

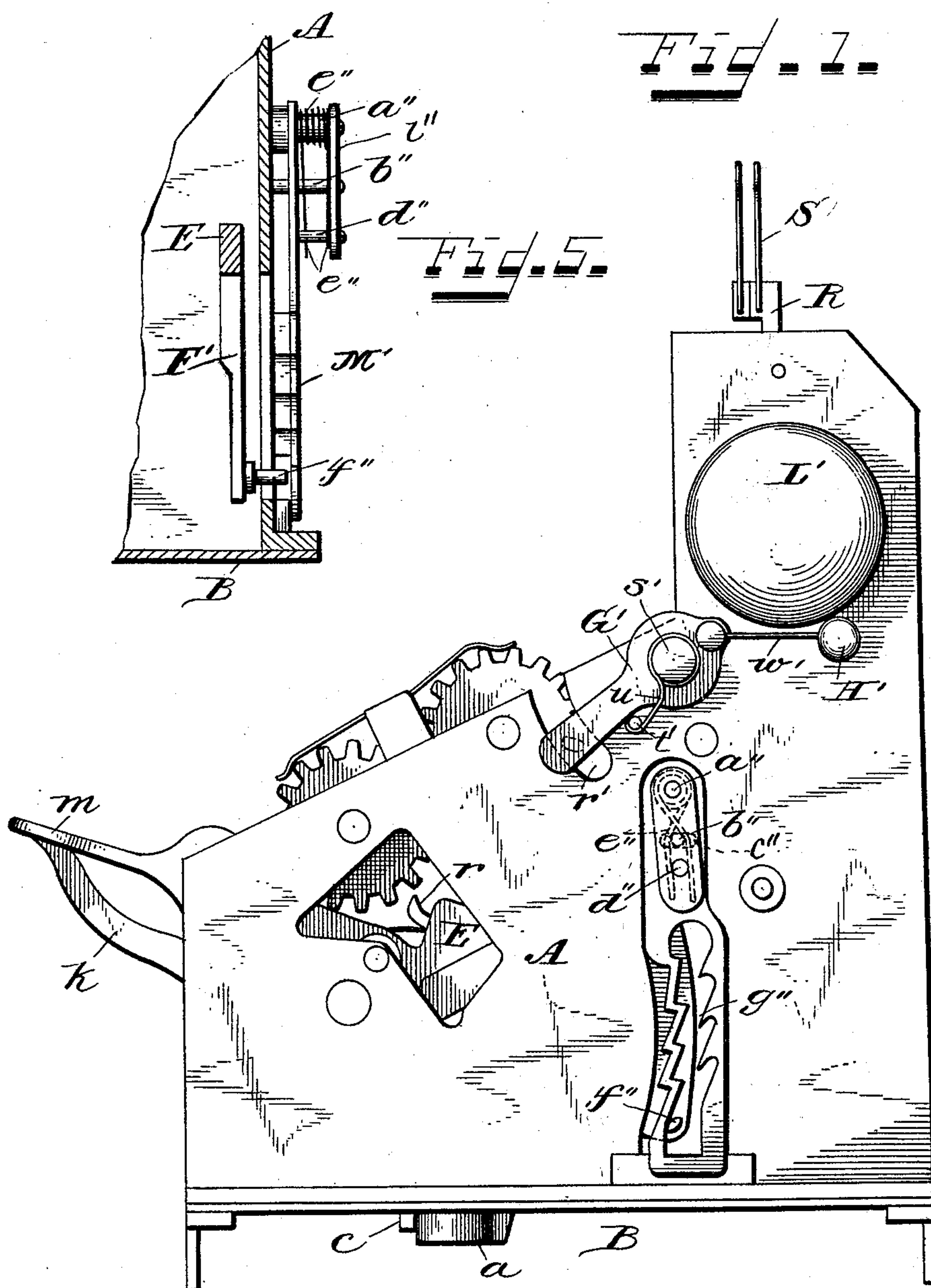
(No Model.)

4 Sheets—Sheet 1.

P. YOE.  
CASH REGISTER.

No. 555,276.

Patented Feb. 25, 1896.



*Witnesses.*

Thompson Cross.  
Albert Streetman.

*Inventor:*

Philip Yoe  
by Stew Allen  
Attorneys.

