

No. 735,398.

PATENTED AUG. 4, 1903.

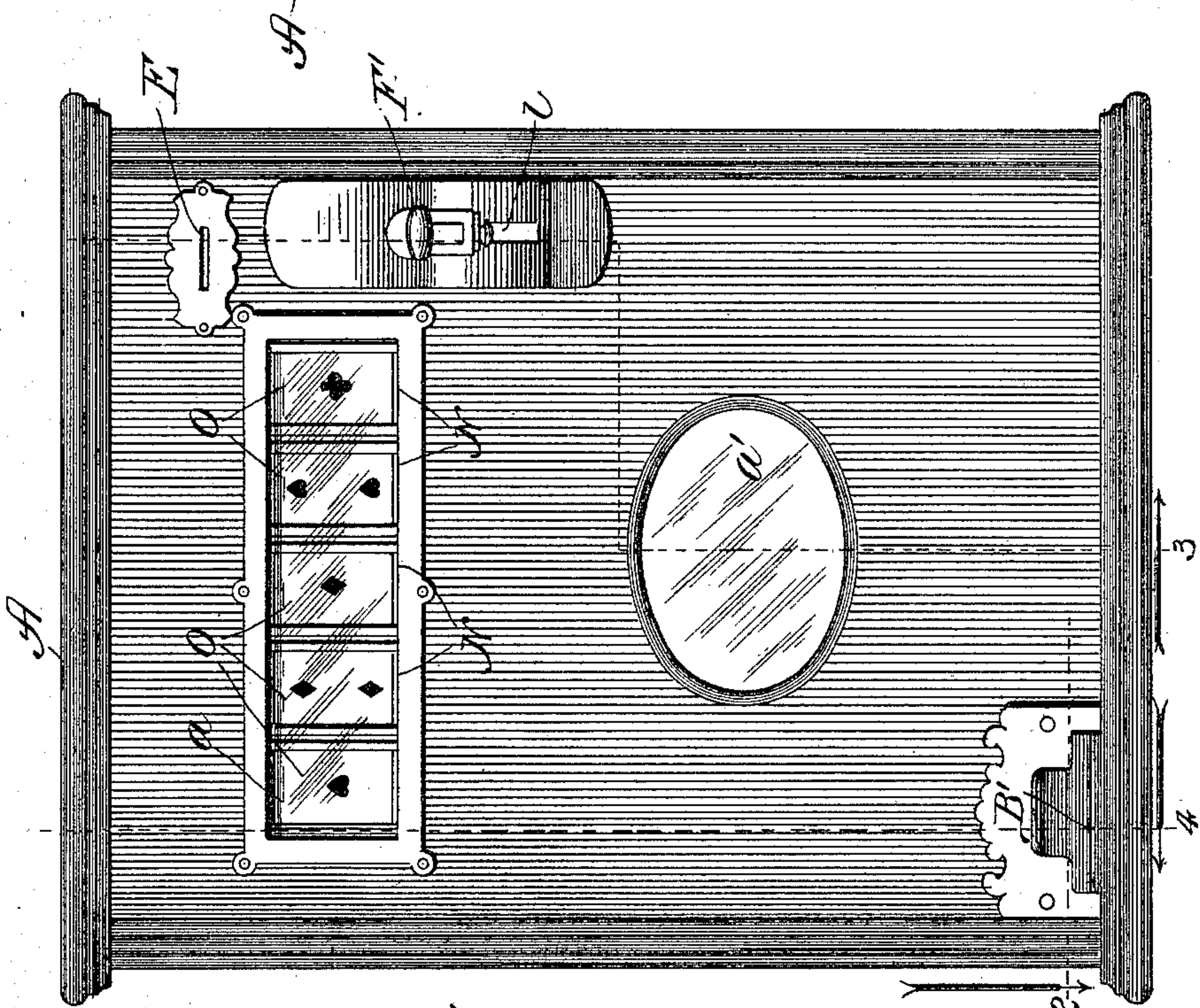
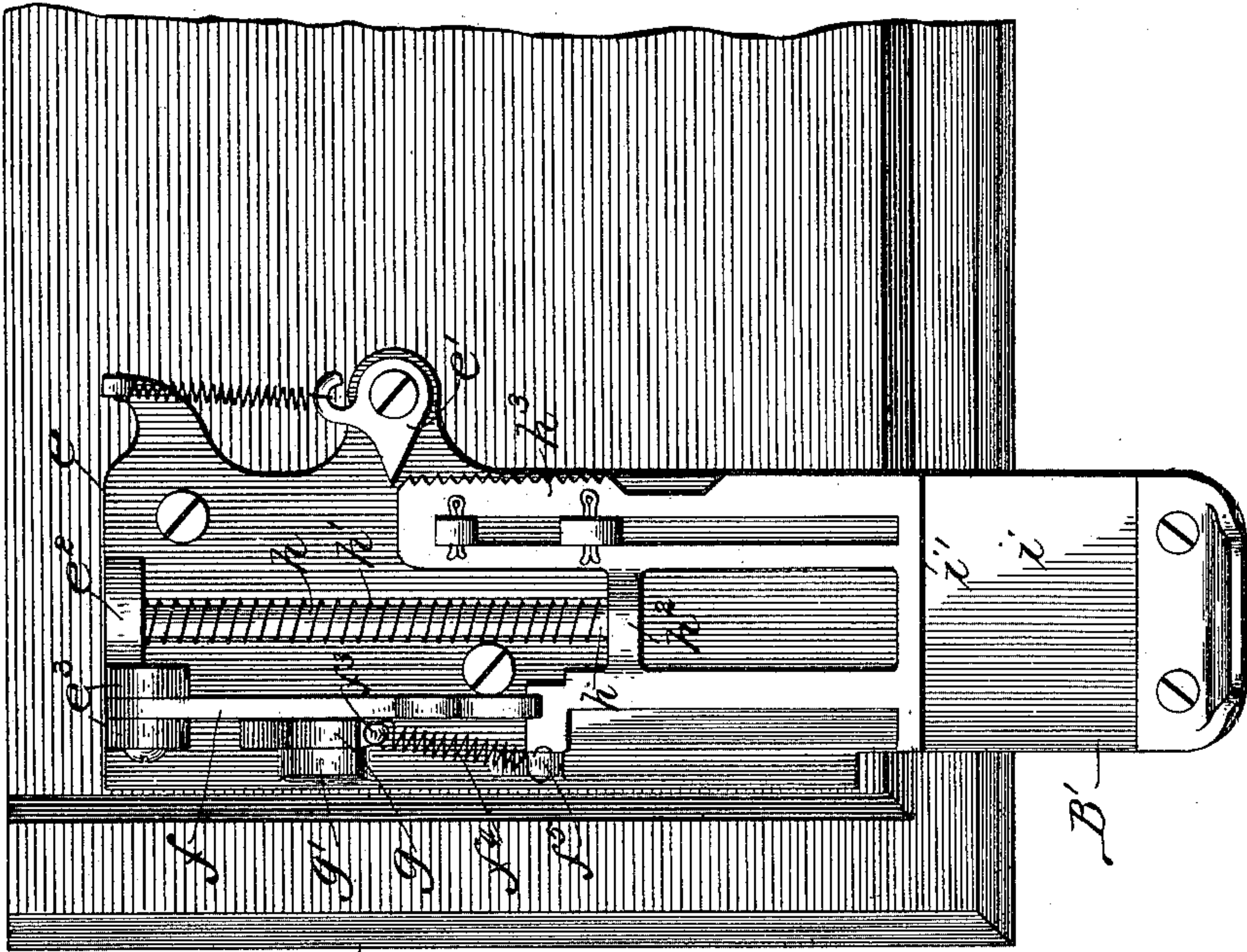
H. S. MILLS.
VENDING MACHINE.

