

(No Model.)

2 Sheets—Sheet 1.

E. F. ROBERTS.
CASH REGISTER.

No. 483,946.

Patented Oct. 4, 1892.

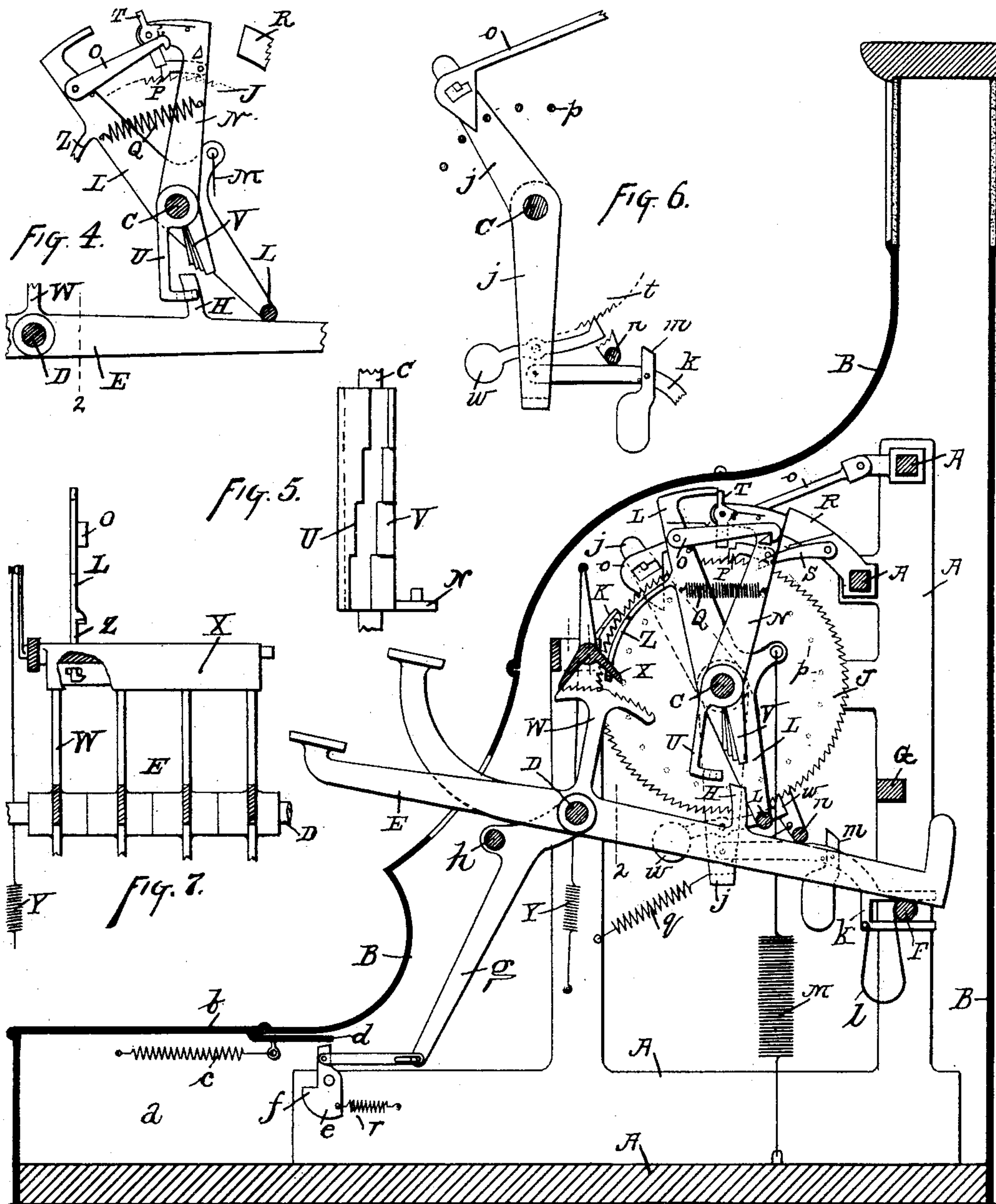


Fig. 1.

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Inventor

by James W. See

Attorney

Witnesses:
P. P. Sherman.
M. S. Belden

(No Model.)

