

No. 606,802.

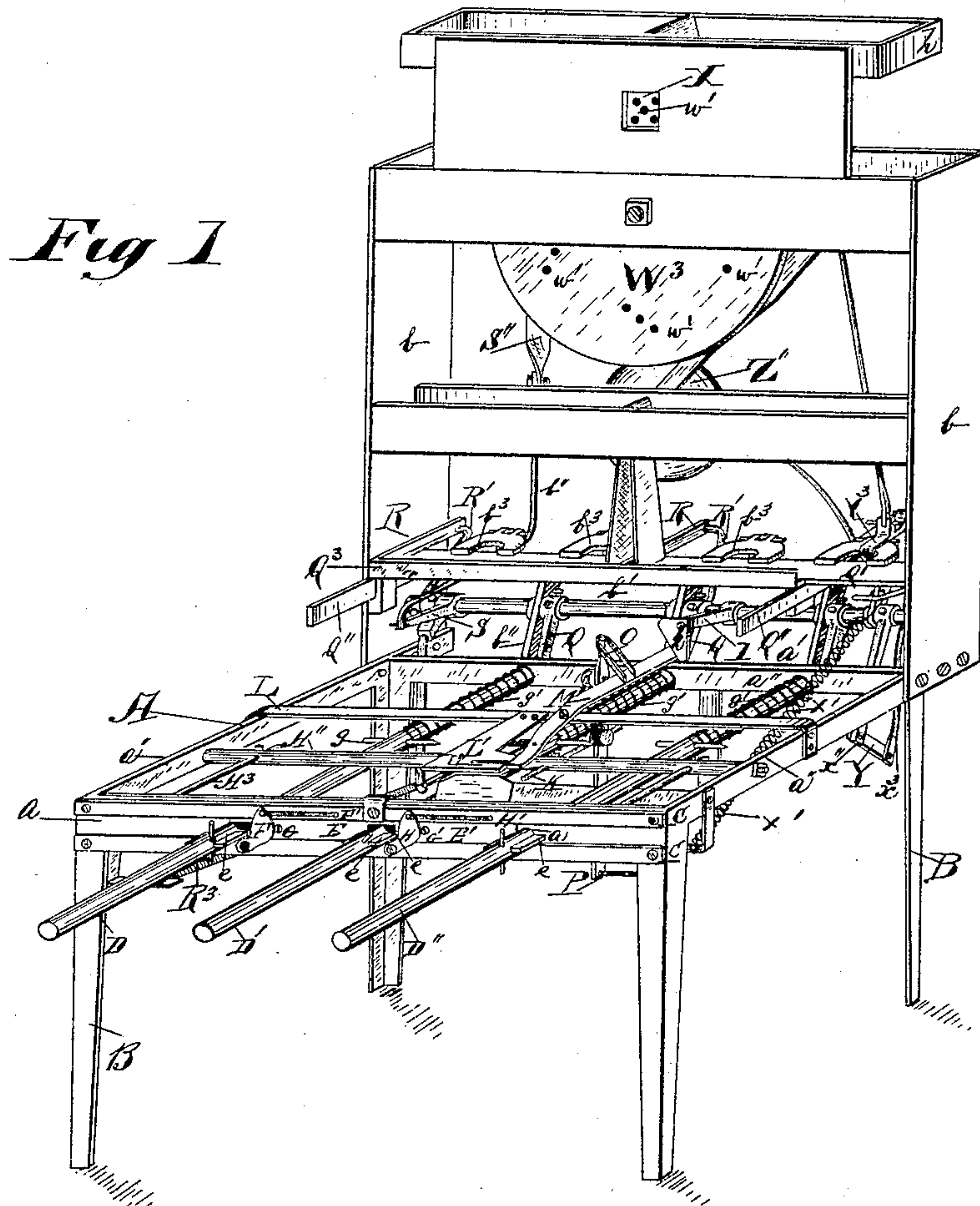
Patented July 5, 1898.

G. A. CLINE.
AUTOMATIC VENDING MACHINE.

(No Model.)

(Application filed Jan. 5, 1897.)

5 Sheets—Sheet 1.



Witnesses.

Wm. Sydney
M. G. Westwood

Inventor
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his Attorney

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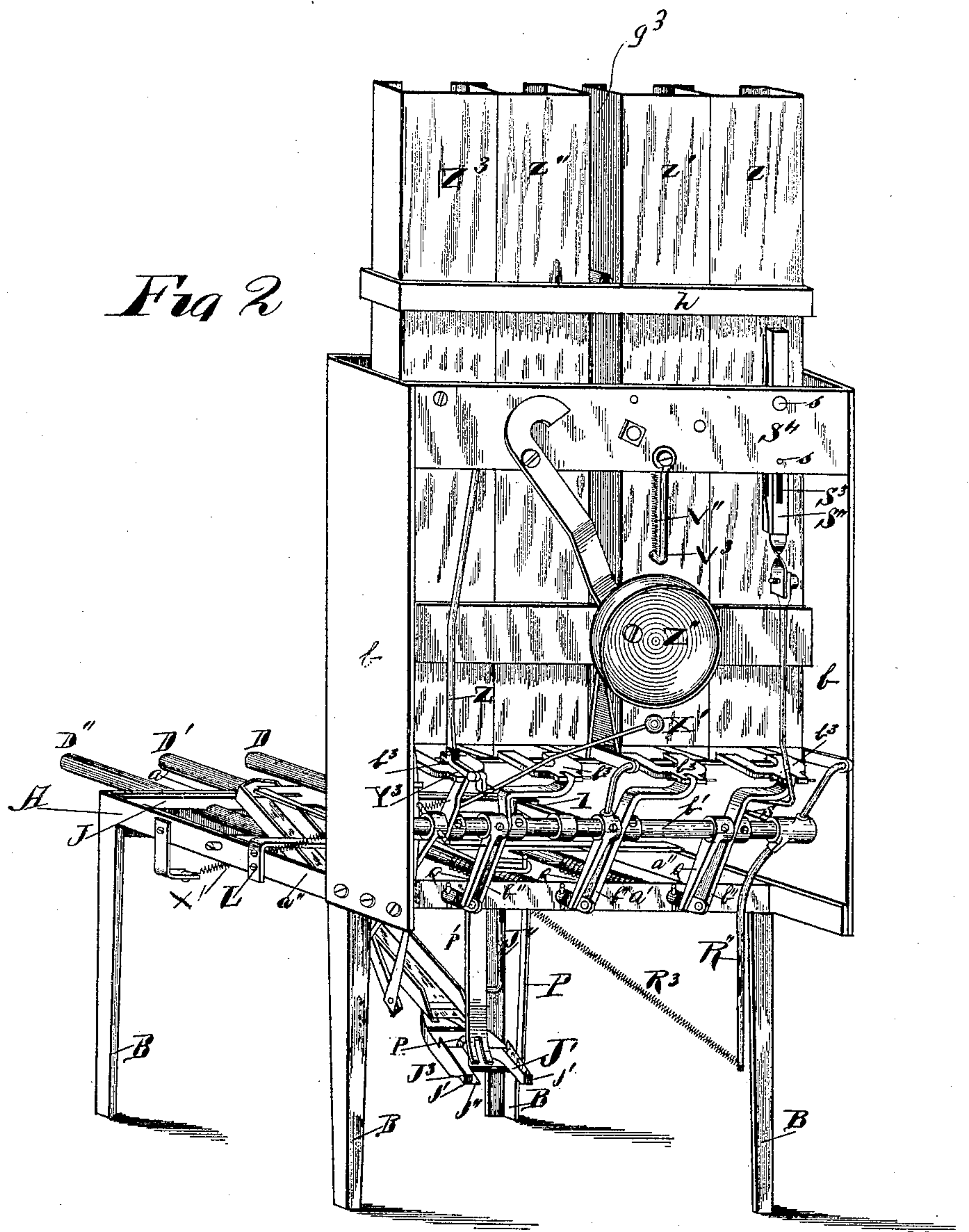
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5 Sheets—Sheet 2.



Witnesses.

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5 Sheets—Sheet 3.