APPLICATION FILED DEC. 1, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 2.



Witnesses:
John Enders &
Edw. Chylford,

Fig. 1.

Inventor:
Herbert S. Mills,
By *Dymally, Dymally & Co.*
Attys.

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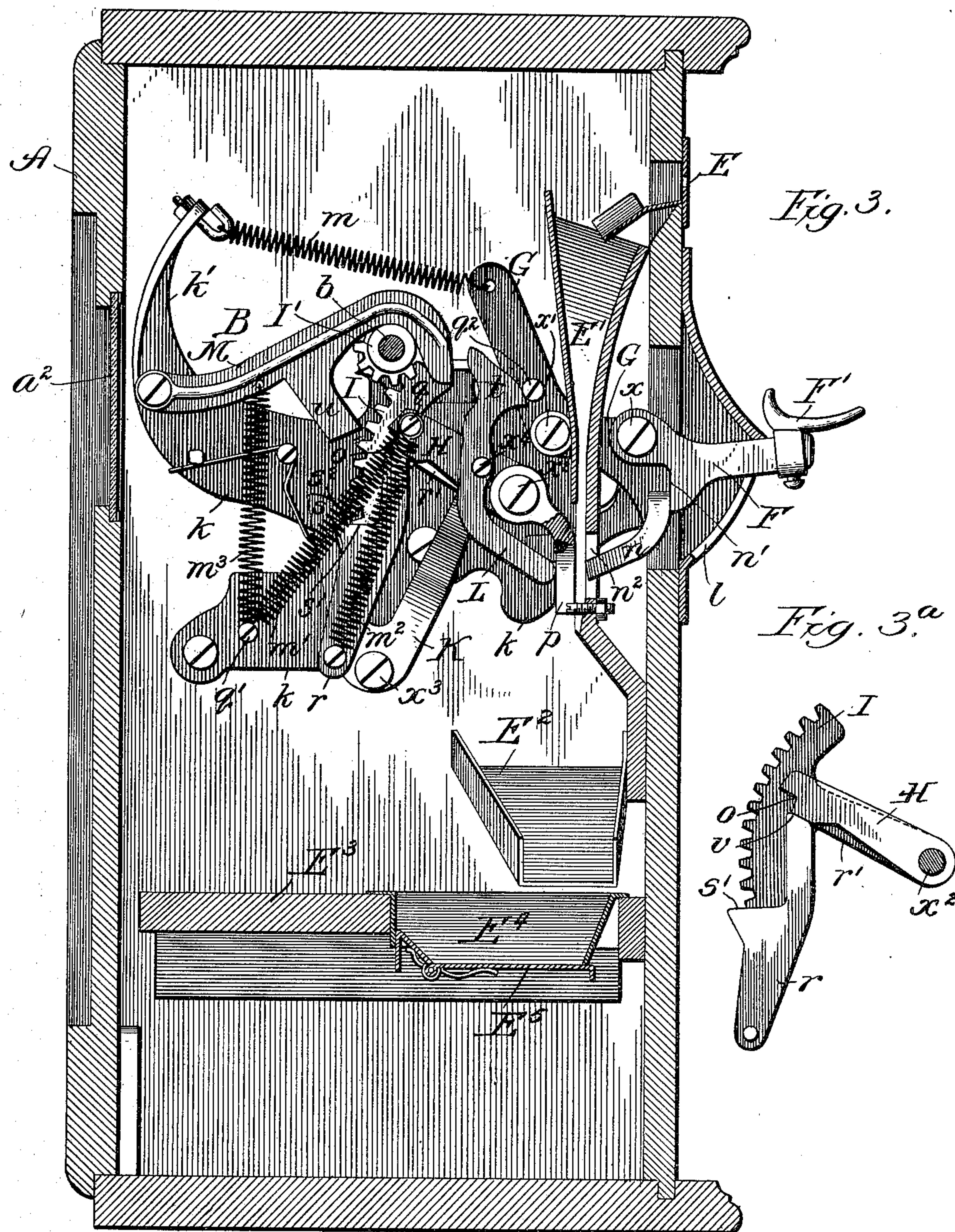
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4 SHEETS—SHEET 2.