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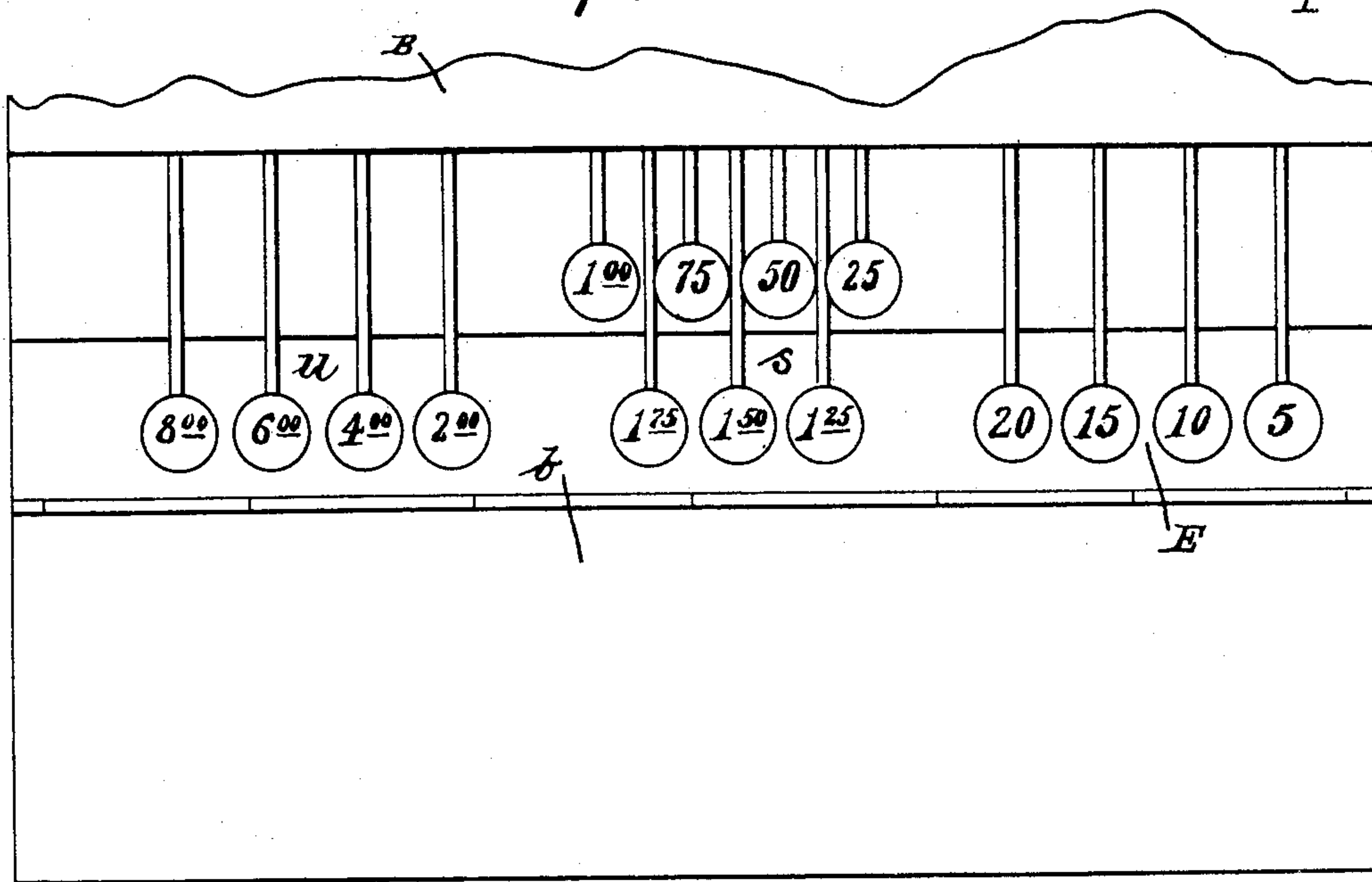
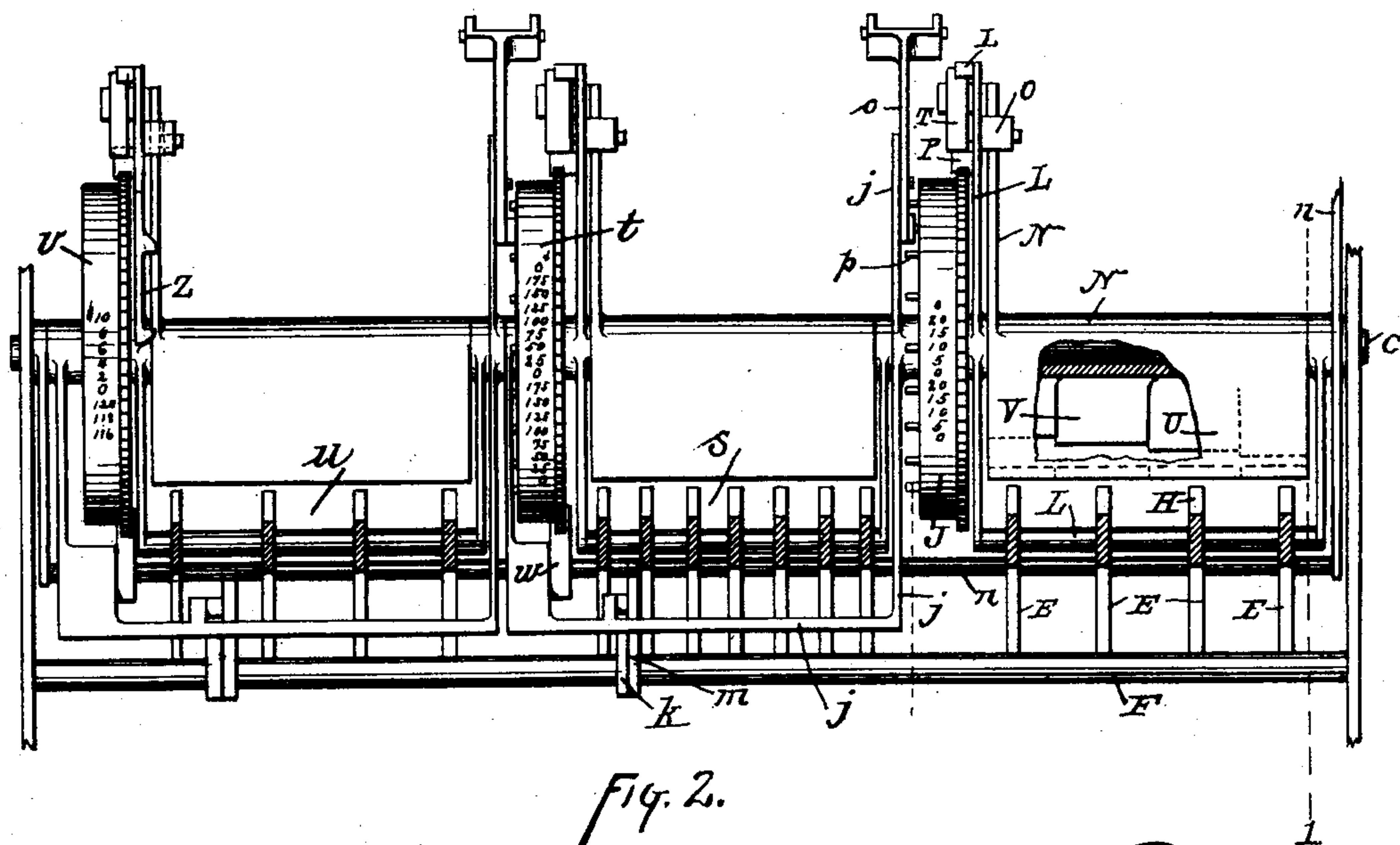


