

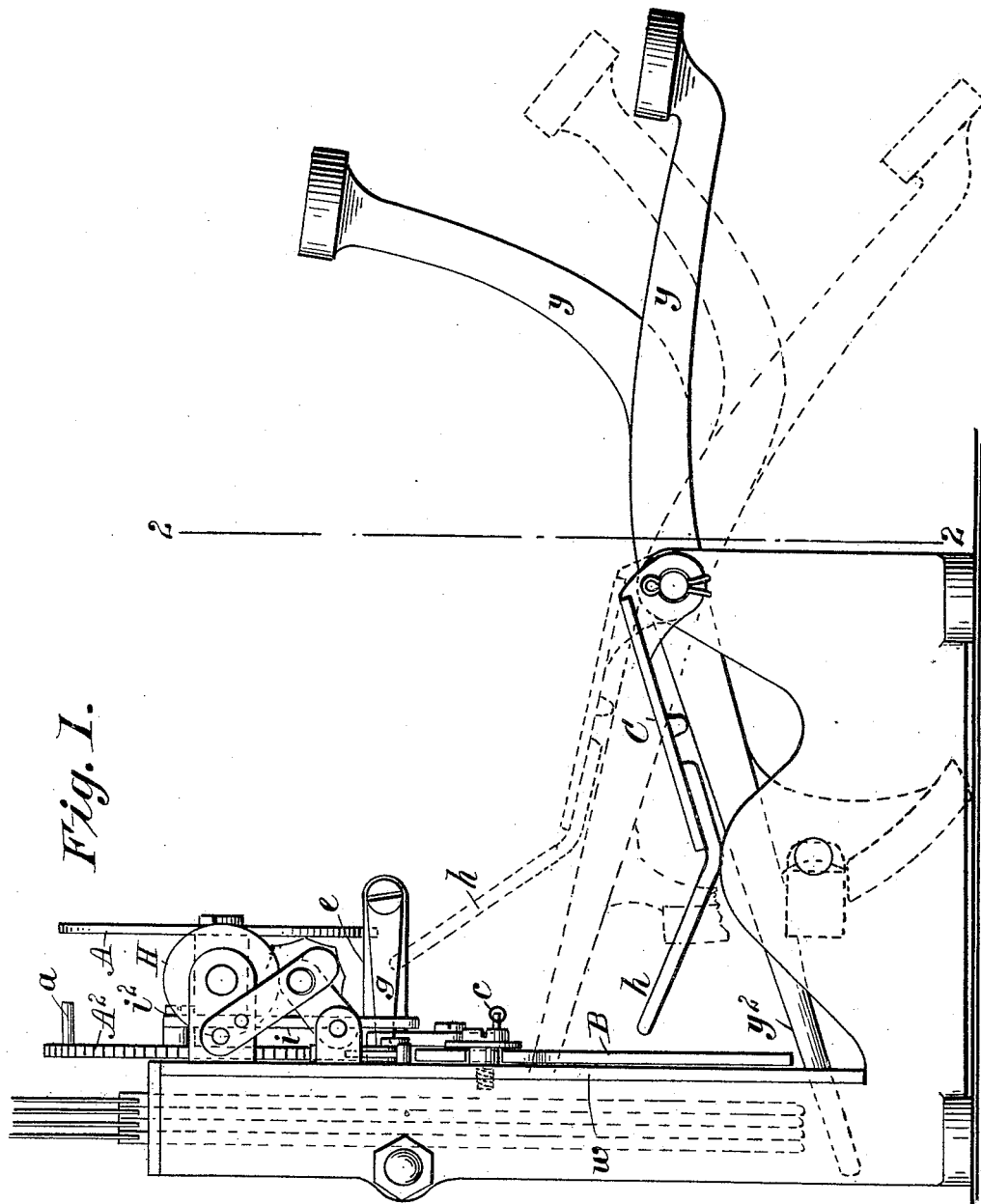
(No Model.)

3 Sheets—Sheet 1.

J. J. WEBSTER.  
CASH REGISTERING MACHINE.

No. 523,611.

Patented July 24, 1894.



