

No. 827,986.

J. W. MEAKER.
CHANGE MAKING MACHINE.
APPLICATION FILED MAR. 21, 1905.

PATENTED AUG. 7, 1906.

2 SHEETS—SHEET 1.

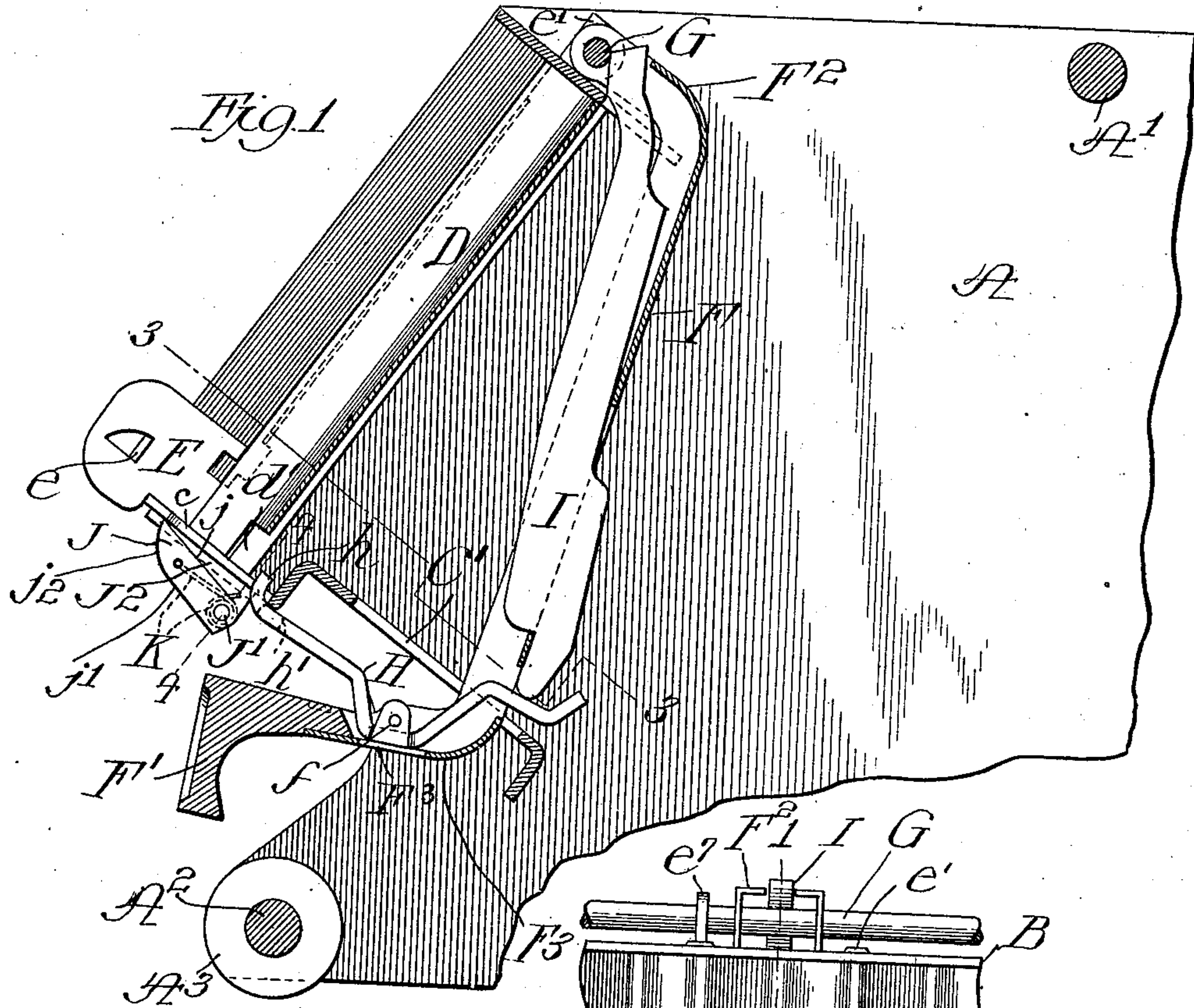
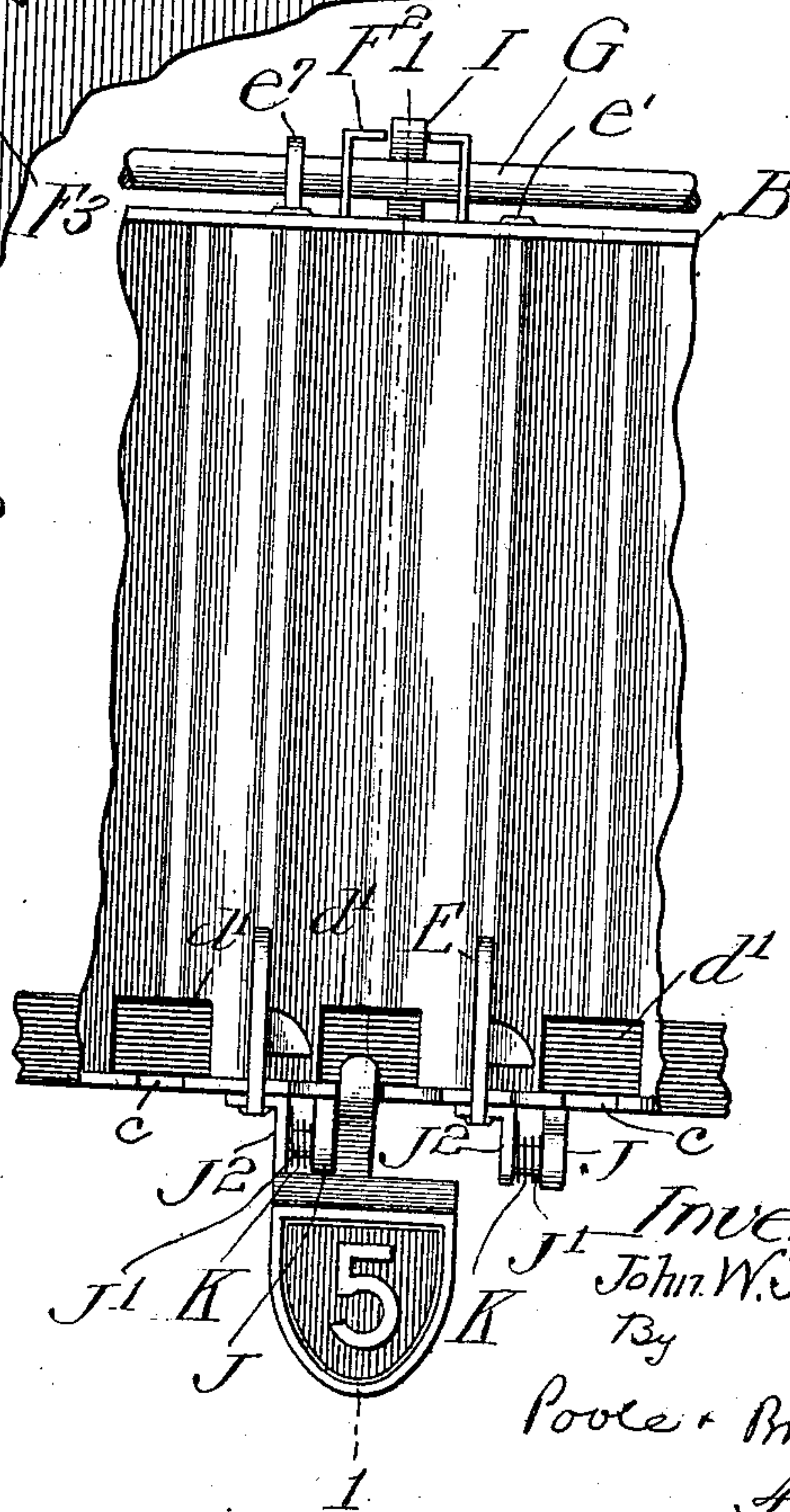


