shown.

6. In combination with the wall of a vending-machine, provided with a coin-slot; a guard pivoted in rear of said slot and adapted to swing away therefrom; a delivery device; and an operating-slide therefor, provided with an arm which, as the slide moves inward, rides beneath and positively lifts the rear end of the pivoted guard and moves its front end across the coin-slot.

7. In combination with the coin-slot and the actuating-slide of a vending-machine, a gate or guard adapted to move away from the coin-slot when the slide is moved to its normal position; and an arm carried by the actuating-slide, adapted to ride beneath the gate or guard and to directly and positively move and hold the same across the coin-slot as the actuating-slide moves from its normal position.

8. In combination with a shell or casing having a coin-slot, a slide having an arm *d'* and a pivoted guard or cut-off T located in rear of the slot and in the path of the arm *d'*, substantially as and for the purpose set forth.

9. In combination with shell or casing B, provided with a coin-slot, shell Q, provided with flanges *b''*, bosses *b'''* and guard *b''''*, all formed in one piece, substantially as set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOHN A. WILLIAMS.

Witnesses:

HORACE A. DODGE,  
C. C. BURDINE.