Fig. 3.

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UNITED STATES PATENT OFFICE.

EDWARD F. ROBERTS, OF COLUMBUS, OHIO, ASSIGNOR TO THE ROBERTS
MANUFACTURING COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 483,946, dated October 4, 1892.

Application filed April 9, 1892. Serial No. 428,523. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. ROBERTS, of Columbus, Franklin county, Ohio, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification.

This invention pertains to improvements in that class of cash-registering instruments in which there is a series of finger-keys, one key for each individual value to be dealt with, the manipulation of a given key causing an appropriate advance of a reading-wheel, the reading-wheel showing the sum of the values of the several keys which may have been manipulated, the manipulation of a key serving, also, to unlock a money-till and to expose to view a tablet showing the value of the key which has been manipulated.

In my improved cash-registers I provide a group of finger-keys corresponding with certain values, and I cause all of these keys to count upon a single wheel pertaining to that group. I arrange a second group of keys of higher values than the first group, and I cause these keys to count upon a second reading-wheel, and so on for as high values as desired, using several groups of keys and a counting-wheel for each group, the machine thus having the aspect of several separate cash-registers set side by side—one for dealing with small sums and another for larger sums and another for still larger sums; but I so arrange transfer mechanism that whenever the sum counted upon the low-value register shall equal the unit of the next register that unit shall be transferred from the lower register to the higher one, and so on through the series. I provide against two keys of a single group being depressed at once. I provide against any key of a group being operated unless all of the other keys of that group are in normal position. I provide against a key returning to normal position until it has made a full stroke. I provide against a key being depressed before it has reached the normal position. I provide a peculiar till-locking arrangement. I provide against the overthrow of the count-wheels as the result of momentum. I provide a peculiar system for admeasuring the count. I provide for the exposure

of the usual tablets, but do not illustrate or describe them, as ordinary arrangements may be employed.

My improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a cash-register exemplifying my improvements, the inclosing case and the cross-shafts, rods, &c., appearing in vertical section in the plane of line 1 of other figures; Fig. 2, a front elevation of the mechanism which is mounted upon the axial-shaft of the count-wheels, the keys appearing in vertical section in the plane of line 2 of other figures; Fig. 3, a plan of the till-cover and the key-buttons; Fig. 4, a side elevation corresponding to Fig. 1, but showing only those features directly pertinent to the movement and admeasurement of the movement of a counting-wheel under the action of the finger-keys belonging to that counting-wheel; Fig. 5, a bottom view of the measuring-wards which determine how far each key shall advance the count-wheel; Fig. 6, a side elevation like Fig. 4, but limited to those parts directly pertinent to the transfer of values from one group of mechanisms to the count-wheel belonging to the group next higher in value; and Fig. 7, a front elevation of the pawl-blades of one key-group, these pawl-blades being entirely omitted from Fig. 2, the office of these pawl-blades being to insure full stroke to the keys.

I have chosen to exemplify my present improvements in a cash-register having three groups of keys and three counting-wheels, the keys of the first group counting, respectively, five, ten, fifteen, and twenty cents, the next group twenty-five, fifty, seventy-five cents, one dollar, one dollar and twenty-five cents, one dollar and fifty cents, and one dollar and seventy-five cents, the third group two, four, six, and eight dollars, as will be best understood from Fig. 3. When values which have been fingered into the first group reach twenty-five cents, that amount becomes transferred to the count-wheel of the group above, any remainder staying on the count-wheel of the lower group. When total values

which have gone to the second count-wheel by the fingering of the keys of that group or by transfers from the count-wheel below reach two dollars, that amount is transferred to the
 5 third count-wheel. In other words, the lowest counting-unit pertinent to a given group of keys is equal to the sum of the highest and lowest key values of the group below. Particular description will be made of the
 10 lowest group and later the relation of groups and the transfer system may be better explained. In following the drawings attention may be generally directed to Fig. 1, the other figures being referred to only when necessary.
 15 In the drawings, A indicates rigid frame parts of the machine; B, the usual inclosing case; C, a shaft disposed across the machine and serving to support the count-wheels and various rockers; D, a pivot-shaft of the finger-
 20 keys; E, a group of four finger-keys pivoted on this shaft and extending rearwardly under the shaft C, this group of keys having values, respectively, as indicated in Fig. 3—viz., five,
 25 of these keys being adapted for engagement with the usual tablet mechanism used in this class of machines; F, a rest-bar on which the rear ends of all the keys rest when in normal position; G, a stop-bar over all the keys, to limit
 30 their upward motion to a uniform maximum; H, a bit projecting upwardly from each key about under the shaft C; J, a count-wheel loose on the shaft C and provided with ratchet-
 35 teeth and bearing a reading for each tooth, as indicated in Fig. 2, each tooth of the ratchet representing the value of the lowest key of the group—viz., five cents—the reading showing the value of one tooth, two teeth, three
 40 teeth, four teeth, and then beginning again at zero, and so on, this group of readings being repeated continuously around the wheel, whose number of teeth is immaterial so long
 45 as it is a multiple of five; K, a fixed pointer or reading-guage at which the wheel reading is to be made; L, a rocker mounted loose on the shaft C and having at its lower end a
 50 horizontal bar resting somewhat above all of the four keys of the group, the upper end of this rocker having a rearward projection, this rocker being hereinafter termed the “drag-
 55 rocker;” M, a spring acting to hold this drag-rocker L in normal position with its cross-bar in lowest position; N, a second rocker loose on the shaft C and extending up alongside of
 60 and in front of the upper portion of the drag-rocker L, the independence of the two rockers being best understood from Fig. 4, this rocker N being hereinafter termed the “count-
 65 rocker;” O, a pawl pivoted to the drag-rocker L and hooking over a stud on the count-rocker N, the hook being of such angle that it will disengage from the pin in case of excessive pulling strain upon the hook, this pawl being hereinafter termed the “drag-pawl;” P,
 a pawl pivoted to the count-rocker N and engaging the teeth of the count-wheel J, this pawl being termed the “count-pawl;” Q, a spring