Fig 3

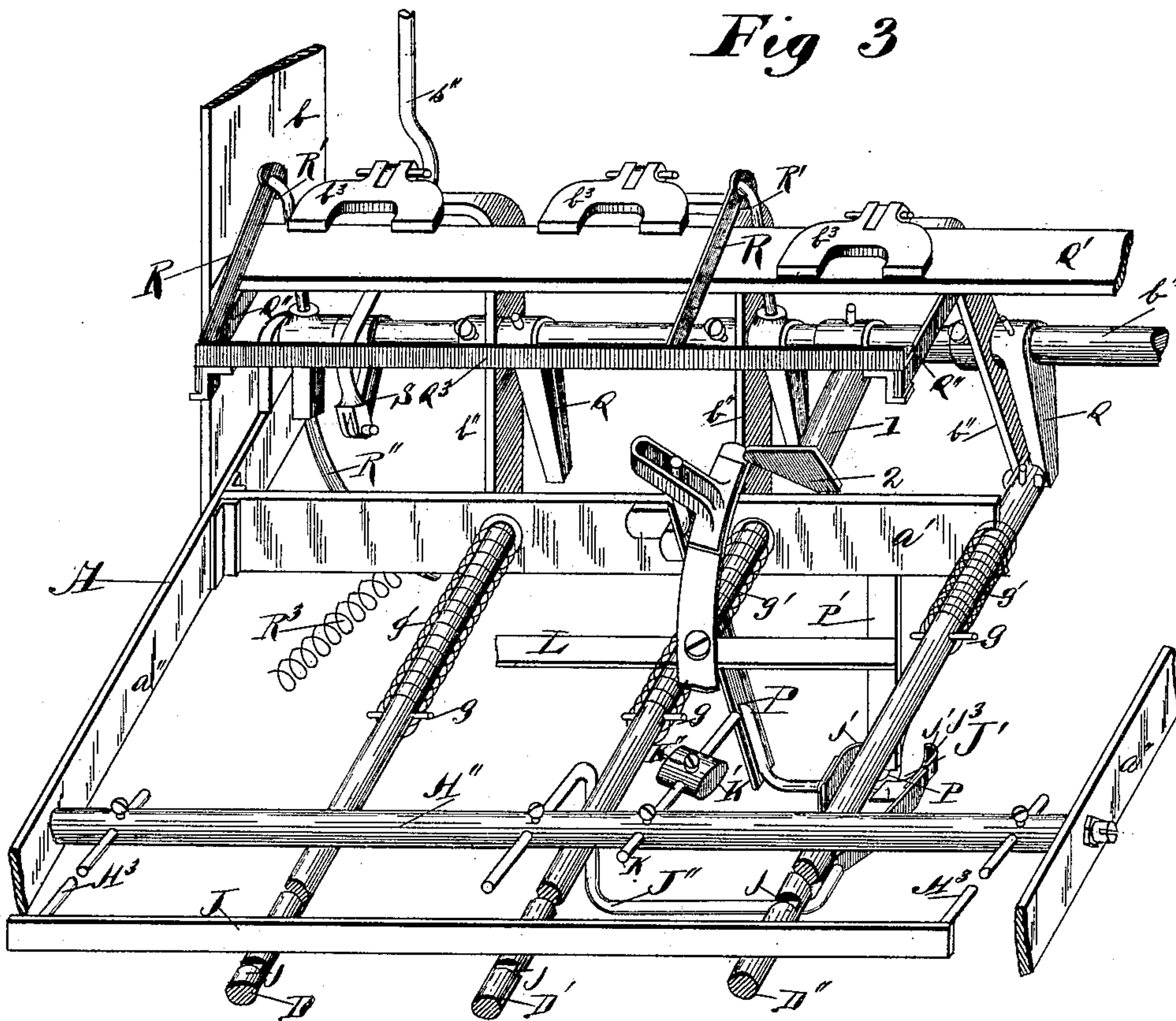
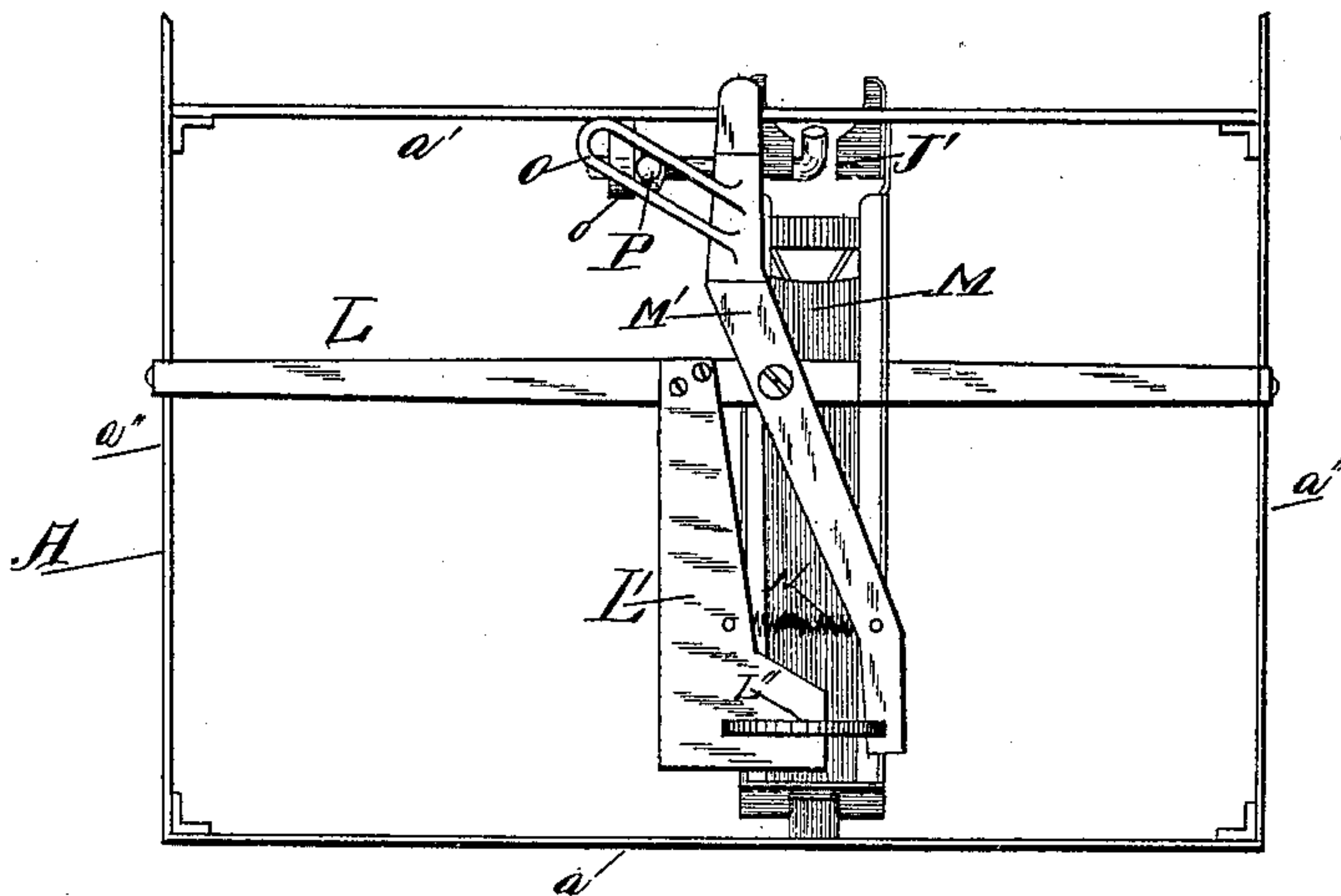