Witnesses:

*J. D. Garfield*  
*W. J. Manning*

Inventor,

*Jerome J. Webster,*  
*per* *Chapman & Co.,*  
*Attorneys.*

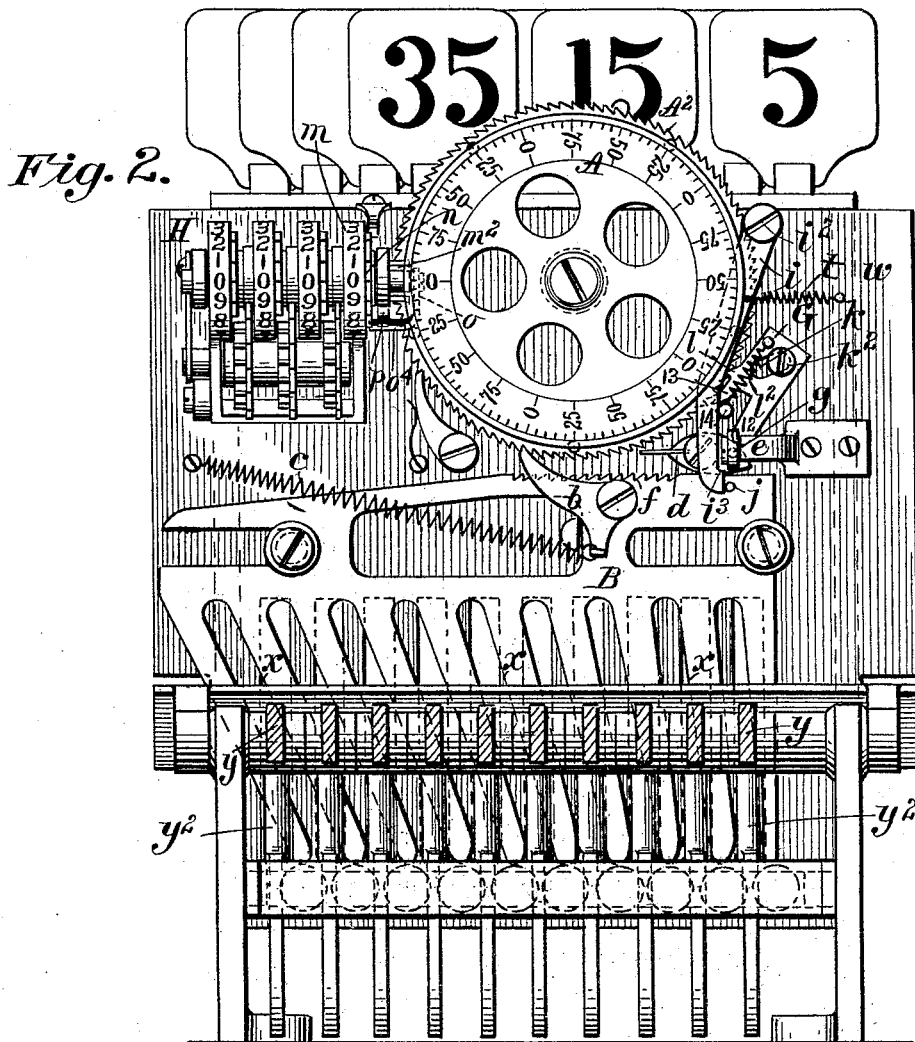
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M. J. Manning