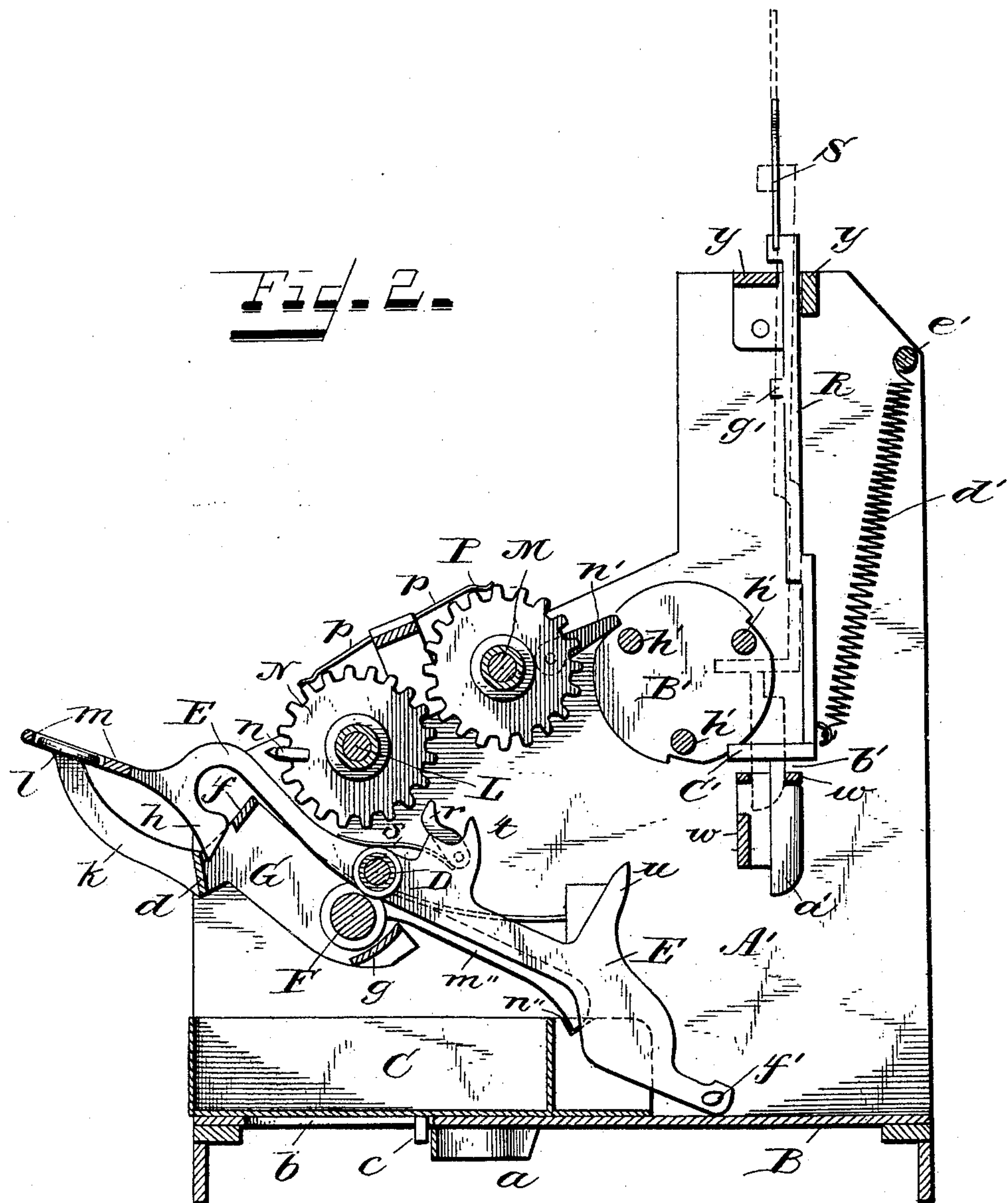
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