Fig 4



Witnesses

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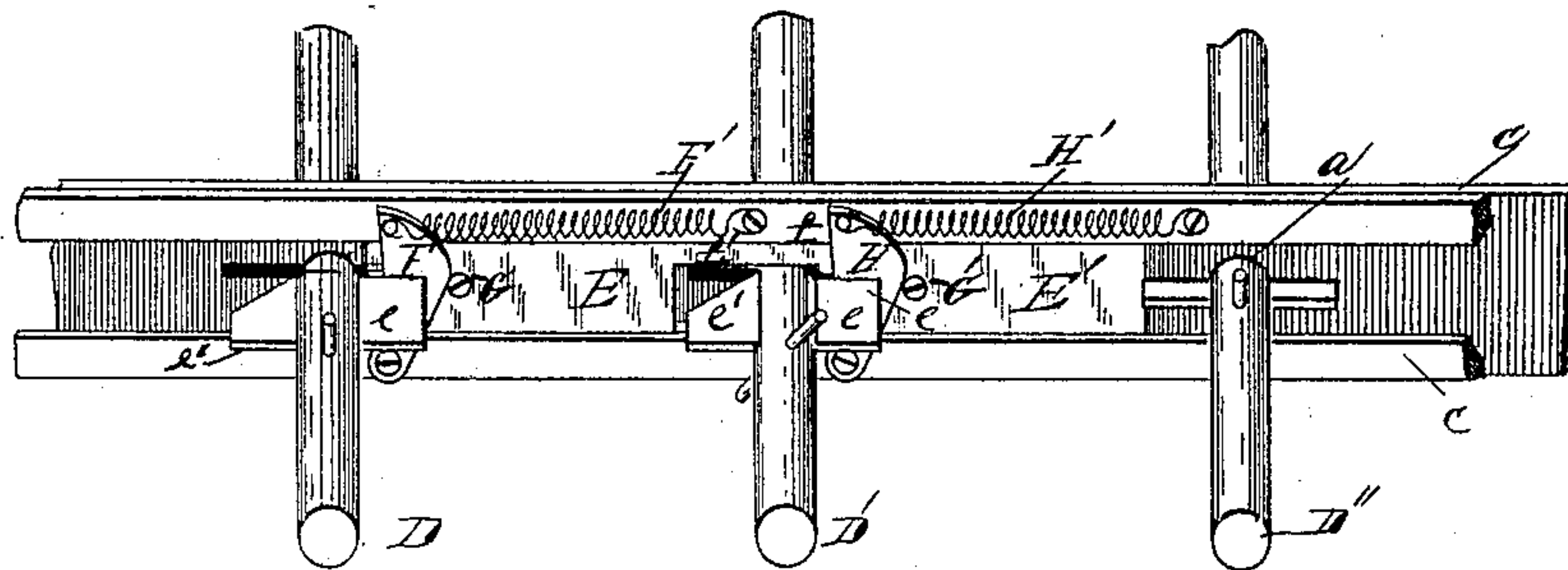
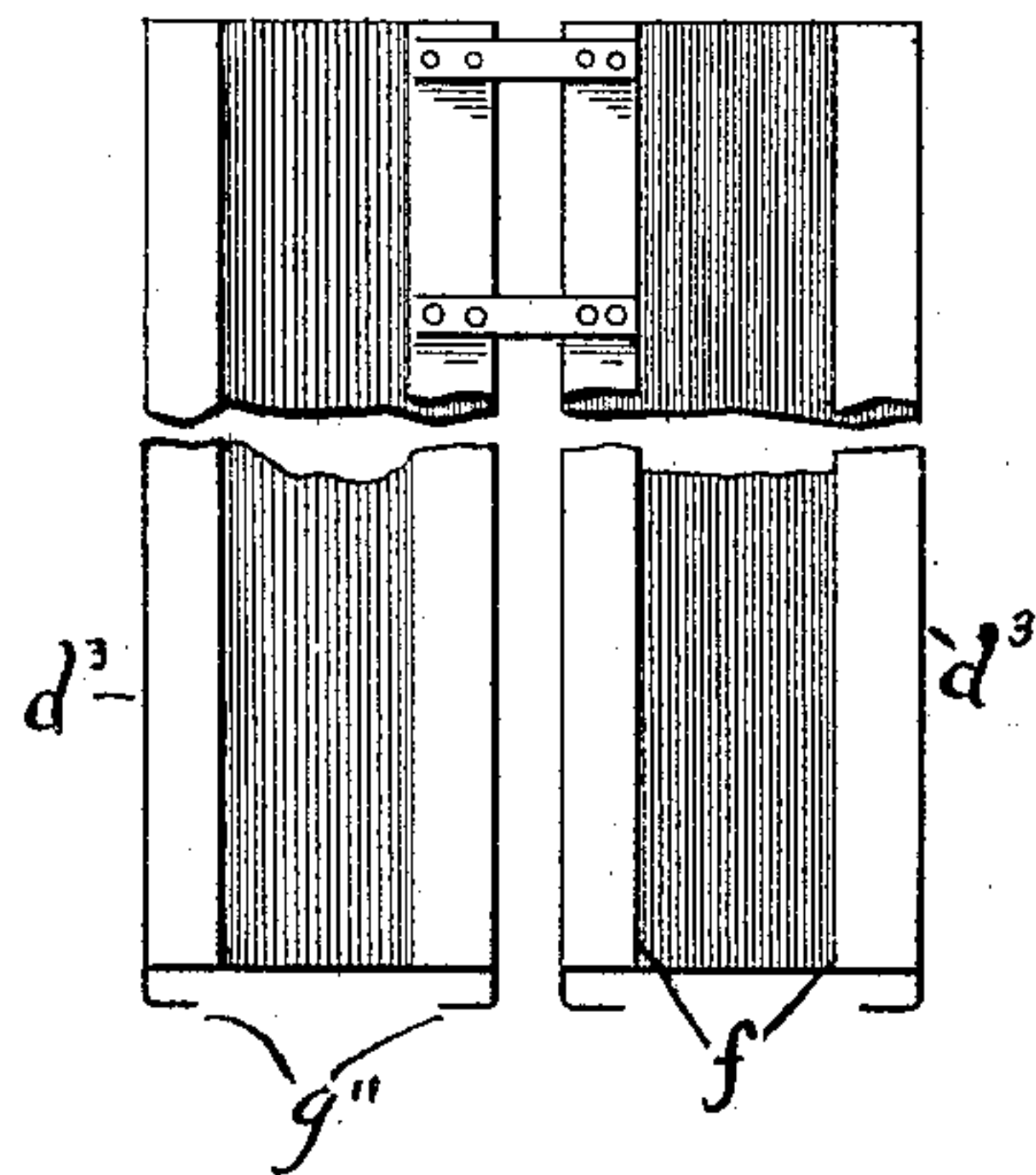
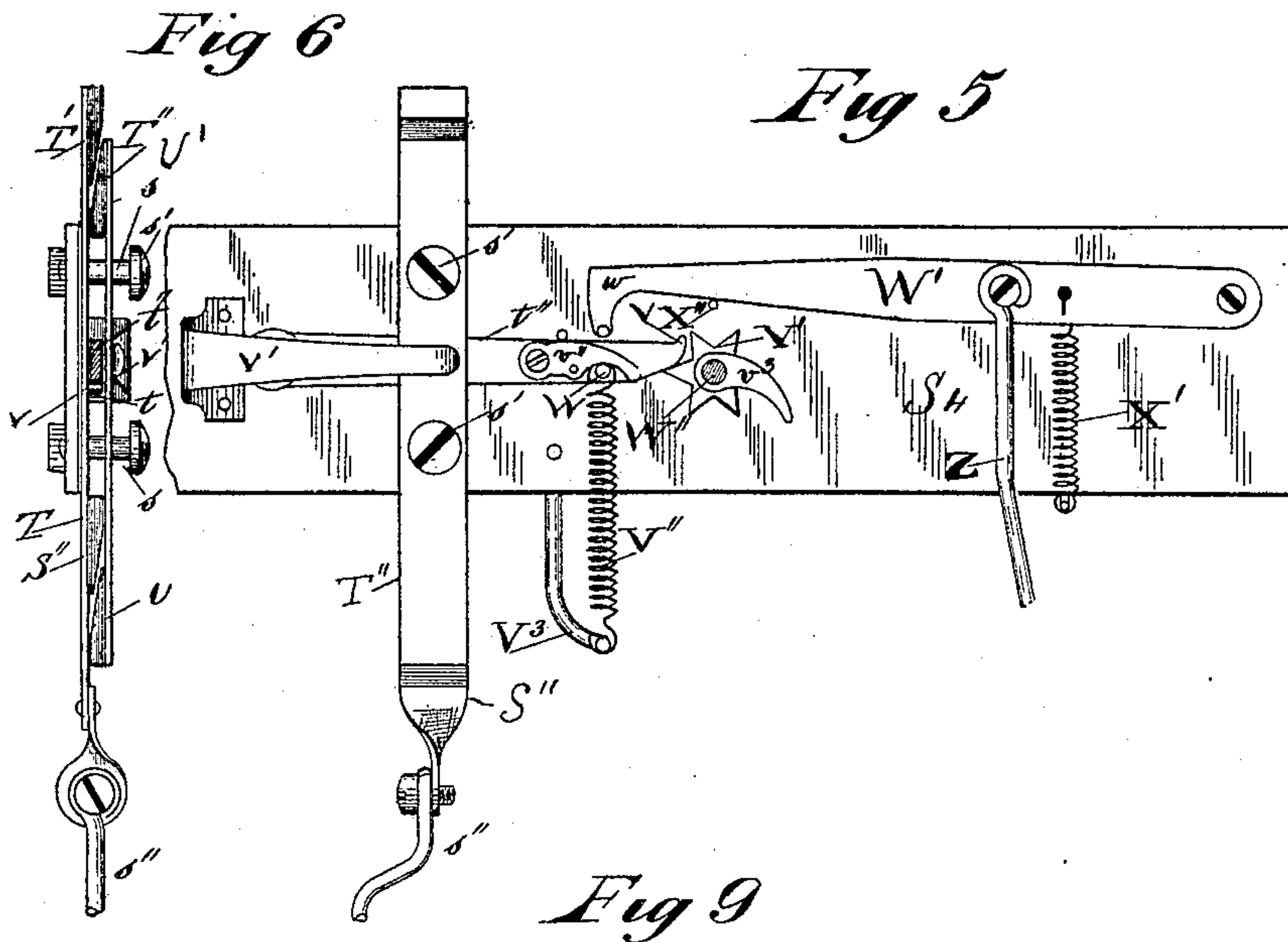
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5 Sheets—Sheet 4.



Witnesses.

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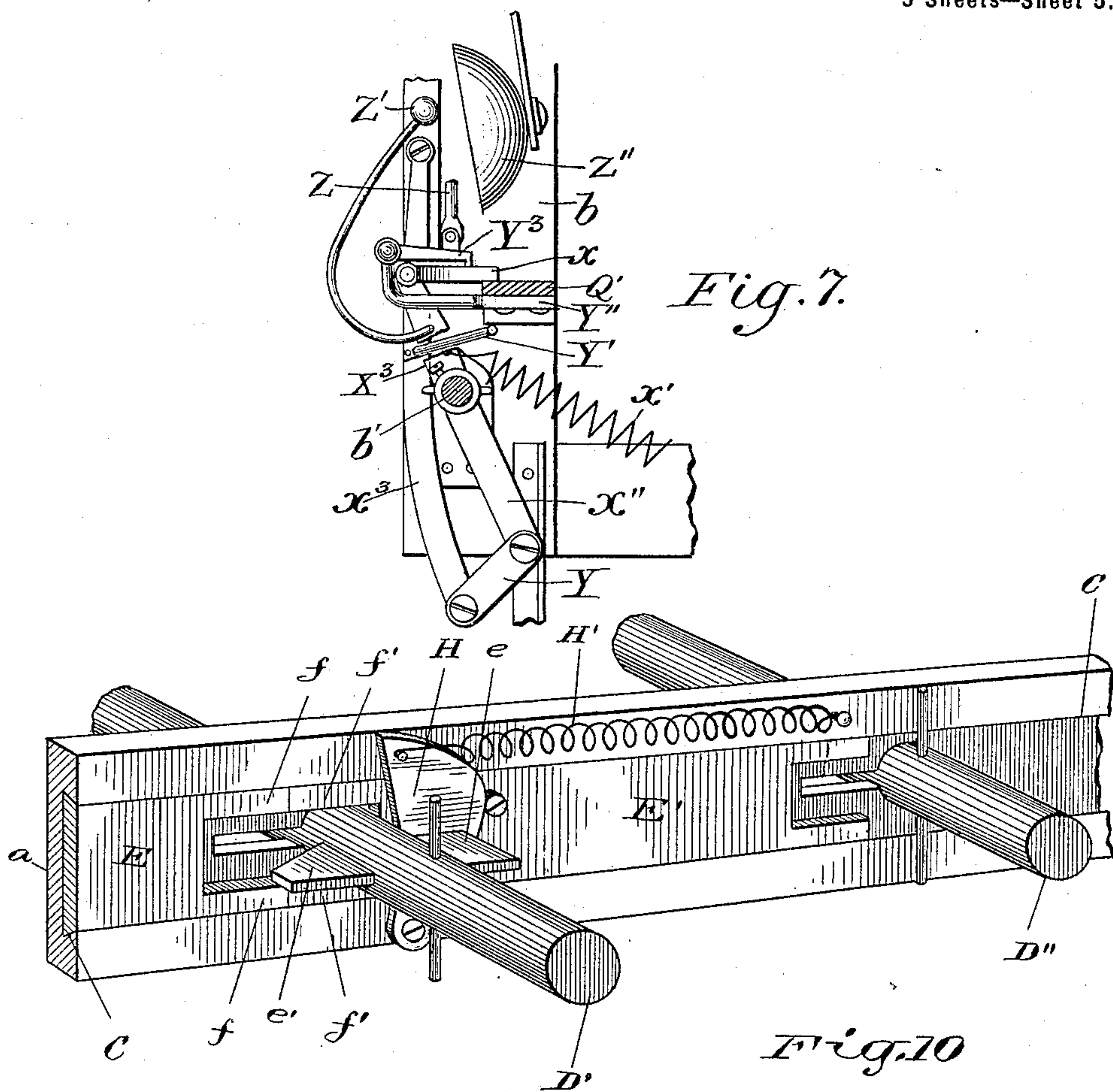
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(Application filed Jan. 5, 1897.)