attached to the drag-rocker L and count-rocker N and tending to draw the count-rocker toward the drag-rocker; R, a fixed back-stop limiting
 70 the rearward motion of the count-rocker, the count-rocker N normally resting against this stop; S, a stop-pawl to prevent the backward turning of the count-wheel J; T, a spring-dog pivoted to the count-rocker N and adapted to
 75 swing its lower end directly over the count-pawl P, the upper end of this dog being in position to be engaged at its front by the upper end of the drag-rocker L; U, a ward-plate formed with the count-rocker N and present-
 80 ing itself just in front of and just above the bits H of the keys, the wards of the plate corresponding with the number of keys in the group and being stepped, as seen in Fig. 5, so that the ward pertaining to the five-cent key
 85 is a certain distance in advance of its bit, the ward pertaining to the ten-cent key a proper greater distance, and so on, these wards being hereinafter termed the “count-wards;” V, a stepped ward-plate formed with
 90 the count-rocker N and standing over the key-bits H, which are to pass up in front of this plate, the ward pertaining to the five-cent key being a certain distance above its bit and a certain distance forward of the rear edge
 95 of the bit, while the ward pertaining to the ten-cent key is farther up and farther forward, &c., as seen in Fig. 5, these wards being hereinafter termed the “guard-wards;” W, a segment forming a part of each key and pro-
 100 vided with ratchet-teeth half facing one way and the other half the other way; X, a pair of united pawl-blades extending across over the four segments W of the group and adapted to rock so that either blade may engage the
 105 segments, the front blade normally engaging the segments; Y, a spring connected with an arm on these pawl-blades X and acting in a line cutting the center of oscillation of the pawl-blades so that the spring will tend to
 110 rock the blades in whichever direction they may be tipped beyond the neutral position; Z, an arm projecting from the drag-rocker L and provided with two shoulders, as seen in Fig. 7, these shoulders engaging the pawl-
 115 blades X and adapted, when the drag-rocker L moves clear forward, to tip the pawl-blades X so that the rear blade will go into action and when the drag-rocker L moves clear back to tip the pawl-blades so that the front blade
 120 will go into action; *a*, the till formed in the front lower part of the case of the apparatus; *b*, the till-cover hinged at its rear; *c*, a spring tending to throw the till-cover open; *d*, a rearward projection of the till-cover below its
 125 hinge; *e*, a pivoted lock-dog with its upper end standing normally under the projection *d* and thus preventing the lifting of the till-cover; *f*, a hook projecting forwardly from the lower portion of the locking-dog *e* in such
 130 normal position that if the till-cover were swung open the projection *d* would clear the hook, but if the dog be swung back to release the projection *d* the hook will present itself in

the path of the projection *d* and arrest the opening motion of the till-cover; *g*, a rocker pivoted to the shaft D and connected at its lower end with the locking-dog *e*; *h*, a bar 5 attached to this rocker *g* and extending along under all of the keys of the apparatus forward of the shaft D, so that if any key be depressed the locking-dog *e* will disengage from under the projection *d*; *j*, a third rocker 10 loose on shaft C, the upper arm of this rocker projecting up alongside the rear face of the count-wheel J, the lower arm extending downwardly and then horizontally along the machine to a point under the count-wheel *t*, belonging to the next groups of keys, this rocker 15 *j* being the transfer-rocker and being most clearly seen in Fig. 6; *k*, a pawl-carrier attached at its forward end to the lower portion of the transfer-rocker *j* and having its rear end horizontally guided by the stop-rod F; *l*, a spring tending to press the lower end of the transfer-rocker *j* forwardly and its upper end rearwardly; *m*, a tipping-pawl mounted on the pawl-carrier *k* and presenting its 25 face forwardly; *n*, a rocker rocking on shaft C and having a horizontal bar resting upon all of the keys of the apparatus forward of the pawl *m*, this rocker being hereinafter termed the "long rocker;" *o*, a light link pivoted at its rear end to the frame and having 30 at its front end a forwardly-presenting shoulder engaging to the rear of a pin on the upper end of the transfer-rocker *j* and serving to prevent the spring *l* from moving the rocker, this link having also at its forward end an incline presenting itself near the rear face of the count-wheel J; *p*, an annular series of pins projecting from the rear face of the count-wheel J, one pin for each zero of the 40 reading of the count-wheel, these pins being in such position that as the count-wheel turns forward they will successively lift the link *o* and disengage its shoulder from the transfer-rocker *j*, this lifting taking place quickly just as reading "20" comes to the reading-gage K; 45 *q*, a spring tending to hold the long rocker *n* in its downward position on the keys; *r*, a spring tending to hold the lock-dog *e* in locking position and to hold the bar *h* in its upper position; *s*, Figs. 2 and 3, a second group of 50 keys, the lowest having a value of twenty-five cents and increasing by that amount as a units value to and including one dollar and seventy-five cents; *t*, the count-wheel acted on by this group of keys *s* in the same manner as group E acted on the first count-wheel J, this second count-wheel *t* being graduated on the same principle as the first one—viz., a zero, then the unit of the group, then two 60 units, and so on, starting again at zero after "\$1.75" has been shown; *u*, a third group of keys beginning at two dollars and increasing by that as a unit to and including eight dollars; *v*, the count-wheel belonging to this 65 group of keys, its reading beginning at zero and reading by increases of two dollars as a unit in consecutive series, and *w* a pawl piv-

oted to the transfer-rocker *j* and engaging the second count-wheel *t*.