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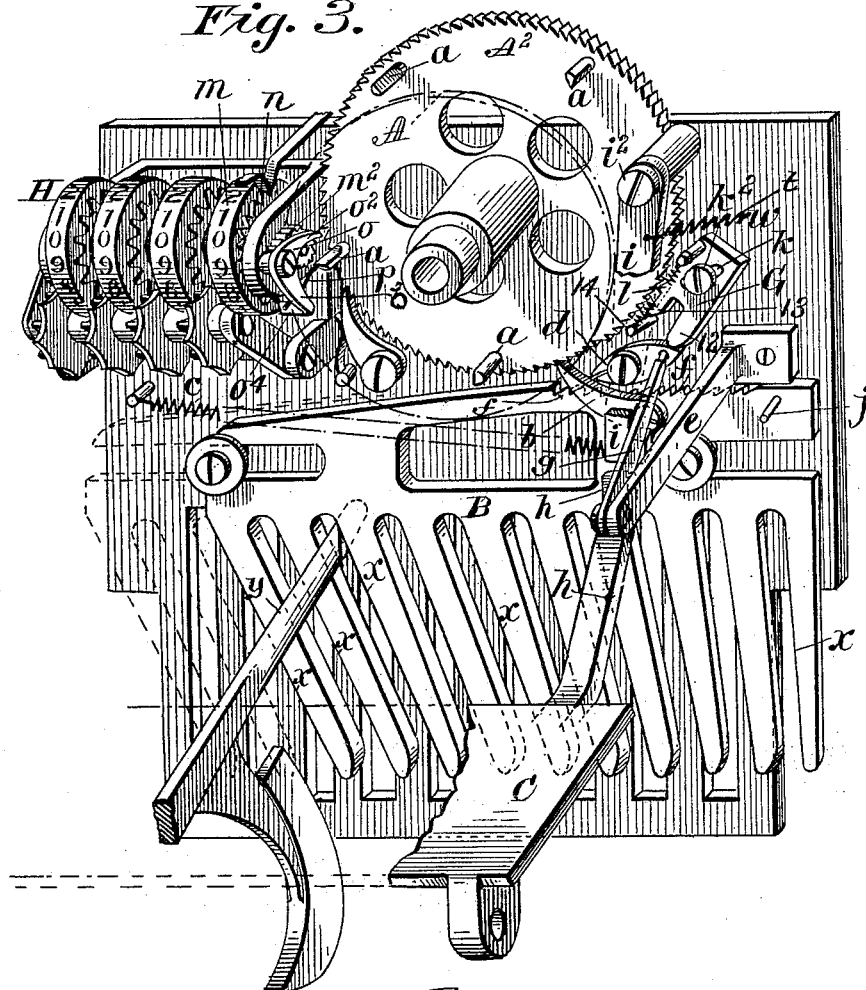
3 Sheets—Sheet 3.

J. J. WEBSTER.  
CASH REGISTERING MACHINE.

No. 523,611.

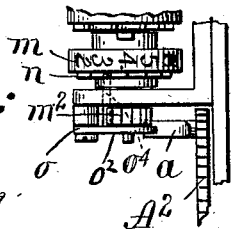
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*Fig. 3.*



*Fig. 4.*

*Fig. 5.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

JEROME J. WEBSTER, OF NORTHAMPTON, MASSACHUSETTS, ASSIGNOR TO  
THE BOSTON CASH REGISTER COMPANY, OF SAME PLACE.

## CASH-REGISTERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,611, dated July 24, 1894.

Application filed August 28, 1893. Serial No. 484,257. (No model.)

*To all whom it may concern:*

Be it known that I, JEROME J. WEBSTER, a citizen of the United States, residing at Northampton, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Cash-Registering Machines, of which the following is a specification.

This invention for improvements in cash registering machines relates to improvements in the key operated register devices and improved means for acting in conjunction therewith for preventing what is termed "pumping" of the keys; that is for preventing while the key is being depressed an intermediate movement in the return direction, or while the key is returning an intermediate movement for the depression thereof; means for this purpose have been applied in a variety of ways in cash registering machines, but the object of this invention so far as it relates to this device is to dispense with the series of ratcheted wings on the key levers and the "long" or common locking pawl for engaging the key levers as well as the somewhat complicated arrangement of operating devices for the long pawl.

The invention also relates to improvements in the means for operating the cash registering mechanism in varying extents according to which of the keys may be operated.

The invention also relates to improvements in the registering mechanism, the improvements more particularly residing in the mechanism for insuring the transfer of amounts from the initial register wheel onto the accumulators or adding wheels; an important feature of the transfer devices being constituted by the novel means which prevents over registration, as might be ensured by momentum due to violence of operation of the initial register.

In the accompanying drawings the present improvements are illustrated.

Figure 1 is a side elevation of the cash registering mechanism as removed from the cabinet or casing. Fig. 2 is in substance a front elevation, the key levers being shown as in vertical cross section taken on line 2,—2, Fig. 1. Fig. 3 is a perspective view taken at the front of the machine showing more clearly

the novel devices. Fig. 4 is an end elevation of the transfer device a part of the initial wheel being shown in vertical section, while Fig. 5 is a plan view of the same.