(No Model.)

5 Sheets—Sheet 5.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE A. CLINE, OF TORONTO, CANADA.

AUTOMATIC VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 606,802, dated July 5, 1898.

Application filed January 5, 1897. Serial No. 618,097. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ADOLPHUS CLINE, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Vending-Machines; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to an automatic vending-machine having a plurality of magazines, the goods from each magazine being discharged by a delivery mechanism primarily operated by a push-rod or plunger, the push-rods or plungers corresponding in number with the number of the magazines, except where a prize-package magazine has been added to the machine; and the objects of the invention are to provide the machine with a single coin-receiving slot and chute and a weighing apparatus to receive and weigh each operating coin or substance inserted into the machine and capable of being set to operate the plunger-releasing mechanism only on the insertion of a coin of the exact size and weight of the coin which is required to operate the machine, to provide the plungers with a locking mechanism which will permit of the operation of only one push-rod or plunger at a single operation of the machine, to provide the coin-receiving slot with a lever which will on each insertion of a coin or other substance through the coin-receiving slot cause the discharge into the coin-magazine of all coins or other substances deposited in the weighing apparatus through the coin-receiving slot, to provide each plunger with a delivery mechanism to cause the delivery of one package on each complete operation of the machine from its respective magazine, to provide the machine with a revoluble disk and mechanism operated by the stoppage of the revoluble disk in a predetermined position, to deliver a package from the prize-package magazine, to arrange the delivery mechanism of the prize-package magazine with a gong-sounding apparatus, and to so construct the magazines that they can be removed from the machine for charging purposes, the whole device being hereinafter more fully set forth, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the front of the operating mechanism

with the magazines omitted. Fig. 2 is a view of the rear of the operating mechanism. Fig. 3 is a perspective view of the primary delivery mechanism and coin-testing apparatus. Fig. 4 is a plan view of the coin-testing apparatus. Fig. 5 is a front elevation of the mechanism for spinning the revoluble disk and operating the prize-delivering mechanism. Fig. 6 is a side elevation of the mechanism for spinning the revoluble disk. Fig. 7 is a side elevation of the secondary delivery mechanism. Fig. 8 is a perspective view of the locking mechanism employed to prevent the simultaneous operation of more than one plunger. Fig. 9 is a perspective view of a section of two magazines. Fig. 10 is an enlarged detail view of one of the plungers and its corresponding locking slide-sections.

Like letters and numerals of reference refer to like parts throughout the specification and drawings.

A represents the lower frame. This frame A consists of a front *a*, a back *a'*, and two sides *a'' a''*, connecting together the ends of the front *a* and back *a'*. The sides *a'' a''* project beyond the back *a'* for the purpose of receiving the supports for part of the operating mechanism. The frame A is supported on four legs or uprights B of a sufficient length to keep the lower part of the operating mechanism entirely free from contact with the base of the machine.

C C represent two dovetailed guides connected to the front side of the front *a* and extending from end to end thereof.

D D' D'' represent the push-rods or plungers. Each of these plungers moves through holes *d d'*, formed horizontally opposite each other in the front *a* and back *a'*, respectively. The holes *d d'* correspond in size and shape with the size and shape of the push-rods or plungers in order that no side play will be permitted on the part of the plunger. For certain purposes hereinafter mentioned I provide one side of the push-rod with a lug or projection *e*, which forms a shoulder, behind which the latch and locking-slide are adapted to move contiguous to the outer side of the front *a*, while I provide the other side of the push-rod with a cam *e'*, the lesser width of the cam being contiguous to the outer side of the front *a* and the greater width of the

cam being remote from the outer side of the front.

E E' represent two locking-slides working in the dovetailed guides C C. The locking-slide E is located between the push-rods D D', while the locking-slide E' is located between the push-rods D' D''. One end of the locking-slide E normally rests against the narrow part of the cam *e'* in the push-rod D', while the opposite end of the slide E is slightly remote from the adjacent side of the push-rod D.

Pivoted to the outer side of the front *a* is the lower end of a latch F, the face of which is close to the lug *e*.

F' represents a spring connected to the upper end of the latch F and to the front *a* between the push-rods D D'.

G represents a pin fitted to the locking-slide E against the back of the latch F. By pressing inward the push-rod D' the cam *e'* pushes the locking-slide E toward the push-rod D. The locking-slide E instantly presses the latch F behind the lug *e* and holds it in that position until the return of the push-rod D' to its normal position. When the push-rod D' has returned to its normal position, the spring F' withdraws the latch F from behind the lug *e* and simultaneously returns the locking-slide into engagement with the cam *e'*. The locking-slide E' is provided with a latch II, a return-spring II', and pin G'.

Each of the locking-slides rests normally against the cam side of the adjacent plunger to its right, while the latches carried by the locking-slides are each arranged to pass behind the respective lugs of the plungers to the left of the operated push-rod in order that when one push-rod is operated the latches of the slides to the left of the operated push-rod will quickly pass behind their respective lugs, while the locking-slides to the right of the operated push-rod will remain engaged with their respective cams, thus effectually locking the remaining push-rods in their normal positions until the return of the operated push-rod to its normal position. In the event of an attempt being made to simultaneously operate two or more push-rods the locking-slides to the right of the dextermost of the operated push-rods will be caused to bind against the cam sides of their respective plungers, while the latches of the locking-slides to the left of the dextermost operated push-rod will pass behind their respective lugs, effectually locking the plungers in their normal position.

The locking-slides E are provided with rearwardly-extending arms *f f*, one located above and the other below the push-rod D', while the locking-slide E' is provided with two forwardly-extending arms *f' f'*, one located above and the other below the said push-rod D'. The ends of the arms *f f* and *f' f'* abut against each other in order that the slides when operated by the push-rod D'' will move unitedly. The push-rod D when operated

does not cause the movement of either of the locking-slides E or E'.

To explain the operation of the locking-slides, we will assume that the push-rod D'' has been operated. The operation of this push-rod D'' causes the cam *e'* to move the locking-slide E' toward the push-rod D' and causes the latch II to pass behind the lug *e* of the said push-rod, and simultaneously causes the movement of the locking-slide E toward the push-rod D and the latch F to pass behind the lug *e* in the said push-rod. The latches behind the lugs of the push-rods D D' lock the said push-rods and prevent their operation until the return movement of the push-rod D'' has been completed, when the locking-slides automatically return to their normal position. To explain the second movement of the locking-slides, we will assume that the push-rod D has been operated. The operation of this push-rod prevents the entry of the latch F behind its lug *e*, and thus prevents the movement of the locking-slides E E', causing the locking-slides to remain in engagement with the cams *e' e'* of their respective push-rods and by this means preventing their operation. By operating the push-rod D' the locking-slide E is moved toward the push-rod D and the latch F is pressed behind the lug *e* of the said push-rod. The operation of the push-rod D' prevents any sliding movement on the part of the locking-slide E', causing the said locking-slide to remain in engagement with the cam *e'* of the push-rod D''.

Passing through each of the push-rods, between the front *a* and back *a'*, is a pin *g*, and coiled on each of the push-rods, between the pin *g* and the inner side of the back *a'*, is a spring *g'* to assist in returning the push-rods to their normal position after having been operated. Journaled in the sides *a'' a''* of the frame A is a rock-shaft II'', and extending forwardly from each end of the rock-shaft II'' is an arm II³. Connected to the front end of the arm II³ is a locking-bar J. The top of each of the push-rods, on the inner side of the front *a*, is provided with a groove *j*, into which is adapted to enter the locking-bar J, which normally rests in the groove *j*.

J' represents a scale-pan connected to the rock-shaft II'' by a depending arm J''. The scale-pan J' consists of a piece of forked spring metal, each fork *j'* having an inwardly-extending flange *j''* to support the operating-coin or other substance inserted through the coin-receiving slot. Each forked end *j'* is also provided with a small inwardly-extending vertical flange J³ to hold the operating-coin. All coins or other substances of a less diameter than the width of the space between the flanges J³ will pass between the said flanges into the coin-magazine.

K represents an arm extending horizontally from the rock-shaft II''. Mounted on the arm K is a balance K', fitted with a set-screw K'' for the purpose of holding the balance in any

set position. The balance can be moved on the arm K'' , so that the weight required to upset the locking-bar J can be regulated to the infinitesimal part of an ounce. Assume, for example, that the weight of a new one-cent piece is required to operate the machine. The balance K' is set so that the weight of the once-cent piece in the scale-pan will raise the locking-bar J out of the grooves j and permit of the operation of any one of the push-rods. If the weight of the coin or other substance in the scale-pan is less than the weight of the one-cent piece, it will fail to raise the locking-bar out of the said grooves, and consequently the push-rods will remain locked.

