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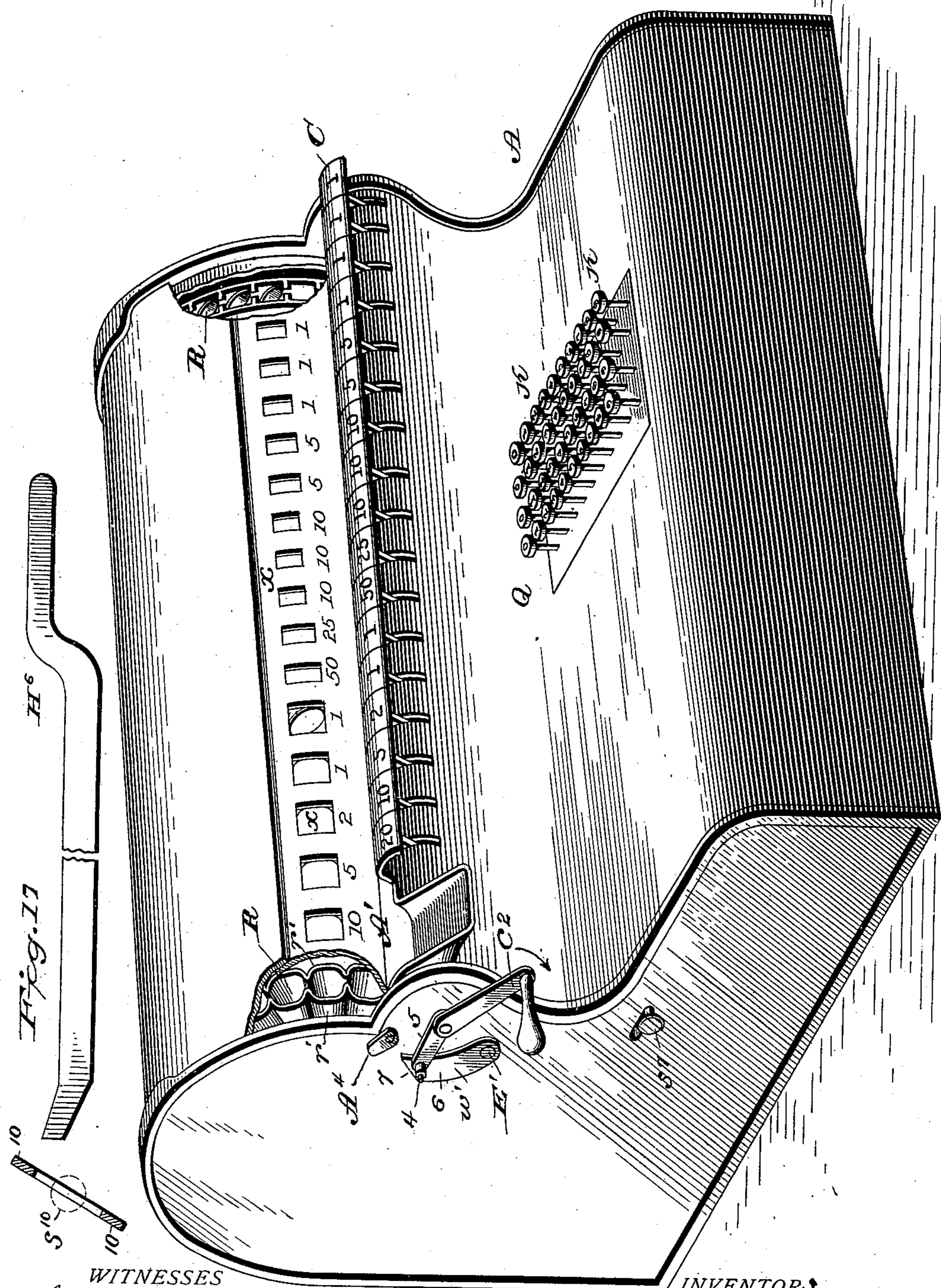
Patented Feb. 7, 1899.

I. S. DEMENT & C. F. BASSETT.
MECHANICAL CASHIER.

(No Model.)

(Application filed July 14, 1898.)

10 Sheets—Sheet 1.



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Fig. 1.

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Fig. 18.

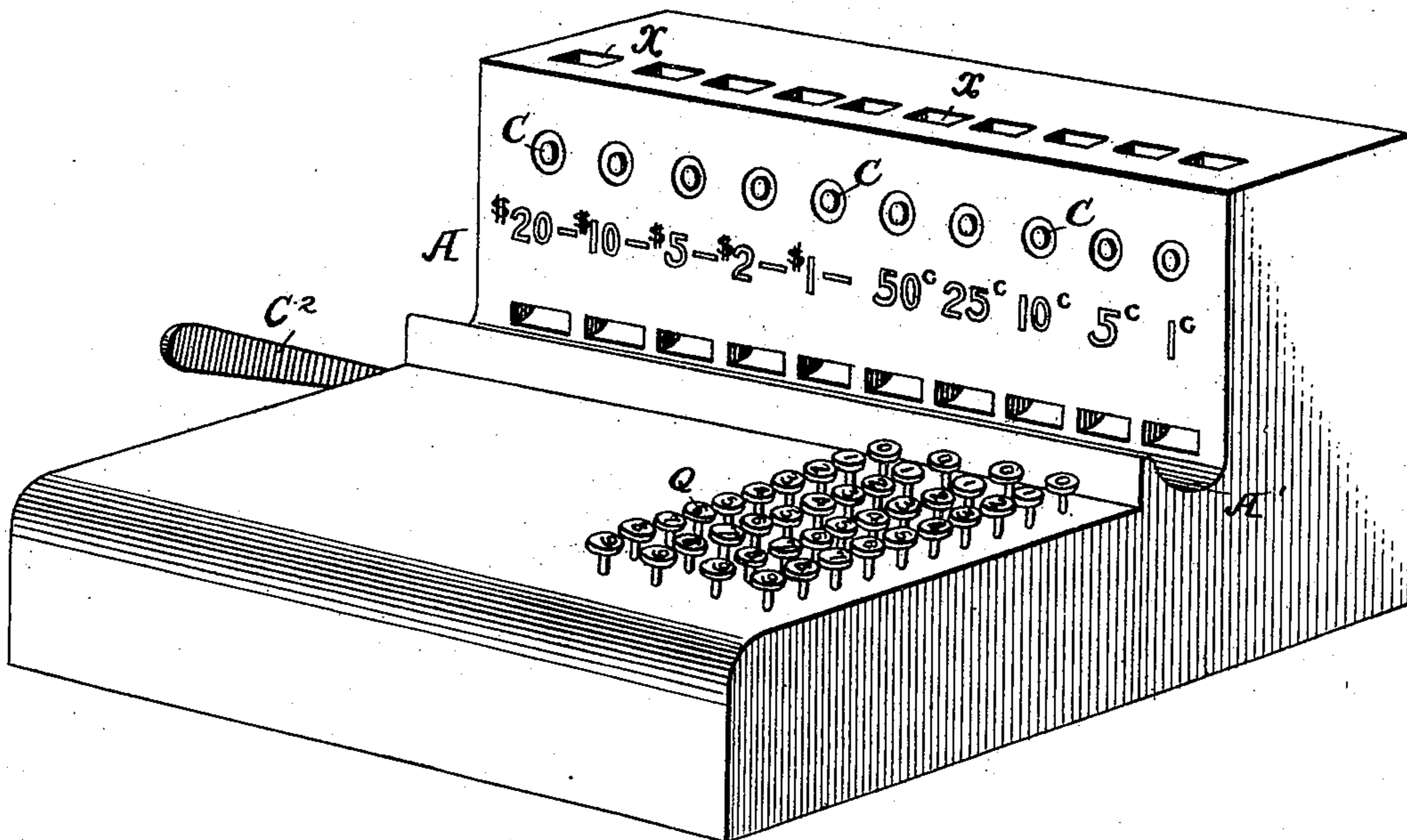


Fig. 2.

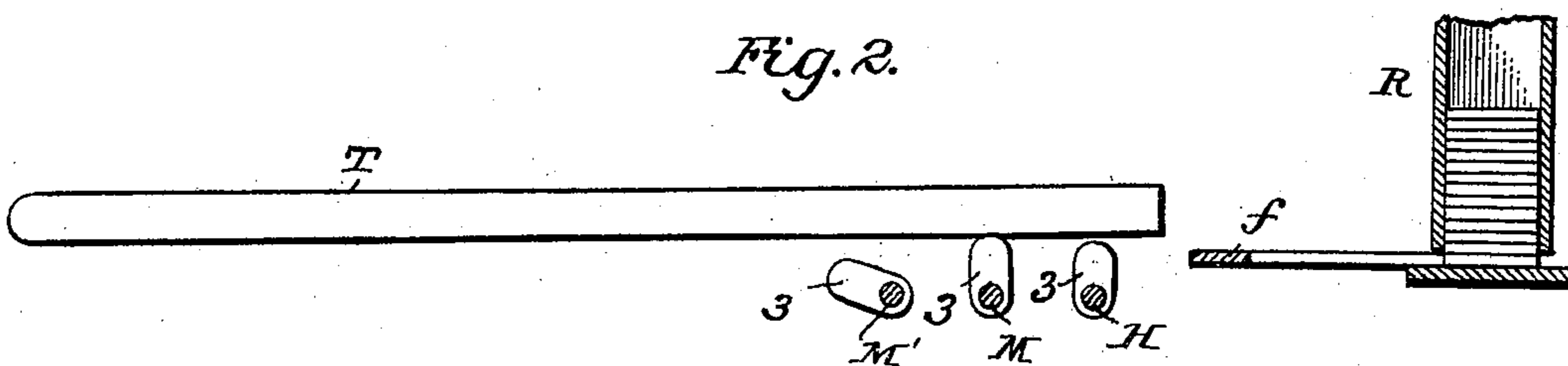


Fig. 12.