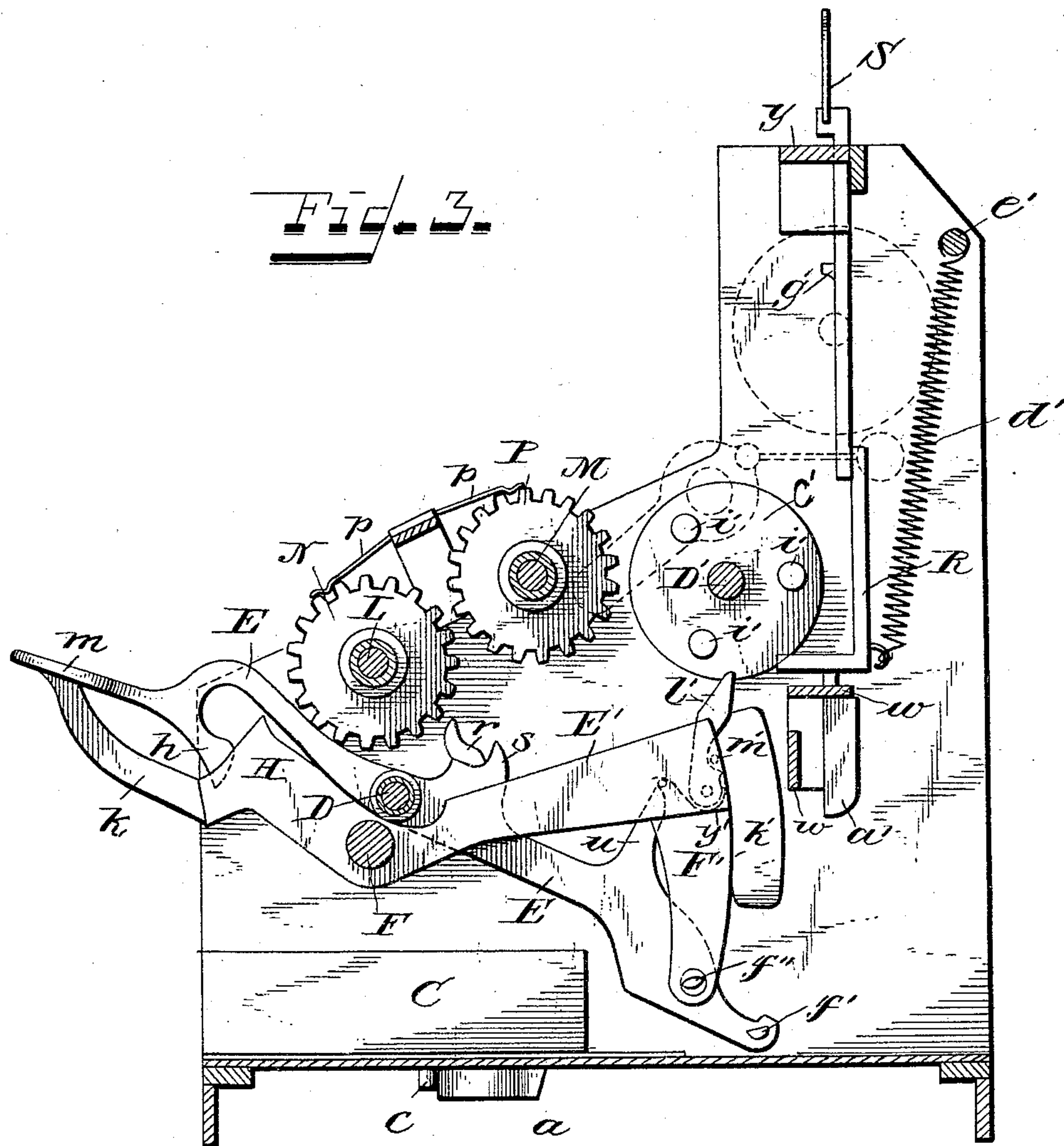
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Thomson Cross  
Albert Sheatman.