In the drawings A represents the initial registering and dial wheel having, for instance as shown in Fig. 2, a consecutive series of indications of amounts in multiples of five cents up to one dollar, the dollar capacity being five fold or five times repeated around the face of this single wheel. This wheel has on its shaft or arbor, at the rear thereof the ratchet wheel A<sup>2</sup> with the properly spaced teeth to correspond with the five cent graduations or indications on the dial wheel. To all intents and purposes the dial wheel and the ratcheted wheel are one, or as an integrally formed element. The ratchet wheel has the pins *a a* at fifths to correspond with the dollar amounts on the register wheel.

The key levers may represent amounts say from five cents to fifty cents, these keys operating to impart a reciprocatory movement to the plate B which carries the driving pawl *b* for the register wheel, in correspondingly varying extents. This is insured by the grading of the cam slots or cam inclines seen at *x x*. The rear extensions of the key levers *y* work against these inclines to force the plate to the right so that the pawl will have a retracting and clicking movement over the proper number of the ratchet teeth of the initial register wheel to next positively drive the wheel forward the proper distance as the plate has its return and working movement to its limit, as impelled by its driving spring *c*.

C represents the rocker plate which is common to and is moved by any one of the key levers of the bank (except the "change" or non-registering key, when such a key is used—as well known).

The graded cam plate B has on its upper edge a series of fine ratchet teeth *f* with the vertical or engagement faces thereof toward the right, while adjacent this ratcheted edge of the plate a pawl *d*, is, intermediately thereof, pivotally hung upon a suitable stationary supporting part, as seen at *w*, of the framing. This pawl as shown (though not essentially) is formed by an approximately elliptical body while the engaging portion thereof is consti-

tuted by the flat strip of thin metal set and secured in a saw kerf in the body and projected longitudinally from the end thereof. The pawl is held normally out of engagement with the ratchet teeth and only engages the same after the plate B has been moved to the right such distance as insured by any of the fully depressed keys,—the engagement continuing until the plate has returned to its normal position by the force of its spring *c*, correspondingly driving the register wheel. This return movement of the said plate is in this mechanism the "working" movement.

The means for holding the pawl out of the engagement as stated will be now pointed out:—A lever *g* is hung on a suitable arm or support *e* of the framing, the extremity of which enters a hole in the body of the pawl *d* at the side of the pivot opposite the pawl tooth; thus when the lever is swung the pawl is pivotally swung also into engagement with the ratchet teeth, *f*. The lever is swung just at the completion of the depression of the key-lever, and consequently of the rightward movement of the plate B, by the arm, *h*, which is a rearward extension of the rocker plate and which is arranged to contact with and swing the lever at just the instant stated. The lever is retained in its so swung position for the proper period during the operation of the mechanism by the catch lever *i* depending from its supporting pivot *i*<sup>2</sup> and having the catch shoulder *i*<sup>3</sup> to take under the lower edge of the swung pawl-operating-lever, *g*. This catch lever swings by gravity or spring *t* into its engaging position, and its engagement with the lever is terminated just as the pawl carrying plate B reaches its normal position by the abutment of the properly positioned stud *j*, against the catch lever to swing it to the left, whereupon the lever down-swinging by its weight also swings the pawl *d* out of engagement with the ratcheted upper edge of plate B.

Now it will be plain that while the key after being depressed is returning to its original position, and the graded cam plate and pawl are driving the register wheel forward the key can not be given any intermediate movement of depression to take a supplemental "hitch," to falsely register, as well understood, on the register wheel, because the key cannot be depressed without moving the plate B to the right, and the plate is by the pawl *d* never permitted to be moved to the right between the times that the key is fully depressed and the plate B and key resume together, their original positions.

Now will be described the improved means for necessarily rendering the depression of the key and the rightward movement of the plate B continuous—no intermediate leftward movement being permitted as would also result in false registration.