Fig. 2



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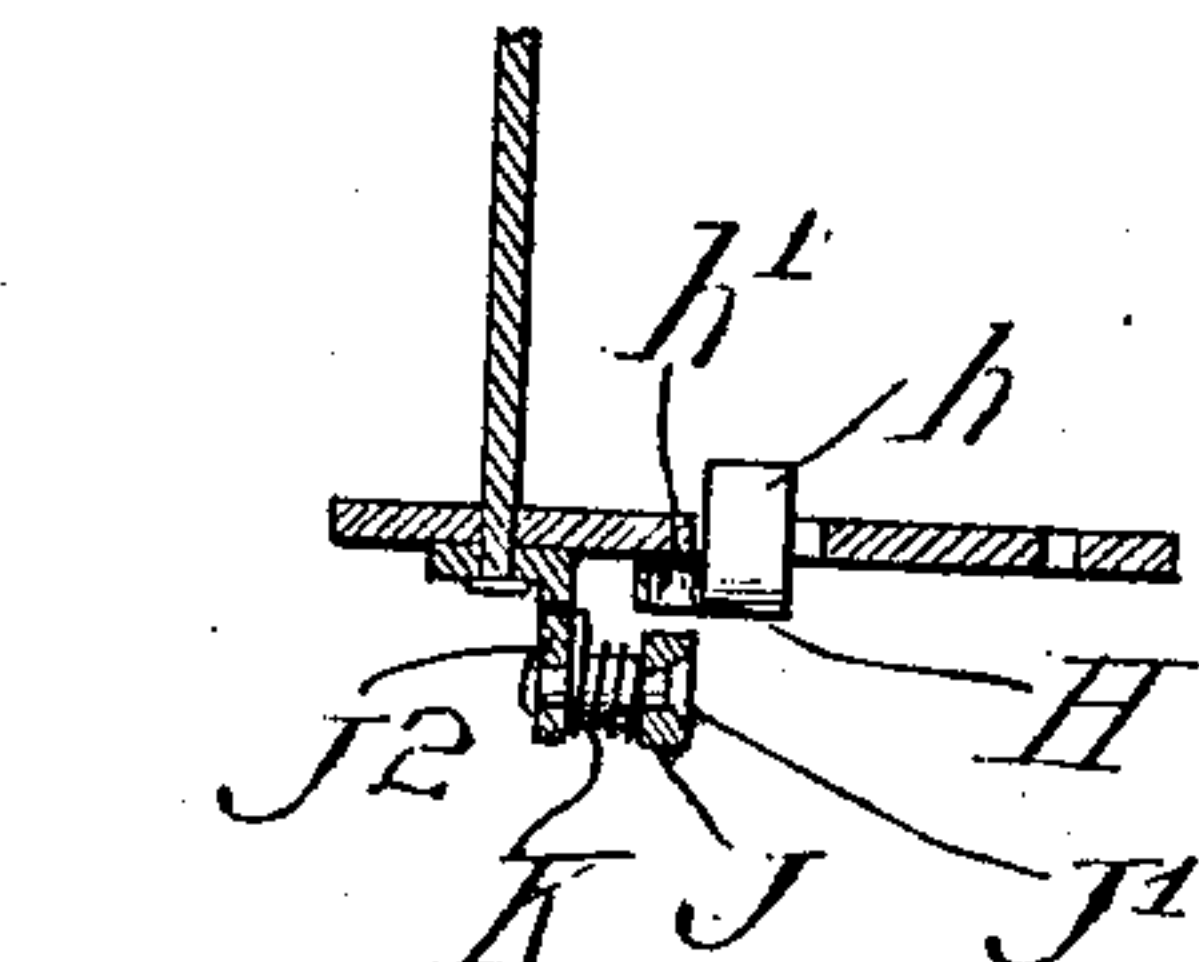