Inventor:  
Philip Yoe  
by Henry Allen  
Attorneys.



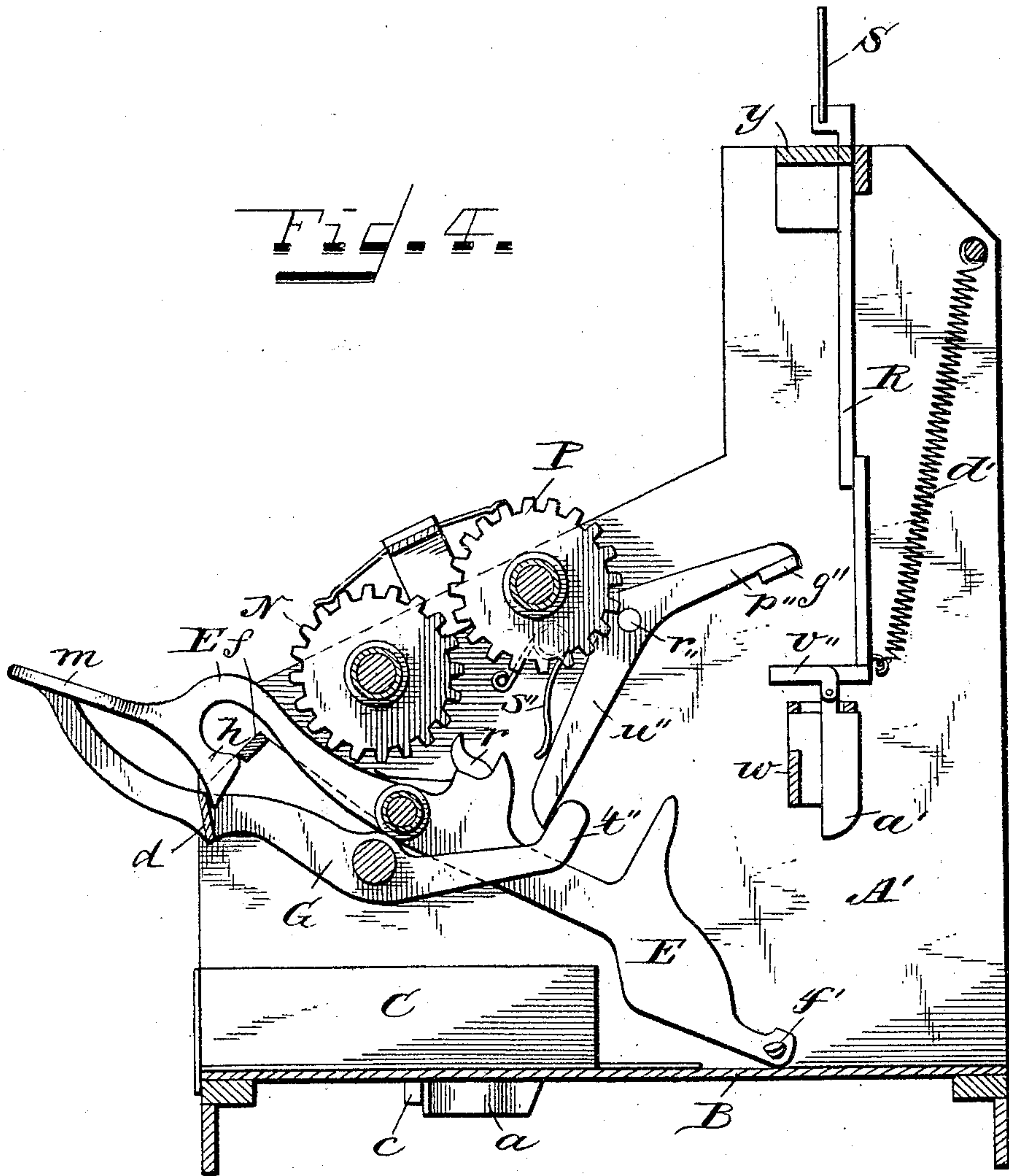
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*Witnesses.*

Thomson Cross  
Albert Streatman.

*Inventor:*

*Inventor:*  
Philip Goe  
by Allen & Allen  
*Attorneys.*



# UNITED STATES PATENT OFFICE.

PHILIP YOE, OF DAYTON, OHIO.

## CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 555,276, dated February 25, 1896.

Application filed September 1, 1893. Serial No. 484,553. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP YOE, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The invention has for its object various improvements in the construction of cash-register machines, the novelty of which will be hereinafter more particularly pointed out and claimed.

My machine belongs primarily to that class of cash-registers in which a series of operating-keys are employed in connection with a series of registry-wheels, one for each key, with suitable registry mechanism operated by the keys, whereby the value of each key of said series is registered on its separate registry-wheel, and the total amount deposited in the register is obtained by adding together the amounts indicated by the separate registry-disks, a class of machines well-known in the art as "detail-adding" machines as distinguished from those in which the registry mechanism itself adds into one total sum the receipts of the register, a class of machines known as "total-adders." It will, however, be understood that very many of the improvements hereinafter specified may be employed with equal success on machines of the "total-adding" class as will be hereinafter clearly set forth.

