

No. 673,625.

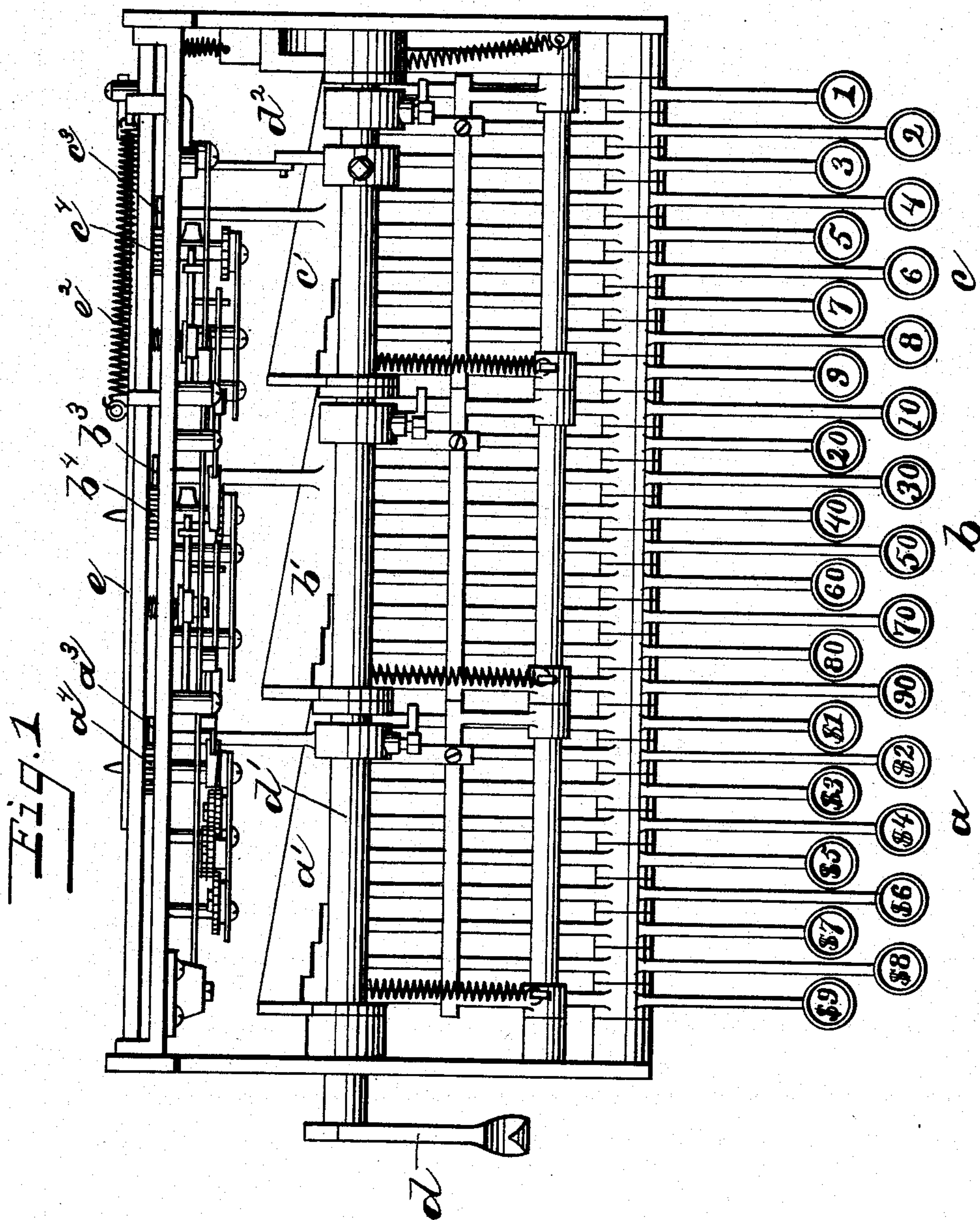
Patented May 7, 1901.