Attention will first be confined to the first 70 group E of keys, of which five cents is the unit, represented by each tooth of the count-wheel. If the five-cent key be operated full stroke, it will, lifting the horizontal bar of the drag-rocker L, move the upper end of the 75 drag-rocker L forwardly. As the drag-rocker moves forwardly the drag-pawl O pulls the count-rocker N along with it and the count-pawl P will advance the count-wheel J. The rising of the key brings its bit H in front of 80 its count-ward U, and as the count-rocker N moves forwardly the count-ward U moves backwardly and very early makes contact with the bit. This contact takes place when the count-wheel J has been advanced one 85 tooth, representing five cents, and when this contact takes place the count-rocker N can go no farther, but the key continues to rise and the drag-rocker L continues to move forward and the count-rocker N, being unable to 90 advance farther, the drag-pawl O disengages from its pin, the angle of engagement permitting this to happen when the strain becomes excessive, and the drag-rocker L goes on full stroke, leaving the count-rocker N in 95 a position of advance corresponding to one tooth of the count-wheel J. When the key is released after making its full stroke, it goes back to normal position and spring M restores the rockers to normal position and the drag- 100 pawl O will again engage its pin. Assuming that the count-wheel J stood at zero, its reading will now be "5." If the five-cent key be again operated the count-wheel J will be advanced another tooth and the reading will be "10." 105 In short, each key movement will advance the count-wheel J, but the count-ward U, pertinent to this key, prevents the count-wheel J being advanced more than one tooth. If the 110 ten-cent key be operated, the action will be the same as with the five-cent key except that the ten-cent count-ward being farther back from its bit H the count-rocker N will be dragged a distance representing two teeth before the drag-pawl O lets go. In this way, 115 while the keys have uniform strokes and move the drag-rocker L a maximum distance each stroke, the count-wards U cause the strokes to be effective upon the count-rocker N for only such proportion of the stroke as 120 is pertinent to the value of the individual keys.

The three count-wheels are operated by their appropriate keys in the manner just indicated. Consequently any given value found 125 upon any key may be registered by operating that key, the count going into the count-wheel pertinent to that key. A key of each group may be operated at one time and count upon all three of the wheels. Thus four dol- 130 lars and sixty-five cents may be counted by operating the four-dollar key, the fifty-cent key, and the fifteen-cent key at one time or in immediate succession in any order, and

the counting will be apportioned among the three wheels, each wheel counting only for the key of its group.

As to transfers or adding forward, the first
 5 count-wheel *J* reads no higher than twenty cents. Assume count-wheel *t* to stand at zero and assume the first count-wheel *J* to stand at fifteen cents. If the five-cent key be now depressed, wheel *J* will advance a tooth and
 10 read "20." As this advance of the wheel takes place a pin *p* lifts link *o*, thus releasing the transfer-rocker *j*. Spring *l* instantly presses the lower end of transfer-rocker *j* forward and pawl *m* will come near to or against
 15 the long rocker-bar *n*. This movement of the transfer-rocker *j* has done no counting but has simply set the transfer-rocker *j* into condition to make a count. If now the five-cent key be depressed, it will cause its count-wheel
 20 *J* to advance a tooth, which will bring its reading to zero. Twenty cents was on this wheel and five cents has been added; but this wheel does not receive it as a count. The sum—twenty-five cents—being equal to the
 25 unit of the next count-wheel *t*, is to be counted upon that second count-wheel. When the five-cent key was operated, it moved the long rocker-bar *n* backwardly, and this bar, acting on the pawl *m*, moved the transfer-rocker *j*
 30 to normal position again and caused the transfer-pawl *w* to advance the second count-wheel *t* one tooth, thus making that count-wheel read "25." Let it be particularly noticed that transfer-pawl *w* engages the second, not the
 35 first count-wheel. When the transfer-rocker *j* thus makes its counting-stroke, the link *o* again catches and restrains it until the next pin *p* releases it. Assume now that the first count-wheel *J* stands at "20" and that the
 40 ten-cent key be operated. The wheel being at "20" the transfer-rocker *j* is released and ready for action. The ten-cent key advances the first count-wheel *J* two teeth, thus bringing the reading to "5," and the transfer-rocker *j*
 45 advanced the second wheel one tooth—twenty-five cents—thus accounting for all the values. There was twenty cents on the first count-wheel *J* and ten cents more has been fingered into the machine, making a total of thirty cents to
 50 be accounted for. Twenty-five cents is shown on the second count-wheel and five cents on the first count-wheel *J*, making a total of thirty. The transfer from the second count-wheel *t* to the third one is effected in the
 55 same manner. When either the first or second count-wheel has reached its maximum count, its transfer is released and the next operation of the machine by any key whatever will cause the released transfer-rocker
 60 to count a unit into the next higher count-wheel, and two transfers may take place at once. The fact should be appreciated that the count-wheels beyond the first one are operated upon by two pawls—first, the count-
 65 pawl *P*, which puts into the wheel counts due to the action of its own keys, and, second, the transfer-pawl *w*, which puts into the