L represents a bracket connected to the sides $a'' a''$ between the rock-shaft H'' and the back a' . Projecting forwardly from the bracket L is a plate L' . Formed inwardly from one edge of the plate L' is a slot L'' , the length of which is less than the diameter of the operating-coin.

M represents the coin-chute, the upper end of which is located directly below the slot L'' and the lower end of which discharges into the scale-pan J' . The slot L'' is directly below a corresponding slot in the case of the vending-machine, the length of slot being preferably the same as the diameter of the operating-coin.

M' represents a lever pivoted at its middle to the bracket L in close proximity to the plate L' . Connected to the lever M' and to the plate L' is a spring N , which holds the front end of the lever M' close against the adjacent side of the plate L' and across the slot L'' in order that the entry of the operating-coin or any other substance through the slot L'' into the machine will move the adjacent end of the lever M' outward from the plate L' and move the opposite end of the lever M' in the opposite direction.

O represents a slotted cam connected to the rear end of the lever M' . Projecting inwardly from the inner side of the back a' is a lug o , and pivoted to the lug o is the upper end of the coin-discharging lever P . The top of the coin-discharging lever P works in the slotted cam O , so that the movement of the lever M' will cause a simultaneous movement on the part of the lever P . The lower end of the lever P extends below the scale-pan J' and projects upwardly through the same. The normal position of the upwardly-turned end p of the lever P is at the front of the place where the operating-coin will lie when deposited in the scale-pan J' . Connected to the back a' , opposite the scale-pan J' , is a depending arm p' , the lower end of which is forked to permit of the operation of the lever P . The purpose of the depending arm p' is to arrest the coin as it is discharged from the coin-chute M and direct it into the pan J' .

The operation of this part of the invention is as follows: The coin or other substance intended to operate the machine is inserted through the slot L'' . It descends through the

coin-chute M , and is directed by the depending arm p' into the scale-pan J' . If the coin is of the requisite weight to operate the machine and of sufficient size to be retained by the scale-pan, it will weigh down the pan J' and turn the rock-shaft H'' to raise the locking-bar J out of the grooves j . When the locking-bar J is raised from the grooves j , any one of the push-rods or plungers can be pushed inward. The passage of the coin through the slot L'' moves the lever M' and causes the slotted cam O to operate the lever P and discharge all substances from the scale-pan.

We will assume that a body of the same size but of less weight than that of the requisite coin has been inserted through the slot L'' . This body, descending into the scale-pan J' , will fail to weigh down the scale-pan. Suppose that a second body is afterward inserted through the slot L'' to make up the necessary weight. The entrance of the second body causes the operation of the levers M' and P , which delivers the first body from the scale-pan. Thus it will be seen that while a coin or body of requisite size and weight will operate the machine a coin of less than the requisite weight and size will fail to operate the machine, and on the insertion of a second spurious coin or other substance to complete the necessary weight the first spurious coin inserted will be discharged from the scale-pan.

Each of the push-rods or plungers projects beyond the back a' . Connected to the back of the sides $a'' a''$ are the standards $b b$ of the upper frame. Journaled in the standards $b b$, slightly above the sides $a'' a''$, is a rock-shaft b' .

Loosely mounted on the rock-shaft b' are a plurality of arms b'' , corresponding in number and location with the push-rods or plungers $D D' D''$. The lower end of each of the arms b'' is hinged to its respective push-rod or plunger, while hinged to the upper end of each of the arms b'' is a forked plate b^3 . Each of the plates b^3 rests on the bottom of its respective magazine and is adapted to deliver one package of goods from its magazine on each operation of its respective push-rod. By loosely mounting the arms b^3 on the rock-shaft b' any one of the arms can be operated without causing the operation of any of the remaining arms. Thus any one of the push-rods or plungers can be operated to cause the delivery of the package of goods from its respective magazine without causing the delivery of the package from any of the other magazines.

Rigidly mounted on the rock-shaft b' are a series of fingers Q , one located contiguous to each of the arms b'' . The ends of each of the fingers Q bear against the ends of its respective push-rod or plunger. By pushing the push-rod inwardly the inner end of the push-rod bears against its respective finger Q and turns the rock-shaft b' in its bearings for the purpose of operating certain mechanism

hereinafter mentioned. The fingers Q, in addition to turning the rock-shaft b' , cause the immediate return of the push-rods or plungers and coacting parts to their normal position immediately on the release of the operating-pressure.

Mounted on and moving in conjunction with the rock-shaft b' is a forwardly-extending arm 1, and carried by the arm 1 is a cam 2, which is arranged to engage the adjacent end of the lever M' and move the said lever on each operation of rock-shaft. The operation of the lever M' , accomplished by the cam 2, has the same effect as that accomplished by the insertion of the coin through the coin-receiving slot.

Connected to the standards $b b$ is a plate Q' of substantially the same width as the width of the packages, serving as a bottom for the magazines. The plate Q' supports the forked delivery-plates b^3 when at rest and in motion. Projecting outwardly from the plate Q' are two guide-rods Q'' , and supported on the guide-rods Q'' is a sliding bar Q^3 , having a vertical flange normally resting against the front of the plate Q' to retain the bottom-most package within the magazine until delivered by the action of the push-rod or plunger. Connected to the sliding bar Q^3 are two rearwardly-extending arms $R R$.

$R R'$ represent two arms, each rigidly connected to the rock-shaft b' and pivotally connected to its respective arm R . When the rock-shaft b' has been operated by the plunger or push-rod, the forward movement of the shaft causes the arms R' and R to move the sliding bar away from the front of the plate Q' to allow of the operated forked delivery-plate b^3 pushing a package from its respective magazine and delivering the package between the sliding bar Q^3 and plate Q' . The return movement of the rock-shaft b' causes a return movement on the part of the arms $R' R$ and the sliding bar Q^3 to its normal position against the plate Q' . This sliding bar serves a double purpose: first, to prevent the discharge of any package from the magazine except on a complete operation of the machine, and, second, to replace in its normal position any package partially discharged, in order that the next complete operation of the machine will not cause the discharge of more than one package.

Rigidly connected to the rock-shaft b' is a downwardly-extending arm R'' , and connected to the arm R'' and to the frame A is a spring R^3 , the purpose of which is to cause the quick return of the rock-shaft and coacting parts to their normal position after having been operated.

S represents a forwardly-extending arm rigidly connected to the rock-shaft b' .

S^4 represents the back of the upper frame, supporting a supplemental mechanism operated by the action of the rock-shaft, arranged to spin a disk and deliver a package from a

supplemental magazine immediately on the stoppage of the disk at a predetermined spot.

S'' represents a vertical plate slidably connected to the back S^4 . As shown in the drawings, the plate S'' is provided with a vertical elongated slot S^3 , through which pass rivets, screws, or bolts s , having enlarged heads s' . The elongated slot S^3 is substantially the same width as the diameter of the bolts s , and these bolts not only guide the vertical movement of the plate, but arrest the movement when completed in either direction.

s'' represents a connecting-rod, one end of which is pivotally connected to the arm S , and the other end of which is pivotally attached to the plate S'' . The rock-shaft b' during its forward motion causes the downward movement of the arm S , the connecting-rod s'' , and plate S'' .

$T T'$ represent two cams carried by the vertical plate S'' , the cam T being located at or near the bottom, and the cam T' at or near the top of the plate.

T'' represents a plate similar to the plate S'' and maintained in a position opposed to the plate S'' by the bolts s .

$U U'$ represent two cams carried by the plate T'' , similar in shape and opposed to the cams $T T'$. Each of the cams carried by the plates $S'' T''$ is an inclined plane, the plane of the cams $U U'$ being the inverse of the cams $T T'$, respectively. The shank of each of the bolts s is of sufficient length to allow of a lateral movement on the part of the plate T'' equal to the depth of the opposed cams. That side of the plate T'' adjacent to the plate S'' is provided with a stop t , against which normally rests a dog t'' , pivoted to the back S^4 . The dog t'' is provided with a tooth V , adapted to engage the teeth of a pinion-wheel V' .

V'' represents a spring connected to the dog t'' and to an arm V^3 , depending from the back S^4 . The purpose of the spring V'' is to draw downward the dog t'' when released from the stop t . The quick downward movement of the dog t'' rapidly revolves the pinion-wheel and its shaft. To explain this movement more fully, it will be assumed that the parts have been operated to cause the downward movement of the plate S'' and its cams $T T'$. The engagement of the cams $T T'$ with the cams $U U'$, respectively, causes the outward movement of the plate T'' , carrying with it the stop t , releasing the dog t'' , and allowing the spring to draw downward the said dog.

v represents a pin connected to the inner side of the plate S'' . The purpose of the pin v is to engage the dog t'' and move it upward during the return movement of the plate S'' in order that the stop t may engage again the dog when the parts have been returned to their normal position. To cause the sharp return of the plate T'' to its normal position after having been operated, I connect to the upper part of the frame a spring v' , which is adapted to bear against the front of the plate

T'' and press the plate T'' against the plate S''. Pivoted to the dog t'' is a supplemental dog v'', which is adapted to engage a supplemental tooth v³ on the side face of the pinion-wheel V'. The toothed end of the dog v'' normally rests on a pin W, connected to the side face of the dog t''. When the toothed end of the dog v'' is in engagement with the supplemental tooth v³ of the pinion-wheel V', the said tooth raises the dog off the said pin W into engagement with the short arm w of an L-shaped lever W' to raise the said lever to operate the mechanism for delivering a package from the supplemental magazine. The pinion-wheel V' is rigidly mounted on a spindle W'', and rigidly mounted on the same spindle W'' is a disk W³, having indicated on its face dice or card spots w'.

