

(No Model.)

3 Sheets—Sheet 1.

W. C. MCGILL.
CASH REGISTER AND INDICATOR.

No. 446,925.

Patented Feb. 24, 1891.

Fig. 1.

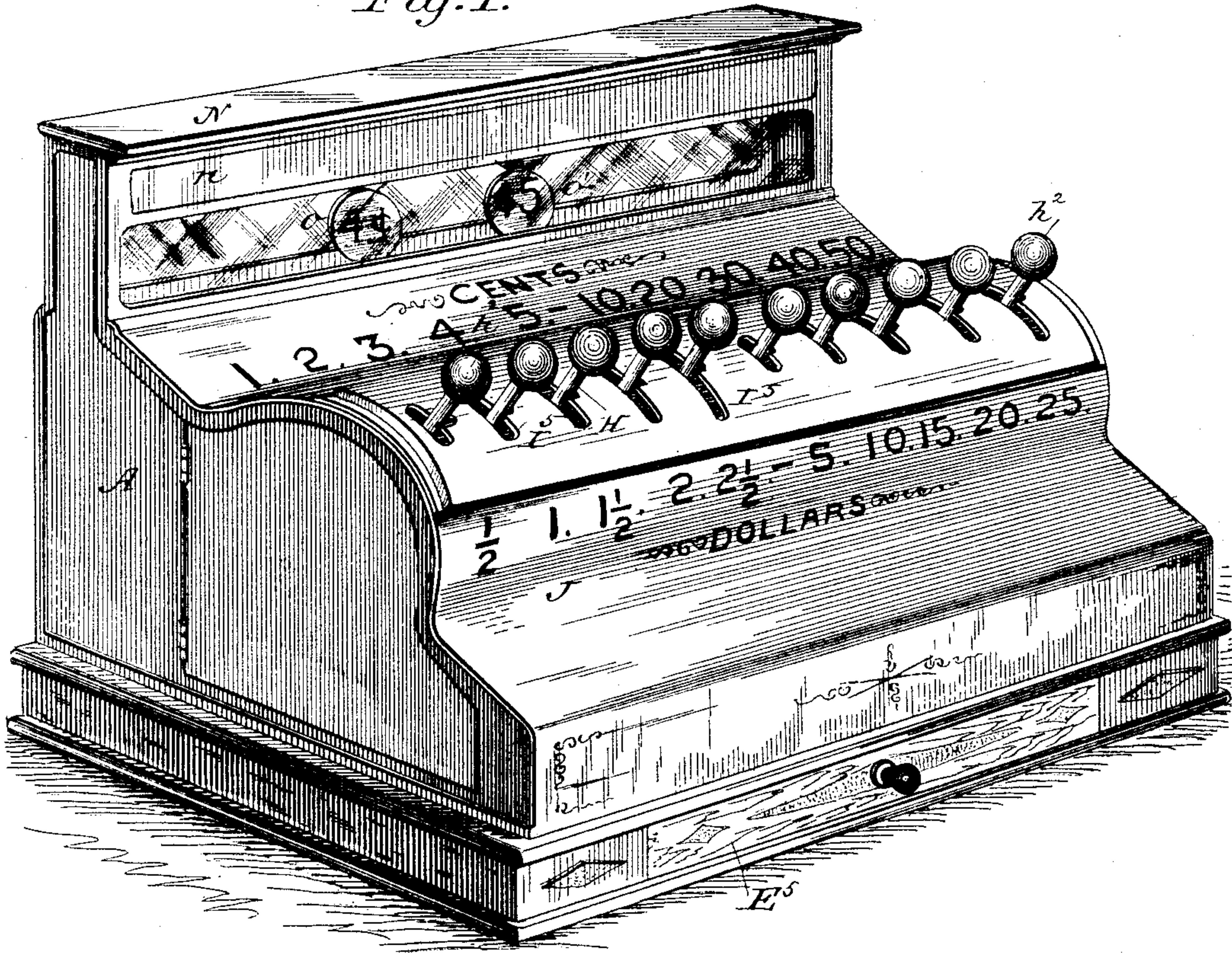
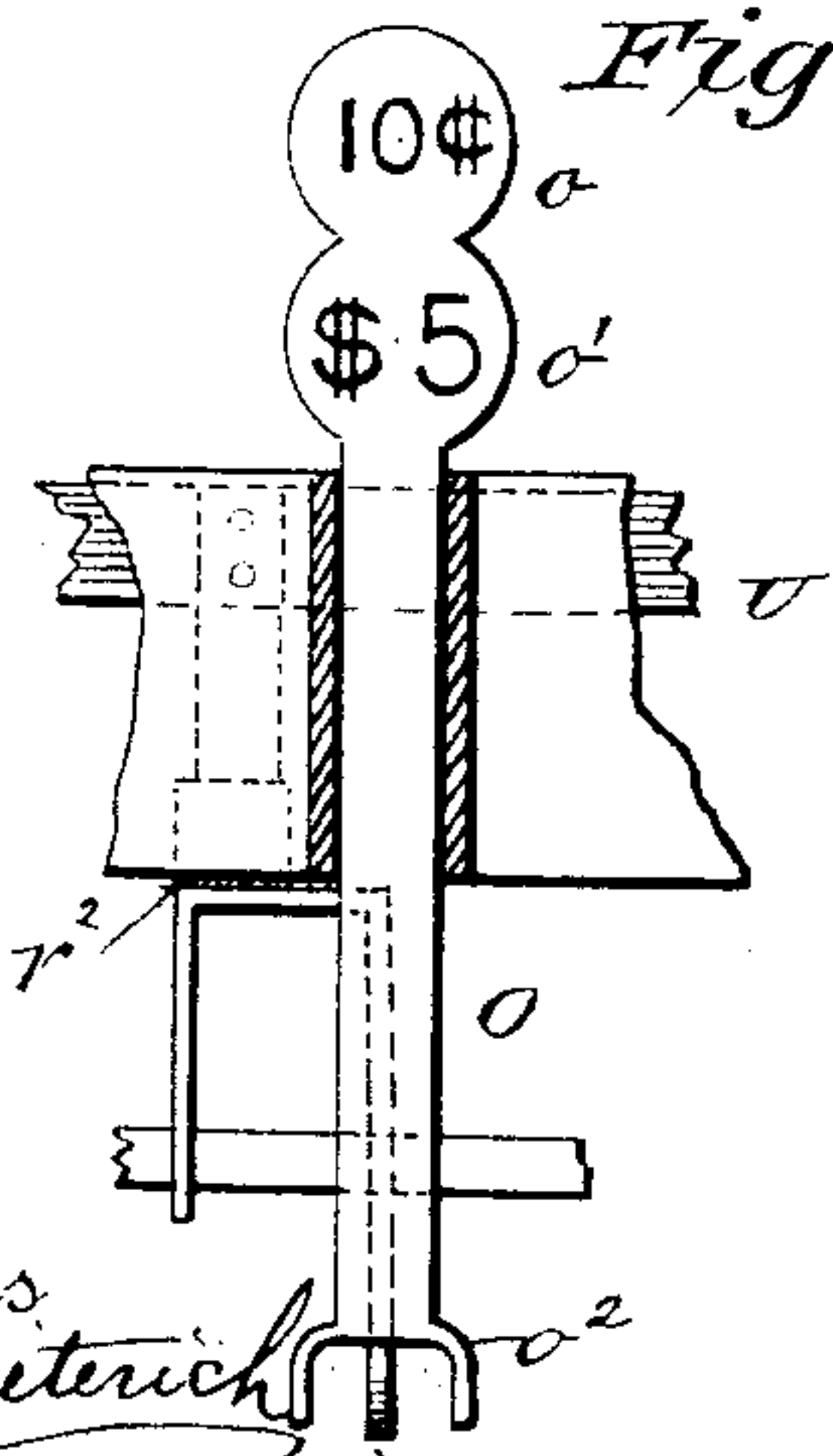
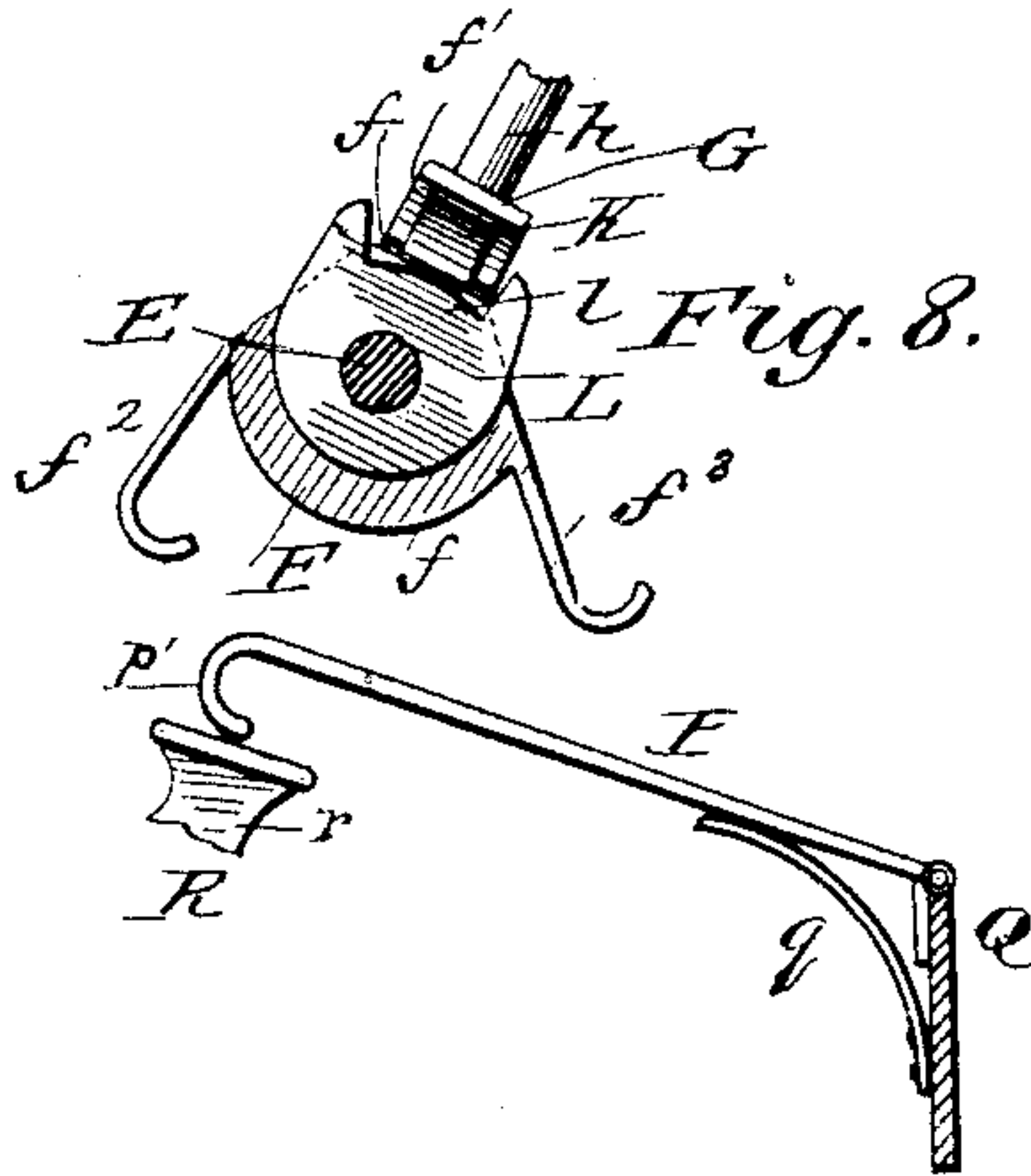