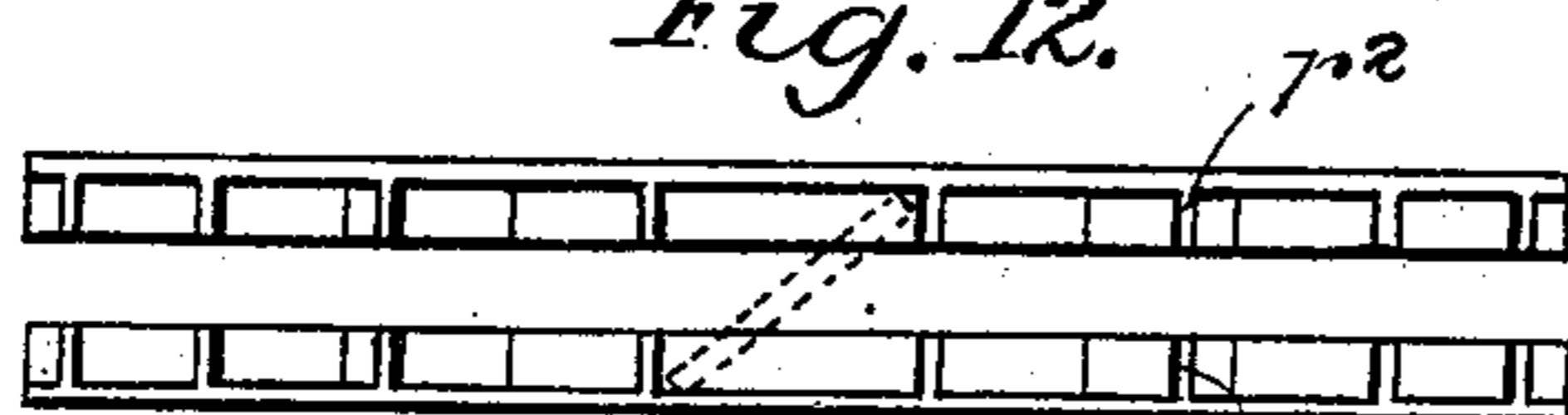
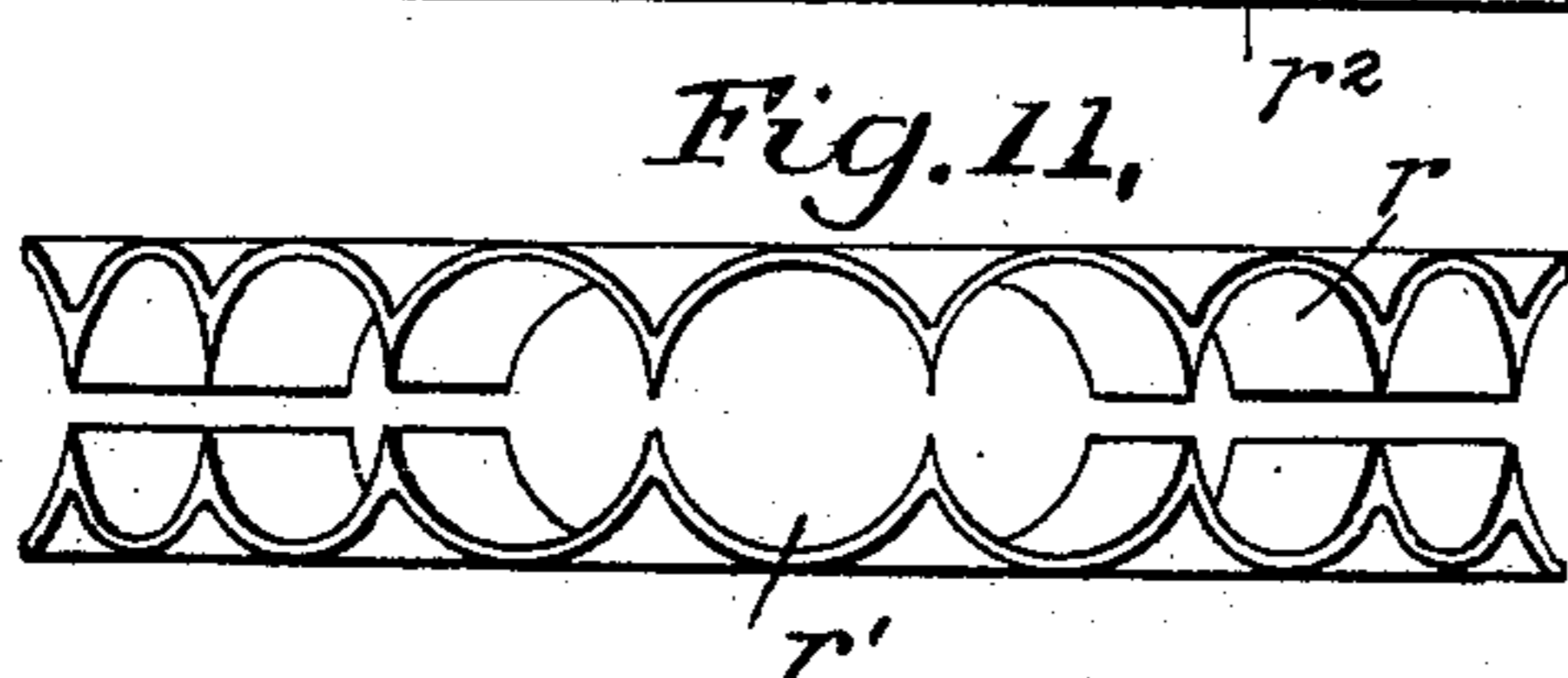


Fig. 11.



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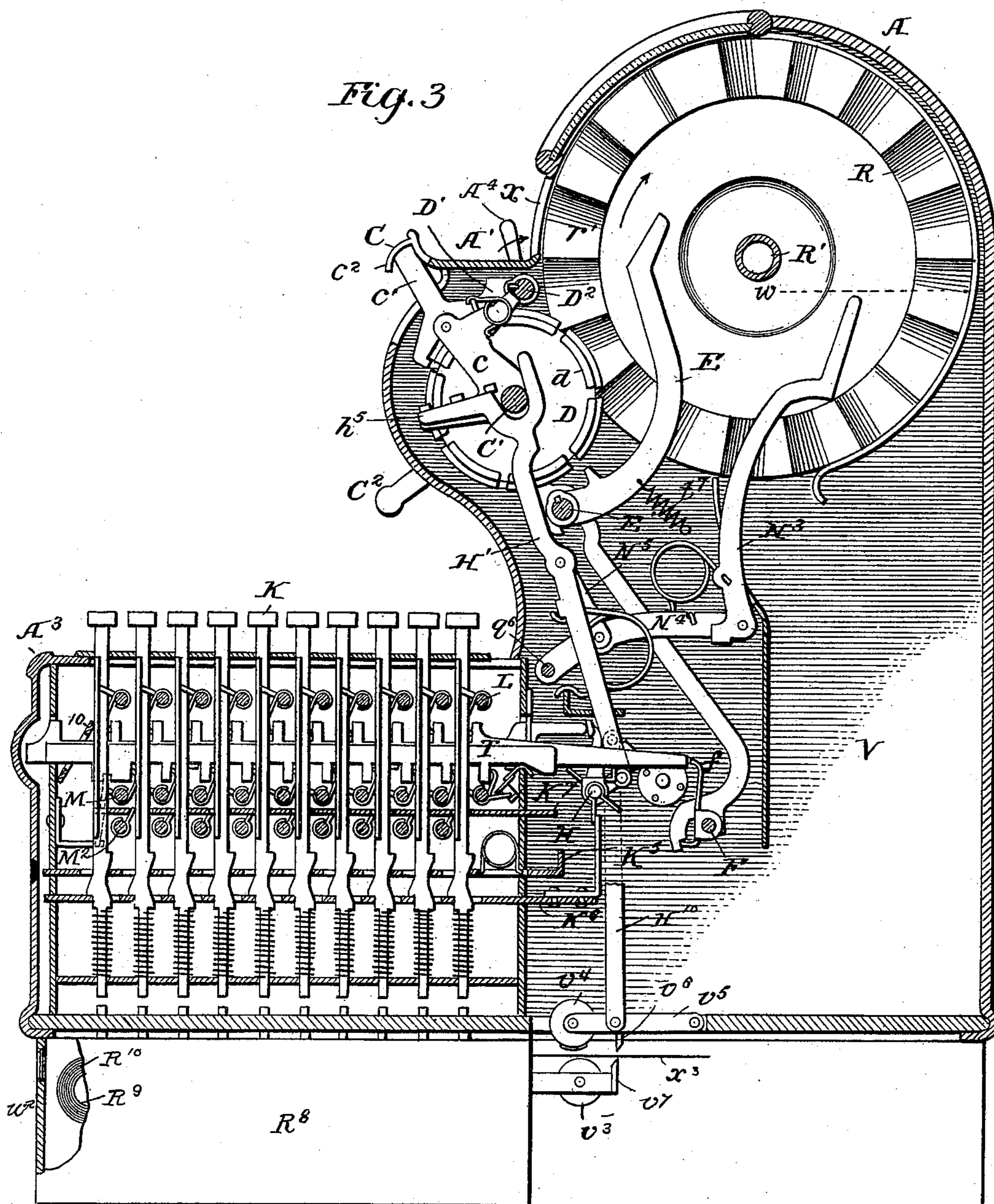
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Witnesses

