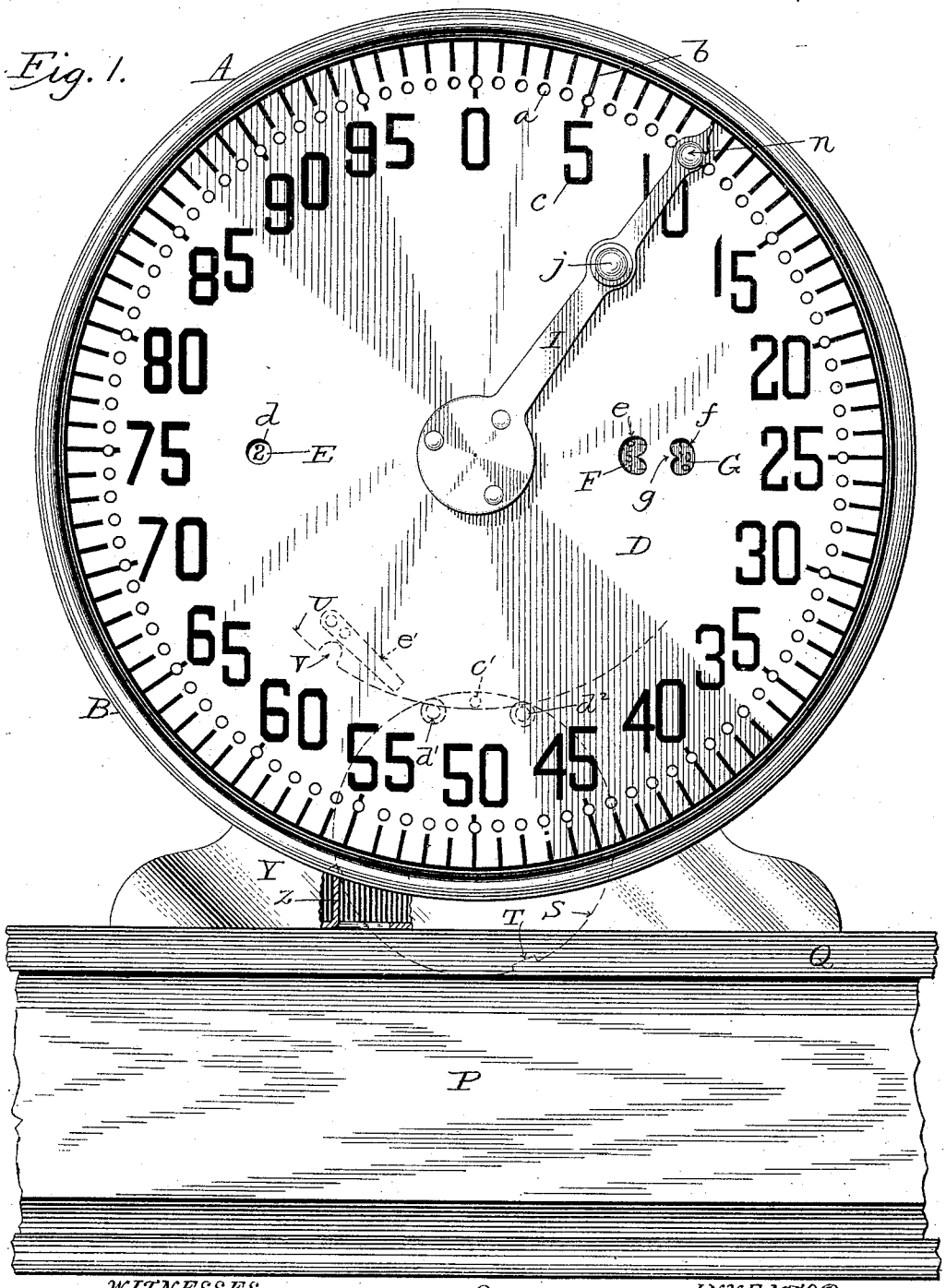
(No Model.) 4 Sheets—Sheet 1.

J. A. WILLIAMS.

CASH REGISTER.

No. 529,436. Patented Nov. 20, 1894.

Fig. 1.