wheel transfers from the group below. It should be further understood that the actual
 work of transfer is done when any key is op- 70
 erated after a preceding key action has set the transfer in condition for work. It might, therefore, occur that when the fifty-cent key, for instance, was operated to count fifty cents
 75 into the second wheel, that very action of the key caused a transfer from the group below to that count-wheel *t*. Twenty-five cents is the tooth-unit of the second count-wheel *t*, and the fifty-cent key in making its normal
 80 count counts in two of these units; but the transfer calls for the third unit and therefore the fifty-cent key must count in three units. How this is done will be understood from Fig. 1 when it is noticed that long rocker *n*, which
 85 drives the transfer-rocker *j*, rests on the keys and begins work at once when any key rises, and its work never exceeds one-tooth degree of movement. The count-rocker *L*, which takes the counts from the keys, stands above
 90 the keys, and consequently before they begin their counting work the transfer will have completed its single-tooth work. Therefore when a transfer is set for action the operation of any key will first produce the one-
 95 tooth advance of transfer and then produce the farther advance pertinent to that particular key. This system may be extended as far as desired by adding count-wheels, &c. The third count-wheel *v* reading to one hundred and twenty dollars or more, if desired, 100
 by having a larger wheel, will render extension of the system unnecessary for general purposes, and for many purposes the second count-wheel *t*, provided with appropriate
 105 readings, may be the final wheel, and in many situations a single count-wheel *J* and group of keys may answer the desired purpose.

As to guarding against overflow of the count-wheel by momentum, when the count-rocker *N* goes forward and stops and the drag- 110
 rocker *L* proceeds the proper count has been completed by the measured stroke of the count-rocker, and the momentum of the count-wheel *J* should not carry it farther forward than the measured distances. At the instant 115
 the drag-pawl *O* lets go the dog *T* becomes freed from the influence of the drag-rocker *L*, and the dog *T* at once takes its position over the count-pawl *P*, thus locking the count-wheel *J* against further forward motion, the 120
 usual stop-pawl *S* preventing backward motion. The count-wheel *J* stays thus locked by the dog *T* and count-pawl *P* until the drag-rocker *L*, having completed its stroke, returns and releases the dog. 125

Regarding prevention of working two keys in one group at one time, if the ten-cent key be operated its bit will rise, and unless provided for its guard-ward of the series *V* would stand over the top of the bit; but while 130
 the bit is rising, the count-rocker and consequently the guard-wards *V* are swinging to the rear, and when the bit reaches the level of its guard-ward the guard-ward will be far

enough to the rear to permit the bit to pass up and complete its stroke. If now while the ten-cent key is thus in action an attempt be made to operate the five-cent key, its bit 5 will engage under the count-wards which have moved to the rear too far for that bit, and if an attempt be made to work the fifteen-cent key its bit H will catch under its guard-ward, which has not moved far enough to the 10 rear for the bit H. Thus with all keys in the apparatus, neither count-wards U nor guard-wards V interfere with the rise of a key, unless another key in the group has previously risen and adjusted the wards.

15 Regarding insuring of full key strokes, if a key be depressed the front pawl-blade X, engaging its segment W, will not prevent this movement of the key, but will prevent the return of the key so long as this pawl-blade is 20 engaging, and it is in engaging position until the drag-rocker L has made full stroke and its arm Z tipped the pawl-blades the other way. Therefore any key started into action cannot return until it has made full stroke. 25 When the key has made its full stroke, it starts to rise and the rear one of the pawl-blades X, now in action, will not prevent the rising motion, but will prevent a depression so long as it engages, and it engages until the drag-pawl 30 returns to normal position and its arm Z tips the pawl-blades again. Thus a key starting down must go clear down before it can come up again, and a key starting up must go clear up before it can start down again. Partial 35 strokes are thus guarded against.

Regarding the till-lock, normally the till-cover *b* is down and spring *c* urging it open and the locking-dog holding it closed. When any key is depressed, the dog *e* moves from 40 under the projection *d* and the till-cover flies open; but the very motion that released the locking-dog brought the hook *f* forward, and this hook arrests the till-cover when partially open, thus preventing it rising so far as to 45 strike the operator's hand. As soon as the key is released the locking-dog *e* and the hook *f* take their normal positions and the till-cover goes clear open. When the till-cover is closed by the hand, it presses the locking-dog back, 50 and the dog then engages under the projection and locks the till-cover.