G represents a dog or pawl constituted by a block or plate which is slotted obliquely as at *k* and, by the headed screw *k*<sup>2</sup>, has a slid-

ing engagement in an oblique direction on the framing and at its edge toward the ratcheted register wheel; this dog has the tooth, *l*, which at times may engage the said wheel to lock it against movement. The spring, *l*<sup>2</sup>, is applied to draw the pawl into its engagement by its tooth with the ratcheted wheel. The lower portion of the pawl is of bifurcated formation the member 12 being extended to contact with the right hand member of the pawl *d*, while the other member 13 has its edge curved or inclined and moves in contact with, and the pawl is, therefore, swung by, the fixed stud, 14. Briefly, the pawl G is in engagement with the register wheel whenever the pawl *d* is out of engagement with the ratchet teeth of the plate B, and vice versa. The swinging of the pawl *d* to its engagement forces through the limb 12 of the pawl G the said latter pawl out of engagement, while on the other hand when the pawl *d* moves into its position of engagement it gives room to the pawl G to move under the impetus of its spring. As this pawl therefore has its somewhat slight sliding movement by its slot over the screw *k*<sup>2</sup>, it also has a slight swinging movement for more directly and quickly bringing the tooth *l* into the register-wheel engagement by reason of the coaction of the stud 14 with the inclined limb 13 of the said pawl.

Other designs of the parts might perhaps be made whereby the swinging movement of the pawl G, in addition to its sliding movement, might not be necessary, but in the mechanism, illustration of which is here given, the entire freedom of the pawl from the ratcheted register wheel at the one time, and its absolute and certain engagement thereof at the other are the better insured on a slight throw of the parts by imparting to the pawl G both the sliding and the swinging movements.

The transfer and accumulating or total adding wheels are shown at II the first to the right for instance registering units of dollars as transferred thereunto by the initial registering wheel, A, while the next succeeding wheels to the left are for indicating tens, hundreds and thousands of dollars their indications being peripherally arranged in a common manner. No detailed description of this registering mechanism is herein necessary or desirable except with respect to the units of dollars wheel which is the one, *m*, to the right. This wheel has on the end of its shaft or arbor a ten-toothed wheel *m*<sup>2</sup>, here shown in the form of a ratchet wheel,—although such form is not absolutely essential,—a tooth of which is engaged by each of the passing pins A of register ratchet wheel A<sup>2</sup>, in a manner to carry the ratchet wheel *m*<sup>2</sup> and wheel *m* around one tooth or step. The wheel *m* also has as are therewith the toothed wheel *n* also with ten teeth. The angular lever *o* is, at its elbow, pivotally mounted on a stationary support and has its one arm *o*<sup>2</sup> extended into proximity with the teeth of ratchet wheel *m*<sup>2</sup>,

while its other arm  $o^3$  has the right-angularly extended member  $o^4$  which has its position near the said toothed wheel  $n$ . The slabbled pins or studs  $a$  of the wheel  $A^2$  are at their ends as seen in Fig. 5 so wide and so arranged as to simultaneously engage both a tooth of the ratchet wheel  $m^2$  and the arm  $o^2$  of the angular lever so that before the pin  $a$  slips by or free from the tooth of the ratchet wheel  $m^2$  it will have swung the angular lever so as to bring its member  $o^4$  into a position to intercept the next tooth of the wheel  $n$  which is now to the rear of said member  $o^4$ . The spring  $p$  is applied relative to the member  $o^4$  of the angular lever to force said lever to resume its normal position of disengagement from the toothed wheel  $n$  immediately the stud  $a$  has passed out of its engagement with the arm  $o^2$ . This device therefore while not interfering with the movement of the register wheel to the extent of one tooth or step, as positively and properly driven by the successively passing pins  $a$  will prevent, on a too violent impulse, the driving forward of the wheel  $m$  more than one tooth or step, by momentum, to result in an over-registration.

I claim—

1. In a cash registering machine the combination with the ratcheted register wheel, and the reciprocatory plate common to and movable in varying extents by, the key-levers substantially as described, and having the series of ratchet teeth and carrying the driving pawl for the register wheel, of a pawl adapted to be swung into engagement with the said teeth of the plate, and another pawl which normally engages and locks the register wheel, but which, as said pawl for the plate moves to engage the plate,—is through connections primarily actuated by the key, moved out of its locking engagement with the register wheel, substantially as described.

2. The combination with the ratcheted register wheel and a driving pawl for the register wheel, and a pawl movable to lock the register wheel while the driving pawl is having its retracting movement whereby the driving pawl may not, in conjunction with the register wheel, then be moved in its working direction, and a device actuated by and at the completion of the depression of any key, and operating on the said register locking pawl for moving it out of its locking engagement with the said register wheel, substantially as described.