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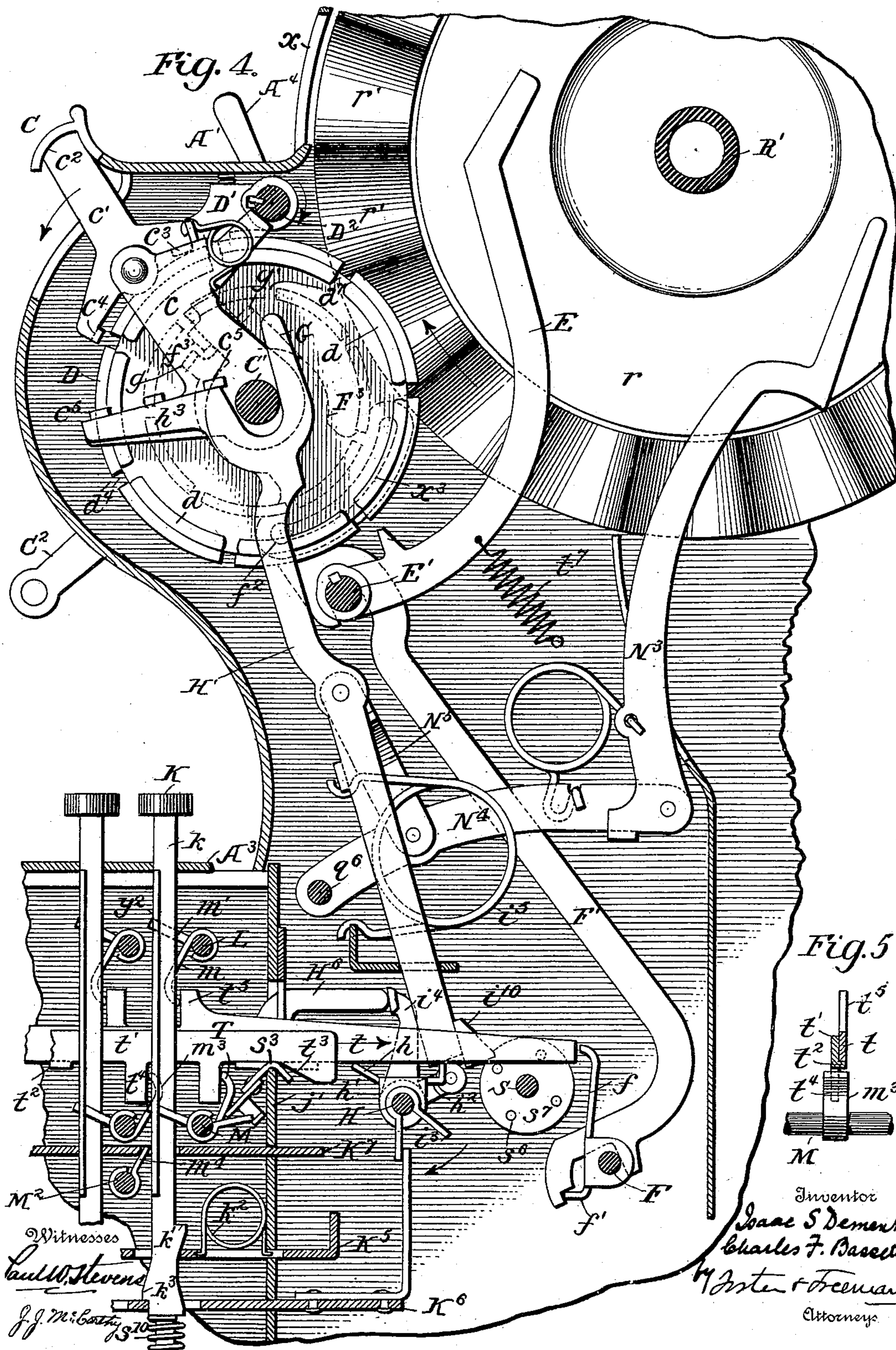
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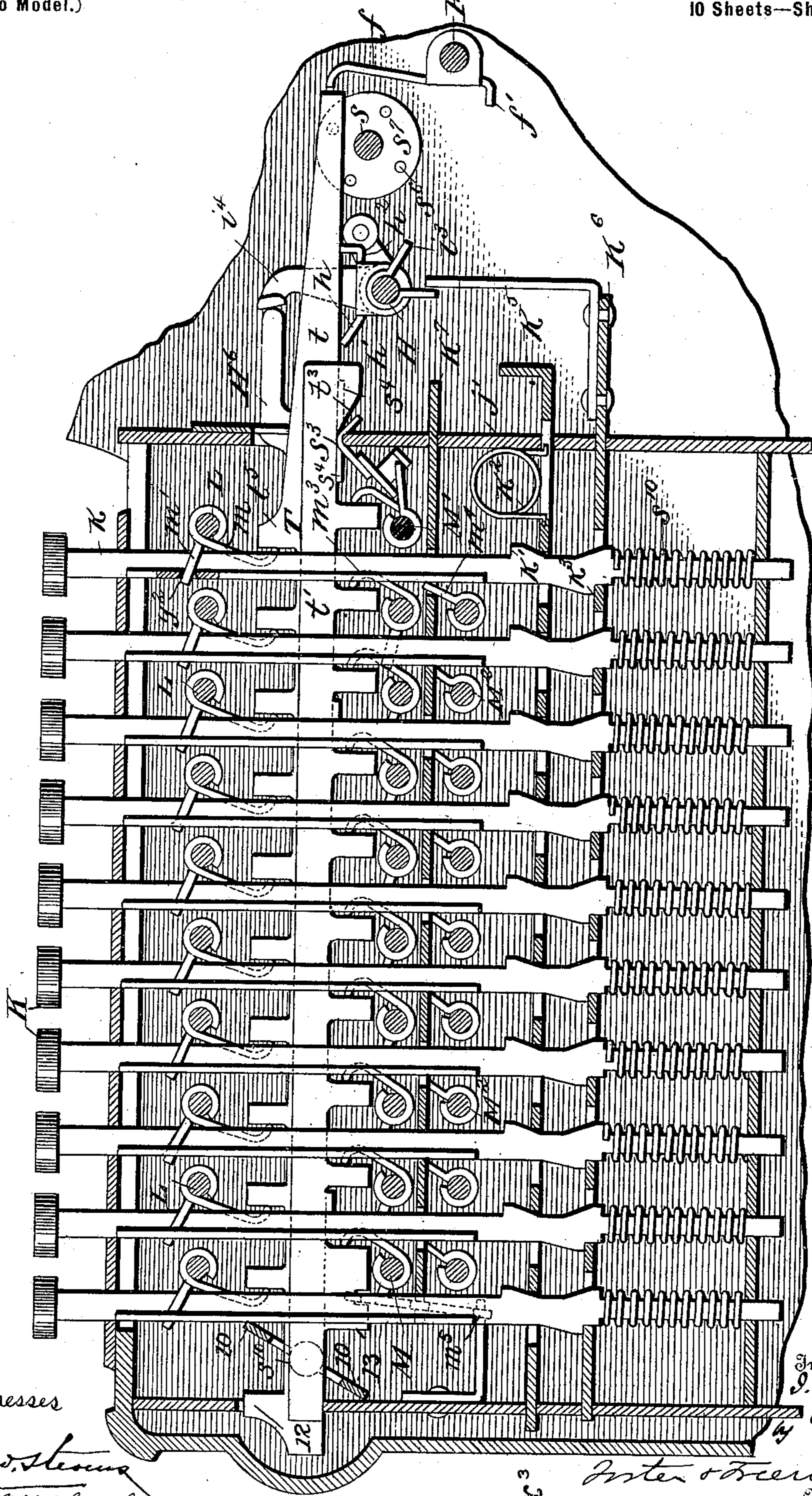
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Fig. 6.



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Fig. 8.

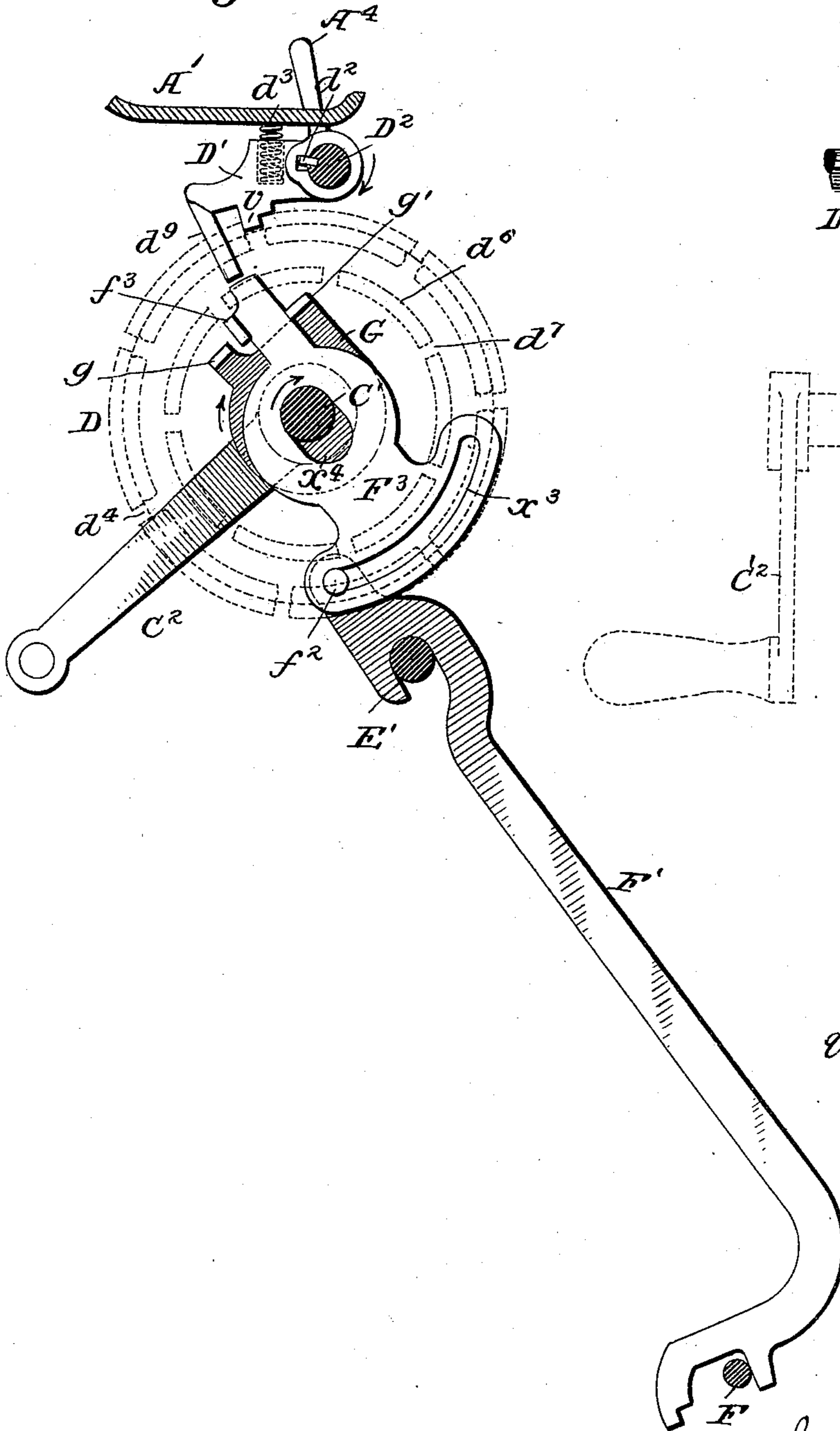
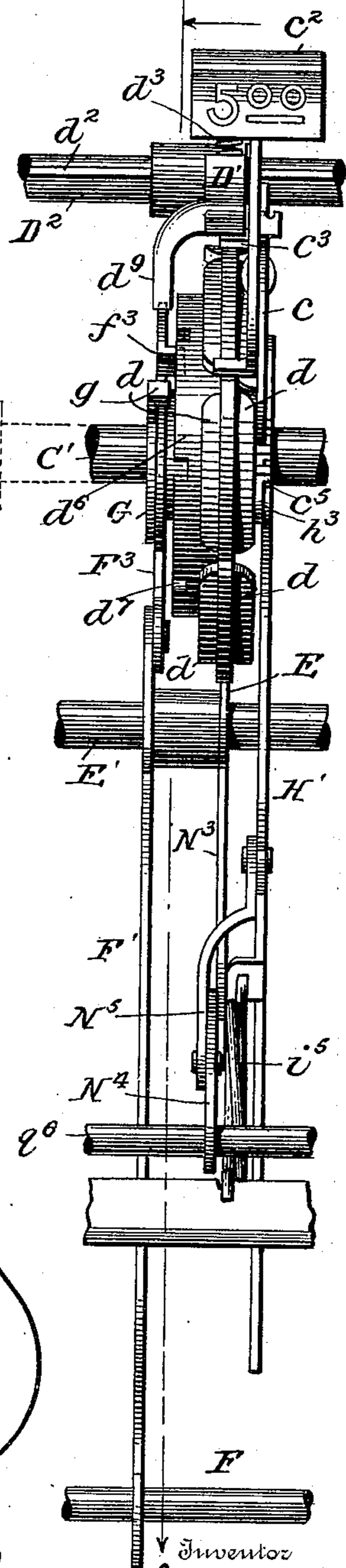


Fig. 7.