Witnesses:
John Enders, Jr.
Ed. Clayford.

Inventor:
Herbert S. Mills,
By *Dyurnfuth, Dyurnfuth & See,*
Att'ys.

No. 735,398.

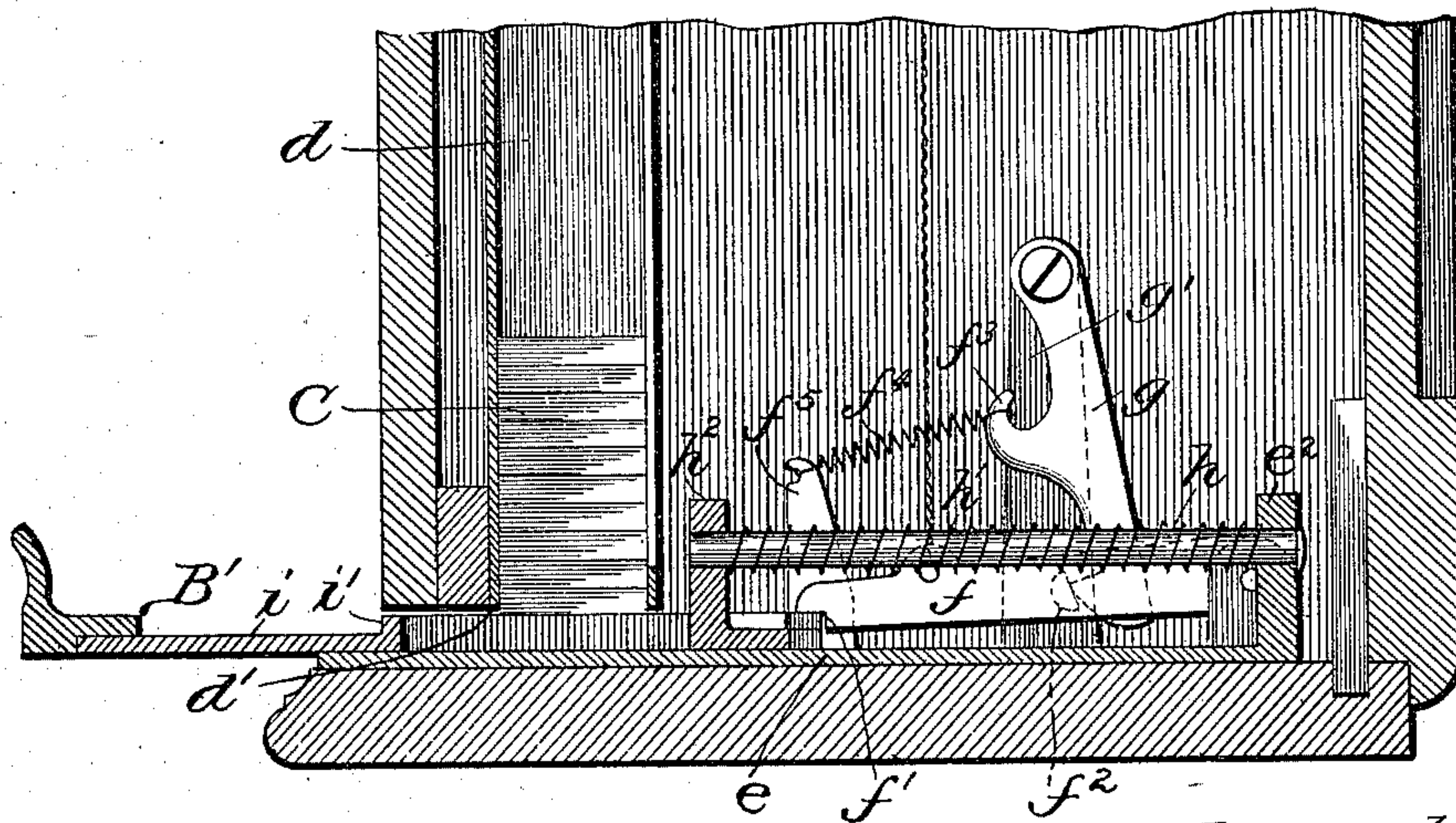