Fig. 7.



Witnesses
Fred G. Dietrich
Henry C. Cooper



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William C. McGill

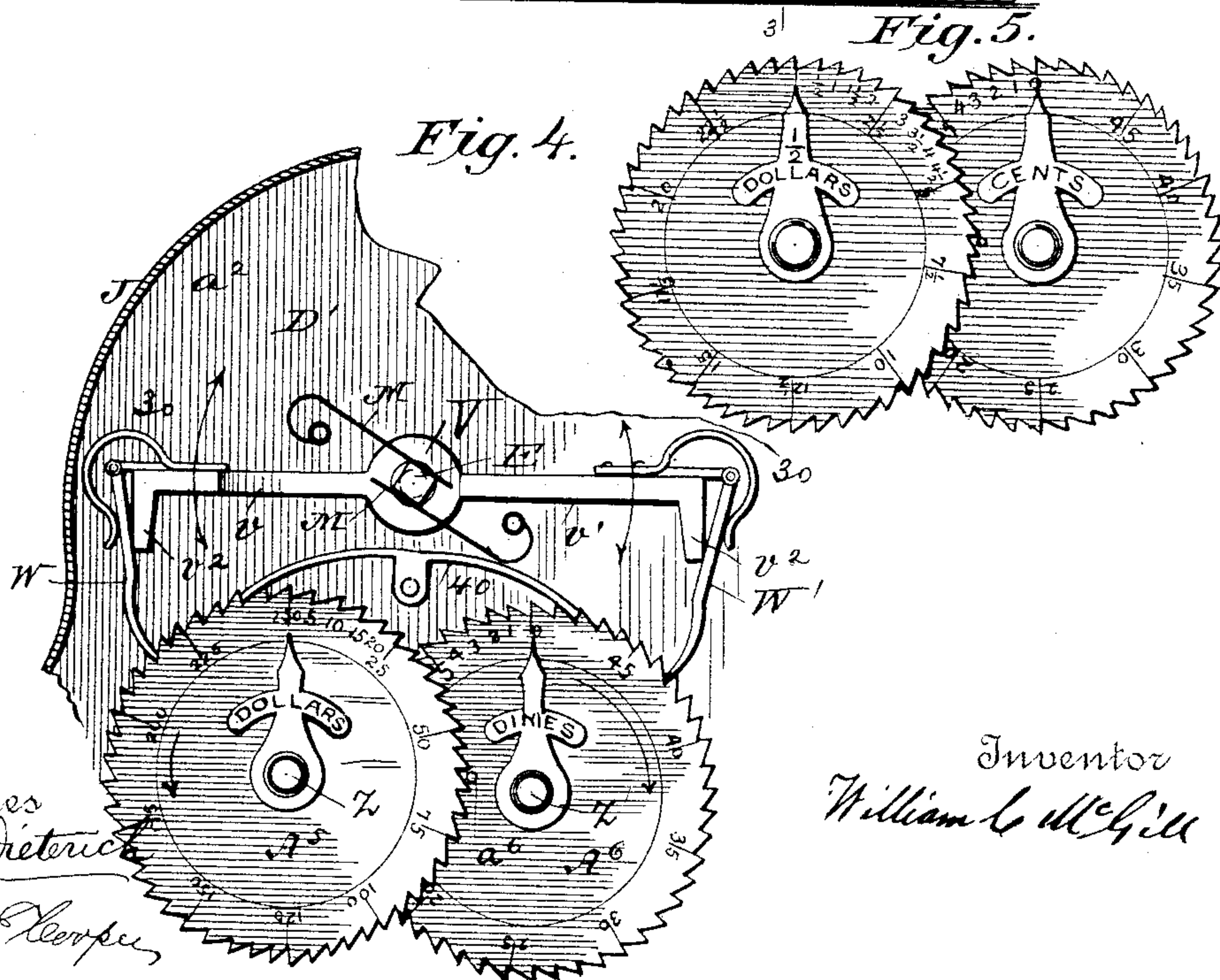
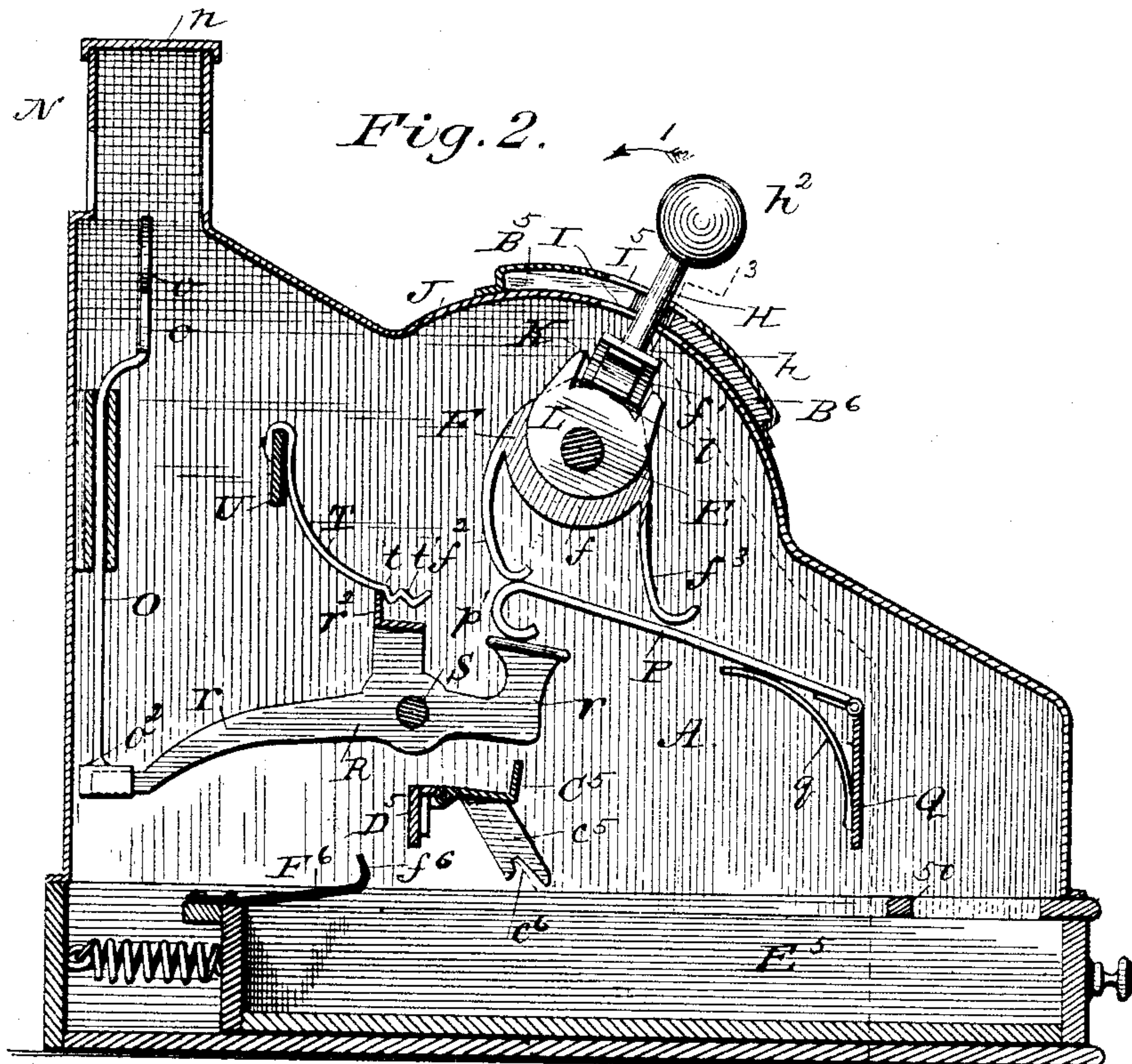
(No Model.)