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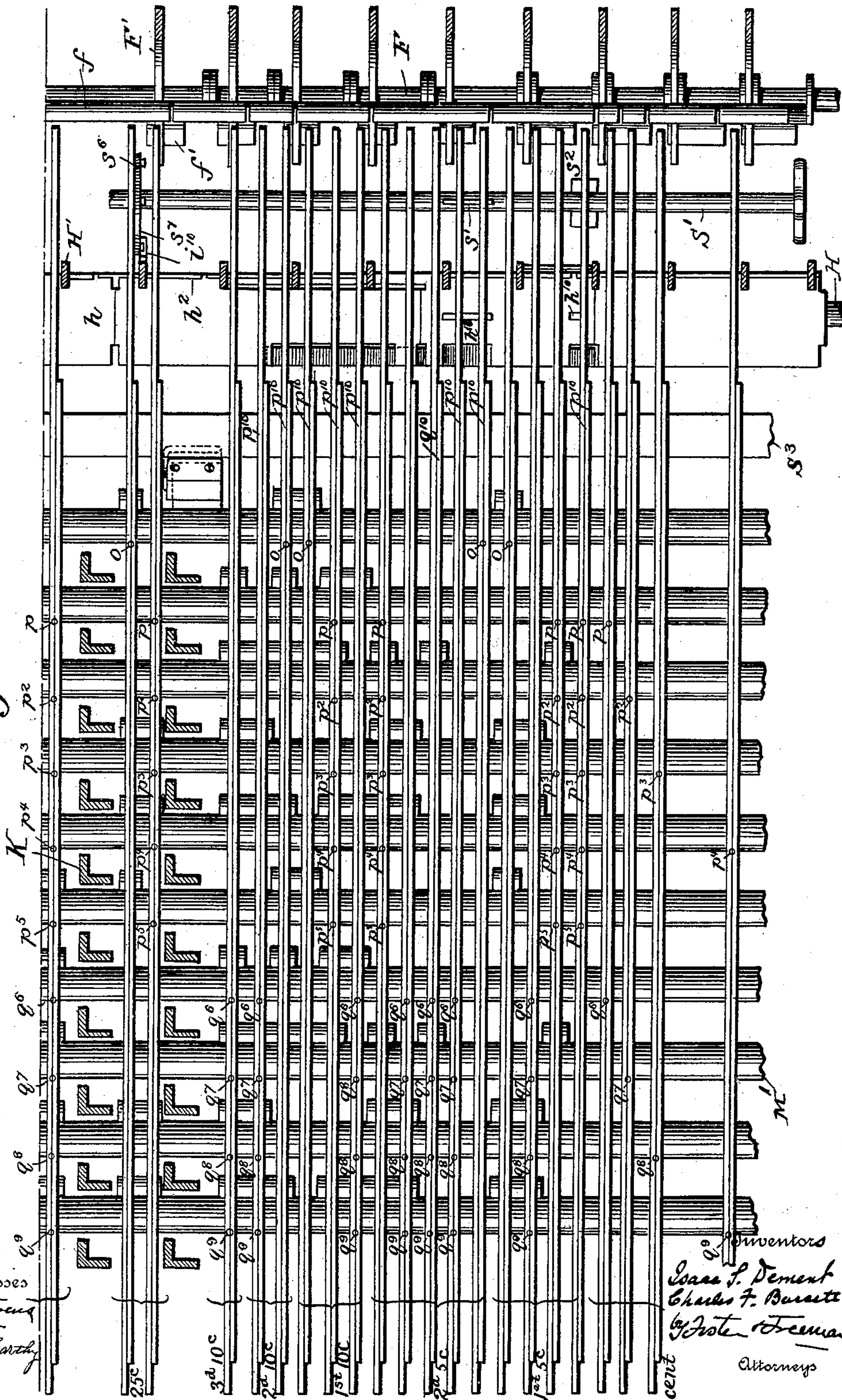
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Fig. 9.

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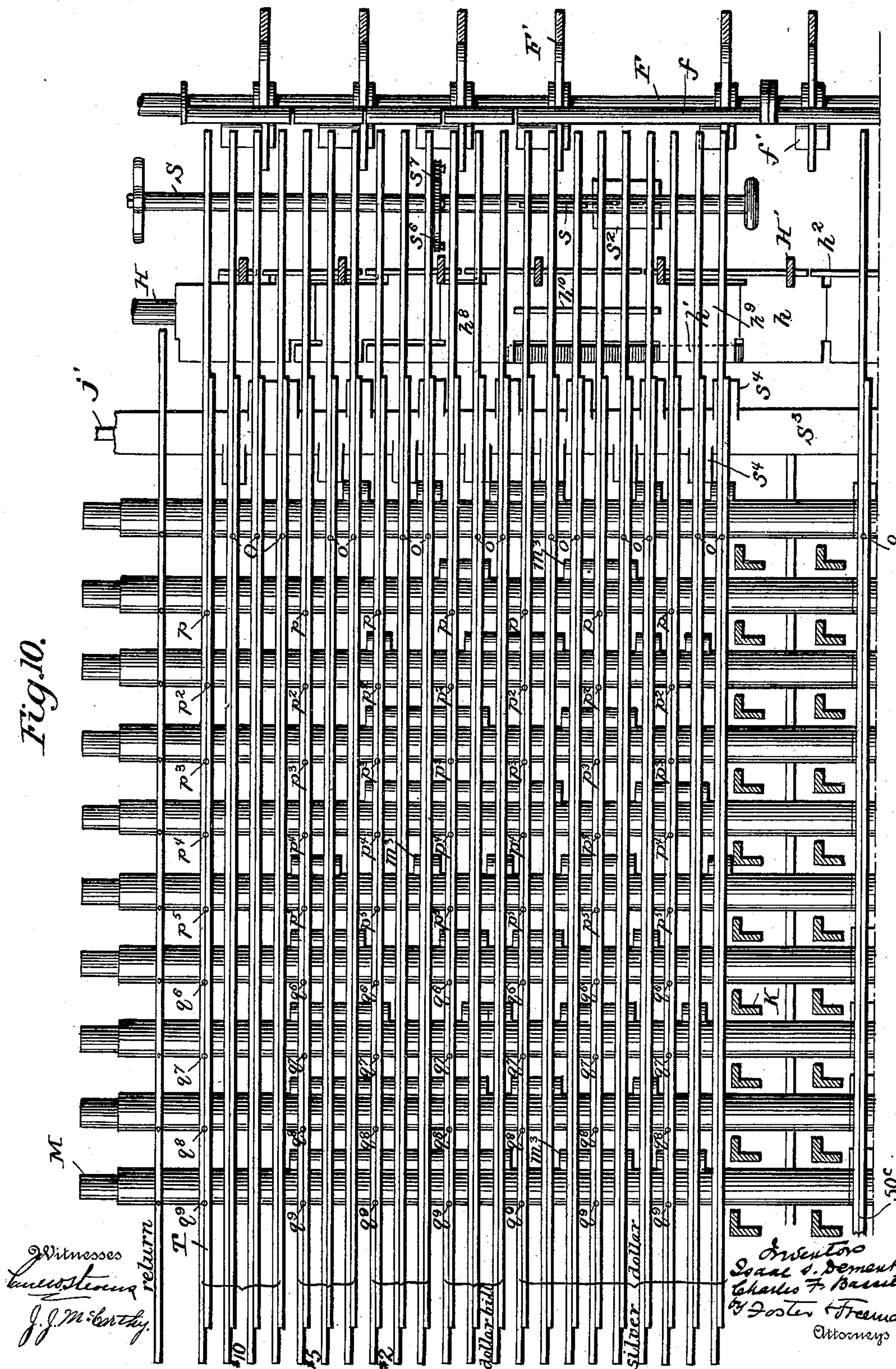
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Fig. 10.