J. PFEIFER.
CASH REGISTER.

(Application filed May 22, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:
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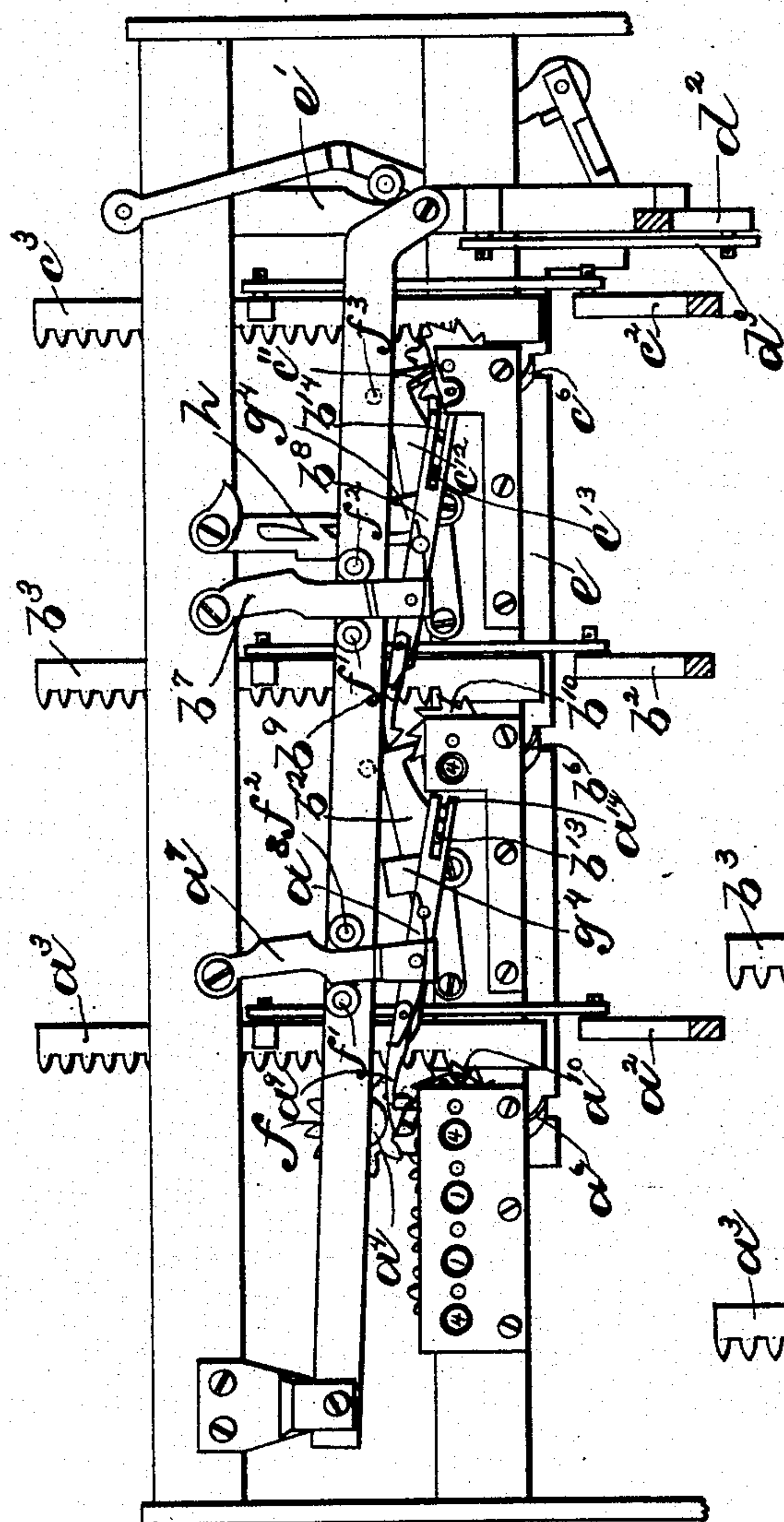
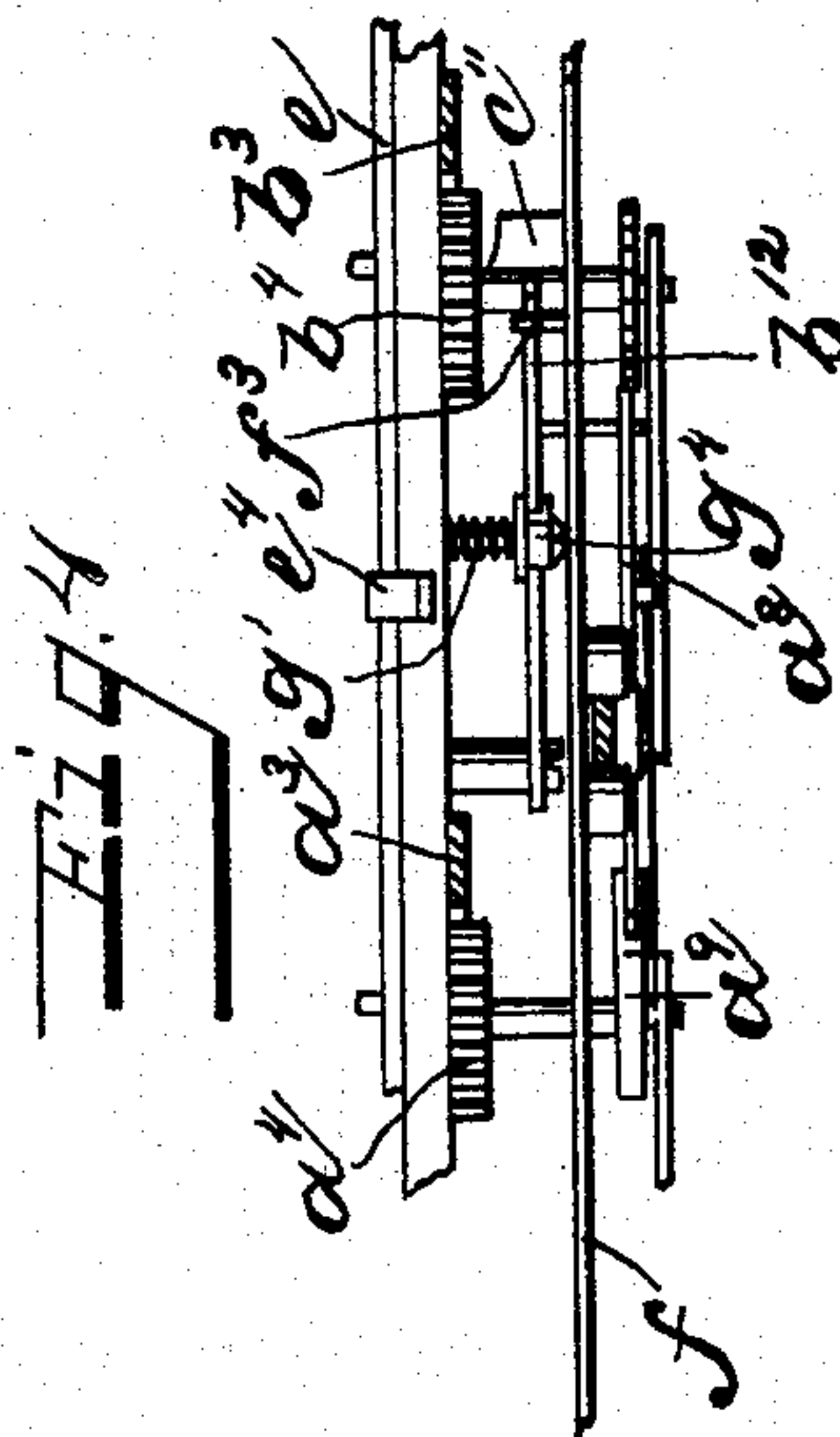