3 Sheets—Sheet 2.

W. C. MCGILL.
CASH REGISTER AND INDICATOR.

No. 446,925.

Patented Feb. 24, 1891.



Witnesses
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Henry C. Hoopes

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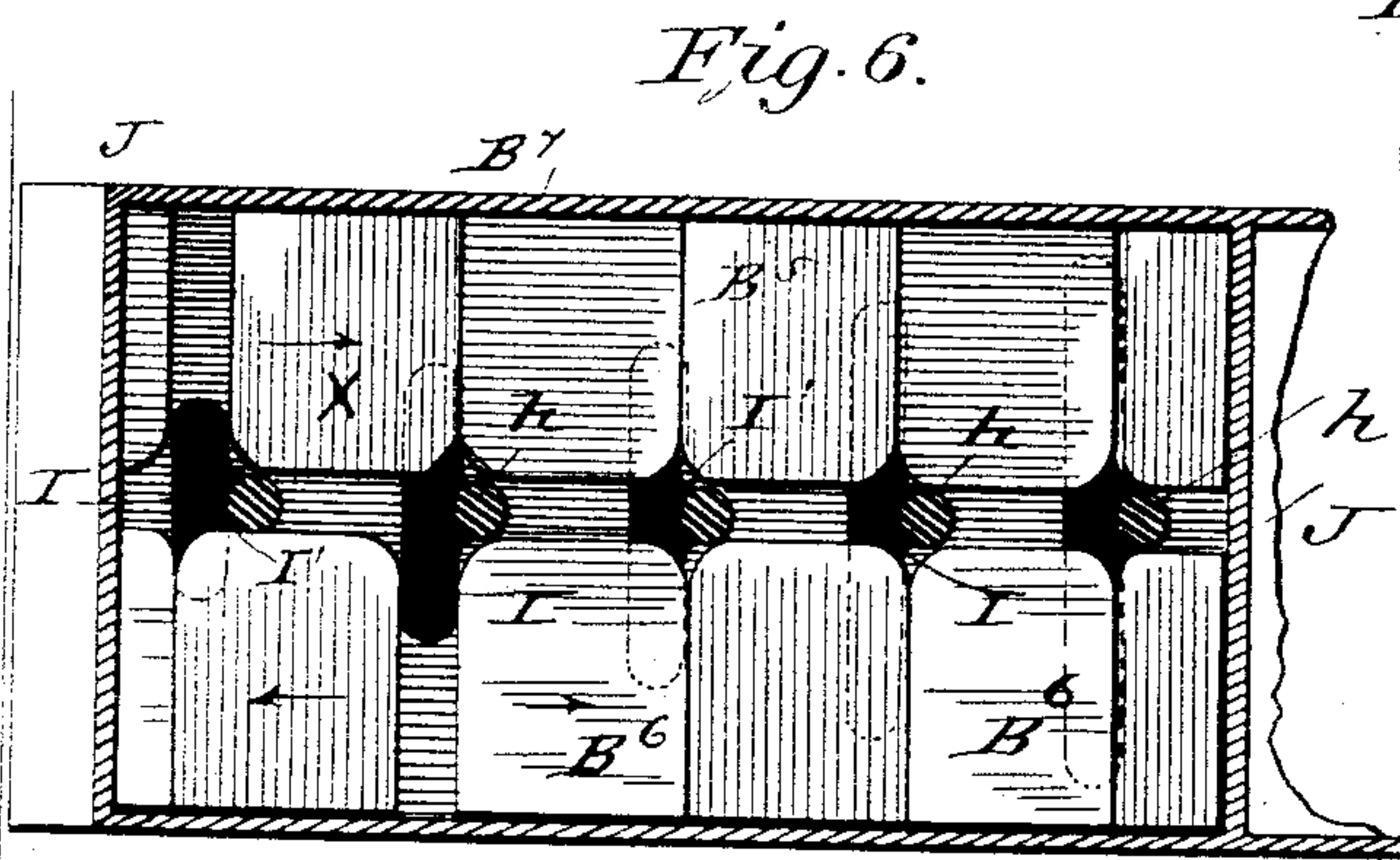
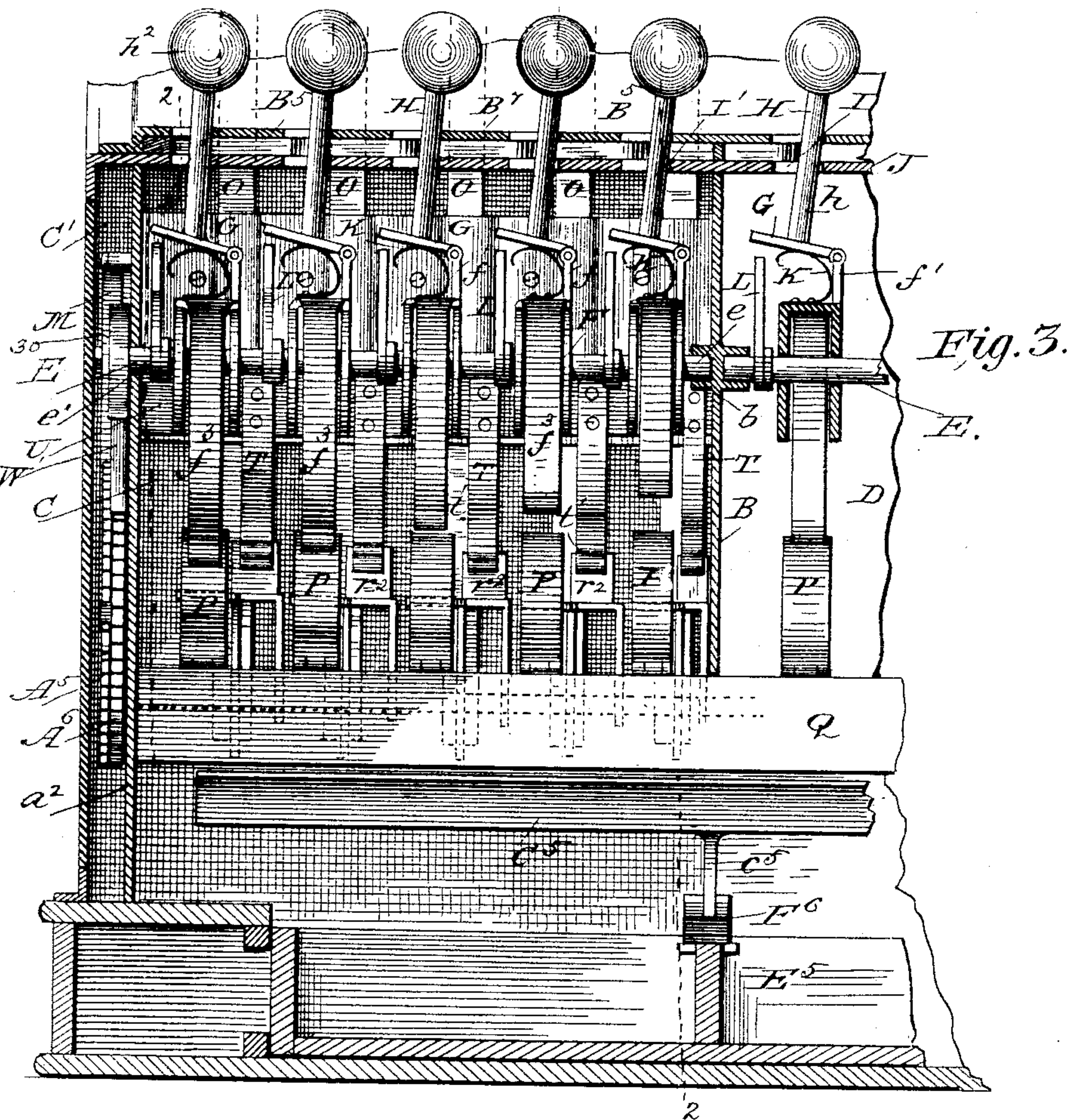
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3 Sheets—Sheet 3.