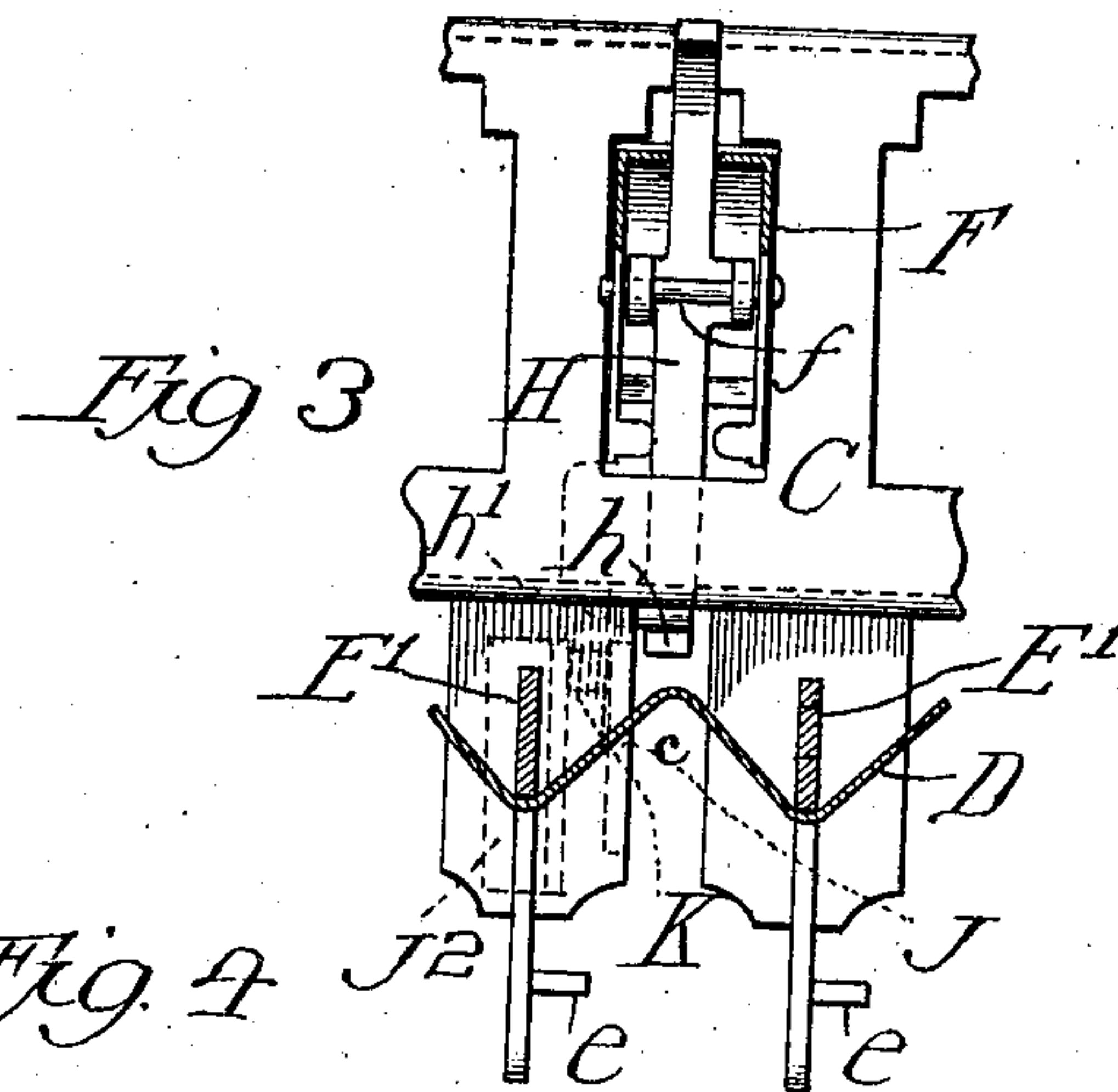
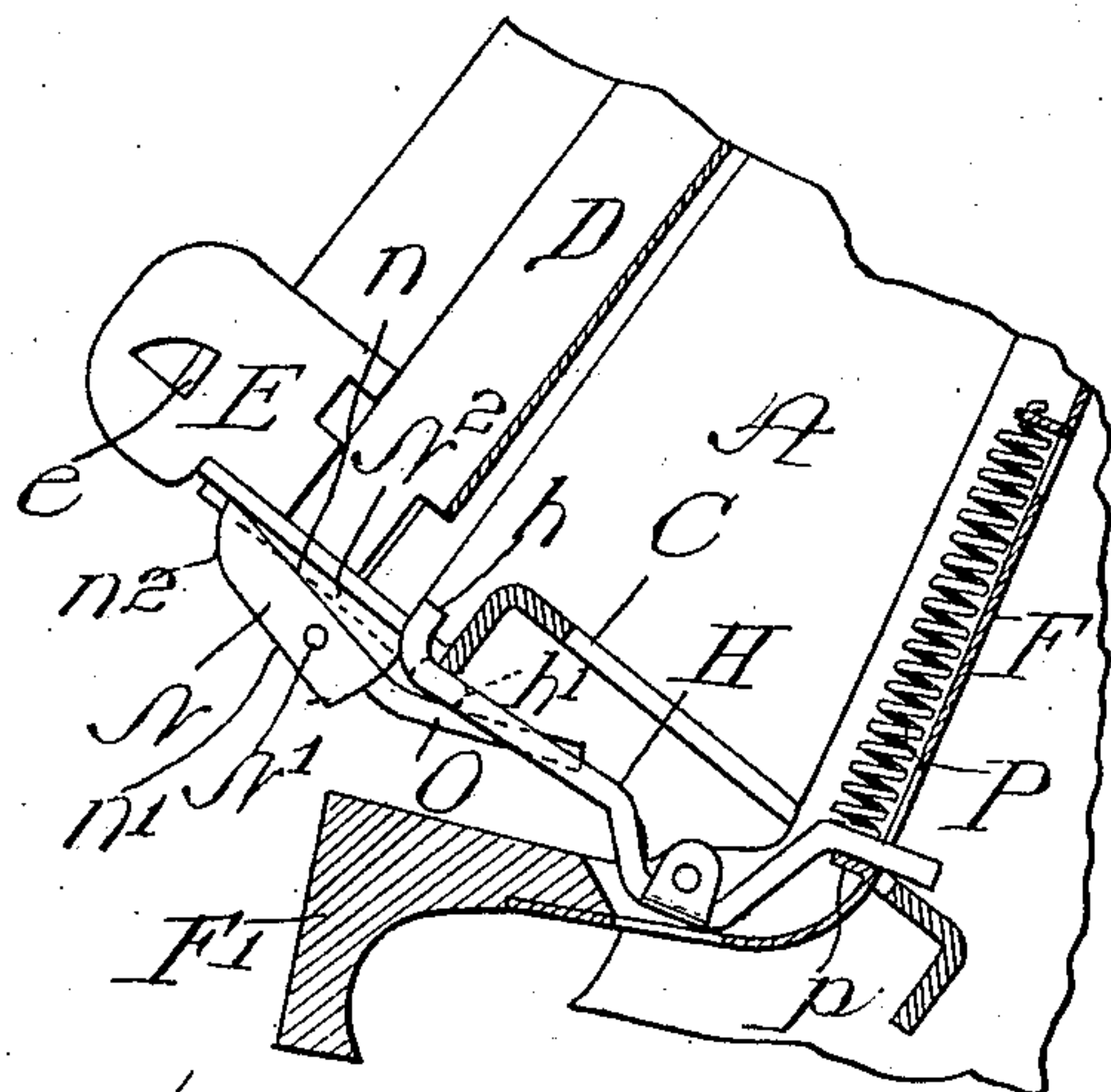