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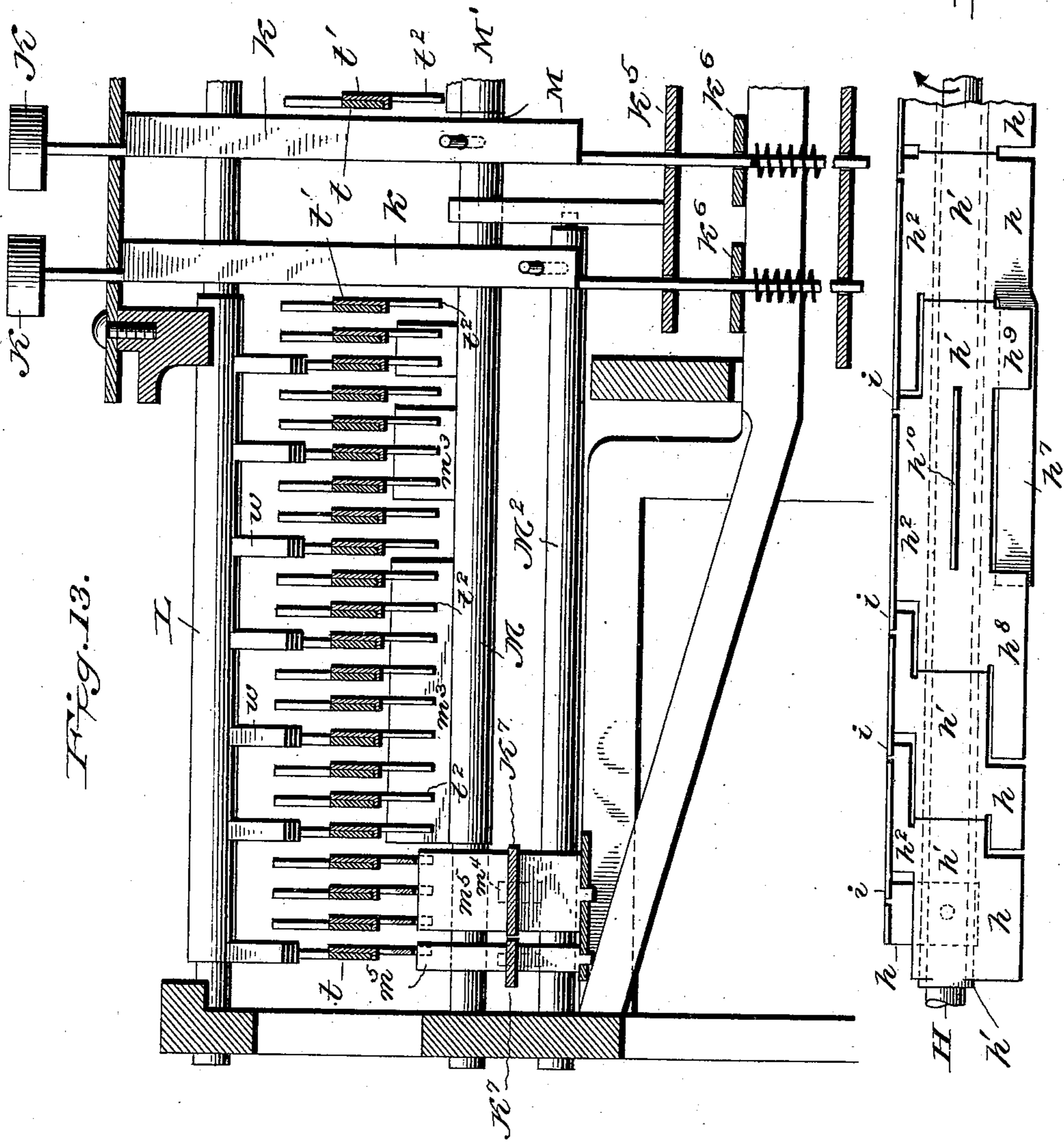
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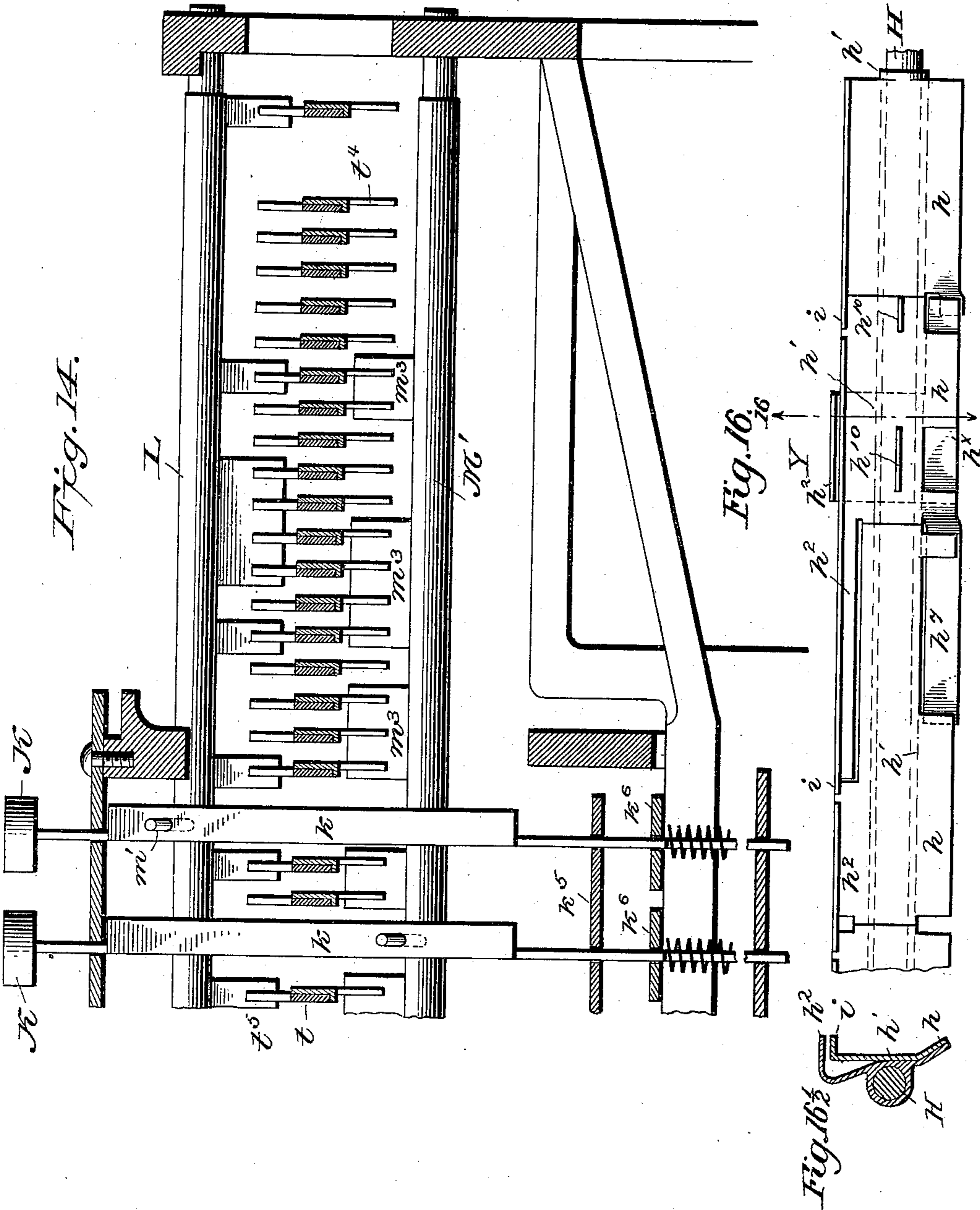
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10 Sheets—Sheet 10.



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UNITED STATES PATENT OFFICE.

ISAAC S. DEMENT AND CHARLES F. BASSETT, OF CHICAGO, ILLINOIS.

MECHANICAL CASHIER.

SPECIFICATION forming part of Letters Patent No. 618,932, dated February 7, 1899.

Application filed July 14, 1898. Serial No. 685,928. (No model.)

To all whom it may concern:

Be it known that we, ISAAC S. DEMENT and CHARLES F. BASSETT, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mechanical Cashiers, of which the following is a specification.

Our invention relates to devices for mechanically performing the operations of changing money and correctly giving the change after deducting the amount of purchase-money from a bill or coin or a number of bills or coins, or both, of any denominations; and to this end our invention consists of a machine having certain receptacles, ejecting means, controllers, keys, and devices regulated by the controllers and keys for determining the discharges from the receptacles, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is an external perspective view, in part section, of a mechanical cashier embodying our improvements. Fig. 2 is a diagram illustrating the operations of permutating devices in controlling the discharge of money. Fig. 3 is a transverse sectional elevation through the keyboard of another form of apparatus from that shown in Fig. 1. Fig. 4 shows part of Fig. 3 drawn to an enlarged scale. Fig. 5 is a view looking toward the end of one of the tumblers. Fig. 6 is an enlarged view showing part of the keys and adjuncts. Fig. 7 is an edge view of some of the parts shown in Fig. 4. Fig. 8 is a detached side view of some of the parts shown in Figs. 4 and 7 on the line 6 6 of Fig. 7. Figs. 9 and 10 together are a plan of the tumblers, the parts above the tumblers being in section. Fig. 11 is an edge view of a receptacle for bills. Fig. 12 is an edge view of a receptacle for coins. Figs. 13 and 14 are together a longitudinal sectional elevation through the keyboard and tumblers, looking from the front. Fig. 15 is a plan of certain tumbler-adjusting devices coacting with the parts Fig. 13. Fig. 16 is a plan of certain tumbler-adjusting devices coacting with the parts Fig. 14; Fig. 16 $\frac{1}{2}$, a section on the line 16 16, Fig. 16. Fig. 17 is a side view of the resetting device, and Fig. 18 is a diagrammatic perspective view to illustrate the main parts of

the apparatus to facilitate the understanding of the relations of these parts.

To facilitate the understanding of the main elements of the machine, we will at first chiefly refer to the diagrammatic views, Figs. 2 and 18.

The frame A of the machine, of any suitable form and proportions, supports or contains a series of receptacles, one at least for each denomination of money which may be received, as for twenty dollars, ten dollars, five dollars, two dollars, one dollar in bills and generally one dollar in silver, fifty cents, twenty-five cents, ten cents, five cents, and one cent, and in many instances there will be several additional receptacles for money of lower denominations.

In the construction of machine shown in Figs. 1 to 17 there are three ten-cent, two five-cent, and four one-cent receptacles.

The money is inserted in the receptacles in any desired manner—as, for instance, in Fig. 18, through top openings α . Another arrangement is shown in the other figures. These receptacles may have pockets for the separate coins or notes and may be fixed or movable. In connection with each receptacle there are ejecting means, which may positively push coins or notes successively from the proper receptacles into a trough A' or release the same, so that the money will fall into the trough or otherwise insure its expulsion.

In connection with each receptacle is what we term a "controller" C, which may be of any suitable character, mechanical or electrical—for instance, an electrical push-button, as shown in Fig. 18, or a lever, as in other figures—and each controller is marked according to the denomination of the money to be placed in and ejected from the receptacle coacting therewith. With these controllers are combined, first, devices whereby on adjusting any one controller coacting with the receptacle in which the money received upon making a sale is placed the discharge of money from such receptacle and from all those above it is prevented; second, connections or devices of any suitable character which are part of or operate what are hereinafter termed "permutation devices," and consisting in the construction shown of series of tumblers and controlling-wings, the adjustment of which

controls the discharge of change into the trough A'.

There is in addition a purchase-keyboard Q, consisting of any suitable number of series of keys, of ten keys each, as units, tens, &c., and which through suitable connections also affect the positions of the tumblers, which therefore are controlled jointly by the controllers and the keys, such keys being depressed on each sale as represent the number corresponding to the purchase price of the article sold.

The power to move the ejectors and other parts of the apparatus not shifted directly or indirectly from the controllers or keys is derived from a hand-lever C², operating on the proper parts through suitable connections.

With the parts above described the money received from a customer, whether a single bill or coin or a number of either or both, is deposited in the proper receptacle or receptacles, the controller connected with each receptacle in which money is placed is adjusted or moved once to each separate deposit therein, the keys representing the amount of the purchase are depressed, and the lever C² is operated, when (if there is any change required) money will be discharged into the trough equal to the difference between the amount received and the amount of the purchase.

If it is desired simply to make change, the "0" units-key of the purchase-keys is depressed, when the amount discharged will equal that inserted, but in smaller denominations.

In most instances a register or recorder of suitable character is combined with the above parts to maintain a record of operations.

Regardless of the construction of parts the operations above set forth are unique in that on effecting a sale the proper change may be had regardless of the denominations of money or number of pieces received from the purchaser and in that any desired amounts (corresponding to the amounts of the purchases) may be represented by the keys of the keyboard, the depression of which aids in regulating the operations of the machine.

Permutation devices.—It is sometimes necessary to get change only, sometimes to receive and deposit money without change, and at times to give the same amount of change from the same amount of money received in various different denominations. Again, it is not practicable to always give change for the same amount of money received from the same receptacles, depending sometimes upon whether the change is "odd" or "even." For instance, it may be necessary, from what we have found to result solely from mechanical conditions, to sometimes eject two tens and a five instead of a twenty-five-cent piece, or vice versa, or three tens instead of a twenty-five-cent piece and a five. Now we have found that it is not practicable to so operate under these different conditions as to eject

or fail to eject money from the different receptacles with any single series of devices or parts, but it is necessary to have different series of devices, some of which will control the discharge from a receptacle under some conditions, while others are needed to control the discharge from the same receptacle under other conditions. For instance, the conditions in making the same amount of change from a five-dollar bill are different if the amount is paid in two two-dollar bills and a one-dollar bill, and are again different if the amount is paid in four silver dollars and fractional currency. These series of devices, which under different conditions coact with the keys and with the parts coöperating with the denominational receptacles to regulate the discharge of money, we term "permutation devices." These devices are so termed because their adjustments depend upon the coaction of different parts, as the controllers and the keys, and vary according as different controllers or different numbers of controllers and different keys are adjusted.

By "permutation devices," therefore, as used in this specification and the claims are to be understood devices which embody various parts, some capable of being acted upon by the operation of several keys and from different controllers and which according to their adjustment determine the discharge of money from different receptacles. By the use of such permutation devices it is possible at any purchase price within the limits of the machine to secure any amount of change from money of any denomination or from any combinations of money of different denominations without the use of keys other than those representing the different denominations of money likely to be received, and series of banks of units, tens, &c., keys, thus avoiding the heretofore proposed use of separate keys for each possible amount of purchase money and money received.