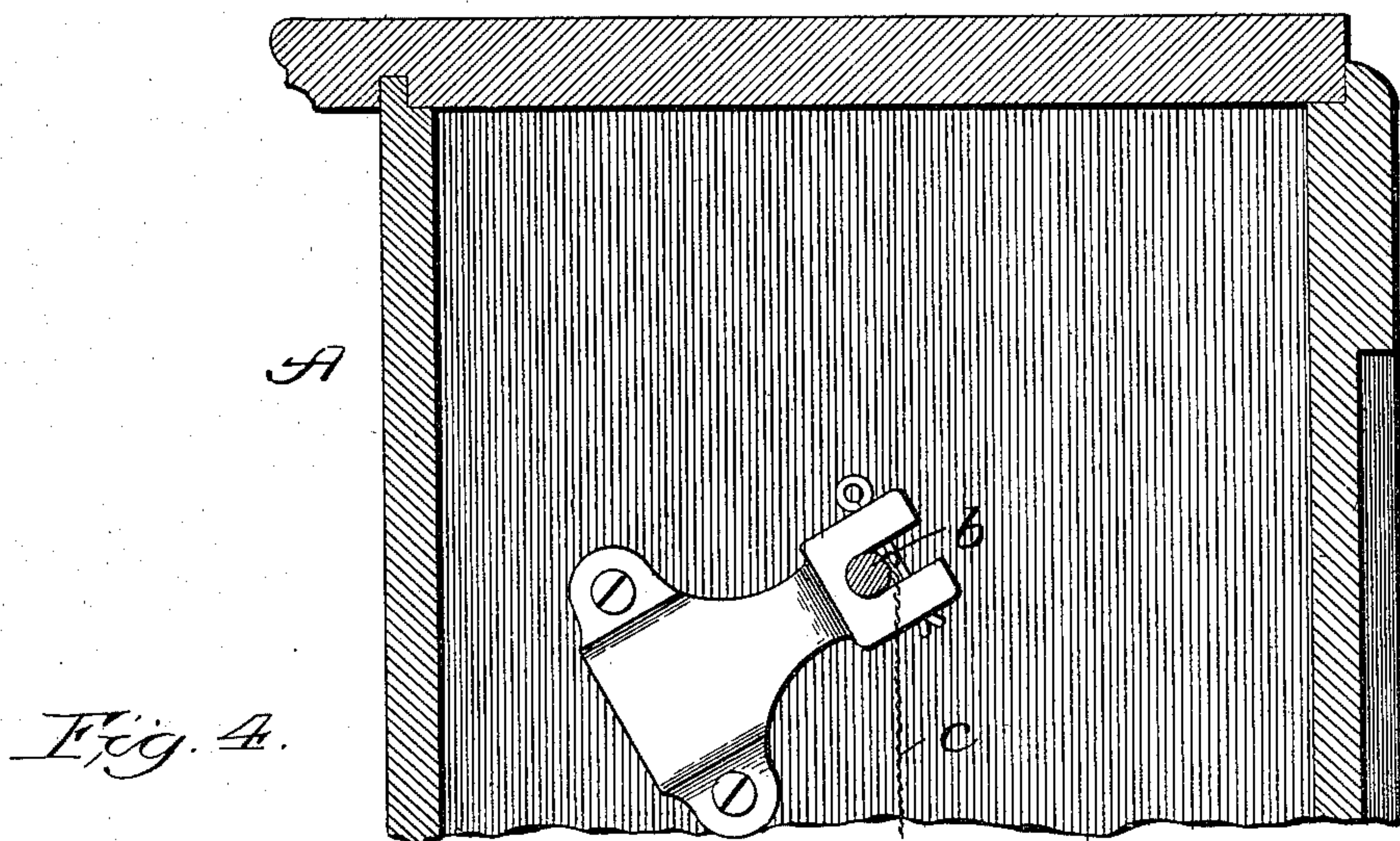
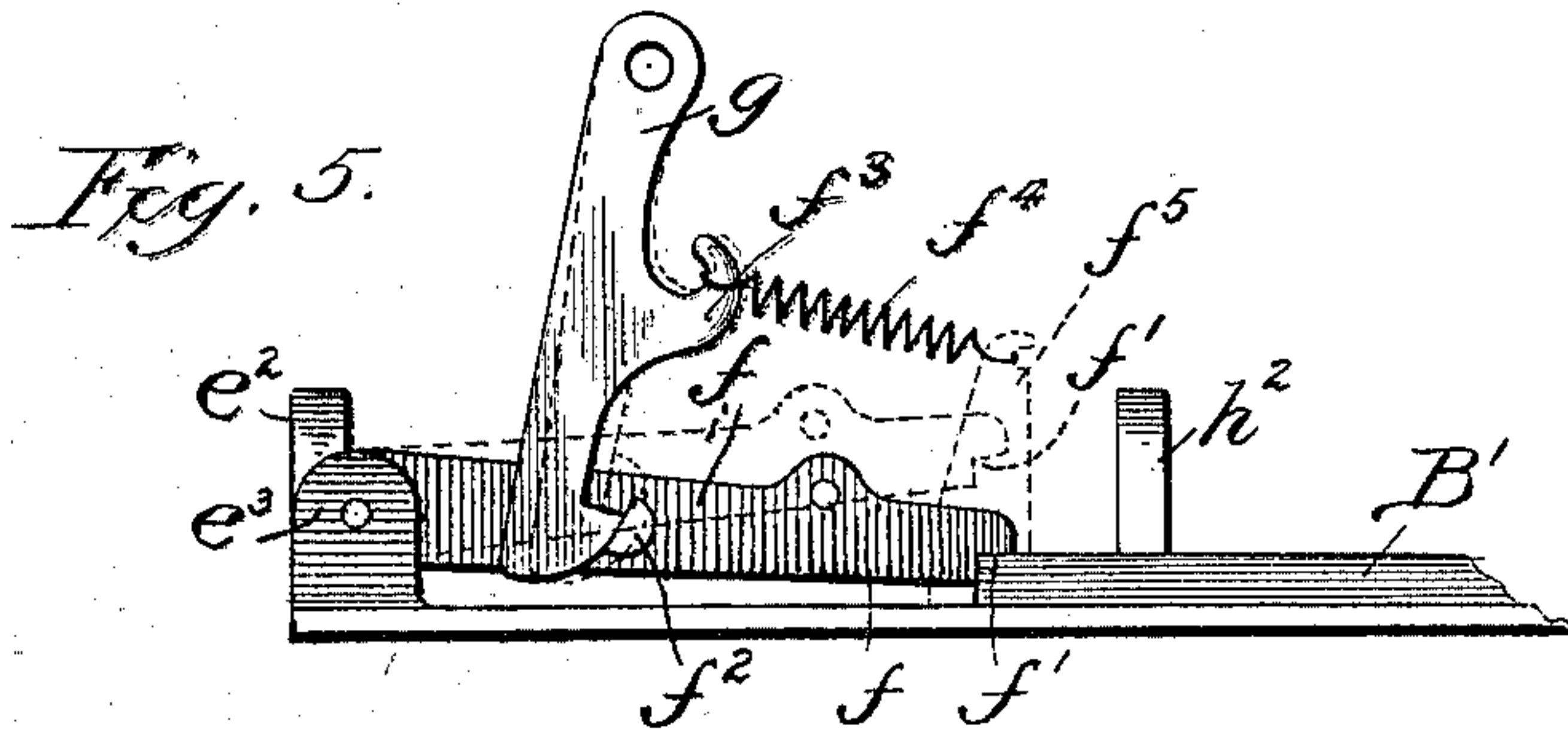
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4 SHEETS—SHEET 3.