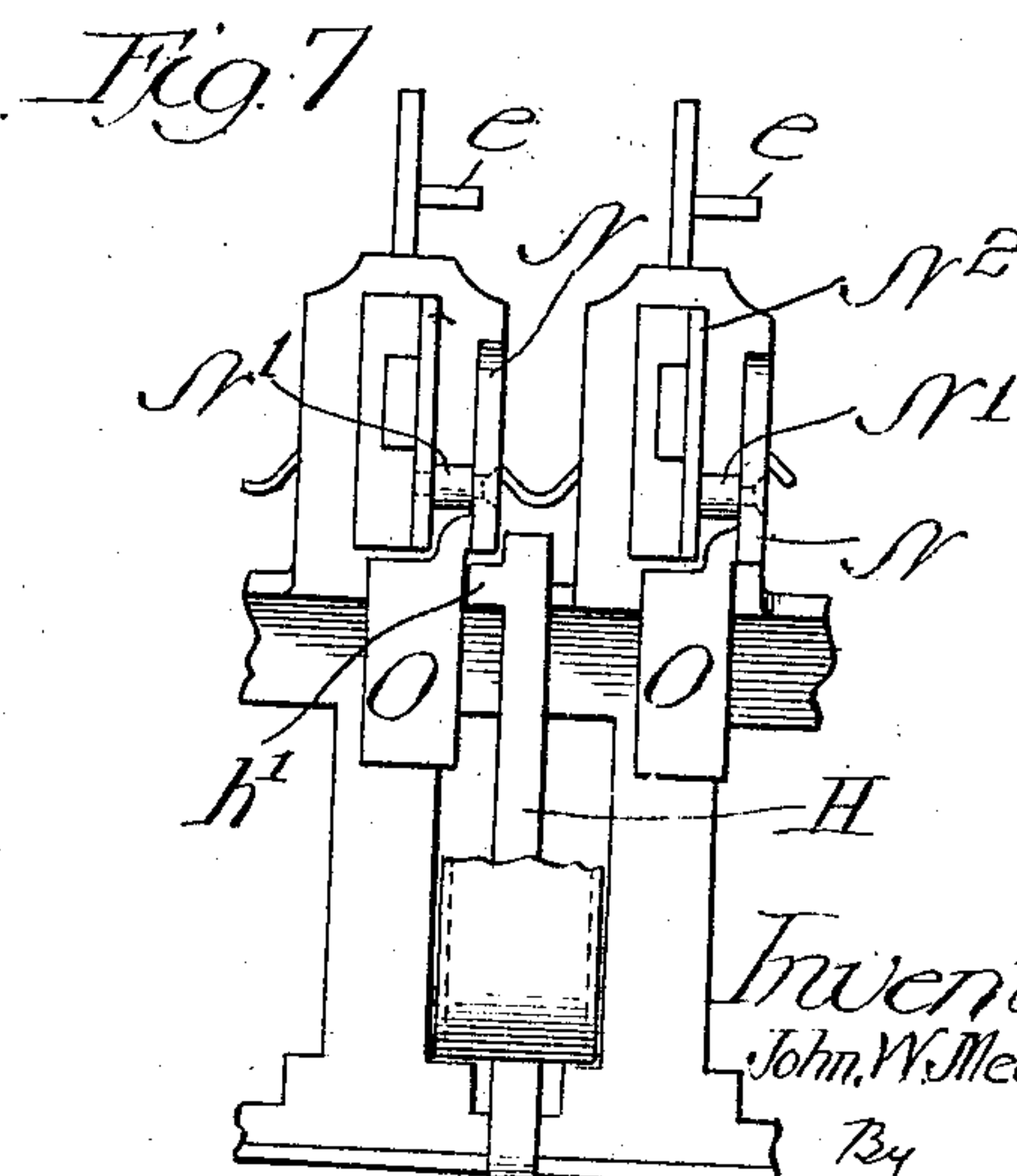
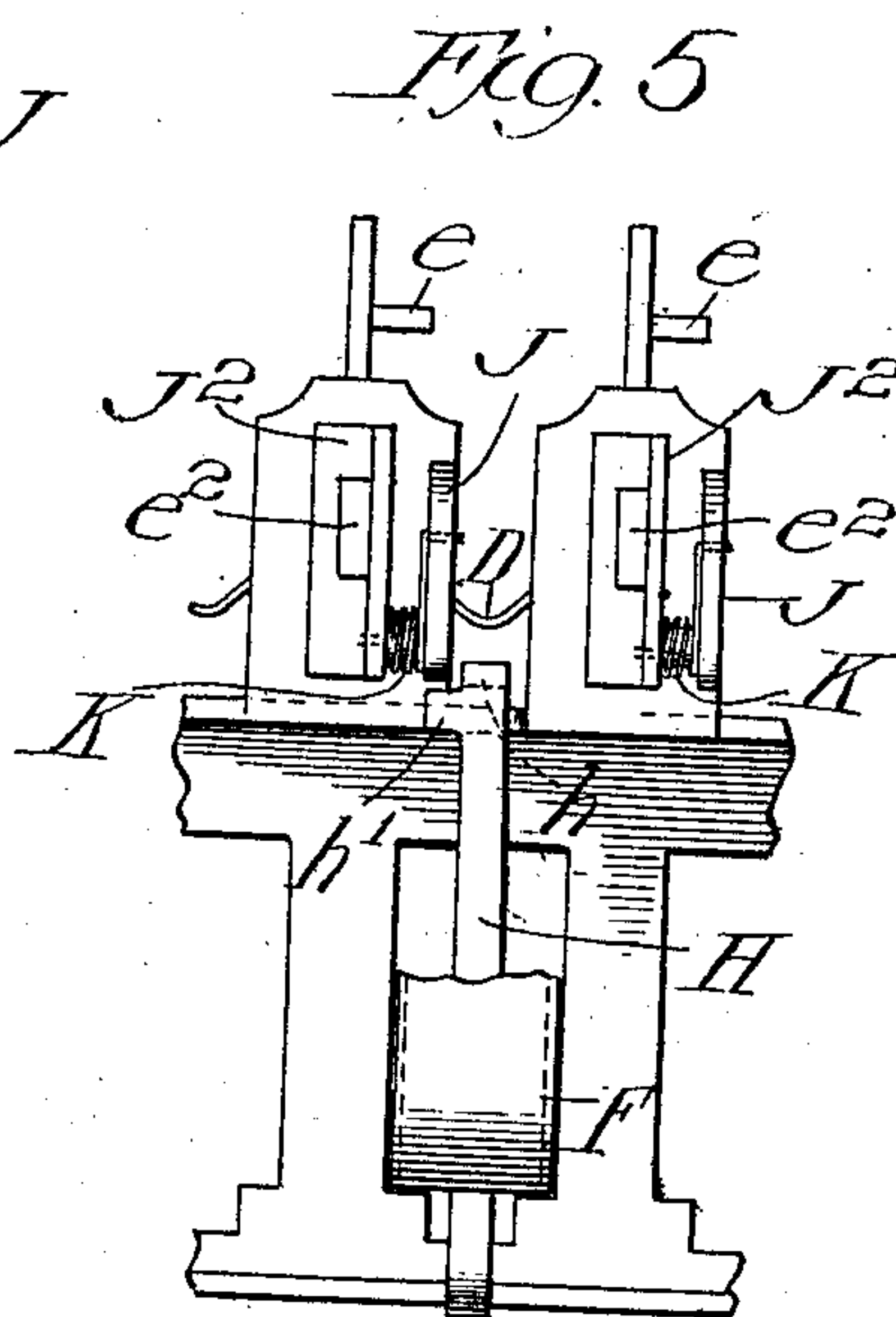


