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PATENTED DEC. 8, 1903.

O. E., E. E. & W. L. CLARK.

VENDING MACHINE.

APPLICATION FILED DEC. 13, 1901.

NO MODEL.

4 SHEETS—SHEET 2.

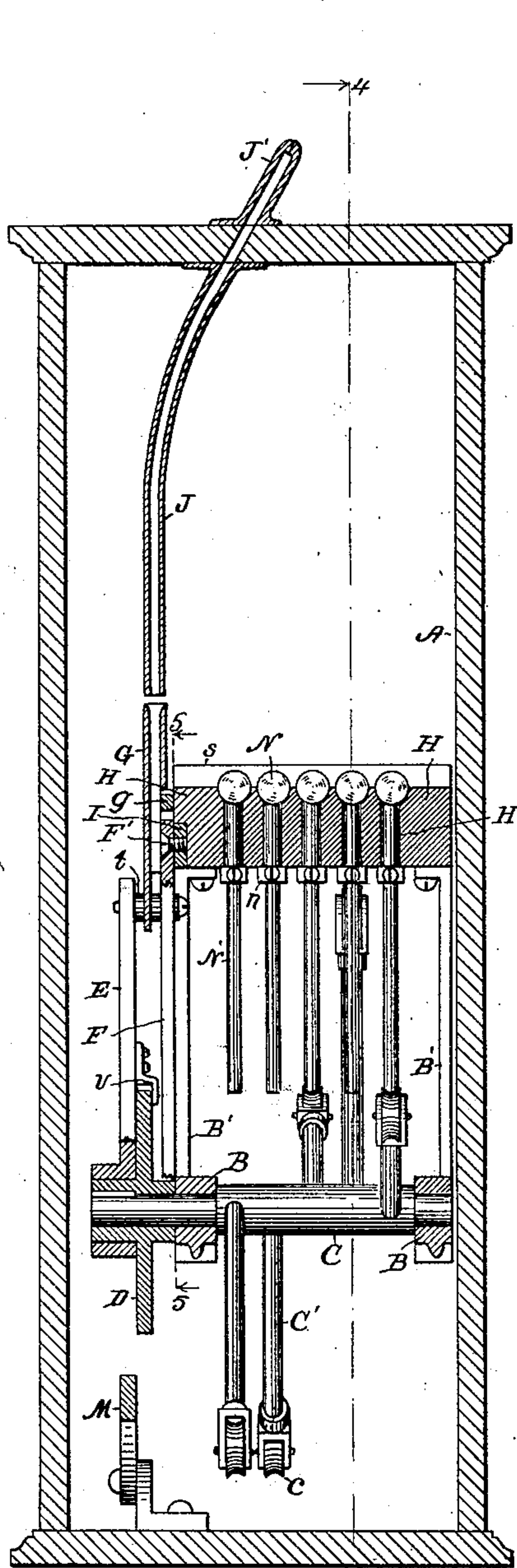


Fig. 2