Witnesses:

John Enders J.
E. S. Taylor,

Inventor:

Herbert S. Mills,
By *Dynamforth, Dynamforth & Sec.*
Att'ys.

No. 735,398.

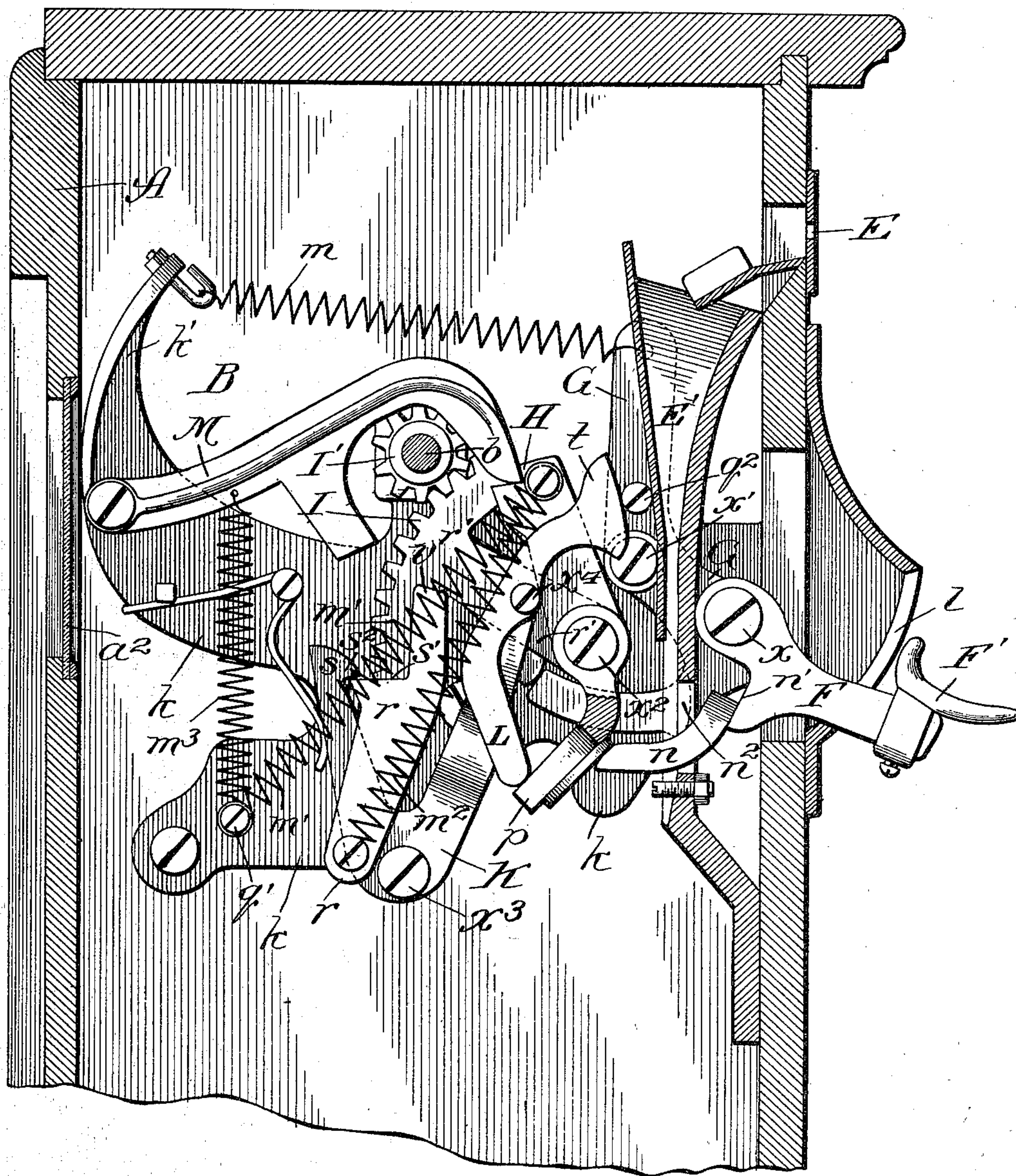
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H. S. MILLS.
VENDING MACHINE.
APPLICATION FILED DEC. 1, 1902.