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Witnesses
Fried G. Dietrich
Henry C. Cooper

Inventor
William C. McGill

UNITED STATES PATENT OFFICE.

WILLIAM C. MCGILL, OF WASHINGTON, DISTRICT OF COLUMBIA.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 446,925, dated February 24, 1891.

Application filed April 3, 1890. Serial No. 347,117. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. MCGILL, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification.

My invention relates to cash registers and indicators, and refers more particularly to that class of such machines in which a series of levers is connected with a suitable rocking shaft, communicating to it varying amounts of movement, such motion being communicated through suitable intermediate devices to registering-wheels, upon which the amounts of sales are indicated, and in which also the movement of the drawer serves to remove the indication of the preceding sale, while at the same time the amount of the latest sale is shown by its appropriate lever. In all machines of this class it is usually necessary to employ a large number of keys to obtain any satisfactory results in indicating sales of large amounts, and so far as I know the operating-shaft is caused to register in one direction only of its movement, which makes necessary the employment of a large number of keys and renders the machine complicated and costly.

The object of my invention is to greatly simplify this construction by making a register employing only a small number of keys or levers, which can be so manipulated as to indicate a sale from one cent to twenty-five dollars, and in which the movement of the key-levers will be almost identical with those now in use.

To this end my invention consists in employing a shaft or shafts adapted to be rocked in two directions by the same operating key-lever and intermediate devices connecting with registering-wheels journaled independent of the rock shaft or shafts, whereby the rocking of such shaft in one direction by an operating-key will serve to indicate and register a predetermined amount and its movement in a reverse direction to indicate and register a different amount.

It also consists in connecting with said shaft and operating-keys indicator-plates having two different amounts marked upon each plate

one above the other, such plates being projected a certain distance in view to show one amount when the shaft is moved in one direction and to show a different amount when its motion is reversed.

It also consists in providing means whereby the money-drawer when pulled out will serve to cause any of the previously-indicated amounts to be dropped out of sight and after such movement be automatically held open, being released by the operation of registering the sale, when the drawer is allowed to be drawn back by a suitable spring.

Finally, my invention consists in the peculiar combination and novel arrangement of parts, all of which will hereinafter be fully described in this specification and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved cash-register. Fig. 2 is a transverse section thereof, taken on the line 2 2 of Fig. 3. Fig. 3 is a detail longitudinal sectional elevation taken on the line 3 3, Fig. 2, on a larger scale. Fig. 4 is a partial end elevation illustrating the "dollars" and "dimes" registering wheels, the operating rock-shaft, and the intermediate mechanism, the case being cut away. Fig. 5 illustrates the "half-dollars" and "cents" registering wheels, situated at the other end of the case. Figs. 6, 7, and 8 are detail views hereinafter specifically referred to, and Fig. 9 is a detail view of one of the key-lever locking-plates.