The front of the vending-machine is fitted with an opening X, through which one spot or set of spots w' is visible at a time. The inthrust of the push-rod or plunger causes the forward rocking movement of the rock-shaft, which transmits, by means of the connecting-rod s'', a downwardly vertical sliding movement to the plate S'' and cams T T'. The vertical movement of the cams T T' imparts a lateral or outward movement to the plate T'', carrying with it the stop t and releasing the dog t'', allowing the spring V'' to draw quickly downward the said dog. As the tooth V of the dog t'' engages the teeth of the pinion-wheel V' the quick downward movement of the tooth V, striking the adjacent tooth of the pinion-wheel, sets the pinion-wheel V', spindle W'', and disk W³ rapidly revolving. The revolution or spinning of the disk continues while the plunger or push-rod is held inthrust or until the force of its revolution has been expended if the plunger or push-rod is held inthrust beyond a reasonable space of time. The usual practice is, however, to immediately release the plunger from the operating pressure and allow of its quick return while the disk is rapidly spinning. The return of the plunger causes the simultaneous return of the rock-shaft and plates S'' T''. The return of the plate S'' moves upward the dog t'' and causes the toothed end of the said dog to engage the pinion-wheel V' and instantaneously stop its revolution. If the pinion-wheel V' has been stopped in such a position as to allow the tooth v³ to engage and lift the dog v'', the delivery of an extra package of goods will be effected from a supplemental magazine by the said dog v'' engaging and operating the lever W'. The dice or card spots on the disk W³ are so arranged in relation to the tooth v³ that when the said tooth engages the dog v'' the ace or any other predetermined spot will be opposite the opening X. The end of the lever W' opposite its short arm w is pivoted to the back S⁴, and connected to the said lever and back is a spring X'. Connected to the back S⁴ is a pin or stop X'' to limit the downward movement of the lever

W', and the purpose of the spring X' is to cause the sharp return of the lever to the pin or stop X'' after having been operated.

Loosely mounted on the rock-shaft b' is an arm X³, and hinged to the top of the arm X³ is a forked delivery-plate x, which normally rests on the top of the plate Q', immediately below the bottom of the supplemental magazine. Connected to the arm X³ and to the frame A is a spring x' for the purpose of causing the return of the arm X³ with the rock-shaft b' after having been operated. Depending from the rock-shaft b' is a finger x''.

x³ represents a lever the upper end of which is pivotally connected to the standard b, adjacent to the arm X³, the opposite end of the lever x³ being connected to the finger x'' by a link Y.

Y' represents a catch connected to the lever x³ and adapted to engage the arm X³ during the rearward movement of the lever x³, to move the said arm into its rearmost position, to bring the plate x clear of the bottom magazine, to allow of the bottommost package in the magazine resting against the top of the plate, the said plate x being opposed to the back of the bottommost package. Extending rearwardly from the plate Q', contiguous to the arm X³, is a bracket Y'', to which is pivotally connected a stop Y³, adapted to engage and hold the plate x when moved into its rearmost position by the action of the lever x³. Pivotaly connected to the stop Y³ and to the lever W' is a connecting-rod Z. Connected to the arm X³ is a hammer Z', adapted to strike a gong Z'' at the back of the machine on each forward movement of the arm X³. Each operation of the rock-shaft b' causes the finger x'' to move the lower end of the lever x³ rearwardly. If the arm X³ and plate x are in their forward position, the lever x³ will during its rearward movement draw rearwardly the arm X³ and plate x until they have reached their rearmost position, where they are held by means of the stop Y³. The continued action of the rock-shaft and lever x³ has now no effect on the arm X³ and plate x. When the tooth v³ engages the dog v'', it raises the dog to engage the end of the short arm w of the lever W' and raises the said lever, the lifting movement of which lifts the connecting-rod Z and stop Y³ sufficiently to disengage the stop from the plate x and allow the plate and arm X³ to return to their normal position and deliver a package of goods from the supplemental magazine, causing at the same time the hammer Z' to strike the gong Z''. The stop Y³, it will thus be noticed, is released from engagement with the plate x only when the tooth v³ engages the dog v''. It will also be noticed that the arm X³ and plate x are moved into their rearward position on the first operation of any plunger or push-rod after having been released and remain in that position until the stop Y³ has again been raised by the ac-

tion of the lever W' , the rock-shaft during each operation of the plungers in the interval rocking loosely in the hub of the arm X^3 .

z, z', z'' represent the magazines operated, respectively, by the plungers D, D', D'' , and Z^3 represents the magazine operated by the arm X^3 and plate x . Each of the magazines is made preferably of sheet metal, having closed sides a^3 and back d^3 , respectively, with flanges f'' overlapping the front. The bottom of each side of each of the magazines is provided with a flange g'' to support the packages, while the bottom of the front flanges f'' is cut away to provide an opening for the delivery of the packages from the magazines. Between the magazines z, z'' is an opening g^3 , through which passes the spindle W'' of the disk and pin. The bottom of each of the magazines is open and normally rests on the plate Q' , while the uppermost part of the magazine is held by an open frame h , connected to the standards b, b . Each magazine is removable in order that it can be charged with goods and afterward placed in the machine.

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

1. In an automatic vending-machine the combination of a magazine, a transversely-grooved push-rod adapted to deliver the goods from the magazine, a rock-shaft, a coin-testing balance consisting of a scale-pan suspended from the rock-shaft, adapted to receive the coins after their insertion, and a counterbalance suspended from the rock-shaft to act in conjunction with the scale-pan, and a locking-bar carried by the rock-shaft adapted to normally engage the groove of the push-rod and to be upset therefrom, after the receipt by the scale-pan of the requisite operating-coin, substantially as specified.

2. In an automatic vending-machine a delivery mechanism consisting of a push-rod, a rock-shaft, an arm loosely mounted on the rock-shaft, one end pivotally connected to the push-rod and the opposite end adapted to discharge the goods from its respective magazine, and a finger carried by the rock-shaft and opposed to the end of the push-rod, whereby the rock-shaft is operated by the intrust of the push-rod, substantially as specified.

3. In an automatic vending-machine the combination of a plurality of plungers, a tilting locking-bar normally engaging all of the plungers, a coin-operated balance to actuate the tilting bar to release the plungers after the insertion of the requisite coin, and a locking-slide to prevent the simultaneous operation of more than one plunger, substantially as specified.

4. In an automatic vending-machine a delivery mechanism consisting of a push-rod, a rock-shaft, an arm loosely mounted on the rock-shaft, one end pivotally connected to

the push-rod and the opposite end adapted to discharge the goods from its respective magazine, a finger carried by the rock-shaft and opposed to the end of the push-rod, whereby the rock-shaft is operated by the intrust of the push-rod, a tilting locking-bar normally locking the push-rod, and a coin-operated balance to actuate the locking-bar to release the plunger after the insertion of the requisite coin, substantially as specified.

5. In an automatic vending-machine, a delivery mechanism consisting of a plunger, a rock-shaft, an arm loosely mounted on the rock-shaft, one end of the arm hinged to the plunger, the opposite end of the arm hinged to a delivery-plate, a finger moving in conjunction with the rock-shaft, bearing against the adjacent end of the plunger, and means for returning the parts to their normal position after having been operated, substantially as specified.

6. In an automatic vending-machine, a delivery mechanism consisting of a plunger, a rock-shaft, an arm loosely mounted on the rock-shaft, one end pivotally connected to the adjacent end of the plunger, a delivery-plate connected to the opposite end of the arm, a finger mounted on the rock-shaft and moving in conjunction therewith, bearing against the adjacent end of the plunger, and a spring to return the parts to their normal position after having been operated, substantially as specified.

7. In an automatic vending-machine, a delivery mechanism consisting of a plunger, a rock-shaft, an arm loosely mounted on the rock-shaft, one end pivotally connected to the plunger, the opposite end pivotally connected to a delivery-plate, a finger moving in conjunction with the rock-shaft, adapted to bear against the adjacent end of the plunger and return it to its normal position, simultaneously with the return of the rock-shaft, and a spring to return the rock-shaft to its normal position after being operated, substantially as specified.

8. In an automatic vending-machine the combination of a spinning disk, having indicated on its face a series of characters to represent a game of chance, a primary delivery mechanism arranged to spin the disk during its delivery action and to instantaneously stop the spinning of the disk by its return action, substantially as specified.

9. In an automatic vending-machine the combination of a spinning disk, having indicated on its face a series of characters to represent a game of chance, a primary delivery mechanism arranged to spin the disk during its delivery action and to instantaneously stop the spinning of the disk by its return action, and a secondary delivery mechanism actuated by the stoppage of the spinning disk at a predetermined part of its revolution, substantially as specified.

10. In an automatic vending-machine the combination of a spinning disk, having indi-

ated on its face a series of characters to represent a game of chance, a primary delivery mechanism arranged to spin the disk during its delivery action and to instantaneously stop the spinning of the disk by its return action, a secondary delivery mechanism, an intermediate connection between the spinning disk and the secondary delivery mechanism, actuated by the stoppage of the disk at a predetermined part of its revolution, substantially as specified.

11. In an automatic vending-machine the combination of a plurality of push-rods, a rock-shaft, a locking-bar carried by the rock-shaft normally engaging each of the push-rods, a scale-pan suspended from the rock-shaft, consisting of two forks, each having an inwardly-extending flange to support the operating-coin, and a lever projecting between the forks to clear the scale-pan of all substances on the insertion of a coin through the coin-receiving slot and on each operation of the machine, substantially as specified.

12. In an automatic vending-machine the combination of a plurality of push-rods, a rock-shaft, a locking-bar carried by the rock-shaft normally engaging each of the push-rods, a scale-pan suspended from the rock-shaft, consisting of two forks, each having an inwardly-extending flange to support the operating-coin, a lever projecting between the forks to clear the scale-pan of all substances, and a lever pivotally connected to the machine, adapted to be actuated by the insertion of a coin through the coin-receiving slot, and on each operation of the machine to actuate the first lever to clear the scale-pan, substantially as specified.