As shown, the permutation devices consist in part of tumblers, and a greater number of tumblers than receptacles is needed, inasmuch as a single tumbler set to operate a given receptacle under one condition would under some other conditions be thrown out of action, although the discharge from its coacting receptacle might be needed. Different series of tumblers and different adjusting means are therefore provided, so that whenever, with a certain number of tumblers, it happens that under any condition the desired effect cannot be secured by such series of these tumblers as can be in action under that condition then one or other of the additional series of tumblers may be used. The number of tumblers actually employed is determined empirically, and is such that under any possible condition or circumstances there are tumblers available by proper adjustment to secure the needed result. We have ascertained the number of tumblers necessary under conditions involving payments in

money of any denominations or combinations of denominations to effect all possible adjustments incident to all possible sales involving amounts not above the capacity of the machine. For instance, in view of the multiplicity of possible combinations in the amounts paid and the various amounts of change required and of the different denominations of money or combinations of denominations which may be used in making payments and change, it has been found necessary to have as many as nine tumblers to control the operations in ejecting from some receptacles (as for the silver-dollar receptacle indicated in Figs. 9 and 10) and the resultant of the two series of adjustments from the controllers and the keys determined the particular tumblers put into or out of action.

The modifying actions or interferences and resultants will be better understood from the diagram Fig. 2, in which there is a tumbler H, which, when depressed, on a forward motion to the right (imparted from any operating part of the machine) will strike the part *f*, the adjustment of which will upon subsequent operations cause the discharge of money from one of the receptacles R. Now beneath this tumbler extend rock-shafts H M M', having cams 3. If any one shaft is turned to bring the cam 3 to bear on and elevate the tumbler above that shaft, the said tumbler will not on moving to the right affect the operation of the part *f* and cause the money to be ejected, but if any shaft or shafts are turned to lower said tumbler then the forward motion will operate the part *f*, and if two or more cams are elevated, as will sometimes result, it will be seen that the lowering of either will not lower the tumbler above them, but that both or all must be turned to effect this. As some of the shafts are controlled by the keys and others by the controllers, the adjustments of the tumbler are the resultant of the coactions of the keys and controllers.

It will be seen that the effect of the controllers is to adjust some of the parts of the permutation devices to aid in determining from which of the receptacles money shall be discharged, and any mechanism which accomplishes this is included within the term "controller."

Having thus set forth the principle of operation of the permutation devices, we will now describe the particular construction and operation which we have found to be very effective in practice, although it must be understood that like results may be had from devices and arrangements of a very different character.

The case A is of suitable construction to contain the receptacles R, which are revolving receptacles, and at the front of the case are four rows of purchase-keys K—that is, a units, tens, hundreds, and thousands row—the stems *k* of the keys, Figs. 4 and 6, extending through the casing A³ of the key device, and

each key has a projection *k'* with an inclined edge and abrupt shoulder, and each row of keys extends through a slotted locking-plate K⁵, which is pushed inward as any key is depressed until thrown back by a spring *k*² over the shoulder of the said key, locking it down. Any key after being locked is unlocked by suitable means, as by pushing on the end of the plate K⁵ through a hole *x*³ in the case to permit springs *s*¹⁰ to raise simultaneously all keys that have been depressed and locked. All the keys are also provided with projections *k*³, having shoulders extending over a locking-plate K⁶, so that no key of the keyboard can be depressed unless said plate K⁶ is pushed outward, which outward movement is effected, as hereinafter described, by the adjustment of any one of the control devices, so that the purchase-keys cannot be manipulated until one of the control devices has been acted upon.

There are sets of rocker-shafts through the medium of which the keys operate in different ways upon the different tumblers to raise some and lower others. There is a series of upper rocker-shafts L, which shift the tumblers longitudinally and which extend between the key-stems across the machine above all the tumblers T, and these shafts are rocked each by one of the keys of the units row. Another set of rocker-shafts M, Figs. 10, 13, and 14, extends beneath the tumblers at the left of the keyboard, facing the front, and each is rocked from one of the keys of the hundreds row. Another set M extends beneath the tumblers at the right of the keyboard and on the same plane as the shafts M and each is rocked by one of the keys of the tens row, and another set of rocker-shafts M² is below the shafts M and each is rocked by one of the keys of the thousands row.

Each tumbler consists of two strips *t t'*, the latter having lugs *t*² on which the strip *t* slides and rests, so that when the strip *t'* is lifted the strip *t* rises with it. Each strip *t'* has an inclined face *t*³, which bears on the edge of a guide-slot in the back plate *j'* of the frame, so that on pushing forward any strip *t'* the inclined face, riding on its bearing edge, lifts the inner end of the strip *t*, and with it the strip *t*.

It will be understood that the back movement of any tumbler, bringing it into contact with the part *f*, is the means of adjusting certain parts which cause money to be ejected from the receptacle coacting with such tumbler. The units-keys, and these only, are the means of pushing back the tumblers.

From each shaft L an arm *m'* extends into a recess or notch *y*² in the stem of the adjacent key of the units series, so that each shaft L is rocked by one of the units-keys, and arms *m* project from the shafts L in position to press on lugs *t*⁵ on the different tumblers and so arranged that the series of units-keys will collectively push back the whole series of tumblers, but only a part of the number on

depressing any one units-key—that is, the first or “0” key of the units row operates to push one group of tumblers (marked o in the plan view, Figs. 9 and 10) that are not operated upon by any other key of the units row. The keys “1” to “5” operate another group of tumblers. The second key No. 1 of the units row operates to push the tumblers marked p , the second units-key to push the tumblers p^2 , the third key to push the tumblers p^3 , the fourth to push those marked p^4 , and the fifth to push the tumblers p^5 . The units-keys “6” to “9” operate to push another group of tumblers, (marked q^6 to q^9 , respectively.) It should be understood that this arrangement is empirical and may be changed according to circumstances. The first four numbers of the second group p and all of the third group q act alike to push those tumblers which coact with the penny-receptacles and which are the last four tumblers at the right. The other shafts are rocked by the remaining keys; but while the tumblers are pushed only by keys of the units row the depression of the remaining keys either elevates or lowers the tumblers. The shafts $M M'$ have wings m^3 , which make contact with projections t^4 , extending from the strips t' , while the shafts M^2 have wings m^4 , which operate upon the tumblers that coact with the ten-dollar receptacle through the medium of two sliding plates K^7 , arranged side by side, Fig. 13, and each operating to swing one of two plate-levers m^5 , one of the said levers entering a notch in a projection of the final tumbler at the left and the other entering notches in projections of the three adjacent tumblers. The plate K^7 on the left (facing front) is actuated only by the odd-numbered keys of the thousands row. The other plate K^7 is actuated only by the even keys of the thousands row. Normally the tumbler q^{10} , connected with the Nos. 2 and 7 keys of the tens row, is in an elevated or non-active position and is brought to an active position on depressing either of these keys. This is simply an incident of mechanical construction. Certain other of the tumblers also are, when the machine is at rest, so under the control of certain keys and of the controllers that they are then in elevated positions. Such tumblers normally elevated are marked with the letter p^{10} , and some are held in their elevated position by means of wings s upon a shaft S , and also by the wings s' of a shaft S' , and others also by wings of certain sleeves h' , hereinafter described. Also some of the tumblers are normally maintained in an elevated position by wings $s^4 s^4$, upon or constituting the edges of a flat plate or shaft S^3 , which rocks upon the edge of the back plate j' of the frame A^3 . This shaft S^3 is rocked by connections with the shaft M' , operated by the “0” tens-key, which is the key K shown in Fig. 4. In Fig. 6 the section through the shaft M' is not on the same vertical plane as the other sections. It will thus be seen that in normal conditions of the machine some

of the tumblers have beneath them several wings which tend to maintain them elevated or out of operative position and that all such wings beneath any one tumbler must be depressed to allow such tumbler to descend, while in other cases the depression of a single wing will allow a tumbler to descend. Other tumblers, as before stated, are normally in their lower position and are lifted to throw them out of operation, this being the case with a great majority of the tumblers. In some instances the movement of a wing from below certain tumblers will carry with it the movement of another wing to elevate other tumblers. Thus on the shafts $S S'$ there are wings s^2 , which are parallel to the tumblers when the wings s' are vertical, but which assume vertical positions and lift the tumblers above when the shafts $S S'$ are turned to carry the wings s' to horizontal positions.

The shafts $S S'$ are turned from certain operative parts of the machine, hereinafter described.

It will now be understood, first, that the shafts $M M' M^2 S S' S^3$ and sleeves h' all act to raise or depress the tumblers; second, that the shafts $M M' M^2 S^3$ are all operated from the purchase-keys, and, third, that the shafts $S S'$ and sleeves h' and a shaft H , carrying the sleeves, are operated from the controllers.

It may be added that the shaft S is operated only by the five-dollar controller and the shaft S' by the twenty-five-cent controller and that the shaft S^3 is operated by the “0” tens-key.

From the above it will be seen that the tumblers which control the ejection of money are greater in number than the receptacles, that in some instances a large number of tumblers coact with a single receptacle, and that sometimes one and sometimes other tumblers of the series pertaining to a given receptacle are adjusted to operate such receptacle, the particular tumblers thrown into action depending upon the adjustment of the different shafts and wings resulting from depressing different keys and operating different controllers or different combinations of controllers. These various different adjustments are so numerous, almost illimitable, that they cannot be specifically set forth; but the result is that whichever may be the keys depressed or the controllers or combination of controllers operated and whichever be the tumblers thrown out of action there will always be tumblers available for adjustment to control the operation of the ejector devices of each receptacle from which money must be discharged.

The receptacles and adjuncts.—While the receptacles may be either movable or stationary and of any desired shape, we prefer to make use of rotating receptacles having pockets at the peripheries, each pocket adapted to receive a single coin or bill. By this means the various coins or bills in a single receptacle will occupy relatively the same peripheral

positions in the receptacles and the operations in ejecting money will not be affected by the fact that some pieces of money of the same denomination are thicker or thinner or bent or in the case of bills more compressed than others, and the ejecting action will be the same in every case regardless of the condition of any particular piece of money.

In the construction shown all of the receptacles are mounted upon a shaft R' , and each of the bill-receptacles, Figs. 1 and 11, consists of two parallel disks r r , slightly separated, each punched out at regular intervals at the periphery to form side depressions r' and the two disks set opposite each other, so that the opposite depressions in the disks will constitute the pockets for the reception of the bills, which are folded and inserted therein, the space between each two disks being sufficient for the play of the ejector-lever E , all of which ejector-levers are rigidly secured at their lower ends to a rock-shaft E' and swung outward together. This shaft E' is rocked at the proper time to throw out all of the ejector-arms by the contact of a spring-pin 4 (sliding on an arm 5, projecting from the handle C^2 , Fig. 1) with an arm 6 on the shaft E' , the said pin bearing on the edge w' of the arm 6 when the handle C^2 is carried in the direction of the arrow until the fingers reach their forward position and then moving the rounded outer end of the arm, which then falls back, returned by a spring. The pin has a beveled end, so that on the back motion it will be forced into the case 7 and its end will ride over the face of the arm 6.