Fig. 6.



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UNITED STATES PATENT OFFICE.

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CHANGE-MAKING MACHINE.

No. 827,986.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed March 21, 1905. Serial No. 251,195.

To all whom it may concern:

Be it known that I, JOHN W. MEAKER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Change-Making Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a change-making machine of that kind illustrated and described in a prior application for patent, Serial No. 217,318, filed by me July 20, 1904, the same having a plurality of coin-receiving receptacles or grooves adapted to hold stacks or piles of coins, together with a series of keys, one for each of said receptacles or grooves, which keys are adapted to severally actuate a series of coin-ejecting fingers adapted to eject from the receptacles or grooves the lowermost coins of the piles of coins therein. The object of my invention is to improve the construction of such machines in various particulars, as will hereinafter appear.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a view in vertical section of a machine embodying my invention, taken through one of the coin-holding grooves of the machine on the line 1 1 of Fig. 2. Fig. 2 is a face view of one of the coin-receiving grooves and the coin-ejecting devices associated therewith. Fig. 3 is a detail plan section taken upon line 3 3 of Fig. 1. Fig. 4 is a detail section on line 4 4 of Fig. 1. Fig. 5 is a detail bottom or underneath view of the coin-ejecting devices. Fig. 6 is a sectional view corresponding with the lower part of Fig. 1, showing a coin-ejecting device having a weight-actuated cam-plate. Fig. 7 is a bottom view of the form of coin-ejecting device shown in Fig. 6.

As shown in the said drawings, A indicates one of two vertical parallel end frame-plates which are rigidly connected with each other by cross-rods, two of which are indicated by A' and A'', said end frame-plates and cross-rods constituting the main frame by which

the operative parts of the machines are supported.