NO MODEL.

4 SHEETS—SHEET 4.

Fig. 6.



Witnesses:
Eas. Gaylord.
Geo. Brown

Inventor:
Herbert S. Mills,
By *Dymond, Dymond & Lee,*
Attys.

UNITED STATES PATENT OFFICE.

HERBERT S. MILLS, OF CHICAGO, ILLINOIS.

VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 735,398, dated August 4, 1903.

Application filed December 1, 1902. Serial No. 133,484. (No model.)

To all whom it may concern:

Be it known that I, HERBERT S. MILLS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Vending-Machines, of which the following is a specification.

My invention relates particularly to an improvement in the delivery mechanism for a coin-operated vending-machine, and it involves in its operation the principle of releasability from its normally projected condition in which it is automatically locked by the action of coin-operated mechanism, which effects its release to permit it to be pushed inward against spring-resistance for the delivery by the recoil action of the spring of the commodity dispensed by the machine.

Referring to the accompanying drawings, Figure 1 is a view in front elevation of a vending-machine equipped with my improved delivery mechanism. Fig. 2 is a section taken at the line 2 on Fig. 1, regarded in the direction of the arrow and enlarged, showing the delivery mechanism in plan view. Fig. 3 is a section taken at the line 3 on Fig. 1, viewed in the direction of the arrow and enlarged. Fig. 3^a is a view in side elevation of certain details of and cooperating with the segmental rack to show them more clearly than they are seen in Fig. 3. Fig. 4 is a broken section taken at the line 4 on Fig. 1, viewed in the direction of the arrow and enlarged; Fig. 5, a view in side elevation showing diagrammatically details of the delivery mechanism; and Fig. 6, a view like that presented by Fig. 3, but showing the coin-operated mechanism and its connecting parts in the other extreme position.

The entire mechanism is contained within a suitable casing A, shown to be provided in its front side with an upper glass-covered horizontally-elongated opening *a*, below which is a glass-covered oval opening *a'* opposite a similarly-covered opening *a*² in the back of the casing.

B denotes the coin-operated mechanism, hereinafter described in detail, though not so claimed in this application, wherein it serves to illustrate one medium for the application of my improved delivery mechanism. This

coin-operated mechanism contains a rock-shaft *b*, journaled at its opposite ends on the opposite sides of the casing and connected, as by a chain *c*, with the delivery mechanism, of which the following is a description. To one side of the opening *a'* on the inner side of the front of the casing is fastened a receptacle *d*, open at its base, as it may also be at its top and back, and shown in a form adapting it to accommodate more or less snugly a stack of rectangular packages of gum C. The particular shape of the receptacle, however, and the particular article and form thereof dispensed by the machine are not of the essence of the invention. In the front side of the casing and at the lower left-hand corner thereof is the delivery-opening *d'*. A bed-plate *e* extends on the base of the casing, to which it is rigidly fastened, from the front side of the delivery-opening nearly to the back of the casing, and carries at one side a pivotal spring-controlled pawl *e'*, and near the center of its rear end an upward-projecting lug *e*², adjacent to which there rises from the plate a bifurcated lug *e*³, having pivoted between its members one end of a forward-projecting dog *f*, recessed at its free extremity to form a shoulder *f'* and provided on the outer side between its ends with a stop *f*², and adjacent to the dog a post *g'* rises from the bed-plate and has fulcrumed to its upper end to depend therefrom a lever *g*, having a catch *g*² on its lower end to engage with the stop *f*². This lever is cast with a hook *f*³ at which to fasten one end of a spring *f*⁴, having its opposite end fastened to a lug *f*⁵, rising from the bed-plate, the spring tending to draw the lower end of the lever forward to engage the catch upon it with the stop *f*² on the pivotal-dog.

B' is the delivery slide-plate, confined to reciprocate longitudinally upon the bed-plate *e*, having a perforated lug *h*², rising from its rear end to admit through its opening a rod *h*, projecting forward from the lug *e*² in alignment with said opening and surrounded by a spiral spring *h'* to bear against the lug *h*² about the opening. On the slide-plate is a rack *h*³ to be engaged by the spring-pawl *e'*. In the forward part of the upper side of the slide-plate is a depression *i*, extending from