Fig. 2



R. B. L. H.

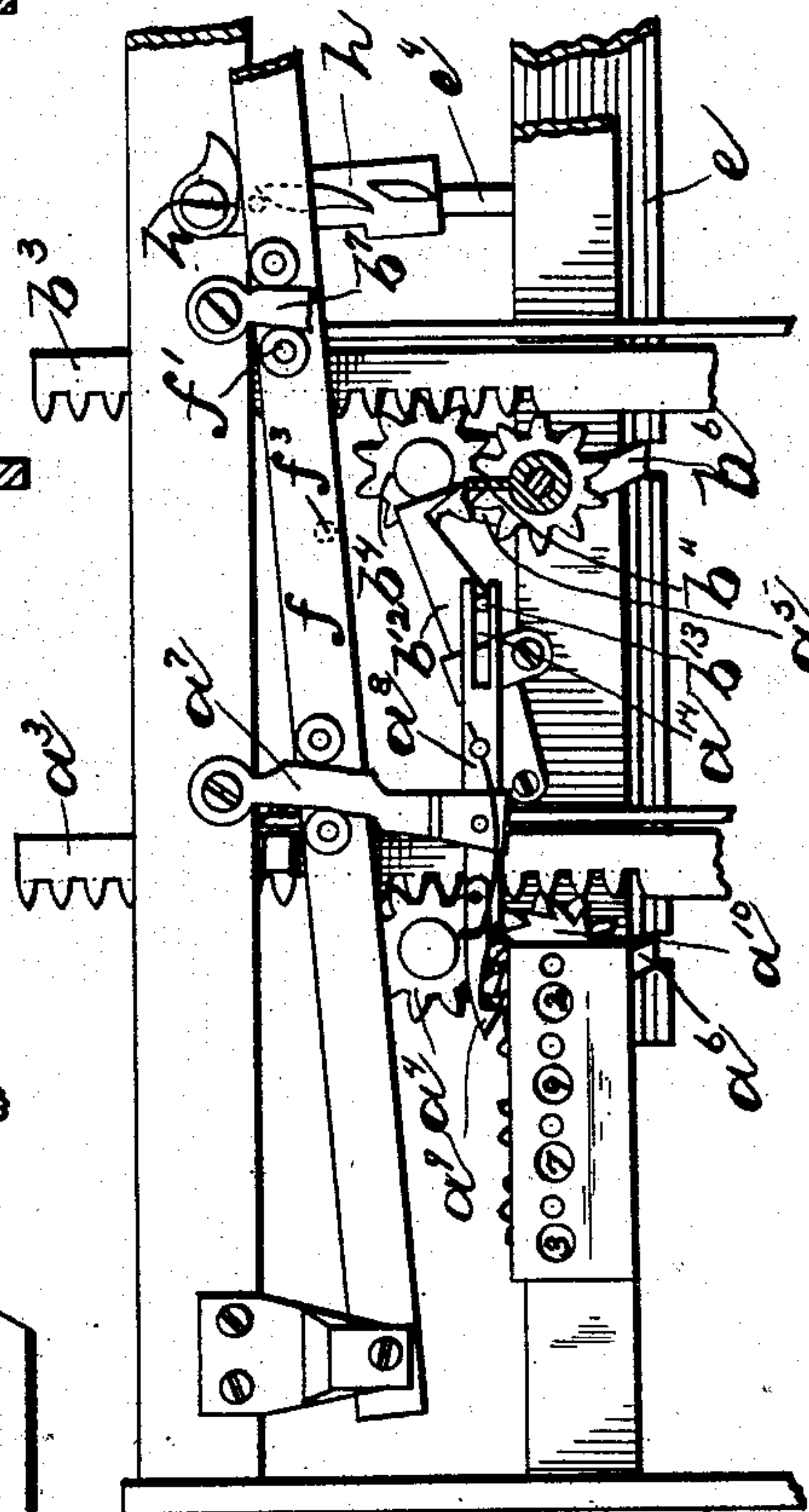


Fig 3

Witnesses
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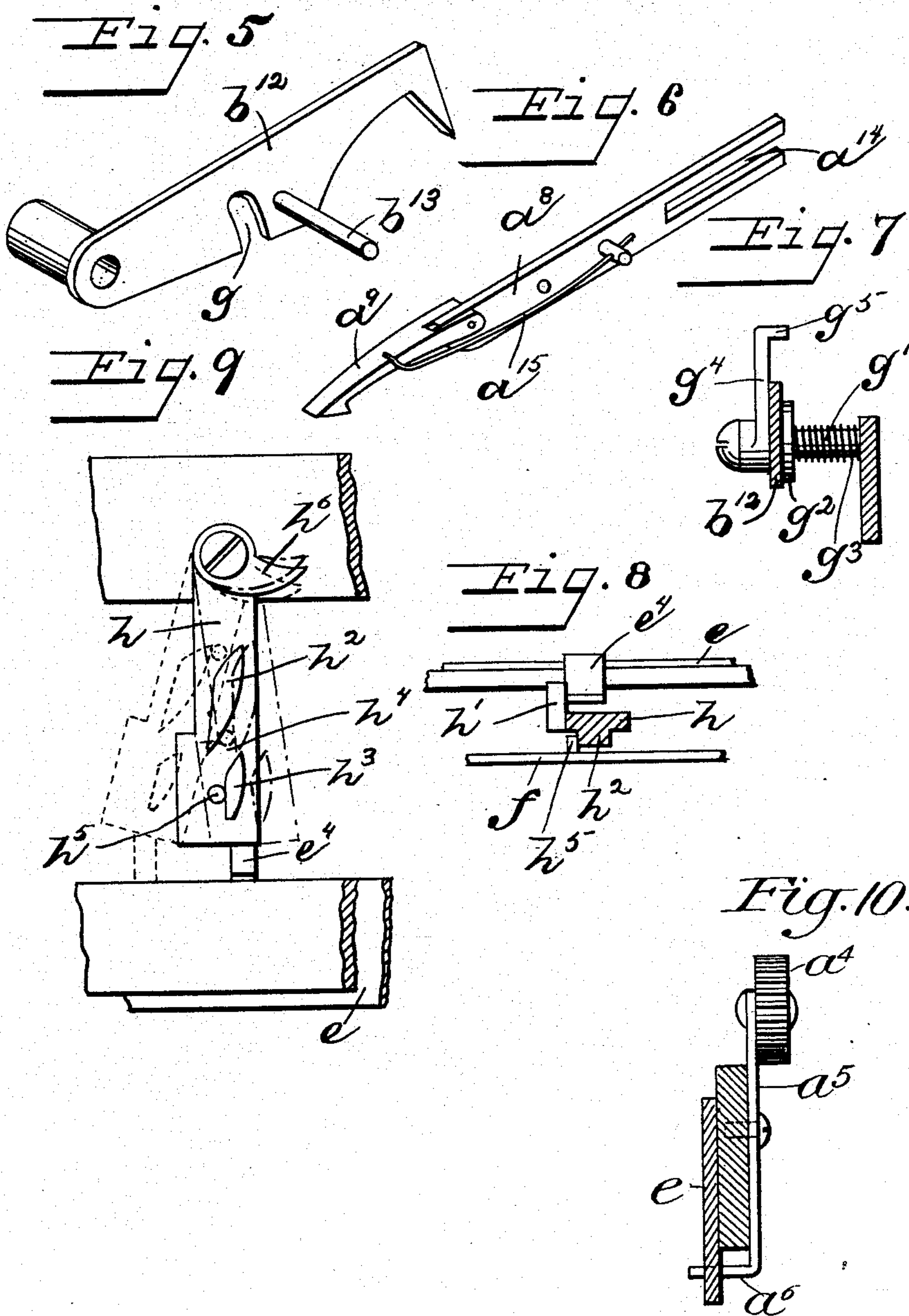
Inventor
John Bleiler
By his Attorney *Samuel R. [Signature]*

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3 Sheets—Sheet 3.



WITNESSES:

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Chas. J. Welch

INVENTOR.
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UNITED STATES PATENT OFFICE.

JOHN PFEIFER, OF SPRINGFIELD, OHIO, ASSIGNOR TO MAST, FOOS & COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 673,625, dated May 7, 1901.

Application filed May 22, 1900. Serial No. 17,616. (No model.)

To all whom it may concern:

Be it known that I, JOHN PFEIFER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification.

My invention relates to total-adding cash-registers, and it relates more particularly to that class of registers described and set forth in my Patent No. 642,713, issued February 6, 1900.

The object of my invention is to provide a simple means for correctly and positively adding the different amounts indicated on the keys of the machine and transferring the amounts of one denomination to the adding or counting devices in the next higher denomination, so as to correctly obtain the total amount of the transactions registered on the device, while the means for accomplishing the same are extremely simple in construction and in operation. I attain this object by the constructions and combinations of parts hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a front elevation of a portion of the adding mechanism, showing the transferring devices. Fig. 3 is a view of a portion of the same with some of the parts removed or broken away. Fig. 4 is a plan view of a part of the same. Figs. 5 to 9, inclusive, are details of parts of the machine. Fig. 10 is a detail showing the pivoted lever, one arm of which supports the movable pinion and the other arm engages the laterally-moving plate.

Like parts are represented by similar letters of reference in the several views.