B indicates a top frame-plate, and C a bottom frame-plate. Said plates B and C extend across the front of the machine between the end frame-plates with their front margins horizontal and parallel with each other, the plates being inclined from their said front margins downwardly and rearwardly and the front margins of the top plate being located rearwardly of the front margins of the bottom plate.

D indicates a corrugated plate which extends across the front of the machine between the said top and bottom plates with its grooves or corrugations extending from its upper to its lower edge, said corrugated plate being arranged at an inclination with its upper margin rearwardly of its lower margin. The forwardly or outwardly facing grooves of the corrugated plate D constitute the coin-holding grooves or receptacles of the machine. The bottoms of said receptacles, by which are supported the piles of coins placed in the said grooves, are formed by the front marginal part of the bottom plate C, which extends forward of the lower margin of the corrugated plate and which is provided with curved notches located severally in front of the grooves and with transverse slots *c c* extending inwardly from the said notches for the passage of the coin-ejecting fingers, as hereinafter described.

The top and bottom plates B and C are rigidly attached to the corrugated plate D, and said three plates are supported on the main frame of the machine and constitute a rigid secondary frame by which the coin-ejecting devices are sustained.

Above the forward part of the bottom plate C, between the several coin-receiving grooves in the corrugated plate D, are located vertical partition-plates E E, which project forwardly from the angles of said corrugated plate between the grooves and are provided at or near their forward ends with stop lugs or projections *e e*, which project laterally from said plates E E toward the center lines of the several grooves. Said lugs or projections *e e* are intended to prevent the delivery at one time from the lower ends of the grooves (by the action of the ejecting or delivering devices hereinafter to be de-

scribed) of more than one or a desired number of coins. The lower edge of the stop projection *e* in the case of a groove from which it is desired to eject one coin only at a time will be located at a distance above the top surface of the bottom plate C equal to the thickness of the coin which that particular groove is intended to hold. In the drawings the groove illustrated is designed for the ejection of one coin, and the lower edge of the stop projection *e* is therefore located at a distance above the top surface of the bottom plate equal to the thickness of a single coin. If, however, it be desired that two, three, or more coins be ejected at once from the groove, said stop projection *e* will be located a distance above the top surface of the bottom plate equal to the combined thickness of the number of coins which are to be ejected at one time from the groove.

As shown in the drawings, the partition-plates *E E* are formed in one piece with and constitute forward projections upon the lower end of connecting-strips *E'*, located in vertical planes parallel with the end frame-plate and extending between the top plate B and the bottom plate C. The upper ends of said connecting-strips fit against the lower surface of the forward part of the top plate B, and their lower ends fit against the front marginal part of the bottom plate C between the slots *c c*, while the front margins of said connecting-strips extend into the angles of the corrugated plate D behind said plate and between inwardly-bent portions thereof. Said connecting-strips *E'* are provided with tongues *e'*, which extend through transverse slots in the top plate B and are upset or riveted at their ends to fasten the upper end of said connecting-strips rigidly to said top plate. At their lower ends the connecting-strips *E'* are provided with similar tongues *e''*, which extend downwardly through transverse slots in the bottom plate C and which are likewise riveted or upset at their ends to secure the strip *E'* rigidly to said bottom plate. The top edges of the partition-plates *E* and the lower margin of the corrugated plate are provided with interfitting notches by which said parts are interlocked with each other.

So far as described the parts of the machine above referred to are made like the corresponding parts illustrated in the application for Letters Patent hereinbefore referred to.

The devices for ejecting the coins from the several grooves or receptacles are alike for all of the coin-receiving grooves, and one only is shown in the accompanying drawings. The main part of the coin-ejecting device consists of a pivoted actuating-lever *F*, arranged with its lower end adjacent to and beneath the lower end of the coin-groove and having its pivotal axis located above the level of and at the rear of the bottom of the coin groove or

receptacle, said lever extending at its main or central part behind or at the rear of the said plate D. The lower end of the said actuating-lever *F* extends forward of the pivotal axis of the said lever, so that said lower end tends to swing downwardly and rearwardly by its own weight or gravity. At its lower or forward end the lever is provided with a depending part or key *F'*, beneath and behind which the finger may be placed for drawing the actuating-lever forward. Said key *F'* is preferably made of considerable weight and desirably of cast metal, so that the gravity of said finger-piece will aid in effecting a rapid or prompt backward movement of the actuating-lever when the latter is released. As preferably constructed, the said actuating-lever *F* is provided at its upper part with a forwardly-bent portion *F''*, which extends over the top plate B and which is provided with a bearing-aperture to engage a horizontal pivot-rod *G*, extending longitudinally of the top plate B above the same. Said pivot-rod *G* may be supported by engagement with apertures formed in upward extensions of the tongues *e'* on some of the connecting-strips *E'*. The drawings show the said pivot-rod as passing through an upward extension *e''* of the tongue *e'* of one of the two connecting-strips illustrated. At its lower end the said actuating-lever *F* is provided with a forwardly-directed portion *F'''*, arranged generally at right angles to the main or body part of the lever and extending beneath the bottom plate C and to the forward end of which the finger-piece *F'* is attached. The said actuating-lever *F* is shown as extending through a guide-slot *C'*, formed in the bottom plate C, said lever having bearing against the side edges of said slot by which it is held from lateral movement when swung on its pivot.