In constructing my machine I employ a casing A of substantially the form shown and supply it with a central division-plate B, Fig. 3, which practically divides it into two compartments, one of which I will for reference term "cents and half-dollars" compartment and the other D the "dimes and dollars" compartment.

On opposite ends of the casing are the registering-chambers C' D, in which operate the registering-wheels, hereinafter fully described. In each of these compartments is journaled a rock-shaft E, upon which is mounted suitable key-operated mechanism, and as such mechanism and its arrangement and connection with the registering devices is precisely similar in each compartment I

shall specifically describe it only once and apply the same letters of reference to like parts in the other compartment. The rock-shaft E is journaled at G in a bearing b, 5 formed in the division-plate B. Its opposite end e' projects through the end wall a^2 into the chamber C', as shown. Upon said shaft is loosely journaled a series of pusher-plates F, Figs. 2 and 8, each consisting of a central 10 or body portion f , an upward extension f' , and the downwardly-extending fingers or pushers $f^2 f^3$.

To each of the extensions f' is hinged an approximately horizontally-disposed plate G, 15 to which is attached the stem h of a key-lever H, passing through a transversely-elongated opening I in the face-plate J of the casing, such opening being formed with a lateral extension I', Fig. 6, an opening I being provided 20 for each of the key-levers, which are provided with suitable knobs or finger-holds h^2 , as shown.

K denotes a spring which holds the plate G in its normal or upper position.

25 Arranged on the shaft E, one for each pusher-plate and adjacent thereto, are disks L L, fixedly held on said shaft to turn therewith, each being provided with a recessed upper end l , as shown. By this construction it 30 will be observed that when any one of the key-levers is swung laterally, so as to become disengaged from the extension I' of the opening I, the plate G will swing down and become seated in the recessed end l of the disk L. Now by moving the key in the 35 direction of the arrow i , Fig. 2, it will be seen that the plate G will cause the disk to move in the direction indicated, and thereby partially revolve the shaft E, the amount of revolution of the shaft varying for each key-lever. 40 When the key-lever has been pushed back its full extent, (this being determined by the length of the opening I,) it will automatically fly back to a point in line with the slot I' by means of the springs M M, (see Fig. 4,) and when at that point will be thrown 45 into said slot I' by the spring K. It will be readily understood that all the disks L turn with the shaft when rocked, but only the 50 pusher-plate connected with the key being operated will move with the shaft.

At the rear of the casing on its upper side I arrange the indicator-chamber N, having a glass front and back on its lower half, where- 55 by a closed chamber n is formed in the upper end.

O O indicate a series of indicator-plates, one of which is shown in detail in Fig. 7 of the drawings, and which are formed at their 60 ends with two enlargements or heads $o o'$, arranged one above the other, upon the front and rear faces of which are the desired indicator-marks. The relation of the two indicator-heads and the key-operating levers is 65 such that should the said key be moved in one direction it will serve to move the indicator up a distance sufficient to disclose the

upper indicator-mark; but should the key be moved in the opposite direction the plate O will be forced up twice the distance, its upper head o entering the chamber n , its lower head o' being in line with the openings in the top N, thereby serving to disclose the lower number. As before stated, this double movement of the indicator-plate is accomplished 75 by reverse movements of the key-levers, and as such key-levers and the rock-shaft have equal degrees of movement in both directions I employ the means most clearly shown in Fig. 2, which are operated by the key-levers 80 to transmit the two different amounts of motion to the indicator-plates.

By reference to Figs. 2 and 3 it will be seen that I provide a series of arms P, arranged one for each key-lever, and hung at their outer 85 ends to a cross-piece Q, their forward ends being turned down at p' and projected under the fingers f^2 and f^3 , being held in their normal position by the springs q , as shown. The front ends p' of the said arms P rest upon the front 90 end of the short arm r of a series of pivoted lever-bars R, loosely journaled on a common shaft S, the long arms r' of which project rearward and under the ends o^2 of the plates O. (Clearly shown in Fig. 2 of the drawings.) 95 The bars R are formed with upwardly-projecting members r^2 , with which flat springs T are arranged to engage, the upper ends of which are secured to a cross-piece U, while their lower ends are formed with the two contact-faces $t t'$, either of which will engage the members r^2 when said member is swung there- 100 under in a manner presently described. By reference to Fig. 2 it will be seen that should the key-lever be moved in the direction of the arrow it would (owing to the plate G engaging the disk L) cause the pusher-finger f^2 to bear against the arm P and press it down, such movement causing the front end of the lever-bar R to be depressed and its rear end 110 to be lifted, and thereby raise the indicator-plate to view.

In my improved register I arrange the key-levers and the operating mechanism in series of five and preferably arrange two series of 115 such keys for each register, although it is obvious that I can construct machines with but one set of keys, or with three or more sets, if desired.

In the construction I have illustrated two 120 sets of figures arranged one above the keys and the other below, and have formed each set into two sections, the left-hand portion of the upper set of figures indicating from one to five cents and the right-hand portion ten to 125 fifty cents, in multiples of ten. The left-hand portion of the lower set indicates one-half dollars from one-half to two and one-half dollars, the right hand indicating five dollars to twenty-five dollars, the relation of the upper 130 and lower set of figures being such that the lower figures will indicate fifty times the amount indicated by the corresponding upper figures.

By reference to Fig. 1 of the drawings it will be seen that I provide ten key-levers operating in the transverse slots I and arranged in two sets of five, the left-hand keys of each set, which indicates the smallest amount of each series of indicator-figures, being arranged to have the smallest degree of movement—i. e., it can be moved forward or backward to rock the shaft a certain degree, such degree of movement being equal to one tooth on the register-wheels, hereinafter referred to. The second key has a movement double that of the first, the third three, the fourth four, and the fifth key five times the movement of the first key, whereby the shaft is rocked to move the registering-wheel two, three, four, or five teeth.