3. In a cash registering machine the combination with the ratcheted register wheel, of the cam slotted plate operated by the keys having the pawl which engages the register wheel, and provided with the ratchet teeth, and the pivoted pawl mounted adjacent the said ratchet teeth for engagement therewith, and a device operated by any of the key-levers at the completion of their depression through the medium of a rocker-plate which is provided in common to the key-lever for throwing said pawl into its engagement with the

ratcheted plate, and holding it in such engagement until the plate has finished its working movement, substantially as described.

4. The combination with the ratcheted register wheel and the plate having the series of cam slots to be operated by any of the keys, and having the pawl which engages the register wheel and provided with the ratcheted teeth, of the pivoted pawl to engage the ratchet teeth of the said plate, a lever which is pivotally mounted for engagement with the pivoted pawl and adapted to be swung at the completion of the working movement of any key to throw the pawl into the said engagement with the ratcheted plate, a catch for supporting the lever in its position for holding the pawl in such engagement, and a projection which is so located on said plate as to abut against the lever catch as the plate resumes its normal position for releasing the pawl operating lever, and a driving spring for the plate, substantially as described.

5. In a cash registering machine the combination with the ratcheted register wheel, and the reciprocatory plate movable in varying extents by the different keys and having the series of ratchet teeth, and carrying the register driving pawl, of a pawl adapted to be swung from its normal position into engagement with the ratchet teeth of said plate, and another pawl in contact with the plate-engaging-pawl which normally engages and locks the register wheel, but which as said pawl for the plate moves to engage the plate, is by said plate-engaging-pawl forced out of its register-wheel engaging position, a lever  $g$  for swinging the plate engaging pawl, actuated at the completion of the retracting movement of the pawl carrying plate, and a catch lever  $i$  for holding the lever in its swung position, a stud on the said plate for releasing the catch lever  $i$  on the completion of the return or working movement of the plate, and a driving spring for the plate substantially as described.

6. In a cash registering machine the combination with the ratcheted register wheel, and the pawl-carrying plate  $B$  having the ratchet-teeth and adapted to be moved in varying extents by the keys substantially as described, and having the spring for reversely driving it, of the pivoted pawl,  $d$ , and devices for throwing it into engagement with the ratchet teeth of said plate on the completion of the movement of the said plate to take by its pawl new teeth of the register wheel, and the lever,  $i$ , and key-actuated rocker-plate,  $C$ , for swinging said lever for holding said plate-engaging-pawl in such engagement during the driving or working movement of the plate,  $d$ , and a stud on the plate for releasing the said pawl retaining lever by contact therewith on the completion of the working movement of the plate, substantially as described.

7. In a cash registering machine the combination with the ratcheted register wheel, and the plate with the register driving pawl, of

the pawl or dog G having a movement for engagement with, and disengagement from, the ratchet teeth of the register wheel, a spring for forcing it to engagement, a pivoted element for engaging when swung the dog and forcing it out of engagement with the register wheel, a lever for swinging the pivoted element which is operated upon the full depression of any key, substantially as described, and a catch for holding the parts in their stated positions, and a stud on the plate for releasing the said parts on the completion of the working movement of the plate whereby the register-engaging-pawl may resume its position of engagement, substantially as described.

8. In a cash registering machine the combination with the ratcheted register wheel and the plate B with the pawl b and ratchet teeth f and the pivoted pawl d and means for actuating it at the time and in the manner set forth, of the pawl G having the inclined slot k and the support and guide stud k<sup>2</sup> and hav-

ing the tooth l and the limb 12 to be engaged by the pawl d, and the inclined limb 13, and the adjacent fixed stud 14, and the spring applied to said pawl G, all substantially as and for the purpose set forth.

9. In a cash registering machine the combination with the initial registering wheel having one or more projections and the second registering wheel to which the amounts, from the initial wheel are transferred, having the toothed wheel to be engaged and moved by the said projections and an angular lever pivotally mounted having an arm to be also engaged by the projection on the initial wheel and having another member to be swung into an intercepting engagement with a tooth of a toothed wheel on the second register wheel substantially as and for the purpose set forth.

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Witnesses:

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