On the lower or forwardly-extending part *F'''* of the lever *F* is pivoted a coin-ejecting lever *H*, having at its forward end an upwardly-extending ejecting-finger *h*, adapted to project through the slot *c* in the bottom plate C. The ejecting-finger is adapted when in its elevated position to extend far enough above the bottom plate to engage a coin resting thereon, and when it is desired that any one of the grooves should be adapted for the discharge of more than one coin at a time the finger will be made long enough and will extend above the bottom plate a sufficient distance to engage two, three, or more coins at once, as desired. The plate D is provided above the slot *c* with a notch *d'* for the passage of the ejecting-finger, which latter in its forward movement rises through the slot *c* at a point behind or near the said plate D. Said ejecting-finger *H* is pivotally connected at a point between its ends by means of a pivot-pin *f* to the said forwardly-extending part of the actuating-lever, and the rear end of said

ejecting-lever is extended past or rearwardly from the pivot *f* and is adapted for engagement with a sliding weight *I*, which is mounted on the actuating-lever and acts to press downwardly on the rear end of the said ejecting-lever and to thereby tend to yieldingly hold in an elevated position the forward end of the same, which bears the ejecting-finger.

Below the bottom plate *G* at one side of the path of the forward end of the ejecting-lever *H* is located a cam-plate *J*, arranged in a vertical plane parallel with the plane in which the ejecting-lever swings. Said cam-plate is provided with an upper guide or cam surface *j*, with a lower cam-surface *j'*, arranged generally parallel with the top surface *j*, and at the forward part of its bottom surface with a downward and rearward inclined cam-surface *j''*. Said cam-plate *J* is mounted on a horizontal pivot-stud *J'*, attached to a bracket *J''*, which is fastened to the bottom plate preferably by extending the tongue *e''* on the lower end of the connecting-strip *E'* downwardly through both the bottom plate and a horizontally-bent part of the bracket and riveting the lower end of said tongue against said bracket. Around the pivot-stud *J'* is placed a coiled spring *K*, one end of which is connected with the cam-plate *J* and the other with the bracket *J''* in such manner that it tends to elevate the forward end of the cam-plate or to yieldingly hold such forward end against the bottom plate *C*. The ejecting-lever *H* is provided near its forward end with a laterally-extending guide-finger *h'*, Fig. 4, adapted for contact with the bottom plate *C* and also with the upper and lower margins of the said cam-plate *J*.

The downward pressure of the weight *I* on the rear end of the ejecting-lever, as before described, tends to hold the rear end of the ejecting-lever so far depressed and its forward end lifted sufficiently to bring the finger *h'* in contact with the bottom surface of the bottom plate *C*. When the actuating-lever is at the rearward limit of its movement, the ejecting-finger will be located at the rear of the rear edges of the coins in the receptacles, so that as the finger *h'* slides along said bottom plate in the forward movement of the actuating-lever the ejecting-finger will strike the rear edge of the lowermost coin and carry said coin forwardly out of the groove. As the actuating-lever is drawn forward the weight will hold the ejecting-lever in position for engagement of its finger *h'* with the said bottom wall *C*; but as the forward movement continues the finger will act on the top edge or cam-surface *j* of the cam-plate *J* and depress the forward end of said cam-plate until the ejecting-finger has been advanced past the said forward edge of and is free from the cam-plate, when the latter will rise under the action of its weighted end

to its normal or elevated position. In the rearward movement of the actuating-lever the finger *h'* will strike the forward cam-surface *j''* of the cam-plate, and by the action of said cam-surface the forward end of the ejecting-finger will be held in its depressed position until the finger *h'* passes the rear end of said cam-plate, when the forward end of the ejecting-lever will rise until the finger *h'* again comes in contact with the bottom plate *C* and the ejecting-finger is brought into position at the rear of the lowermost coin resting on the bottom plate. It follows that when the actuating-lever is released and allowed to return to its original position or said actuating-lever swings backwardly said finger *h'* will ride downwardly on the lower edge of the cam-plate, thereby depressing the forward end of said actuating-lever and carrying the ejecting-finger below the coin which rests on the bottom wall *C*. As soon as said finger *h'* has passed rearwardly from the cam-plate *J* the weight *I* acting downwardly on the rear end of said ejecting-lever will lift the forward end thereof until the finger *h'* is again brought above the level of the rear end of the cam-plate and again engaged with the bottom wall *C*, along which it will slide in the next forward movement of the actuating-lever.

As a result of the construction above described the actuating-finger on the coin-ejecting lever will as the actuating-lever is drawn forward be guided in a path parallel with the bottom plate while engaged with the coin and while acting to push the same from its place beneath the pile of coins and will after the ejection of the coins be drawn downwardly by the action of the lower cam-surface of the cam-plate, so that it will be entirely free from contact with the lowermost coin in its backward movement. The movement of the coin-ejecting finger is thus made positive, and said finger will as it is moved forward invariably engage the rear edge of the lowermost coin regardless of the rapidity with which the parts are operated. Moreover, in the return movement of the actuating-lever said finger will be free from contact with the lowermost coin and is thus prevented from lifting from place or disturbing the position of the lowermost coin in the receptacle. In prior constructions, in which the cam ejecting-finger is thrown upwardly by a spring or weight and rides over the lowermost coin in its return movement, the lowermost coin is liable to be lifted and thrown out of place by the upward pressure of the finger in such backward movement at times when one or two coins only are left in the receptacle; but by the construction herein described liability of such lowermost coin being thrown out of place by the returning finger is entirely avoided.

It is to be noted that the main purpose or

function of the cam-plate J is to depress the ejecting-finger so that it will be free from contact with the said coin in its rearward movement. The top surface *j* of said cam-plate therefore has no guiding function; but the ejecting-finger is guided in its forward movement and maintained in position for engagement with the coin by contact of the finger *h'* with the bottom plate C. In other words, movement of the ejecting-finger after it has become engaged with the rear edge of the coin in a path parallel with the bottom plate is insured by contact of said finger with the bottom plate itself, so that no special accuracy in shape or location or adjustment of the cam-plate itself is required to insure the proper engagement of the ejecting-finger with the coin and the maintenance of the said finger in position to act on the coin throughout its forward movement.