a rear transverse shoulder i' and forming a seat for the article to be delivered by the machine—gum in the present instance. The stack of gum Crests on the plate B' , which normally protrudes to the extent of the width of the seat i beyond the delivery-opening d' . When the slide-plate is pushed inward to the limit of its movement under the stack of gum, the seat registers with the base of the receptacle d , permitting the stack to enter it, and as the offset i' does not reach higher than the thickness of the lowermost piece or package of the gum when the slide-plate advances the offset carries the piece or package beyond the delivery-opening, and thus delivers it. However, the normally protruding slide-plate is normally locked against being pushed inward by the projection into its path of the dog f , which engages at the shoulder f' at its forward extremity with the rear end of the plate. When the dog is lifted to remove it from obstructing the delivery-plate, which results, in the manner hereinafter described, from inserting a coin into the machine and actuating the coin-operated mechanism B to turn the shaft b to pull upward on the chain c , which is connected with the dog, the slide-plate may be pushed inward to its full limit against the resistance of the spring h' and is locked against withdrawal before or until it reaches the full limit of its inward movement by engagement of the pawl e' with the rack h^3 , which, however, clears the pawl at the limit of inward movement of the slide-plate and leaves the latter free when released from the hand of the operator to be protruded by the recoil force of the spring h' to effect the delivery. When the dog f is lifted in the manner described, the spring f^4 pulls the lever g forward to bring its catch g^2 under the stop f^2 on the dog and hold it in its raised position until the delivery-plate has been pushed in, and when the plate is pushed in to the full extent of its movement its rear end engages with the lower end of the lever g in its path, forcing it backward against the resistance of its controlling-spring f^4 , and thus removing its catch from underneath the stop f^2 , whereby the dog f is freed and drops and rests on the slide-plate until the latter clears it, when it drops further and presents the shoulder f' in the return path of the slide-plate to obstruct it against being pushed inward until the coin-controlled mechanism is again operated.

The shaft-actuating portion of the mechanism B is supported on the inner side of the casing adjacent to a coin-insertion slot E in the upper right-hand corner of its front wall. The slot leads to a coin-chute E' , from the lower end of which the coin when released, as hereinafter described, drops into a trough E^2 , forming, practically, an extension of the chute, inclining across it from the side wall of the casing below the mechanism B and discharging into a hoppers diaphragm E^3 , supported in the casing below the plane of the openings $a' a^2$, the hopper E^4 having a spring-

supported hinged bottom E^5 , which drops under the weight of a predetermined number of coins inserted into the machine to dump them into the casing below the diaphragm, whence they may be removed from time to time on taking off the separable casing-back. While the coins remain in the hopper, they are subject to inspection for detecting any spurious ones among them through the glass-covered openings $a' a^2$. The mechanism B is carried by a spider-like base-plate k , fastened to the casing side wall.

F is the operating-lever, fulcrumed at x upon one arm of a bent lever G, fulcrumed between its ends at x' on the plate k . The operating-lever is provided with a handle F' and projects through a vertical slot l in the casing-front below the coin-insertion slot. The lever G is connected from its inner end by a spiral spring m with a rigid curved arm k' of the base-plate k . From the under side of the operating-lever within the casing there extends a shoulder n' to abut against a curved finger n , projecting from the outer end of the lever G into a slot n^2 in the lower end of the coin-chute E' . While the levers F and G are formed as separate pieces connected at x , they are practically one, since depression of the operating-lever abuts the shoulder n' against the finger n in its path and turns the lever G on its fulcrum x' .

H is a bent lever fulcrumed between its ends on a stud x^2 , projecting horizontally from the plate k . This lever is provided at its upper inner extremity with a shoulder o and terminates at its outer end in a fork p , embracing the plane of the opening n^2 in the coin-chute. From near the shouldered extremity of the lever H there projects horizontally a rigid stud q , connected by a spiral spring m' with another rigid stud q' , projecting horizontally from the bed-plate. This stud q on the lever H is also connected by a spiral spring m^2 with the lower end of an arm r , extending downward from a segmental rack I on one end of an arm r' , which is pivoted at its opposite end on the stud x^2 behind the lever H. At the junction with an end of the segmental rack of the arm r it presents a shoulder s' to be engaged by a catch s , formed on the end of the shorter arm of a bell-crank K, fulcrumed at x^3 and carrying on a side of its longer arm, near the end thereof, a bent locking-dog L, loosely pivoted between its ends at x^4 to the lever-arm to tend to cause the cam-like head t at its upper end normally to engage by gravity with a rigid stud q^2 , projecting horizontally from the lever G. The lower end of the dog L coincides with the inner face of one of the prongs of the fork p .

M is a dog pivoted at one end to the bed-plate k to engage at its opposite end, as hereinafter described, with the shoulder o on the lever H, being under the control of a spiral spring m^3 , connecting it with the stud q . A lug u projects from the under side of the dog M into the path of the shoulder o .

On the end of the shaft *b*, that is journaled on the bed-plate *k*, is a pinion *I'*, which meshes with the rack *I*.