13. In an automatic vending-machine a coin-testing apparatus consisting of a coin-receiving slot, a pivoted lever one end of which is contiguous to the coin-receiving slot, a cam carried by the pivoted lever, a supplemental pivoted lever one end of which is engaged by the cam, and the opposite end of which is contiguous to the scale-pan of the coin-testing balance, the pivoted levers adapted to be operated by the insertion of each coin during its passage through the coin-receiving slot, substantially as specified.

14. In an automatic vending-machine a coin-testing apparatus consisting of a coin-receiving slot, a pivoted lever one end of which is contiguous to the coin-receiving slot, a cam carried by the pivoted lever, a supplemental pivoted lever one end of which is engaged by the cam, and the opposite end of which is contiguous to the scale-pan of the coin-testing balance, the pivoted levers adapted to be operated by the insertion of each coin during its passage through the coin-receiving slot, in combination with the primary delivery mechanism, released by the tilting of the scale-pan, caused by the insertion of the operating-coin, substantially as specified.

15. In an automatic vending-machine a coin-testing apparatus consisting of a pivoted

scale-pan, to receive and weigh each inserted coin, a normally-locked delivery mechanism released by the operation of the scale-pan, a lever pivoted contiguous to the coin-receiving slot actuated by the insertion of the coins, and also by the action of the delivery mechanism to eject the contents of the scale-pan, substantially as specified.

16. In an automatic vending-machine a coin-testing apparatus consisting of a pivoted scale-pan, to receive and weigh each inserted coin, a normally-locked delivery mechanism released by the operation of the scale-pan, a lever pivoted contiguous to the coin-receiving slot actuated by the insertion of the coins, and a cam actuated by the delivery mechanism to operate the lever during the operation of the delivery mechanism to eject the contents of the scale-pan, substantially as specified.

17. In an automatic vending-machine, the combination of a primary delivery mechanism, a secondary delivery mechanism placed in position by the operation of the primary delivery mechanism, to be actuated by an intermediate mechanism controlled by the primary delivery mechanism, substantially as specified.

18. In an automatic vending-machine the combination of a primary delivery mechanism, a disk having a series of numbers or symbols indicated on one of its side faces, mounted on an easily-revoluble spindle revolved by the delivery action and stopped by the return action of the primary delivery mechanism, a lug carried by the spindle, a secondary delivery mechanism, an intermediate connection for the secondary delivery mechanism actuated by the lug on the stoppage of the revolution of the disk at a predetermined part of its revolution, substantially as specified.

19. In an automatic vending-machine the combination of a primary delivery mechanism, a magazine, a permanent bottom for the magazine, an opening in the bottom of the front of the magazine for the delivery of the goods, a sliding bar opposed to the opening, arms connected to the sliding bar and to the primary delivery mechanism, to allow of the primary delivery mechanism moving the sliding bar away from the opening to deliver the goods through the opening formed between the bottom of the magazine and the sliding bar, and to cause the sliding bar to return the undelivered packages of goods to their original position in the magazine on the return of the primary delivery mechanism, substantially as specified.

20. In an automatic vending-machine the combination of a plurality of plungers, a delivery mechanism operated by each plunger, a tilting locking-bar normally engaging each of the plungers, a balance to actuate the locking-bar after the insertion of the requisite coin to release the plungers, and a locking-slide consisting of a series of sections each

having a spring-pressed latch adapted to engage the remaining plungers and prevent their operation while one plunger is being operated, substantially as specified.

21. In an automatic vending-machine the combination of a frame, a plurality of plungers passing through the frame, guides formed in the frame contiguous to the plungers, a locking-slide moving in the guides, consisting of a plurality of sections, one section interposed between each adjacent pair of plungers, and a spring-pressed latch carried by each section, adapted to engage the remaining plungers and prevent their operation while one plunger is being operated, substantially as specified.

22. In an automatic vending-machine the combination of a frame, a plurality of plungers passing through the frame, guides formed in the frame contiguous to the plungers, a locking-slide moving in the guides, consisting of a plurality of sections, one section interposed between each adjacent pair of plungers, a spring-pressed latch carried by each section, adapted to engage the remaining plungers and prevent their operation while one plunger is being operated, and a coin-actuated locking-bar normally engaging the plungers to prevent their operation until the insertion of the requisite coin, substantially as specified.

23. In an automatic vending-machine the combination of a frame, a plurality of plungers passing through the frame, guides formed in the frame contiguous to the plungers, a locking-slide moving in the guides, consisting of a plurality of sections, one section interposed between each adjacent pair of plungers, a spring-pressed latch carried by each section, adapted to engage the remaining plungers and prevent their operation while one plunger is being operated, and a cam for each plunger adapted to move the locking-slide sections to bring the spring-pressed latches into engagement with their respective plungers, substantially as specified.

24. In an automatic vending-machine the combination of a frame, a plurality of plungers passing through the frame, guides formed in the frame contiguous to the plungers, a locking-slide moving in the guides, consisting of a plurality of sections, one section interposed between each adjacent pair of plungers, a spring-pressed latch carried by each section, adapted to engage the remaining plungers and prevent their operation while one plunger is being operated, and a spring to return the locking-slide sections to their normal position after the return of the operated plunger to its normal position, substantially as specified.

25. In an automatic vending-machine the combination of a frame, a plurality of plungers passing through the frame, guides formed in the frame contiguous to the plungers, a locking-slide moving in the guides, consist-

ing of a plurality of sections, one section interposed between each adjacent pair of plungers, a spring-pressed latch carried by each section, adapted to engage the remaining plungers and prevent their operation while one plunger is being operated, a coin-actuated locking-bar normally engaging the plungers to prevent their operation until the insertion of the requisite coin, and a spring to return the locking-slide sections to their normal position after the return of the operated plunger to its normal position, substantially as specified.

26. In an automatic vending-machine the combination of a frame, a plurality of plungers passing through the frame, guides formed in the frame contiguous to the plungers, a locking-slide moving in the guides, consisting of a plurality of sections, one section interposed between each adjacent pair of plungers, a spring-pressed latch carried by each section, adapted to engage the remaining plungers and prevent their operation while one plunger is being operated, a cam for each plunger adapted to move the locking-slide sections to bring the spring-pressed latches into engagement with their respective plungers, and a spring to return the locking-slide sections to their normal position after the return of the operated plunger to its normal position, substantially as specified.

27. In an automatic vending-machine the combination of a plunger provided with a cam, and a groove opposed to the cam, a locking-slide consisting of a plurality of movable sections arranged to move independently and in conjunction with each other, and to be actuated by the cam during the movement of the plunger, and a spring-pressed latch carried by each of the locking-slide sections, adapted to enter the groove in its respective plunger, substantially as specified.

28. In an automatic vending-machine, the combination of a primary delivery mechanism, a secondary delivery mechanism consisting of a spring-actuated delivery-plate, a stop to hold the delivery-plate in an operative position, a pivoted lever, a connection between the stop and the pivoted lever, and an intermediate connection between the lever and the primary delivery mechanism, substantially as specified.

29. In an automatic vending-machine, the combination of a primary delivery mechanism, a revoluble disk, a pinion-wheel moving in conjunction with the revoluble disk, a dog engaging the teeth of the pinion-wheel, and a connection between the primary delivery mechanism and the dog, to revolve the pinion-wheel and afterward to stop its motion, substantially as specified.

30. In an automatic vending-machine, the combination of a primary delivery mechanism, a revoluble disk, a pinion moving in conjunction with a revoluble disk, a pivoted dog normally engaging the teeth of the pinion-

wheel, a spring to free the dog from engagement with the teeth of the pinion-wheel, and a movable stop operated by the primary delivery mechanism, to normally hold the pivoted dog in engagement with the teeth of the pinion-wheel, and to return it to its normal position after setting the pinion-wheel in motion, substantially as specified.

31. In an automatic vending-machine the combination of a primary delivery mechanism, a secondary delivery mechanism consisting of a delivery-plate, placed in position by the action of the primary delivery mechanism, a spring connected to the delivery-plate, a stop to hold the delivery-plate in its set position, a pivoted lever, a link connecting the pivoted lever and stop, a revoluble disk actuated by the primary delivery mechanism, adapted on its stoppage to operate the pivoted lever, and release the delivery-plate from the stop, substantially as specified.

32. In an automatic vending-machine, a primary delivery mechanism, consisting of a coin-controlled plunger, a rock-shaft, an arm loosely mounted on the rock-shaft, one end pivotally connected to the adjacent end of the plunger, a delivery-plate hinged to the opposite end of the arm, a finger moving in conjunction with the rock-shaft, and bearing against the adjacent end of the plunger, in combination with a secondary mechanism, consisting of an arm loosely mounted on the rock-shaft, a delivery-plate hinged to the arm, a lever actuated by the rock-shaft to set the delivery-plate, and a stop to temporarily hold the delivery-plate in its set position, substantially as specified.

33. In an automatic vending-machine, the combination of a primary delivery mechanism, consisting of a plunger, a rock-shaft, an arm loosely mounted on the rock-shaft, one end of the arm pivotally connected to the adjacent end of the plunger, a delivery-plate hinged to the opposite end of the arm, a finger moving in conjunction with the rock-shaft, adapted to bear against the adjacent end of the plunger, and a secondary delivery mechanism consisting of an arm loosely mounted on the rock-shaft, a delivery-plate hinged to the said arm, a lever actuated by the rock-shaft to set the delivery-plate in its operative position, a stop to hold the delivery-plate in its set position, a pivoted lever, a link connecting the pivoted lever and stop, and a revoluble disk actuated by the primary delivery mechanism, adapted to actuate the pivoted lever to release the delivery-plate from the stop, substantially as specified.