The first part of my improvements relate to a certain novel arrangement for raising and depressing the indicating-tablets which are employed to indicate the amount of the sales. One of the ordinary forms of indicating mechanism of this class of machines consists of a series of indicating-tablets supported in a vertical position by tablet-rods and arranged to be raised by the operation of the register-keys to display the tablet corresponding with the number on the key, the operated tablet being sustained by a bar or supporting-wing, which wing is shifted upon the depression of the next key operated to allow the tablets which are displayed at the time to return to

their normal concealed position by gravity or the positive action of a spring.

Another older arrangement consists in a reversal of this mode of procedure, in which the tablets are supported on a series of vertical tablet-rods and arranged to be raised vertically by springs acting on the rods, the tablet-rods being normally held down by a series of pivoted catches, one for each rod, the proper catches being released by the movement of the particular key-levers operated.

My improvements in the indicating mechanism consist of certain improvements in this second method of construction to be hereinafter particularly pointed out and claimed, in which the series of pivoted catches, one for each key, are dispensed with, and a single, cheap and simple stationary bar is substituted therefor. This construction forms one of the novel features of my machine and can obviously be applied to machines of the total-adding class, and its use is not intended to be limited to machines of the detail-adding class herein referred to.

Another novel feature of my machine consists in my construction and arrangement of parts for releasing the money-drawer when the keys are operated, and allowing it to be thrown open by the action of a spring. Herebefore it has been customary to hold the drawer shut by a lever and release the lever by the operation of the registering-key; or if this construction is not used a separate lever has been employed, so that two movements are required, one to release the drawer and the other to operate the registering key or keys.

In my machine I employ a separate lever, but so arrange the parts that both the key and the releasing-lever can be operated simultaneously with one movement; and I further arrange the parts so that my releasing-lever shall serve both as a key-coupler to couple together keys that may be operated simultaneously and as a key-lock to prevent the operation of any other keys until those already displaced have been returned to their normal position. This construction forms another novel feature of my machine which is not intended to be limited to the detail-adding class of machine herein referred to.



A third feature of novelty in my machine consists of a key-arrester to compel the operation of each key played in both directions, which shall at the same time prevent the register from being abused by the swift operation of the key. In cash-registers, both of the detail and total adding class, the registering and adding mechanism can very often be disarranged by a sharp sudden blow struck upon the keys. To prevent this, I construct a key-arrester with a triple rack so arranged and operated on by springs that with a slow and regular movement of the key the pivoted rack merely prevents a return of the key to its normal position in either direction until a complete stroke of the key has been made, but whenever a quick sharp movement is given the key the key will at once be caught by the third rack before the springs operating thereon have time to perform their functions, and the movement of the key will at once be stopped positively. This is also a novel feature which is applicable as well to total-adding machines as to those of the class herein referred to.

There are other novel features in my construction and arrangement of parts, which will also be hereinafter more particularly pointed out and claimed.

In the drawings the outer casing of the machine has in each view been removed to show the working parts.

Figure 1 is a side elevation of the machine, taken just within the outer casing. Fig. 2 is a central vertical section of the machine in elevation. Fig. 3 is a similar side elevation taken just within the inner framework which supports the working parts. Fig. 4 is a view similar to that shown in Fig. 2, showing a modified form of tablet-operating mechanism. Fig. 5 is a front detail view of the key-arresting mechanism.

The working parts are suitably supported in two side frames A A' erected on and secured to a bottom plate B.

C is the money-drawer, acted on by spring *a*, secured to the bottom B, so that the drawer will be thrown out from the case when released, as hereinafter described. An opening *b* is formed in the bottom B through which the lug *c* attached to the drawer passes and against which lug the spring *a* acts.

Pivoted from side to side of the framework is the shaft D, and upon this shaft are strung the key-levers E. Underneath the shaft D is a second shaft F upon which the key-coupler for the keys is mounted. This key-coupler consists of the side arms G and H connected in front by the bars *d* and *f*, and in the rear by the bar *g*, all extending across the machine from side to side. The bars *d* and *f* are separated to allow a horizontal opening between them to receive the downwardly-extending arm *h* of the key-levers. At points on the lower bar, *d*, of the key-coupler corresponding to the positions of the various keys are secured the arms *k*,

which arms carry the buttons *l* numbered to correspond with the values of the registering-keys. The key-levers themselves do not carry these numbered buttons, as is usually the case, but the outer extremity of each key-lever E is formed with a loop *m* to surround the numbered buttons on the arms *k* of the key-coupler.