In the class of register to which I have shown my invention applied a series of keys are arranged in three banks a , b , and c and are adapted to represent dollars, dimes, and cents. Each bank is numbered from "1" to "9" or from "10" to "90," as the case may be, and the depression of any key is adapted to release and to set in operation a pivoted segmental graduated bar a' b' c' . An operating-lever d , attached to a shaft d' , which extends entirely through the machine, with the

lever d on the outside of the inclosing case, (not shown in the drawings,) is adapted to carry the segmental graduated bars back to their normal position and in so doing to give movement to the adding mechanism. Each of these segmental bars is attached by link connections a^2 b^2 c^2 to vertically-operating racks a^3 b^3 c^3 , which as the bars move are correspondingly moved. The keys are so arranged that when operated the segmental bar corresponding to that bank of keys will move until it contacts with the key operated, and the bars are so graduated that in their movement they will carry the racks a number of notches or teeth corresponding to the number on the key. In their normal position the keys are preferably locked and they are unlocked by the operation of the lever d .

A device as thus briefly described is well known and forms no part of my present invention, and such a device is more fully set forth in my prior patent referred to.

Adjacent to each of the racks a^3 b^3 c^3 is a pinion a^4 b^4 c^4 . These pinions are each mounted on a pivoted lever, as shown at a^5 in Fig. 3, and in their normal position they are disengaged from the racks. The pivoted lever, however, which supports them is provided with an arm a^6 b^6 c^6 , which engages with a laterally-moving bar e , which is connected to the arm d^2 of the shaft d' , so that each time the shaft d' is moved the bar e is given a lateral movement, and thus brings the pinions into engagement with the racks, the arrangement being such that the pinions are thrown out of engagement with the racks as soon as the lever d' has reached the limit of its forward stroke, all of which is more fully set forth in my previous patent referred to. The pinions a^4 b^4 c^4 are geared directly to counters, those in units and tens being numbered from "1" to "9," that one for the hundreds or dollars being provided with any suitable number of counting-wheels to register larger amounts. These constructions also form no part of my invention, but have heretofore been described in my prior patent referred to.

Inasmuch as the counters for the units and tens bank of keys run only from "1" to "9," it is necessary to provide means for transferring the amounts of these respective counters

to that of the next higher denomination whenever one of these counters has made a complete cycle, and I accomplish this as follows: There is pivoted to one side of the machine
 5 a bar f , which is attached at one end to the vertically-sliding bar e' , which is connected directly to the arm d^2 of the shaft d' by means of the link d^3 , so that each time the shaft is oscillated this bar f is also oscillated. There
 10 are pivoted to a suitable part of the frame, opposite to the tens and hundreds counters, vibrating levers $a^7 b^7$. To the lower ends of these levers $a^7 b^7$ are pivoted pawl-levers $a^8 b^8$, and at the end of these pawl-levers there are
 15 pivoted spring-actuated pawls $a^9 b^9$, and these pawls are, when in certain positions, adapted to engage with ratchet-wheels $a^{10} b^{10}$, forming part of the counters. Each of the counters representing units and tens is provided with
 20 a single tooth $b^{11} c^{11}$, which when the counter-wheel has made a complete revolution is adapted to contact with the beveled end of a pivoted lever $b^{12} c^{12}$. These levers $b^{12} c^{12}$ are pivoted at a suitable point to the frame mechanism, and each carries a projecting stud b^{13}
 25 c^{13} , which engages in a slotted opening $a^{14} b^{14}$ in the pawl-levers $a^8 b^8$. In their normal position these pawl-levers are held by the respective studs, so that the pawls will not engage with the ratchets in the counters; but
 30 when these pivoted levers $b^{12} c^{12}$ are moved about by the teeth $b^{11} c^{11}$ the studs $b^{13} c^{13}$ will operate the pawl-levers to depress the pawls until they engage with the ratchet-teeth of the counters. The swinging levers $a^7 b^7$ are
 35 each formed with cam projections, which are engaged by small cam projections, preferably rollers $f' f^2$, on the vibrating lever f , so that the pawls are given a vibrating stroke at each operation of the main shaft of the machine. These cam projections are so formed that as
 40 the shaft d' is returned to its normal position and the pivoted lever f is moved downward the lever b^7 is first operated upon, and after it has completed its movement the lever a^7 is
 45 operated upon, the construction being such that the pawl-lever b^8 will be vibrated to its normal position before the pawl-lever a^8 is started. It will thus be seen that if the pawls
 50 have been thrown into operative position by the pivoted operating-levers b^{12} and c^{12} then as the pawl-levers are vibrated the counting-wheels with which they engage will be moved one notch.
 55 To provide for holding the pivoted operating-levers b^{12} and c^{12} in their operative position, and thus hold the pawl-levers in the proper position to engage the ratchet-teeth until after the transfer is made, each of the
 60 operating-levers $b^{12} c^{12}$ is provided with a slotted opening g , as shown in Fig. 5, which fits over a stud g' on the supporting-frame, and on this stud there is a washer g^2 , which is pressed against the lever by a spring g^3 . The
 65 extremity of the stud is provided with a shoulder, and there is mounted thereon a bearing-