The receptacles for the coin are necessarily constructed differently from the receptacles for the bills, but consist of opposite disks, Figs. 1 and 12, having projections r^2 on their opposite inner faces, and although these projections are opposite each other the distance between the faces is such that a coin cannot be placed therein directly transversely, but can only be inserted at an angle to the plane of the disk, as shown in Figs. 1 and 12, which not only facilitates the insertion of the coin, but also takes up less room longitudinally, so that the length of the machine is reduced.

The trough A' is opposite the edges of the receptacles, at one side thereof, and the cover, composing a part of the case, extends over the receptacles to an extent to leave opposite each receptacle the opening x or is cut away to leave such opening of such size that the desired bill, coin, or number of coins may be introduced in or ejected from a pocket, it being understood that in some cases, as in connection with coins of the lower denominations, the ejector may be arranged or the receptacle turned so that more than one coin will be ejected by one forward movement of the ejector-lever. For instance, three pennies may be thrown out at once by turning the receptacle farther than required to eject one cent. Upon receipt from a customer of money, which may be a bill or coin or a number of bills or

coins of the same or different denominations, or both bills and coins of the same or different denominations, the salesman inserts each piece of money in the pocket of the receptacle of the denomination corresponding to the piece of money inserted or to the combination of pieces of money inserted. Thus a ten-dollar bill is put in the exposed pocket of the ten-dollar receptacle, and so with other denominations. If there are two pieces of money of the same denomination, the salesman may insert one in the exposed pocket and then turn the receptacle back (by operating the controller, as hereinafter set forth) to expose another pocket and then insert the other piece, or he may combine two or more pieces of money until they equal an amount corresponding to the designation of another receptacle. For instance, two five-dollar bills may be put together in the exposed pocket of the ten-dollar receptacle or a five-dollar bill and a five-dollar gold piece may be put together in the exposed pocket of the ten-dollar receptacle, it simply being necessary that the amount put into each pocket shall correspond to the denomination of the receptacle and that the controller shall be operated after each insertion in each pocket.

On the operation of the machine after inserting the money, or, if desired, by the direct act of the salesman, each receptacle in which money has been placed is turned back one step in the direction of the arrow, Fig. 4, so as to conceal the money received and so also as to put the receptacle in position to be automatically turned forward in a reverse direction when change is to be made by subsequent operations, when the last piece of money deposited in any receptacle by a single reverse step thereof is brought in position for ejection into the trough A' .

We prefer to move each receptacle a step in the direction of the arrow, Fig. 4, by the operation of the controller C , coacting with such receptacle. As shown in Figs. 3 to 8 and other figures illustrating the same construction, the controller is a lever-controller, consisting of a two-part lever, one part c swinging loosely upon a shaft C' and the other part c' pivoted to the end of the part c and provided with a head c^2 , which when in its upper position fits to and forms, in connection with the other heads, the side of the trough A' . (See Fig. 1.) The controller turns the receptacle R through the medium of a toothed wheel D , turning loosely upon the shaft C' , this wheel consisting of a disk having opposite ribs d d inside of the periphery and together forming teeth adapted to enter the pockets of the receptacle R and turn the latter as the wheel D is revolved. The wheel D is held normally in place by a spring-pawl D' , hung to a rock-shaft D^2 and recessed to receive a pin d^2 , whereby the pawl can swing freely on the shaft D^2 to a limited extent; but all the pawls can be lifted when the said shaft D^2 is turned in the direction of its arrow, Fig.

3, by a hand-lever A^4 . A spring d^3 presses downward each pawl D' , so as to normally maintain the end v of the pawl in one of a series of peripheral notches d^4 of the wheel
 5 D, the said notches being between the teeth of the said wheel. The pawl D' extends over a lug c^3 of the section c' of the controller-lever C, and when the latter is swung in the direction of its arrow it lifts the dog D' , and at the
 10 same time a lug c^4 at the opposite end of the section c' of the lever C is brought into one of the notches d^4 , and as the lever C is carried farther in the direction of its arrow, Fig. 4, the wheel D is rotated on its shaft until the
 15 receptacle R has been turned back the extent of one pocket and the pawl D' has dropped into the succeeding notch d^4 . On moving the control-lever C in a reverse direction its lug c^3 travels on the periphery of the wheel D
 20 until it is brought beneath the overhanging end of the pawl D' .

It will be understood that on money being put in any pocket of any receptacle that receptacle on operating the controller is turned
 25 up one step, and therefore no money in a pocket is normally in position to be thrown out by the action of the ejector-lever, the filled pockets being always normally above the edge of the ejection-openings. It is therefore
 30 necessary in order to eject the money from any pocket that the receptacle having such pocket shall first be turned downward one step and be brought opposite the opening x . This turning is effected from the ad-
 35 justment of the tumblers T, which are set in position as before described. Thus when a tumbler T is in its lower position, Fig. 4, it will on being carried in the direction of its arrow strike the arm f upon a rock-shaft F
 40 and swing it backward and through connected parts will turn forward the receiver coacting therewith, a result which will not be effected if the tumbler T is lifted to its upper position. The rock-shaft F has an arm f' ,
 45 which bears against the end of a sliding bar F' , slotted to be guided by the shaft E' and having a stud f^2 , which enters a curved slot x^3 in a segment F^3 , having a slot x^4 to receive the shaft C' , so that the segment can both
 50 slide up and down and rock upon the said shaft. The segment F^3 is provided with a lug f^3 , normally below a circular rib d^6 upon the side of the wheel D and having recesses d^7 , into which the lug f^3 is carried when the seg-
 55 ment is raised, this same action bringing the end of the segment against a finger d^9 , extending from the pawl D' and lifting the latter, thus releasing the wheel D from the pawl D' , but locking it to the segment.

60 Upon the shaft C' are secured forks G, each having two arms $g g'$, so arranged that when the shaft C' is turned in the direction of its arrow, Fig. 8, by its hand-lever C^2 all of the
 65 lugs g will be carried beneath the lugs f^3 of the segments that have been elevated and will prevent them from descending and will at the same time swing the said segments

with the shaft C' , carrying therewith the wheels D and turning the receptacles R forward the extent of one pocket to bring the
 70 contents into position to be discharged into the trough A' by the action of the arms E. When the motion of the handle C^2 is reversed, the lug g will be carried from below the lug f^3 , the segment will descend, and the lugs g'
 75 will strike the backs of the segments. Of course in any case where the segment is not lifted the lug g will make contact with and turn the adjacent segment; but in such case, as the lug f^3 is below the rib d^6 , the wheel D
 80 and its receptacle will not be turned. After the deposit of money in the pocket of any receptacle and the turning of that receptacle upward by the operation of the controller C such receptacle cannot be turned downward
 85 by any combination of the permutation devices, because in the act of adjusting any controller C a tumbler T (or tumblers T) which might cause the movement of the receptacle
 90 of such controller is by that act thrown out of operation. Of course it will be understood that while all of the tumblers coacting with any receptacle must be thrown out of
 95 operation to prevent said receptacle from being turned forward the said operation is effected if any one of the tumblers is in operative position.

As before stated, each controller-lever C when moved or adjusted after depositing a coin in the receptacle connected therewith
 100 serves to cut out of operation the ejectment devices of said receptacle and all above it. This might be done by arresting the movements of the ejectors; but we prefer to prevent the discharge of money from the said
 105 receptacles and those above it by preventing the turning of the receptacles and the money from being presented to the operation of the ejector.

Any suitable arrangement of devices may
 110 be employed for throwing the tumblers connected with one receptacle out of operative position upon the adjustment of the controller of said receptacle. As shown, there is a shaft H, on which turns a series of sleeves
 115 h' , each having an arm or arms h or $h^7 h^8 h^9$ extending beneath all of the tumblers that would effect the operation of the adjacent receptacle, so that on turning a sleeve such
 120 tumblers are lifted out of action. Each sleeve h' has an arm h^2 , on which rests a bar H' , Fig. 4, slotted at the upper end to be guided by the shaft C' , and from the forward side of the bar extends an arm h^3 beneath lugs c^5
 125 upon a projecting arm of the section c of the controller-lever C. When, therefore, the section c of the lever is swung downward, the bar H' is pushed downward and rocks the sleeve h' below its end, thus elevating the
 130 tumblers T which are above the wing h of said sleeve, and thus it is rendered impossible for the receptacle the pocket of which has just been filled to be turned back to permit the contents to be ejected. The like effect

upon all the receptacles above to thus render them inoperative is secured by devices which we will now describe.

Upon the shaft H is the succession of loose sleeves h' , each of which is provided with an arm h^2 and with a wing or wings differently lettered, as h^7 h^9 h^{10} , each wing extending beneath all of those tumblers which when depressed would operate to turn backward and open one of the receptacles and in some cases, as shown at h^7 , Figs. 15 and 16, extending under tumblers which operate in connection with receptacles of a higher denomination or under both lower and higher denominations, as at h^8 h^9 , Fig. 15. A projecting portion, as a part i , of the sleeve h' or some attachment thereof extends over some part of the sleeve connected with the receptacle of the next higher denomination. For instance, the projection i may be an extension or rib upon each arm h^2 , and it therefore follows that when any sleeve is turned in the direction of the arrow, Figs. 4 and 15, to elevate its wing and the tumblers above the same it will turn the next sleeve in like manner, and that will turn the next sleeve above, and so on, so that such adjustment of any one sleeve will carry with it all the sleeves of higher denomination. Some of the sleeves h' are provided with wings h^{10} , which in normal position hold up the tumblers above said wings, and at Y, Figs. 16 and 16 $\frac{1}{2}$, there are two sleeves with wings, one beneath the other. When the lower wing h^x is lifted, it lifts also the upper wing h and with it the wing h^7 and all the tumblers above both wings; but when the wing h is lifted only the tumblers above this wing are raised.

The intermittent rotation of the shafts S S' results in any suitable way from the adjustment of the controllers. Thus one of the bars H' adjacent to each shaft S or S' has a finger i^{10} , which when the bar descends engages one of four pins s^6 upon a disk s^7 , secured to the adjacent shaft S or S', and turns the latter one-fourth of a revolution.

The keys are all unlocked after a controller lever is depressed by the outward movement of the locking-plate K⁶ imparted by the contact of an arm i^3 on the shaft H, rocked by the descent of the bar H'. The same will result from the pushing in of a hand-bar H⁶, Fig. 6, bearing on an arm i^4 , extending from the shaft H, said hand-bar operated from a hand-knob S⁷, Fig. 1, extending through the case. A spring i^5 lifts the bar H'.