It will be seen by this construction that the operator can simultaneously with one movement depress the key-lever E and also the key-coupler. As these two levers are depressed the arm *h* will enter the opening between the bars *d* and *f* on the key-coupler, and if any other keys are depressed the keys will be coupled together in this way, all of them becoming attached to the key-coupler, the respective arms *h* on each key-lever entering between the bars *d* and *f*. If the loops *m* on the key-levers are alone depressed, the lower edge of the arms *h* will be brought to bear on the bar *d* of the key-coupler and depress it at the same time, so that in use the key-coupler and the key-lever will both be depressed simultaneously.

Strung on shafts L and M across the machine is a series of registry-wheels N and P, the wheels N being the primary registering-wheels and P the secondary wheels, arranged to receive the totals from the primary wheels in the usual way. At each revolution of a primary wheel the lug *n* thereon engages with a tooth on its corresponding secondary wheel and advances it one point. Each of the primary and secondary wheels carries a numbered disk with numbers to correspond with the teeth of their respective wheels, so that a registry is made of the movement of the wheels in the usual way.

*pp* are spring-pawls engaging with the teeth of the registry-wheels to prevent any reverse movement.

Each key-lever E carries a spring-pawl *r* arranged to engage with its respective primary registry-wheel at each depression of the key-lever to advance the registry-wheel one tooth. Springs *s* acting on these pawls allow the key-levers to be returned to their normal position without affecting the registry-wheels in the back movement. Two upward extensions *t* and *u* are also formed on the key-levers, one to engage with the teeth of the primary registry-wheel and the other with the teeth of the secondary registry-wheel at the moment of the completion of the downstroke of the key-lever, to positively stop the registry-wheels from any further movement under the stroke of the key.

At the rear of the keys are arranged a series of vertical tablet-rods R, one for each key-lever, and each carrying a suitable tablet S, numbered to correspond with the value of the key-lever, these tablet-rods being guided in their vertical play by the bar *w* at the bottom and bar *y* at the top, these two bars extending horizontally across the machine from side to side and being provided with suit-



able slotted openings within which the tablet-rods ride. The lower end of each tablet-rod is beveled downward at  $a'$  and is provided with a notch  $b'$ , while immediately above this notch the tablet-rod is provided with a horizontally-extending arm  $c'$ . When the tablet-rod is down in its normal position, a spring  $d'$ , one end of which is attached to the rod  $e'$  and the other to the tablet-rod, one spring for each tablet-rod, holds the tablet-rod with the notch  $b'$  engaged by the bar  $w$ . Each key-lever  $E$  is provided with a lug  $f'$ , and as the key-lever is depressed this lug  $f'$  engages with the beveled lower edge of its respective tablet-rod, the effect of which is to disengage the tablet-rod from the bar  $w$  and allow it and its tablet to be raised to view by the action of the spring  $d'$ . A lug  $g'$  engaging with the upper bar,  $y$ , prevents the tablet from being thrown up too far by the action of the spring  $d'$ .

A rotating framework consisting of the disks  $B'$   $C'$ , connected together by the horizontal rods  $h'$   $h'$ , is pivoted on the shaft  $D'$  in each side of the frame  $A$   $A'$ , the framework being so arranged with relation to the tablet-rods that one of these rods  $h'$  will always be above the arms  $c'$  on the tablet-rods. Three lugs  $i'$  are secured to the outer face of the disk  $C'$  of this rotating frame.

Integral with the key-coupler and secured thereto on one side is a rearwardly-extending arm  $E'$ , the outer end of which arm carries a downwardly-extending arm  $F'$ , the outer edge of which,  $k'$ , is curved in a circle whose center is the center of the shaft  $F$  upon which the key-coupler oscillates.