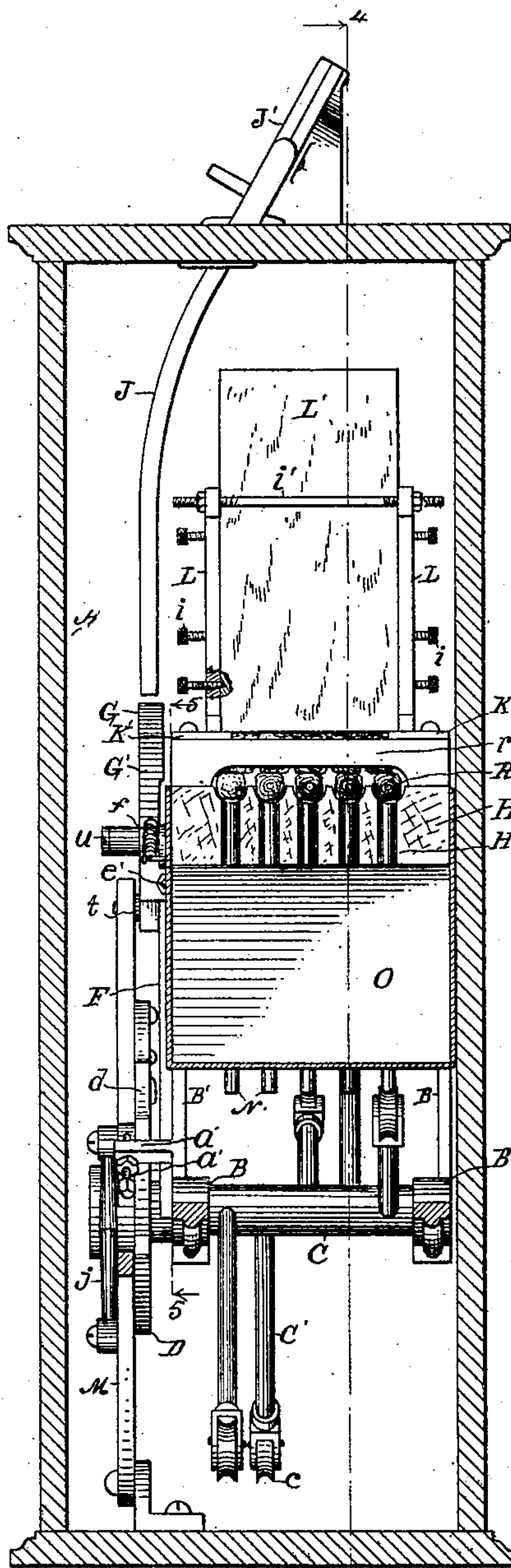


Fig. 3

Witnesses:

D. E. Wood.
Otis A. Earf

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By Frederick L. Cappell
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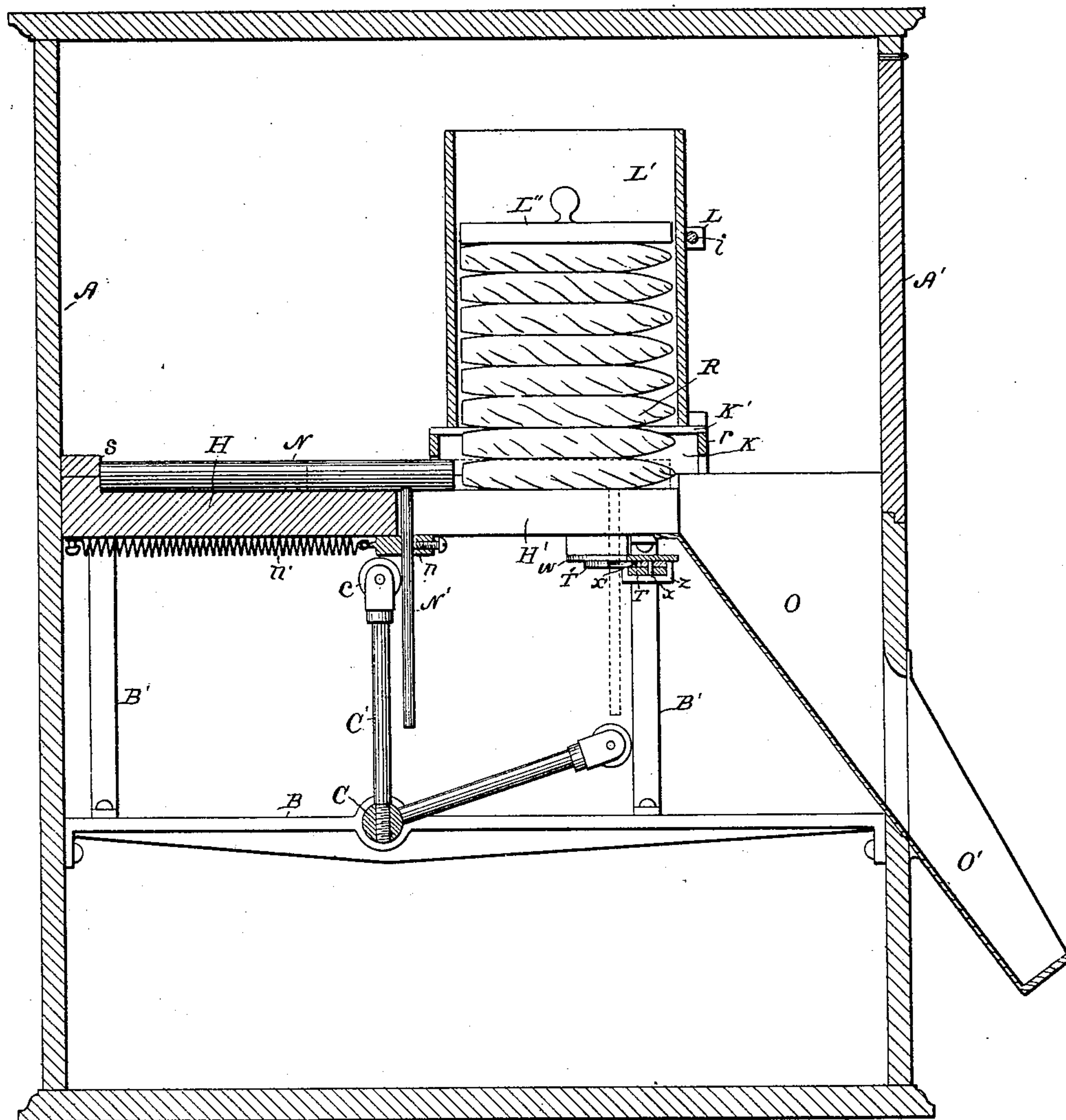