I claim as my invention—

1. The combination, substantially as set forth, of a ratchet-wheel, a pawl therefor, a 55 rocker carrying said pawl, a dog mounted on said rocker and adapted to engage said pawl and hold it against release from the ratchet-wheel, a stop, as a count-ward, to limit the forward motion of said rocker with its pawl 60 and dog, a drag-rocker normally engaging said dog and holding it free of engagement with the pawl, a connection uniting the two rockers and adapted to yield under excessive strain, and mechanism for giving to the drag- 65 rocker a motion in excess of the motion of the first rocker, whereby when the pawl has reached its forward limit of motion it remains

locked to its ratchet-wheel by the dog until the drag-rocker completes its forward stroke and returns to the dog. 70

2. The combination, substantially as set forth, of a ratchet-wheel, a counting-rocker, a pawl thereon engaging the ratchet-wheel, a drag-rocker, a connection between the two 75 rockers, adapted to yield under excessive strain, a group of finger-keys engaging and adapted to rock the drag-rocker and provided with bits, and count-wards carried by said count-rocker and standing forward of said key-bits in position to be arrested by said key- 80 bits as the key-bits rise, the distance between the count-wards and the key-bits varying appropriately for each key.

3. The combination, substantially as set forth, with a pawl-and-ratchet mechanism 85 and a group of finger-keys acting thereon, of count-wards moving with the pawl, a yielding connection between the pawl and keys to permit the keys to continue motion after the pawl has come to rest, and bits moving with 90 the keys and arresting the motion of the count-wards and pawl.

4. The combination, substantially as set forth, with a pawl-and-ratchet mechanism, of a group of finger-keys, a yielding connection 95 between the pawl and all the keys of the group, whereby any key tends to give maximum pawl-stroke to the pawl, wards moving with the pawl, and a bit on each key in a position to engage a ward and prevent the farther ad- 100 vance of the pawl under the influence of said yielding connection from the key in action and also in position to be obstructed by the wards if moved by a previously-operated key.

5. In a cash-register, the combination, sub- 105 stantially as set forth, of a till, a cover hinged thereto and provided with a locking projection extending inwardly beyond the hinge, a spring tending to open the cover, a locking-dog engaging under the projection and pre- 110 venting the opening of the cover, a group of finger-keys, and connections from said keys to said locking-dog, whereby the operation of any key releases the locking-dog from the projection. 115

6. In a cash-register, the combination, sub- stantially as set forth, of a till, a cover hinged thereto and provided with a locking projec- 120 tion, a spring tending to open the cover, a locking-dog engaging said projection and preventing the opening of the cover, a hook standing normally out of the path of move- ment of said projection and moving with the locking-dog and adapted to move into the path of said projection and prevent the complete 125 opening of the cover, a group of finger-keys, and connections between said keys and locking-dog and hook, whereby the depression of a key releases the locking-dog and puts the hook in arresting position. 130

7. In a cash-register, the combination, sub- stantially as set forth, of two independent groups of finger-keys, each group having an independent count-wheel and counting mech-

anism, a series of transfer-pins in one of said count-wheels, a transfer-pawl engaging the other count-wheel, a bar adapted to be moved by any finger-key of either group, and connecting devices, substantially as set forth, between said pins and bar to cause said pawl to move with the bar at each passage of a pin.

8. In a cash-register, the combination, substantially as set forth, of two independent groups of finger-keys, each group having an independent count-wheel and counting mechanism, the keys being arranged for a degree of motion before acting on their counting mechanisms, transfer-pins in one of said count-wheels, a transfer-pawl engaging the other count-wheel, a bar arranged to be moved by any key of either group before the key acts on its own counting mechanism, and devices, substantially as described, for causing said bar to move said transfer-pawl each time one of said pins comes into action, whereby a single key-stroke may first make a transfer count upon its count-wheel and then add to that count a count appropriate to the value of the key.

9. In a cash-register, the combination, substantially as set forth, of two independent groups of finger-keys, each group having its own independent count-wheel and counting mechanism, transfer-pins in one of said count-wheels, a pawl engaging the other count-

wheel, a rocker carrying said pawl, a spring urging said rocker and pawl in one direction, a link restraining the action of the rocker and arranged to release at the passage of each of said pins so that the spring may cause the pawl to move, a bar arranged to be moved by any key of either group, and connections between said bar and rocker to cause the bar to move the rocker in the direction opposed to said spring.

10. In a cash-register, the combination, substantially as set forth, of two independent groups of finger-keys, each group having its own independent count-wheel and counting mechanism, a transfer-rocker, a pawl carried by said rocker and engaging one of said counting-wheels, pins in the other counting-wheel, a transfer-bar arranged to be moved by any key of either group and adapted to move said transfer rocker and pawl in the forward direction, a link engaging said transfer-rocker and holding it in its forward position of motion and adapted to be disengaged at the passage of each of said pins, and a spring arranged to move said rocker and pawl in its backward direction of motion when said link is disengaged.

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Witnesses:

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