$l'$  is a spring-pawl carried by the arm  $E'$  and resting against the pin  $m'$ . As the key-coupler is depressed, in depressing the key-lever this pawl  $l'$  is brought into engagement with one of the lugs  $i'$  on the disk  $C'$  of the rotating framework and the frame is rotated, bringing the innermost rod  $i'$  against the arms  $c'$  on any of the tablet-rods that may be raised, and forcing these tablets downward until the notch  $b'$  thereon engages with the bar  $w$ . To prevent the rotating frame from overrunning under the action of the pawl  $l'$ , the rear edge of the arm  $F'$  is formed in the arc of a circle, so that as the key-coupler is depressed and the rotating frame rotated by the pawl  $l'$  the rear edge of the arm  $F'$  will be brought to bear against the two rods  $h'$   $h'$  and prevent this frame from overrunning, while at the same time allowing still further depression of the key-coupler. A pawl  $n'$  pivoted to the side  $A'$  of the frame engages with teeth formed in the disk  $b'$  and prevents any back movement of the rotating frame. After the frame is rotated by the pawl  $l'$ , the still further depression of the key-coupler brings the pawl  $l'$  into contact with the lug  $p'$ , which extends inward through the slot  $r'$  in the side  $A$  of the case from the lever  $G'$ , which is pivoted on the outer side of the casing on the pin  $s'$ . This lever  $G'$  is normally held against the pin

$t'$  by the spring  $u'$ , and this lever carries the bell-hammer  $H'$  secured thereto by the spring-rod  $w'$ . As the pawl  $l'$  advances, the lever  $G'$  is rotated until the pawl passes the lug  $p'$ , when the hammer  $H'$  will be thrown against the bell  $L'$  and an alarm will be sounded. On the return stroke of the key-coupler, the pawl  $l'$  turns on its pivot against the action of the spring  $y'$ , so that the key-coupler can be returned to its normal position without further disturbance of the bell-lever or the rotating frame.

Pivoted on the outside of the side frame  $A$  on the pin  $a''$  is a rack  $M'$ , provided with three sets of teeth, one set on the front edge and the other two sets formed on the front and rear edges of a vertical slot in the rack. A short distance below this pivot-pin  $a''$  is another pin,  $b''$ , secured to the side frame, the rack being slotted at  $c''$  to allow for its movement on its pivot-pin. Secured to the rack and extending out at right angles thereto is another pin,  $d''$ , and a spring  $e''$  coiled on the pivot-pin  $a''$  has one end bearing on one side of the pins  $b''$  and  $d''$  and the other end of the spring bearing against the other side of these two pins, so that the ends of the spring will act in opposite directions and the rack will be held normally in one position, and when thrown in either direction one of the ends of the spring will always be acting on it to return it to its normal position.

Secured to the lower edge of the arm  $F'$  and extending outwardly through a slot in the side frame is a beveled lug  $f''$ , this lug riding in the rack  $M'$ . It will be manifest that as the key-lever and key-coupler are depressed this lug  $f''$ , riding against the teeth on the front edge of the slot in the rack, will cause the rack to vibrate and allow the key-coupler to be depressed until it has reached the limit of this stroke, when the lug  $f''$  will ride back on the outer edge of the rack, and that the teeth of the rack will prevent any back movement of the coupler in any direction, the rack being cut away on the inside to allow the lug to pass over and around the upper and lower teeth at the end of the stroke in each direction. Should a sharp sudden stroke be given to the key-coupler and key-lever, however, the action of the lug  $f''$  against the rack will throw the rack to the left, and before the end of the spring can return it to its normal position to allow the lug to pass the first tooth the lug will be caught by the teeth  $g''$  on the rear edge of the slot in the rack, and the stroke on the keys will at once be stopped until the spring can have time to disengage the rack-teeth  $g''$ . It will thus be manifest with this construction of key-arrester that it will be impossible to abuse the register by sudden strokes on the keys.  $l''$  is a plate covering the spring  $e''$  to prevent the spring from being displaced.

$m''$  is a lever pivoted on the shaft  $F$  at one side of the frame, the outer end of which engages in the notch  $n''$ , formed in the side of



the drawer C at the rear, and thus the drawer is held shut against the pressure of the spring *a*. The bar *g* of the key-coupler is arranged such a distance below this lever *m''* that just before the completion of the key-coupler stroke the bar will raise the lever *m''* and release the drawer. It will be noticed that the connection between the key-coupler and registering-keys is such that the key-coupler is capable of further movement after the key-lever has completed its stroke, and the distance of bar *g* from the lever *m''* is such that the movement imparted to the key-coupler by the registering-keys is not sufficient to bring the bar *g* in contact with the drawer-lever, and in this way the operation of the key-lever can in no event release the drawer, the key-lever being limited in its downstroke by coming in contact with the bar *w* before the key-coupler has reached the limit of its stroke. The arms *h* are, moreover, so formed that as they engage with the key-coupler they will slide on as well as push down the coupler, and therefore the key-levers will travel downward faster than the coupler. The effect of this is that the buttons *l* on the ends of the arms *h* of the key-coupler in fact become the operating-handles by means of which the functions of the machine are performed, and in use after the commencement of the downstroke the buttons *l* are alone in contact with the hand of the operator.