Fig. 4

Witnesses:

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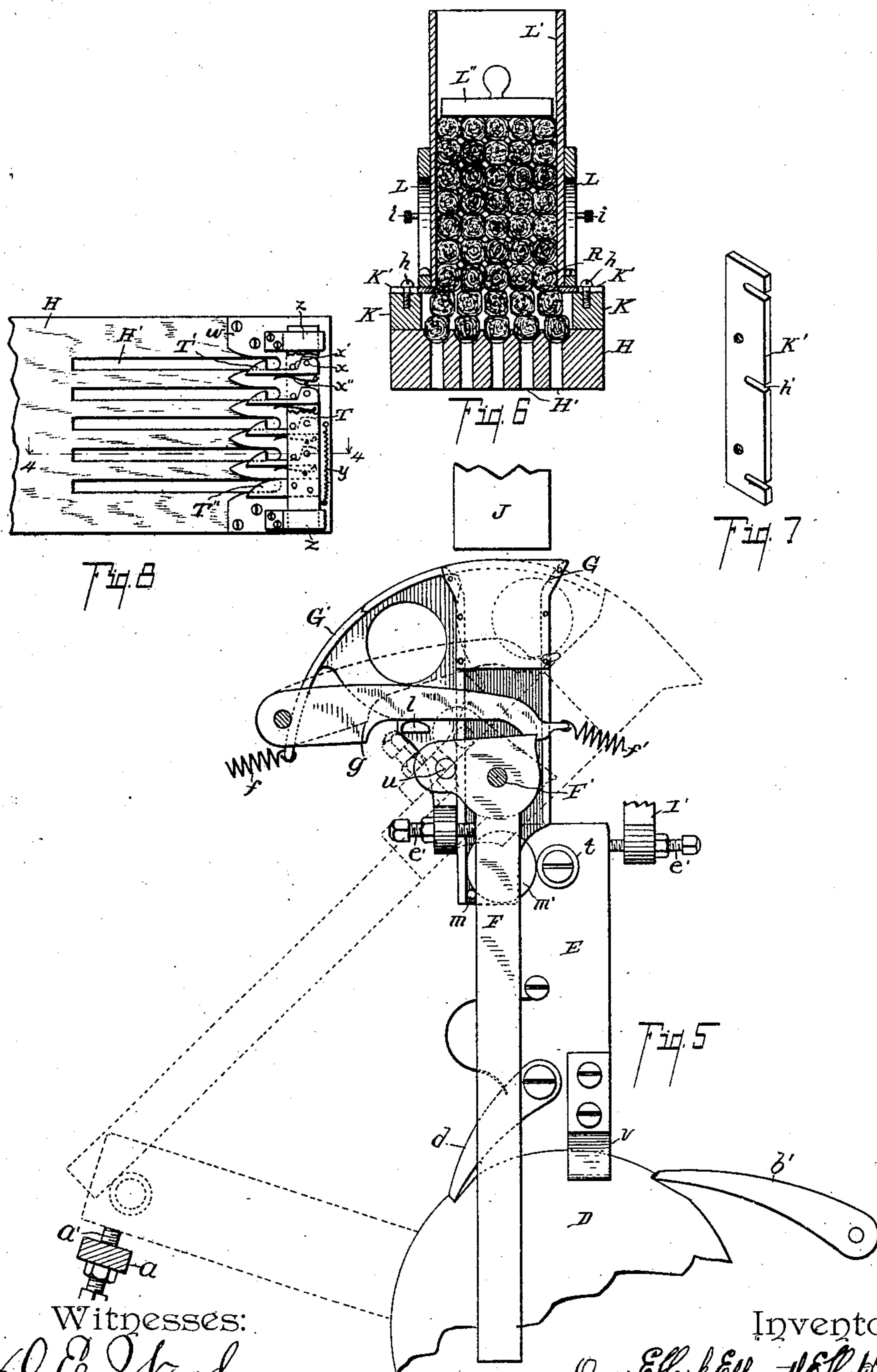
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NO MODEL.