As it is essential to the proper operation of the machine that the indicator-plates shall not appear to view until each key-lever has been moved to its limit, I form the pusher-fingers $f^2 f^3$ of different lengths and arrange them in such a manner that they will serve to engage the arms P during the last part of the movement of each key-lever.

By reference to Fig. 2, which shows the first key-lever and its connections with the indicator-plates, it will be seen that the fingers f^2 and f^3 are arranged to touch the arms P, so that the movement of the key will at once operate the indicator-plate, while in Fig. 8 I show the fifth key-lever and its pusher-fingers, which are arranged away from the arms, and which will only come into engagement therewith at the last portion of its movement.

As before stated, I arrange the indicator-plates with a double set of numerals, one above the other, the upper one of such sets arranged to indicate the amounts disclosed by the upper row of figures on the casing and the lower row the lower set.

It being necessary to lift the indicator-plates to their full extent to show the lower row of numbers and only one-half so much to show the upper row of numbers, I arrange the fingers $f^2 f^3$ in such relation that the forward fingers f^3 , which are adapted to operate only when the key-levers are swung forward, depress the arms P twice as far as the fingers f^2 . To this end I make the fingers f^3 longer than fingers f^2 and dispose them to engage the arms P nearer to their pivotal hinged ends. By this means when the key-levers are pushed backward the fingers f^2 will engage the arms P, depress the short ends of the bars R a certain distance, and when the levers are moved in the opposite direction the fingers f^3 will engage the arms P, depress them double the distance, and cause the long ends of the bars R to be raised to their full extent.

The rock-shafts project out into the end chambers C' D', one shaft into each, and have their ends (see Fig. 4) squared. Upon the squared ends bear suitably-arranged springs M M, which serve to bring the shafts back to their normal positions after they have been

moved. Mounted on and rocking with the shafts are the lever-arms V, formed of the lateral members $v v'$, arranged on each side of the shaft, the outer ends of which are formed with depending lugs $v^2 v^2$, which serve to limit the inward movement of the operating-pawls W W', which are hinged to the outer ends of the members $v v'$ and are held against the lugs by the springs 30 30, as most clearly shown in Fig. 4 of the drawings, by reference to which it will be seen that I journal upon studs $z z$, disposed below the lever-arms V, two registering-disks $A^5 A^6$, each of which is provided with fifty ratchet-teeth, one of said wheels indicating the dollars and the other the dimes, the one-half-dollars and cents registering disks on the opposite shaft being shown in Fig. 5, and as their construction and operation are precisely similar to the disks shown in Fig. 4 further description thereof is unnecessary. The disks A^5 and A^6 are always in engagement with the pawls W W' and revolve in the direction of the arrows, so that one complete revolution of the wheels A^6 will bring its lug a^6 to engage the wheel A^5 and move it one tooth, it being understood that one revolution of the wheel A^6 will indicate an amount of fifty dimes or five dollars and the movement of one tooth on the wheel A^5 an amount of five dollars. It will also be understood that the relation between the teeth on the disks $A^5 A^6$ and the movements of the rock-shaft is such that a movement of one degree of the said shaft forward will cause the pawl W to push the wheel A^5 forward one tooth, while moving the shaft backward five degrees will cause the pawl W' to turn the wheel A^6 five teeth, a suitable spring-dog 40 being employed to prevent reverse movement. By forming the members $v v'$ with the shoulders v^2 it will be seen that as one end of the lever V is freed from its wheel the freed pawl will keep its position in relation to the arm v' , so that when it resumes its normal position it will again engage the same tooth from which it was raised.

From the foregoing description in connection with the drawings, it will be seen that by the construction set forth I am enabled to register and indicate the amount of any sale from one cent to twenty-five dollars, and by the use of only four registering-disks I am enabled to register amounts of sales up to two hundred and fifty dollars.

By arranging the two shafts as described I am enabled in case a sale is made which is not specifically shown on any of the indicator-plates to show it by a combination—as, for example, a sale amounting to five dollars and four cents. The operator by grasping the first key of the second series and pulling it toward him and the fourth key of the first series and pushing it from him will cause the indicators showing \$5 and 4c. to be simultaneously raised to view.

Where an amount in dollars is indicated

by the same lever and on the same plate as a different amount in cents, as \$1.02, \$5.10, &c., it will be necessary in order to properly indicate their sum (which, it is manifest, however, would be properly registered by merely moving the lever first in one direction and then in the other) to make a combination, as by using the one-half-dollar lever, the fifty-cent lever, and the two-cent lever in the first instance and the three-dollar lever, the two-dollar lever, and the ten-cent lever in the second. In a similar manner other amounts not capable of indication directly may be shown by combinations of various indicator-plates.

To prevent any two keys of the same series from being operated at one time, (in which case only the larger amount would be registered, as is obvious from the construction of the register-disks,) I provide a series of cut-off plates B^5 B^6 , (see Figs. 2, 6, and 9,) which are arranged in a housing B^7 , formed on the upper face of the casing, the upper wall of which is formed with a series of openings I^5 , similar in size and form to the opening I in the casing, and are arranged just over such openings, as shown. By reference to Fig. 6 it will be seen that I arrange these plates in the housing with such an amount of play that when they are pushed together a space equal to the width of the opening I will be provided between two of them, and I also make the edge of the plate coincident with one edge of the openings I and round the plate-corner, as shown. By this arrangement it will be seen that only sufficient room can be provided at one time to allow a single key-lever to be moved—as, for instance, the parts being in the position shown in Fig. 6, where the upper half of the first opening is already uncovered and a sale of two cents has been made, the operator would grasp the second key-lever and force it forward, causing the plate X to move to the left and close the first opening, thereby providing a very simple and effective means of locking all but one key-lever in a series from operation.

In registers now in general use when a sale is made the operator presses or pulls on the proper key, which, in connection with its other functions, serves to release the cash-drawer and cause it to fly open. The cash is then placed therein and the drawer closed, the movement of the key-lever also serving to cause the preceding indicator-plate to drop.