Where there are repeated rapid sales, the deposit of purchase money would soon fill the pockets of all the receptacles. To prevent this, we provide means for discharging into a closed receptacle V within the case the contents of all above a determined number of pockets. Various different means may be employed. For instance, an ejector-lever N³ is carried backward across the pockets below a line w , Fig. 3, of each receiver at each motion of the latter and forces out all the money in said pockets. The lever N³ is carried by an

arm N⁴, pivoted at q^6 and connected by a link N⁵ with the bar H', so as to swing when the latter reciprocates. A shaft S¹⁰, with wings 10, when rocked to make contact with lugs 12 on the slides t and with lugs 13 on the slides t' will move the former out and the latter in to restore the parts to normal positions. The shaft S¹⁰ is operated by the pusher H⁶, the end of which strikes the upper part of the wing when the pusher is moved outward, Fig. 17.

The construction and operation of the different parts having been set forth in detail, we will now illustrate their operation, assuming that a two-dollar note has been placed in the two-dollar receptacle and the two-dollar controller has been depressed. The operations will be as follows: First, the shaft H is rocked, shifting the plate K⁶ and unlocking all the keys; second, the sleeve h' , coacting with the two-dollar receptacle, and all sleeves above are rocked, so that all the said receptacles are prevented from turning to bring the money into discharging position; third, it must be understood that prior to inserting the money four of the twelve one-dollar tumblers are normally in operative position. Of those remaining, which are elevated, two are supported by the wing s^4 alone, two are held up by the wings h^{10} alone, and another is held up by a wing on the shaft S' and by the wing h^{10} . Two others are held up also by the wing h^{10} and by the wing s upon the shaft S, and another is held up by the wings s^4 , h^{10} , and s . This being the condition of these tumblers, the two-dollar sleeve h' , Fig. 15, is turned to bring its wing h^9 under and to lift two of the silver-dollar tumblers that were down. Its wing h^8 also lifts two of the paper-dollar tumblers that were down and also the three ten-dollar tumblers, and by the descent of the wing h^{10} two of the silver-dollar tumblers that were held up are dropped. The descent of the wing h^{10} also takes it out of the way, so that if it should be necessary to operate the five-dollar controller (which might be the case if both a five-dollar and a two-dollar bill were inserted in the machine) the said wing h^{10} will not hold up the tumbler extending over it and which should be lowered by the action in such case of the wing s on the shaft S, over which the tumbler also extends. This will leave three of the silver-dollar tumblers, which may be operated upon by the action of the shafts controlled by the purchase-keys; but the action will be different, according to the extent of purchase. Assuming that the purchase is from one to nine cents—say six cents—then on depressing the units-key "6" the shaft L, connected with that key, will be rocked and one of the said remaining three tumblers will be projected. Assuming that the purchase is from ten to ninety cents—say sixty cents—the "6" tens-key and the "0" units-key are successively depressed, rocking the connected shafts, and two of said three tumblers will be projected. One of the same,

however, will be in an elevated position and therefore inoperative. Assuming the purchase to be, say, one-dollar, then the keys "1" of the hundred row and the keys "0" of the tens and units row will be depressed, rocking the respective shafts, the "0" tens-key also operating the shaft S^4 , which will lift one of the said dollar-tumblers which was in an operative position and depress one which was elevated, thus making it operative. The operations of the units-key in each case will project against the part f those tumblers which have been put or are left in an operative position.

15 *Recording devices.*—As security against fraud by the attendants we combine with the above devices means for registering and recording the amounts of the sales. As the specific means employed will constitute the subject of a separate application for Letters Patent, we do not here show the same in detail, but illustrate sufficient in Fig. 3 to exhibit the combination. In said figure the case R^8 contains the recording devices, which may be of any of the various well-known forms, the registering-wheels R^9 being visible through an opening w^2 in the front of the case. These devices are operated by the stems of the purchase-keys acting on sliding pins v^2 . The strip X^3 , of thin board or paper, is fed from the recorder-case between a platen-roll v^3 and a series of type-wheels v^4 , carried by a frame v^5 , connected by a rod H^{10} with the bar H' , so as to print on each operation of the change devices. The frame also carries a cutter v^6 , which shears with a stationary cutter v^7 at each operation. By this means the amount of each purchase is impressed on the strip and the latter cut off.

40 A recorder similar, except as to details, to that indicated in the drawings is to be found in Letters Patent to D. E. Felt, No. 441,232.

Without limiting ourselves to the precise construction shown and described, what we claim is—

45 1. The combination with a mechanical cashier provided with receptacles for money of different denominations, of permutation devices and coacting parts, regulating the ejection of money from the receptacles, substantially as described.

50 2. The combination in a mechanical cashier, of receptacles, controllers for said receptacles, ejecting means and purchase-keyboard, and permutation devices regulating the discharge of money from the different receptacles, substantially as set forth.

60 3. The combination with the money-receptacles of a mechanical cashier, of controllers representing different denominations of money, and keys in series of units, tens, &c., and devices controlled by keys and controllers for regulating the ejection of change from said receptacles, substantially as set forth.

65 4. A mechanical cashier provided with re-

ceptacles for money of different denominations, controllers for said receptacles, a purchase-price keyboard consisting of keys in series of ten each, and permutation devices regulating the discharge of change, substantially as set forth. 70

5. The combination with means for discharging change in a mechanical cashier, of permutation devices, of the character described, the adjustment of which regulates such discharge, and a keyboard and denominational controllers jointly regulating the adjustments of the said devices, substantially as set forth. 80

6. The combination with the receptacles for money of different denominations, controllers for said receptacles and ejector devices of a mechanical cashier, of a purchase-keyboard having keys in series of units, tens, &c., substantially as set forth. 85

7. The combination in a mechanical cashier having separate receptacles, of a controller coacting with each receptacle, a keyboard consisting of series of units, tens, &c., keys, and permutation devices coacting with the keys and controllers to regulate the discharge of money, substantially as set forth. 90

8. The combination with the denominational receptacles and controllers and keyboard of a mechanical cashier, of different series of tumblers, ejecting means controlled by the adjustment of said tumblers, and devices coacting with both the keys and the controllers for adjusting the tumblers, substantially as set forth. 100

9. The combination of denominational receivers and controllers, a purchase-keyboard, means for locking the keys thereof, and means for mechanically unlocking the same on operating any one of the controllers, substantially as set forth. 105

10. The combination with the denominational controllers and receptacles, ejecting means, and keys of a mechanical cashier, of different series of tumblers, means for imparting motion thereto from the different keys of the units series, and means for putting the tumblers into and out of operative position by the actions of the other keys and of the controllers, substantially as set forth. 115

11. The combination with the keys, denominational receptacles and denominational controllers of a mechanical cashier, of different series of tumblers by the adjustment of which the pieces of money to be ejected are selected, and means for adjusting the tumblers into and out of operative position by the keys and controllers, substantially as set forth. 120

12. The combination in a mechanical cashier of receptacles, controllers, and keys arranged in series of ten each, different series of tumblers, and connections whereby different series of tumblers are operated from different keys of the units row, substantially as set forth. 130

13. The combination with the receptacles,

ejecting means, controllers and keys of a mechanical cashier, of different series of tumblers upon the adjustment of which the ejection of money depends, and means whereby different series are adjusted into and out of operative positions under different conditions, substantially as set forth.

14. The combination with the denominational controllers and purchase-keyboard having keys in series of ten each, of permutation devices having tumblers arranged side by side, and rock-shafts crossing the line of the tumblers, means for adjusting certain tumblers from each shaft, and connections whereby the shafts are moved from the controllers and keys, substantially as set forth.

15. The combination with the denominational receptacles, devices coacting with the receptacles and purchase-keyboard of a mechanical cashier, of series of tumblers controlling the discharge of money from the receptacles, different series of rock-shafts and means for shifting the tumblers into and out of operative position from said shafts and connections whereby the shafts are turned from the keys and from the devices coacting with the receptacles, substantially as set forth.

16. The combination in a mechanical cashier and with receptacles for money of different denominations, of controllers, purchase-keys arranged in series of ten each and adapted to represent any desired amount, and connections whereby to mechanically select and discharge the difference between the money received and that represented on the adjusted purchase-keys, substantially as set forth.

17. The combination in a mechanical cashier, of a series of independently-adjustable movable money-receptacles, each adapted to hold money of one denomination, and means coöperating with said receptacles for shifting the same separately to positions to receive and discharge money, substantially as set forth.

18. The combination with independently-movable money-receptacles of a mechanical cashier, of denominational controllers, and keys, and devices controlled thereby, for regulating the ejection of change from said receptacles, substantially as set forth.

19. The combination in a mechanical cashier, of independently-movable money-receptacles, each having separate pockets for separate pieces of money, and means coöperating with all the receptacles for ejecting money from the different pockets, substantially as set forth.

20. The combination in a mechanical cashier, of a case having money receiving and discharging openings, a series of independent money-receptacles arranged opposite said openings within the case, means for shifting the receptacles to carry money placed therein away from said openings, and means for shifting back opposite said openings those recep-

tacles from which money is to be ejected, substantially as set forth.

21. The combination in a mechanical cashier, of a case having money receiving and discharging openings, a series of independent money-receptacles arranged opposite said openings within the case, means for shifting the receptacles to carry money placed therein away from said openings, and means for shifting back opposite said openings those receptacles from which money is to be ejected, and ejectors whereby the money is forced outward from such receptacles, substantially as set forth.

22. The combination with a casing having money receiving and discharging openings, of denominational receptacles, each circular with peripheral pockets, the coin-receptacles having lugs arranged to hold each coin at an angle to the plane of the receptacle, substantially as set forth.

23. The combination of a series of circular denominational receptacles and connections whereby each receptacle is turned back after the deposit of money therein and those from which money is to be discharged are turned forward, with means for ejecting the money, substantially as set forth.

24. The combination of circular pocketed denominational receivers, means for turning each one step backward on the deposit of money and one step forward when money is to be discharged therefrom, ejectors, and means for operating them to discharge the money after the forward movements of the receptacles, substantially as set forth.

25. The combination with the money-receptacles of a mechanical cashier, of a case having a compartment and ejecting means for discharging into said compartment all above a determined number of pieces of money in the receptacles, substantially as set forth.

26. The combination with the rotating pocketed receptacles of a mechanical cashier, of a closed compartment, and ejectors arranged to discharge from said receptacles into said compartment all pieces of money carried beyond a predetermined point, substantially as set forth.

27. The combination with receptacles for money of different denominations, of ejecting means, controllers, a keyboard with keys in series of ten each, permutation devices as described and a recorder, substantially as set forth.

28. The combination in a mechanical cashier, of receptacles of different denominations, money-discharge devices, controllers, keys in series of units, tens, &c., connections between the controllers, keys and discharge devices, and a recorder for recording the amount of each purchase, substantially as set forth.

29. The combination with a mechanical cashier, of money-receptacles and discharge devices, controllers, series of rows of pur-

chase-keys for representing any required purchase amount, connections between the controllers, keys and discharge devices, and a recorder for recording the amount of each
5 purchase provided with means for impressing the same upon a strip, substantially as set forth.

In testimony whereof we have signed our

names to this specification in the presence of two subscribing witnesses.

ISAAC S. DEMENT.

CHARLES F. BASSETT.

Witnesses:

B. SINGER,

R. J. BEHRINGER.