4 SHEETS—SHEET 4.



Witnesses:

L. E. Good

Otis A. Earf

Inventors,

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UNITED STATES PATENT OFFICE.

OMAR E. CLARK, ELLSWORTH E. CLARK, AND WESLEY L. CLARK, OF
VICKSBURG, MICHIGAN.

VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 746,028, dated December 8, 1903.

Application filed December 13, 1901. Serial No. 85,801. (No model.)

To all whom it may concern:

Be it known that we, OMAR E. CLARK, ELLSWORTH E. CLARK, and WESLEY L. CLARK, citizens of the United States, residing at the village of Vicksburg, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to improvements in vending-machines.

The invention relates more particularly to a vending-machine adapted to deliver such articles as cigars and cigarettes from the package, although, of course, the same is adapted to deliver any sort of packages from layers in a receptacle.

The objects of the invention are, first, to provide improved means of delivering successive articles or packages from layers in a receptacle; second, to provide improved means of controlling a series of plungers or followers successively; third, to provide improved means of separating the articles of a layer from a package, whereby they can be delivered separately and one at a time; fourth, to provide in a vending-machine an improved adjustable means for the connection and use of a package or receptacle of various sizes containing layers of articles.

Further objects will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of our invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail side elevation view of our improved vending-machine, one side of the casing being removed and certain others being indicated by dotted lines. Fig. 2 is a detail transverse sectional view taken on a line corresponding to the irregular line 2 2 of Fig. 1. Fig. 3 is a detail sectional view taken

on a line corresponding to line 3 3 of Fig. 1.

Fig. 4 is a detail vertical sectional view taken on a line corresponding to line 4 4 of Figs. 2 and 3. Fig. 5 is an enlarged detail sectional view of the coin-controlled device, taken on a line corresponding to lines 5 5 of Figs. 2 and 3. Fig. 6 is a detail transverse sectional view through the receptacle and separating device, taken on a line corresponding to lines 6 6 of Fig. 1. Fig. 7 is a detail perspective view of one of the adjustable side plates K' for supporting the box or receptacle. Fig. 8 is an inverted detail plan view of the detaining device for the plungers or followers in, with an automatic release, the location of which appears distinctly in Figs. 1 and 4, the same having been omitted from Figs. 2 and 3 for the sake of clearness of illustration.

In the drawings all of the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar views throughout the several views.

Referring to the lettered parts of the drawings, A is the main case, inclosing and supporting the various parts of our improved vending-machine with the exception of the coin-detector J', which is on the outside and is of any usual form for the detection and discarding of improper coins and will not be hereinafter referred to, as it does not pertain to the invention described in this specification.

Supported within the casing A is a framework B, having upright supports B' therefrom which support a platform H above, containing longitudinal slots H'. On this platform H is supported a series of plungers or followers N, having downwardly-projecting fingers or arms N', extending through the slots H'. These followers N are held normally in the returned position against the stop S by means of the spring n', secured to a suitable bracket n on the rods N'. Means to be hereinafter described are provided for reciprocating the followers N back and forth on this platform. These followers are in this structure substantially the size of a cigar, this machine being

adapted for the vending of cigars, and the platform H is grooved to form a convenient receptacle above each of the slots H' to receive the cigars from a box above, so that when the plungers N are reciprocated the cigar will be forced endwise and delivered into a suitable chute or pan, as O, and drop out of the casing into a little receptacle O' in front of the same. This receptacle could be placed at the side of the casing or in any other desired position.