In Figs. 6 and 7 I have shown still another modification in the construction of the coin-ejecting devices, wherein a weighted instead of a spring-actuated cam-plate is used to give movement to the ejecting-lever when retracted. In this instance the rear end of the ejecting-lever H is held yieldingly in contact with an upwardly-facing stop *p* on the actuating-lever F by means of a downwardly-acting spring P, said stop being so located that the guide-finger *h* will be held normally elevated or in guiding contact with the bottom plate C and the ejecting-finger in position to engage the lowermost coin in the receptacle. A cam-plate N is used in this instance, which cam-plate is mounted on a pivot-stud N', attached to a bracket N², fastened to the bottom plate by the tongue on the connecting-strip E'. The cam-plate has a rigidly-attached weight O extending rearwardly from its pivot in such manner that it tends to throw the forward end of the cam-plate upwardly. Said weight is shown as arranged in laterally-offset relation to the cam-plate, so that it will not stand in the path of adjacent moving parts. When the actuating-lever F is at the rearward limit of its movement and the cam-plate stands in its normal position with its front end elevated and in contact with the bottom plate C, the finger *h'* on the forward end of the ejecting-lever will bear upwardly against the bottom plate C and will stand above the level of the rear end of the cam-plate. Said cam-plate in this instance is provided with cam-surfaces *n n' n''*, corresponding with the cam-surfaces *j j' j''*, hereinbefore described. As the actuating-lever is drawn forward the finger *h'* will strike the cam-surface *n*, depressing the forward end of the cam-plate through the lifting of the weight O until said finger *h'* passes from the forward end of the cam-plate, when the latter will rise or return to its normal position. In the rearward movement of the actuating-lever the finger *h'* will strike the lower surface *n''* of the cam-

plate and in traveling rearwardly along said surface will depress the front end of the ejecting-lever until the finger *h'* passes the rear end of the cam-plate, when the spring P will return the ejecting-lever to its position with the ejecting-finger extending above the bottom plate. The parts will then be in position to be again operated as before.

While I have shown in the accompanying drawings in one instance a sliding weight and in another instance a spring for holding the forward end of the ejecting-lever yieldingly elevated, yet it will be understood that any suitable construction may be employed to afford the desired unbalanced construction in said ejecting-lever, whereby its forward end will be held yieldingly in its elevated position. Moreover, the cam-plate may be movably mounted in any manner affording rising-and-falling movement in its forward end, and the said cam-plate may be yieldingly held with its forward end elevated by a spring applied thereto by an attached weight or by any other device adapted for the purpose.

I claim as my invention—

1. The combination with a coin-holding receptacle adapted for the forward discharge of coins from the lower end thereof, of coin-ejecting means embracing a forwardly and backwardly moving actuating member, an unbalanced ejecting-lever pivoted to said actuating member and provided with an ejecting-finger, said lever having guiding contact with the bottom wall of the receptacle in the advance movement of the actuating member, and a yielding cam-plate adapted to act on said lever during the rearward movement of said actuating member.
2. The combination with a coin-holding receptacle adapted for the forward discharge of coins from the lower end thereof and provided with a slotted bottom wall, of coin-ejecting means embracing a forwardly and backwardly moving actuating member, an unbalanced ejecting-lever pivoted to said actuating member and having guiding engagement with said bottom wall and also having an ejecting-finger which projects through the slot in said bottom wall for engaging the coin or coins to be ejected, and a yielding cam-plate adapted to act on said ejecting-lever for depressing said ejecting-lever during the rearward movement of the actuating member.
3. The combination with a coin-holding receptacle adapted for the forward discharge of coins from the lower end thereof and provided with a slotted bottom wall, of coin-ejecting means embracing a forwardly and backwardly moving actuating member, an unbalanced ejecting-lever pivoted to said actuating member and provided with an ejecting-finger which projects through the slot in said bottom wall for engaging the coin or coins to be ejected, and also having a guide-

finger adapted for guiding engagement with said bottom wall, and a yielding cam-plate adapted to act on said guide-finger for depressing said ejecting-lever during the rearward movement of the actuating member.

4. The combination with a coin-holding receptacle adapted for the forward discharge of coins from the lower end thereof, of coin-ejecting means embracing a pivoted actuating-lever, an unbalanced ejecting-lever pivoted to said actuating-lever and provided with an ejecting-finger, said unbalanced lever having guiding contact with the bottom wall of the receptacle in the advance movement of the actuating-lever, and a yielding cam-plate adapted to act on said lever during the rearward movement of said actuating-lever.

5. The combination with a coin-holding receptacle adapted for the forward discharge of coins from the lower end thereof, and provided with a slotted bottom plate, of coin-ejecting means embracing a pivoted actuating-lever, an unbalanced ejecting-lever pivoted to said actuating-lever and provided with an ejecting-finger at its forward end, and a pivoted cam-plate, means yieldingly holding the forward end of said cam-plate elevated, said cam-plate being adapted to act

on the ejecting-lever to depress the ejecting-finger in the rearward movement of the actuating-lever.

6. The combination with a coin-holding receptacle having a slotted bottom plate on which the coin in the receptacle rest, of coin-ejecting means embracing a pivoted actuating-lever, an unbalanced ejecting-lever pivoted to said actuating-lever and provided at its forward end with an ejecting-finger adapted to extend through said slot in the bottom plate, and with a guide-finger adapted for guiding engagement with said bottom plate, a pivotally-supported cam-plate, the forward end of which is held yieldingly elevated and in contact with the bottom plate, said guide-finger being adapted for engagement with the lower surface of said cam-plate to depress the ejecting-finger, in the rearward movement of said ejecting-lever.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 16th day of March, A. D. 1905.

JOHN W. MEAKER.

Witnesses:

OTTO F. BARTHEL,
THOS. S. LONGSTAFF.