34. In an automatic vending-machine, the combination of a primary delivery mechanism, consisting of a plunger, a rock-shaft, an arm loosely mounted on the rock-shaft, one end of the arm pivotally connected to the adjacent end of the plunger, a delivery-plate hinged to the opposite end of the arm, a finger moving in conjunction with the rock-shaft, adapted to bear against the adjacent

end of the plunger, and a secondary delivery mechanism consisting of an arm loosely mounted on the rock-shaft, a delivery-plate hinged to the said arm, a lever actuated by the rock-shaft to set the delivery-plate in its operative position, a stop to hold the delivery-plate in its set position, a pivoted lever, a link connecting the pivoted lever and stop, a revoluble disk actuated by the primary delivery mechanism, adapted to actuate the pivoted lever to release the delivery-plate from the stop, and a spring to operate the delivery-plate of the secondary delivery mechanism substantially as specified.

35. In an automatic vending-machine the combination of a delivery mechanism, a coin-testing apparatus consisting of a rock-shaft, a scale-pan connected to the rock-shaft to receive and weigh each inserted coin, and upset the rock-shaft on the insertion of a specific coin, a lever to eject all substances contained in the scale-pan on each insertion of a coin through the coin-receiving slot, a cam operated by the primary delivery mechanism to actuate the said lever, and a locking-bar carried by the rock-shaft to normally engage the primary delivery mechanism, and to release the primary delivery mechanism on the insertion of the requisite coin, substantially as specified.

36. In an automatic vending-machine, the combination of a delivery mechanism consisting of a plurality of plungers, a rock-shaft, a plurality of arms loosely mounted on the rock-shaft, one end of each arm pivotally connected to the adjacent end of its respective plunger, a delivery-plate hinged to the opposite end of each arm, a plurality of fingers moving in conjunction with the rock-shaft, each finger adapted to bear against the adjacent end of its respective plunger, a forwardly-extending arm connected to the said rock-shaft, a cam carried by the said arm, a coin-testing apparatus consisting of a rock-shaft, a balance carried by the rock-shaft, a locking-bar connected to the rock-shaft adapted to engage each of the plungers, and a lever to remove all substances from the balance actuated by the cam, substantially as specified.

37. In an automatic vending-machine, the combination of a delivery mechanism, consisting of a plurality of plungers, a rock-shaft, a plurality of arms loosely mounted on the rock-shaft, one end of each of the arms pivotally connected to the adjacent end of its respective plunger, a delivery-plate hinged to the opposite end of each of the said arms, a plurality of fingers, each finger adapted to engage the adjacent end of its respective plunger, a rock-shaft, a locking-bar carried by the rock-shaft normally engaging each of the said plungers, a coin-testing apparatus consisting of a balance connected to the rock-shaft of the locking-bar, a coin-chute to receive the coin from the coin-receiving slot, and deposit it on the scale-pan of the balance,

a pivoted lever operated by the admission of the coin, and by a cam carried by the rock-shaft of the delivery mechanism, a pivoted lever, one end of which is adapted to remove
5 all substances from the scale-pan of the balance, and the opposite end of which is actuated by the pivoted lever, substantially as specified.

38. In an automatic vending-machine, the
10 combination of a delivery mechanism, consisting of a plurality of plungers, a rock-shaft, a plurality of arms loosely mounted on the rock-shaft, one end of each of the arms pivotally connected to the adjacent end of its
15 respective plunger, a delivery-plate hinged to the opposite end of each of the said arms, a plurality of fingers, each finger adapted to engage the adjacent end of its respective plunger, a rock-shaft, a locking-bar carried
20 by the rock-shaft normally engaging each of the said plungers, a coin-testing apparatus consisting of a balance connected to the rock-shaft of the locking-bar, a coin-chute to receive the coin from the coin-receiving slot,
25 and deposit it on the scale-pan of the balance, a pivoted lever operated by the admission of the coin, and by a cam carried by the rock-shaft of the delivery mechanism, a pivoted lever, one end of which is adapted to remove
30 all substances from the scale-pan of the balance, and the opposite end of which is engaged by a cam carried by the pivoted lever, substantially as specified.

39. In an automatic vending-machine the
35 combination of a plurality of primary delivery mechanisms, each operated by its own push-rod, a locking-bar normally engaging each of the push-rods, a rock-shaft carrying the locking-bar, and a scale-pan connected to the
40 rock-shaft, substantially as specified.

40. In an automatic vending-machine the combination of a plurality of primary delivery mechanisms, each operated by its own push-rod, a locking-bar normally engaging each of
45 the push-rods, a rock-shaft carrying the locking-bar, a scale-pan connected to the rock-shaft, a pivoted lever operated by the insertion of a coin and also by the action of the primary delivery mechanism, a cam connected
50 to the pivoted lever, a second pivoted lever, one end of which is adapted to be engaged by the said cam, and the opposite end of which is adapted to remove all substances from the scale-pan of the balance, substantially as
55 specified.

41. In an automatic vending-machine the combination of a plurality of primary delivery mechanisms, each independently operated by its own push-rod, a locking-bar normally engaging the push-rods, a rock-shaft carrying the locking-bar, a scale-pan connected to the rock-shaft, a pivoted lever operated by the insertion of the coin, and by a cam carried by the delivery mechanism to re-
60 move all substances from the scale-pan, substantially as specified.

42. In an automatic vending-machine, the

combination of a delivery mechanism, consisting of a plurality of plungers, a rock-shaft operated by each of the said plungers, a delivery-
70 plate coacting with each plunger, the magazines, a permanent bottom for the magazines, and a removable flange for the permanent bottom, substantially as specified.

43. In an automatic vending-machine, the
75 combination of a primary delivery mechanism, a spindle journaled in the framework, a pinion and a disk mounted on the spindle, a pawl engaging with the teeth of the pinion, a supplemental tooth revolving with the spin-
80 dle, a trip-dog pivoted to the pawl, adapted to engage with the supplemental tooth, a pivoted lever engaging with the trip-dog, adapted to operate a secondary delivery mechanism, a primary delivery mechanism, and means
85 connected to the primary delivery mechanism to operate the pawl, substantially as specified.

44. In an automatic vending-machine, the combination of a primary delivery mechanism, a vertically-sliding plate operated by the
90 primary delivery mechanism, cams connected to the sliding plate, a laterally-moving plate, cams connected to the laterally-moving plate, engaging the cams on the sliding plate, a stop carried by the laterally-moving plate, a pawl
95 normally resting on the said stop, a spring to actuate the pawl, a pinion engaged by the said pawl, a spindle on which the pinion is rigidly mounted, a disk mounted on the said spindle, a trip-dog pivotally connected to the pawl,
100 adapted to be engaged by a tooth on the said spindle, and a stop to limit the movement of the pawl and return it to its normal position after having been actuated, substantially as specified.

45. In an automatic vending-machine, the combination of a primary delivery mechanism, a vertically-sliding plate operated by the primary delivery mechanism, cams connected to the sliding plate, a laterally-moving plate,
110 cams connected to the laterally-moving plate, engaging the cams on the sliding plate, a stop carried by the laterally-moving plate, a pawl normally resting on the said stop, a spring to actuate the pawl, a pinion engaged by the said
115 pawl, a spindle on which the pinion is rigidly mounted, a disk mounted on the said spindle, a trip-dog pivotally connected to the pawl, adapted to be engaged by a tooth on the said spindle, a stop to limit the movement of the
120 pawl and return it to its normal position after having been actuated, a pivoted lever engaged by the trip-dog, a secondary delivery mechanism, consisting of a delivery-plate held in an operative position by a stop, a link con-
125 nected to the said stop and pivoted lever, and a spring to actuate the stop, substantially as specified.

46. In an automatic vending-machine, the combination of a primary delivery mechanism, a vertically-sliding plate operated by the
130 primary delivery mechanism, cams connected to the sliding plate, a laterally-moving plate, cams connected to the laterally-moving plate,

engaging the cams on the sliding plate, a stop
carried by the laterally-moving plate, a pawl
normally resting on the said stop, a spring to
actuate the pawl, a pinion engaged by the
5 said pawl, a spindle on which the pinion is
rigidly mounted, a disk mounted on the said
spindle, a trip-dog pivotally connected to the
pawl, adapted to be engaged by a tooth on the
said spindle, a stop to limit the movement of
10 the pawl and return it to its normal position
after having been actuated, a pivoted lever
engaged by the trip-dog, a secondary delivery
mechanism, consisting of a delivery-plate
held in an operative position by a stop, a link
15 connected to the said stop and pivoted lever,
a spring to actuate the stop, a gong, and a
hammer actuated by the return of the deliv-
ery-plate to sound the gong, substantially as
specified.

20 47. In an automatic vending-machine, the
combination of a primary delivery mechan-
ism, consisting of a plunger, a rock-shaft ac-
tuated by the plunger, and a secondary de-
livery mechanism consisting of an arm loosely
25 mounted on the rock-shaft, a delivery-plate

hinged to the arm, a lever pivotally connected
to the framework, a lever moving in conjunc-
tion with the rock-shaft, a link connecting
together the said levers, and a claw connected
to the first lever to draw backward the arm 30
and delivery-plate, substantially as specified.

48. In an automatic vending-machine, the
combination of a primary delivery mechan-
ism, consisting of a plunger, a rock-shaft ac-
tuated by the plunger, and a secondary de- 35
livery mechanism consisting of an arm loosely
mounted on the rock-shaft, a delivery-plate
hinged to the arm, a lever pivotally connected
to the framework, a lever moving in conjunc-
tion with the rock-shaft, a link connecting 40
together the said levers, a claw connected to
the first lever to draw backward the arm and
delivery-plate, and a spring to operate the
delivery-plate, substantially as specified.

Toronto, December 18, A. D. 1896.

G. A. CLINE.

In presence of—

C. H. RICHES,

M. A. NESTWOOD.