The operation is as follows: A coin (copper cent) inserted through the slot *E* drops into the coin-chute *E'* and lodges therein between the curved finger *n* and the forked end *p* of the lever *H*. Upon inserting the coin the operator depresses the lever *F*, thereby forcing the shoulder *n'* against the curved finger *n* and turning the lever *G* on its fulcrum *x'* against the resistance of the spring *m*, while the pressure of the curved finger against the lodged coin abuts the latter against the fork *p* and turns the lever *H* on its fulcrum *x''* against the resistance of the springs *m'* and *m''* until the shoulder *o* clears the end of the dog *M*. When the shoulder *o* attains coincidence with the free end of the dog *M*, the spring *m''* pulls it into engagement with the shoulder, thereby temporarily locking the lever *H* against retraction under the recoil force of the springs *m'* and *m''*. Meantime the turning of the lever *G* on its fulcrum retracts the stud *q''* relative to the headed end of the dog *L*, and the head *t*, forming the heavier end of the dog, follows the movement of that stud in the arc of a circle until the dog assumes a position to become wedged at its opposite ends between the stud *q''* and a prong of the fork *p* by the eventual return movement of the lever *G* under the recoil force of the spring *m*. When the limit of depression of the lever *F* is reached, the operator releases the handle *F'*, which rises under the recoil force of the spring *m* against the lever *G'*, consequent turning of which first withdraws the finger *n* from and releases the coin, which drops into the trough *E''* and thence discharges into the hopper *E'''*. Further turning of the lever *G* under the recoil force of its controlling-spring wedges the dog *L* between the stud *x'* and the fork *p* and exerts the pressure of the returning lever *G* against the bell-crank lever *K* at the pivot *x'''*, thereby turning the bell-crank on its fulcrum in the direction to disengage the catch *s* from the shoulder *s'*. The instant this disengagement takes place the recoil of the spring *m''*, tensioned by bringing the lever *H* to its position for engagement by the dog *M*, turns the rack-arm *r* upward and backward, thereby quickly turning upward the rack *I* on its fulcrumed arm *r'*. In this movement of the rack the shoulder *s'* encounters the lug *u* and raises the dog *M* out of engagement with the shoulder *o* on the end of the lever *H*, which thereupon assumes its normal position (shown in Figs. 3 and 3^a) under the recoil force of its controlling-spring *m'* and in doing so encounters a lug *v*, projecting into the path of its freed end from the side of the rack, and forces the rack back to its illustrated normal position, where it is reengaged at the shoulder *s'* by the catch *s*, and the parts are again in readiness to be actuated in the manner described. The first-described turn of the rack *I* by its

engagement with the pinion *I'* suddenly turns the shaft *b* part way around or rocks it in one direction and winds upon it the chain *c* sufficiently to cause it to lift the dog *f* of the delivery mechanism and permit the latter to be operated in the manner already explained. The second-described turn of the rack under the impact force of the lever *H* against the lug *v* suddenly rocks the shaft in the opposite direction. These movements of the shaft in the present machine serve to start into rotation a series of annular sections of a drum or rings *N*, (indicated in Fig. 1,) loosely centered on the shaft and dogged to permit the members of the series to be rotated only in successively contrary directions. Thus the first turn of the rack *I* starts alternate members of the series of rings into rotation in one direction, and the second turn of the rack starts the other members into rotation in the contrary direction. These rings carry about their peripheries series of playing-cards, (indicated at *O* in Fig. 1,) and when the rings come to a standstill from the rotation to which they are subjected by each operation of the machine they display at the casing-opening *a* a horizontal series of the cards, representing a combination which may or may not, depending on the particular combination, determine a bonus to be given for the deposited coin which produced the delivery of the article vended by the machine. The cards on the rings render the machine a so-called "card-machine," and the detailed construction of the rings, whereby they are caused to rotate, as described, on a shaft *b*, is old and so well known, particularly in connection with cigar-vending, that it is not necessary in the present connection to illustrate it.

One of the objects of providing my invention on a card or analogous machine is to offer an inducement to an intending purchaser to patronize the machine, whereby he shall not only receive in every instance the value of the deposited coin, but also a bonus in the nature of a chance to obtain an additional article free of cost. This object is accomplished by the card feature of the machine, which the mechanism *B* serves to actuate in addition to controlling the delivery mechanism of my invention and through the medium of which the element of chance is added to the machine, since certain predetermined combinations presented by the cards at the opening *a* entitle the persons to bonuses for their deposited coins, while the other combinations thus presented do not.

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

1. In a vending-machine, having a receptacle for the article to be vended, delivery mechanism comprising a bed-plate in the casing of the machine crossing the base of said receptacle, a spring-pressed slide-plate on said bed-plate normally projecting beyond the casing through a delivery-opening therein, a pivotal dog normally obstructing said

slide-plate against inward movement and adapted to be withdrawn from the path of the slide-plate, a stop on said dog, and a spring-controlled lever having a catch engaging with
 5 said stop to support the dog when withdrawn, said lever extending into the return path of the slide-plate to be engaged by it for releasing the dog from said catch.

2. In a vending-machine, having a receptacle for the article to be vended, delivery
 10 mechanism comprising a bed-plate in the casing of the machine crossing the base of said receptacle, a slide-plate on said bed-plate working through a delivery-opening in the
 15 casing, and provided with a guide, a rod on the bed-plate engaging with said guide, a spring on said rod pressing against said guide to project the slide-plate beyond the casing, a dog normally obstructing said slide-plate
 20 against inward movement and adapted to be withdrawn from the path of the slide-plate, and means for releasably holding said dog out of engagement with said slide-plate.

3. In a vending-machine, having a receptacle
 25 for the article to be vended, delivery

mechanism comprising a bed-plate in the casing of the machine crossing the base of said receptacle, a slide-plate on said bed-plate working through a delivery-opening in the casing and provided at its outer end with a
 30 shouldered seat for the article to be delivered and at its opposite end with a guide-lug, a rod on the bed-plate passing through said lug, a spring on said rod pressing against said lug to project the seat of the slide-plate
 35 beyond the casing, a rack on the slide-plate and a spring-pawl on the bed-plate engaging therewith, a dog pivotally supported at one end on the bed-plate to engage at its opposite end and obstruct inward movement of
 40 said slide-plate, a stop on said dog, and a spring-controlled lever having a catch and fulcrumed on said bed-plate to engage the catch with said stop and to project into the return path of the slide-plate for the release
 45 of the dog from said catch.

HERBERT S. MILLS.

In presence of—

F. M. TRACY,

F. F. DAVIS.