plate g^4 , which carries at the top a projection g^5 , which forms a stop to prevent the operating-lever from being thrown too far, while the bearing-plate g^4 and the spring-pressed washer
 70 g^2 furnish a friction device to hold the operating-lever in its proper position until the transfer is made. To provide for returning these operating-levers to their normal positions the vibrating lever f is provided with
 75 studs or projections f^3 , which contact with the pivoted operating-levers as the vibrating bar is returned to its position, thus moving the pivoted operating-levers to their normal positions, so as to be engaged by the projec-
 80 tions b^{11} and c^{11} of the counters.

Any suitable means may be employed for furnishing movement to the sliding bar e , which operates the pinions $a^4 b^4 c^4$ to cause them to engage and disengage the racks $a^3 b^3$
 85 c^3 , the means employed in the former patent being preferable. A spring e^2 returns the plate e to its normal position. In order, however, to insure the action of the spring and to make the movement of the plate cer-
 90 tain in case the spring is not actuated, I preferably provide a swinging arm h , having on one side a projection h' , (see Figs. 8 and 9 for detail,) which engages with the arm e^4 on the
 95 sliding bar e . This swinging arm h is provided on its opposite side with cam projections $h^2 h^3$ and a camway h^4 . The vibrating bar f is provided with a stud h^5 , which normally stands in contact with the cam pro-
 100 jection h^3 , and thus holds the swinging arm h positively in its position, and thus locks the plate e , so that the pinions $a^4 b^4 c^4$ are held positively out of engagement with the racks. As the swinging bar f moves at each stroke
 105 of the lever the stud h^5 moves through the camway h^4 and permits the bar e to be moved so as to bring the pinions into engagement with the racks. The swinging arm h is provided at the top with a trip-arm h^6 , which as
 110 the vibrating bar f is moved contacts with the top of said bar, brings the arm h over so as to positively move the plate e in case the spring is not operated, and brings the cam projection
 115 h^2 on the opposite side of the stud h^5 , so that as the swinging bar f descends the stud is carried along said cam projection and forces the arm back to its normal position and with it the plate. The stud rests against the pro-
 120 jection h^3 when in its normal position, and thus holds the plate locked. It is obvious that the arm h may be connected pivotally to the plate, so as to operate the same in both
 125 directions, in which case the swinging arm may be used to positively operate the plate in both directions and the other operating de-
 vices may be dispensed with.

It should be noted that each of the pawls $a^9 b^9$ is provided with a spring a^{15} , which is attached to the pawl-lever, so that the pawl
 130 will be spring-pressed against the ratchet-wheel with which it engages when it is brought into operating position by the oper-

ating-lever, said spring permitting a slight giving or relaxing movement of the pawls when acting on the ratchet-wheel.

It will be seen that by the above construction at each operation of the main shaft the pivoted bar *f* will be vibrated and will carry with it the swinging cam-arms, which in turn will produce a longitudinal movement of the pawl-levers. If the operating-levers have been moved by a complete cycle of its counter, the pawl-levers will be depressed so as to engage the ratchet-wheels of the counting device, and thus produce a movement of one step in the counting of the next higher denomination. The vibration of the pivoted bar *f* will also cause a movement of the swinging arm *h*, which will positively move the plate *e* of the counter-pinions into and out of engagement with their racks and when the pivoted bar is in its normal position will positively hold said pinions out of engagement with their racks.