In this invention I construct the drawer so that it can be pulled out by the operator when he makes a sale, which causes the preceding sale-indication to be dropped, at the same time causing a check to hold the drawer open. When the operator manipulates the key-lever to register and indicate the sale, this check will be released and allow the drawer to be closed by a spring. To this end I provide a plate C^5 , Fig. 2, extending longitudinally under the lower end of the short arms of the lever-bars R , but normally not in contact

therewith, such plate C^5 being hinged to a cross-bar D^5 of the frame and provided with a forwardly and downwardly projecting finger c^5 , formed with an inclined notch C^6 , the plane of which is in advance of the pivotal point of the plate. Upon the upper face of the back-board of the drawer E^5 , I secure a stout spring F^6 , made with an upturned lip f^6 , which, when the drawer is pulled out to its full extent, (such movement being limited by the stop 50,) will pass under the finger c^5 and raise the plate C^5 and cause it to engage the lower end of the lever-bars R , which may be depressed, and thereby cause the indicator-plate held by such bar R to drop, the stop 50 so limiting the play of the drawer that the lip f^6 of the spring F^6 does not pass the finger c^5 , but engages it and forces it up to or above its dead-center, the spiral drawer-closing spring acting to keep the catch and the lip f^6 in engagement. In receding the lip f^6 will engage the inclined notch C^6 , and the pressure of the spring F^6 being in an upward direction in advance of the hinged point of the bar D^5 will cause the drawer to be held in its open position. Now where any one of the keys is depressed the lower front end of the bar R will press down on the forward end of the notched portion to turn past the dead-center, and, overcoming the force of the spring F^6 , tending to keep the finger c^5 in its upper position, allow the lip f^6 to become disengaged and allow the drawer to fly back.

From the foregoing description, taken in connection with the drawings, the advantages of my improvements will readily appear. It will be seen that by my invention only a small number of key-levers need be employed to indicate amounts from one cent to twenty-five dollars, and that the construction thereof is very simple and easily understood, its operation positive and exact, and the cost thereof greatly reduced from that of machines now in general use.

The method of operating this register is as follows: A sale having been made, the clerk opens the drawer, which is held open by the check or finger c^5 , and makes change. He then operates the key-lever to register and indicate the amount of the sale. Upon operating any lever the drawer-check is released and the drawer shuts. It is thus impossible to close the drawer without registering the sale, and this affords a check against dishonesty, as leaving the drawer open would immediately attract attention. It is also usual, though not essential, to provide a gong of any ordinary construction to attract attention when the drawer is opened.

Having thus described my invention, what I claim, and desire to protect by Letters Patent of the United States, is—

1. In a cash register and indicator, the combination of indicating and registering mechanisms, a rock-shaft connected by suitable means therewith and adapted to operate them when moved in either direction, and a

series of key-levers moving the rock-shaft through predetermined angles, substantially as described.

2. In a cash register and indicator, the combination of a rock-shaft and the disk F, loosely journaled thereon and provided with the fingers $f^2 f^3$, adapted to communicate different definite amounts of motion to the indicating apparatus by means of suitable intermediate devices, substantially as described.

3. In a cash register and indicator, a rock-shaft, a disk F, journaled thereon and having fingers adapted to operate the indicator mechanism by proper intermediate devices, and a disk L, secured to the shaft and adapted to partially rotate it through the motion of key-levers, communicated by means of lugs on its upper edge, substantially as described.

4. In a cash register and indicator, a rock-shaft communicating motion by suitable means to appropriate registering and indicating devices and receiving motion from a series of key-levers reciprocating in slots limiting their play from a central position, whereby the shaft may be turned different definitely-limited amounts in either direction by each key-lever, substantially as described.

5. In a cash register and indicator, an indicator-plate having two tablets for figures, the one above the other, in combination with a journaled arm R, an arm P, and fingers $f^2 f^3$, all co-operating to transmit motion thereto from a rock-shaft E, substantially as described.

6. In a cash register and indicator, the combination of an indicator-plate having two tablets $o o'$, a lever R, having the arms r and r' and the projecting lug r^2 , adapted to engage the spring T at either notch $t t'$, the arm P, the fingers $f^2 f^3$, the rock-shaft E, and the key-lever H, whereby the backward rotation of the shaft will expose to view one tablet and its forward rotation the other tablet, substantially as described.

7. In a cash register and indicator, a series of key-levers H H, adapted to turn the rock-shaft E, connected by suitable devices to indicating and registering mechanisms through partial revolutions in either direction from a

normal central position limited by the slots I I, the key-levers being maintained in their normal position by the spring K, substantially as described.

8. In a cash register and indicator, in combination with a registering dial or dials, an arm V, having on its outer end a shoulder v^2 and a spring 30 and carrying a pawl W, whereby the pawl will return to the same point of engagement on the registering-dial after being lifted out of contact therewith, substantially as described.

9. In a cash register and indicator, in combination with a registering dial or dials, an arm V, attached to a rock-shaft E, having a squared end whereon bear springs M M, having on its outer end a shoulder v^2 and a spring 30 and provided with a pawl W, whereby the arm is caused to resume its horizontal position and the disengaged pawl its former point of engagement after a movement of the shaft, substantially as described.

10. In a cash register and indicator, in combination with a series of levers R, adapted to project the indicator-plates O, a horizontal bar journaled beneath and formed with the lip C^5 , and the lug c^5 , arranged to raise the ends r of the levers by the opening of the drawer E^5 , thus dropping the indicator-plates, substantially as described.

11. In a cash register and indicator, a horizontal journaled bar arranged beneath the inner ends of a series of lever-arms R R and having an upwardly-projecting lip and a downwardly-projecting trigger-catch c^5 , having the notch C^6 , adapted to engage the spring F^6 , all in combination with a cash-drawer, whereby the opening of the drawer will raise the ends of the lever-arms to a normal position and engage the spring F^6 with the notch, and the depression of any lever-arm will release the spring F^6 and allow the drawer to be closed, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM C. MCGILL.

Witnesses:

HENRY E. COOPER,
T. J. JOHNSTON.