It is a requirement of the law that cigars, cigarettes, tobacco, and certain other articles be sold from the original box or package. Either end, top, or bottom of the box is removed to accomplish this result, and the box is supported above the path of the plungers N by means of blocks K K at each side, the tops of which are provided with adjustable plates K', clearly appearing in Figs. 6 and 7, so that the same can be adjusted to meet the requirements of any size box. The opposite end of the box is then removed, (the cigars being supported by a slide within until the machine is ready to be operated,) and the follower L'' is inserted within the box L'. The box is securely clamped between plates L L by means of screws *i i'*.

The plungers N, there being as many of them as there are layers in the box, are operated successively to deliver a single cigar or other article at will. This could be accomplished by reciprocating the plungers successively and allowing them to be returned by springs *n'* out from under the package at each delivery; but we find it most satisfactory to retain these plungers in position under the receptacle until the entire bottom layer or course has been discharged and then release the plungers, so that they will all be withdrawn at once, which obviously permits of an even descent of the cigars or other articles from the package without any danger whatever of their becoming clogged. The grooves for receiving cigars are a little separated, so that when the cigars come down they separate from each other, as clearly appears in Fig. 6. We provide means for retaining the plungers under the receptacle, consisting of detents which embrace the downwardly-depending rods N' of each of the plungers excepting the last one of the series. This clearly appears in Figs. 1, 4, and 8. A series of detents T' are pivoted to a suitable transverse bar T, carried by a suitable frame *w*, the bar being adapted to reciprocate through suitable guiding-loops *z* and being held normally toward the left by a spring *y*. On the left side which appears at the bottom of Fig. 8 is a cam-shaped finger T'', with which the last bar N' engages. This moves the bar T to the left and carries with it all of the detents T', so that when the last plunger N is operated by its action it releases all of the other plungers, so that the entire battery of plungers or fol-

lowers is withdrawn at once by the springs *n'* thereto connected, allowing the whole mass of cigars or other articles in the receptacle L' to descend evenly without danger of clogging. The return of the plungers or followers N by means of the springs results in their striking the wooden stop or buffer S, which gives the apparatus a jar or vibration, which insures the proper descent of the cigars or other articles. Where the articles are heavy and not closely packed, of course no follower, as L'', is necessary. The detaining device which we have described, while very satisfactory, is not an essential, as the vending device will operate without it, although it, in connection with the other means, insures a more perfect operation. To actuate these plungers N, we provide a shaft C, having a series of laterally-projecting arms C' at intervals along the length corresponding to the distance between the plungers N. Little antifriction-rollers *c* are placed on the outer ends of these arms, and they are distributed around the shaft one-fifth of a circle apart, so that in a single revolution of the shaft C all five of the arms pass a given point. The antifriction-rollers *c* are to contact with and carry forward the arms or fingers N' and by that means actuate the plungers N above. It is obvious that the antifriction-rollers could be dispensed with in this connection, but they of course make the operation much easier. The shaft C is rotated intermittently by a pawl-and-detent connection. This pawl-and-detent connection consists of the lever M, which projects through the case, having a button or handle M' outside the case. A spring *k* holds the lever normally upward. A link *j* connects the lever to a swinging arm E', which operates arm E, which carries a pawl *d*, which acts upon the ratchet-wheel D. The teeth on this ratchet-wheel D are one-fifth of the circumference apart, so that each complete movement of the lever M rotates the shaft one-fifth of a revolution. A detent *b'* is supported on the lug *b* and prevents any return of the wheel. An adjustable stop *a a'* is provided for regulating the throw of the ratchet. The arm E extends upwardly and is locked in position until a coin is introduced to release it, which device will be explained farther on in this description. It will be seen that on the rotation of the shaft C the arms C', carrying the antifriction-rollers *c*, will contact successively with the arms or fingers N', which will carry forward the plungers N and discharge the bottom row of cigars from the box one by one successively, so that at each complete revolution five cigars, constituting the bottom row, will be discharged, when of course the first arm will be brought into position and the operation repeated for the next row.

The arm F is pivoted at F' and extends downwardly by the side of the upwardly-pro-

jecting arm E. Supported on the head of the arm F by a suitable pivot *u* is a coin-chute G. An adjusting-screw *e'* is provided for adjusting the chute in relation to the arm. Carried by the chute G is a dog *g*, which is adapted to engage the arm F to lock the same in its normal position. A shield *G'* is provided, which closes the bottom of the chute J, through which the coin is delivered into the case when the chute G is swung to one side, the same being connected with the chute by a suitable web. A lug *l* is on this chute positioned to contact with the under side of the dog *g*. A spring *f* serves to hold the chute G in its normal position through its connection to the shield *G'*, and a spring *f'* holds the dog *g* normally into the engaging position. At the bottom of the coin-chute G is a small stop *m*. An antifriction-roller *t* is supported on the upper end of the arm E in position to contact with the coin *m'* when in the bottom of the chute G.