Having thus described my invention, I claim—

1. The combination with a series of counting devices, and means for operating the same independent of each other, a pivoted operating-lever adapted to be engaged and moved by the counting device of a lower denomination, and a pivoted longitudinally-moving pawl-lever having a pivoted hook end adapted to engage and move the counter of a higher denomination, a connection between said operating-lever and said pivoted pawl-lever, means as described for holding said operating-lever and pawl-lever in their normal operating positions and for producing a longitudinal movement of said pawl-lever while in this position, substantially as specified.

2. The combination with the counters representing different denominations, a pivoted operating-bar, cams on said bar, swinging cam-arms operated by the cams on said bar, pivoted pawl-levers on said swinging arms and the operating-levers pivoted adjacent to the counters of a lower denomination and a loose lever pivoted between said pawl-levers and said operating-levers, substantially as and for the purpose specified.

3. The combination with the counters, the operating-racks and the movable pinions forming a part of said counters and adapted to be thrown out of and into engagement with said racks, the pivoted vibrating bar arranged adjacent to said racks, swinging cam-arms, cam projections on said bar to operate the swinging cam-arms, pivoted pawl-levers loosely and pivotally connected to said swinging cam-arms, operating-levers adapted to be operated by the counter of lower denomination and the pawl-lever connected thereto being adapted to engage and operate the counter of a higher denomination, substantially as specified.

4. The combination with the racks, the counters and the movable pinions adapted to

be thrown out of and into engagement with said racks, a vibrating plate connected to the said pinions, a pivoted vibrating bar, a swinging lever having cam projections, a projection on said bar adapted to engage said swinging lever, a swinging arm to engage said vibrating plate, and a trip on said arm to engage said bar when it reaches the limit of its stroke and thus move said arm to cause the projection on said bar to engage on the opposite sides of the cam projections, thus furnishing a means for positively moving and locking said plate and the movable pinions, substantially as specified.

5. The combination with the movable racks, the counters having the movably-supported pinions forming part of said counters, a vibrating plate connected to the movable supports of said pinions, a swinging bar having a projection, a swinging arm attached to said sliding plate having camways to engage the projection on said swinging bar, pivoted cam-arms, projections on said pivoted bar to engage said cam-arms, said cam-arms carrying at their free ends pivoted pawl-levers, loosely pivoted to operating-levers, the pawl-levers being adapted to engage and operate the counters of a higher denomination and the operating-levers being adapted to be engaged with and operated by the counters of a lower denomination, whereby the counter-operating pinions are locked positively out of engagement with the racks and the transfer from a lower to a higher denomination is made by the vibration of said bar, substantially as specified.

6. The combination with the counters, representing different denominations, of a pivoted operating-lever having the projecting stud, a pivoted longitudinally-moving pawl-lever having a slotted opening engaging said stud, a friction device for holding said operating-lever in different positions and means for moving said pawl-lever longitudinally on said stud, substantially as specified.

7. The combination with the counters representing different denominations, of the pivoted oppositely-extending operating and pawl levers, as described, said pawl-lever being loosely connected to said operating-lever so as to permit a longitudinal movement of said pawl-lever, and means for holding said levers in their normal operating positions and for producing a longitudinal movement of said pawl-lever in said position, substantially as specified.

8. The combination with counters representing different denominations, of a pivoted operating-lever arranged adjacent to and adapted to be operated by the counting device of a lower denomination, a pawl-lever pivoted to a swinging arm and carrying a spring-actuated pawl lying adjacent to the counting device of a higher denomination, said pawl-lever being attached by a loose connection to the operating-lever so as to permit a longitudinal movement of said pawl-lever,

and means for moving said swinging arm so as to produce a longitudinal movement of said pawl-lever, substantially as specified.

9. The combination with the pivoted bar,
5 the sliding plate, and the movable arms connected to said plate and carrying the movable counter-pinions, movable racks adjacent to said pinions, a projection in said bar,
a swinging arm engaging said plate, and cam
10 projections on said arm adapted to be en-

gaged by said bar projection and normally lock said plate and positively move the same by a vibration of said bar, substantially as specified.

In testimony whereof I have hereunto set
my hand this 14th day of May, A. D. 1900.

JOHN PFEIFER.

Witnesses:

CHAS. I. WELCH,
EDMOND J. OGDEN.