As a modified form of my indicator-operating mechanism, instead of the rotating frame heretofore described I can use a rocking or reciprocating frame, as shown in Fig. 4. This rocking frame is made up of side arms *p''* with horizontal bar *z''* connecting them, and the frame is pivoted to swing on the shaft *r''*.

*s''* is a spring acting on the arm *u''*, secured to the frame at one side to keep the frame in an elevated position, while *t''* is a lug or extension of the key-coupler in contact with the arm *u''*, so that the movement of the coupler will cause the frame to rock and bring the horizontal bar of the frame against the portions *v''* of the tablet-rods and thus return them to their normal position.

As the play of the parts is such as to carry the horizontal bar of the frame below the parts *v''*, in order to allow the frame to return to its normal position, with my modified construction I pivot these parts *v''* to the rod, so that they will turn upward to allow the horizontal bar to pass them on the return stroke, the weight of the parts returning them to their normal position as soon as the frame has passed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cash-register, the combination, with a series of registering-keys and a key-coupler, of arms on the keys, and operating-handles on the coupler corresponding to the keys, the key-arms being so shaped that the stroke of

the coupler will be at a lower rate of speed than that of the keys, substantially as shown and described.

2. In a cash-register, the combination with a series of registering-keys, and a money-drawer, of a key-coupler, with arms on the keys to engage the said coupler, shaped to allow the further movement of the key-coupler after the completion of the stroke of the keys, and a lever engaging with said drawer arranged to be released by the subsequent movement of the key-coupler after the completion of the key-stroke, substantially as shown and described.

3. In a cash-register, the combination, with a series of registering-keys and a money-drawer, of a key-coupler, with arms on the key to engage said coupler shaped to allow a further movement of the key-coupler after the completion of the stroke of the keys, a lever engaging with said drawer arranged to be released by the subsequent movement of the key-coupler after the completion of the key-stroke, arms on the key-coupler arranged in close proximity to the operating ends of the keys, whereby said additional movement may be given to the key-coupler simultaneously with the key operation, substantially as shown and described.

4. In a cash-register, the combination, with a series of registering-keys, indicating-tablets and tablet-rods, and springs to throw said tablets into view when released by the keys, of a rotating frame operated by the keys, with arms on the tablet-rods arranged in the pathway of said frame whereby the rotation of said frame will return said tablets to their normal position, substantially as shown and described.

5. In a cash-register, the combination, with a series of registering-keys, indicating-tablets, and tablet-rods, of a stationary bar extending across the machine from side to side, with notches on the tablet-rods to engage said bar, springs to throw said tablets into view when released from said bar, rotating frame operated by the keys, with arms on the tablet-rods arranged in the pathway of said frame, whereby the rotation of the frame will return the said tablets to their normal position, substantially as shown and described.

6. In a cash-register, the combination, with the key-levers, of a movable bar, provided with ratchet-teeth arranged on said bar in opposite directions facing each other, with an arm in connection with the key-levers riding against one set of ratchet-teeth, the distance between said sets of ratchet-teeth being such that with a quick stroke of the key the second set of ratchet-teeth will be thrown into engagement with the arm and thus stop further movement, substantially as shown and described.

7. In a cash-register, the combination, with the key-levers, of a slotted pivoted bar, provided with ratchet-teeth on the inner edge of the slot, facing each other in opposite direc-



tions, with an arm in connection with the key-  
levers riding against one set of ratchet-teeth  
and spring to keep the said ratchet and arm  
in engagement and prevent the back move-  
5 ment of the arm, said racks being such dis-  
tance apart that with a quick stroke of the  
key the second set of ratchet-teeth will be

thrown into engagement with the arm and  
thus stop further movement of the arm, sub-  
stantially as shown and described.

PHILIP YOE.

Witnesses:

W. L. SILVEY,  
J. KIRBY, Jr.