In operation a coin of the desired size is dropped into the chute, improper coins being eliminated by the detector *J'* above, and the coin will descend to the position indicated at *m'* in Fig. 5. The lever M is then depressed, and it acts upon the arm E through its connecting-link *j* and carries the same forward against the coin, which presses against the opposite side of the chute G, swinging it on the pivot *u*. This throws the lug *l* into contact with the dog *g*, forcing it upward and disengaging the arm F. This allows the arm F to swing, thereby releasing the arm E, which is allowed to swing forward against the stop *a'*, as clearly appears in Fig. 5. The coin is allowed to drop as soon as the arm E passes it and may fall into the bottom of the casing A or any suitable receptacle. This freeing of the arm E permits the pawl *d* to engage the ratchet D and rock the shaft one-fifth of a revolution. This actuates one of the plungers N by the arm *C'*, with its antifriction-roller C, contacting with finger N'. When a complete revolution has been made from the beginning, the last plunger N releases all of the others, which have been retained by the detents, (clearly illustrated in Fig. 8,) and the battery of plungers or followers returns and allows the next row of articles in the receptacles to descend, so that this operation can be repeated. It will thus be seen that by depositing the proper coin and pressing the lever such an article as a cigar, cigarette, or other small article may be delivered from a receptacle one at a time, thus making a satisfactory and efficient coin-controlled vending apparatus. Where the cigars are only two deep in a box, of course only two plungers would be required, and the arms for actuating the same would be correspondingly arranged on the shaft C. The same remark also applies to three layers, and where a larger number of layers than five are placed

in a box the number of plungers and corresponding mechanism would need to be correspondingly increased.

From the statements we have made and from the description it will be obvious that many modifications of this improved vending-machine are possible without departing from our invention. We, however, believe that the specific structures we have shown possess merit over any other, and we desire to claim the said structure specifically as well as broadly.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a vending apparatus, the combination of a suitable receptacle for articles in layers; a table with grooves and slots beneath the grooves; plungers to reciprocate on said table along said slots; fingers projecting through said slots; a shaft with arms distributed around the same and positioned to contact with the fingers on said plungers to actuate the same successively; suitable means of actuating the shaft whereby the plungers are pushed forward and released by the passing of the arms; suitable means of returning the plungers to the normal position after they are released, for the purpose specified.

2. In a vending apparatus, the combination of a series of plungers; detents for all but one of said plungers; and a release mechanism actuated by the last of said plungers whereby they will all be released at the same time.

3. In a vending-machine, the combination of a platform with suitable grooves a little separated from each other; blocks or brackets at each side supporting adjustable plates for supporting boxes or packages of different size; means of clamping the boxes in position whereby the articles to be forced from the box will be separated into the grooves so that they can be readily delivered one at a time, as specified.

4. In a vending-machine, the combination of a platform with suitable grooves a little separated from each other; blocks or brackets at each side supporting adjustable plates for supporting boxes or packages of different size; means of clamping the boxes in position whereby articles to be forced from the box will be separated into the grooves; a series of plungers for delivering the articles from the grooves, one at a time for the purpose specified.

5. In a vending apparatus, the combination of a box suitably supported; a table beneath the said box with suitable grooves for receiving layers of articles in said box; the said grooves being a little separated and expanded over a slightly larger area than the bottom of the box, whereby the articles will be a little separated, for the purpose specified.

6. In a vending apparatus, the combination of a box suitably supported; a table beneath

the said box with suitable grooves for receiving layers of articles from said box, the said grooves being a little separated and expanded over a slightly larger area than the bottom of
5 the box, whereby the articles will be a little more separated; a series of plungers for delivering the articles from the grooves one at a time, as specified.

In testimony whereof we have hereunto set

our hands and seals in the presence of two or more witnesses.

OMAR E. CLARK.

[L. S.]

ELLSWORTH E. CLARK.

[L. S.]

WESLEY L. CLARK.

[L. S.]

Witnesses:

TYRRELL RAYNER, Jr.,

CHAS. A. MORSE.