WITNESSES

C. C. Burdine.

C. B. Bull.

INVENTOR

John A. Williams

by Dodger & Lowe, Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 2.

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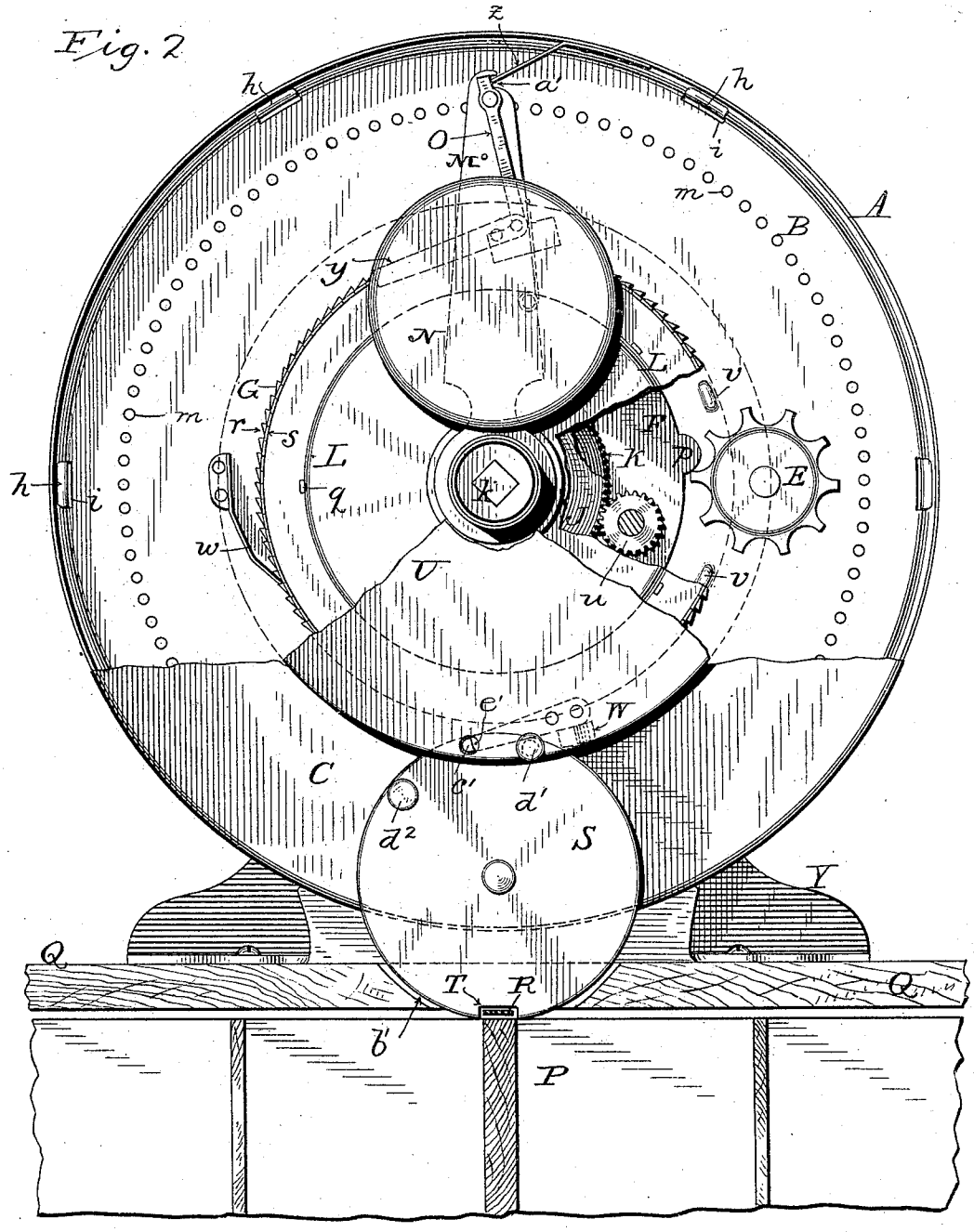
Fig. 2



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C. C. Burdine.

C. B. Bull.

INVENTOR

John A. Williams

by Dodger Sons, Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 3

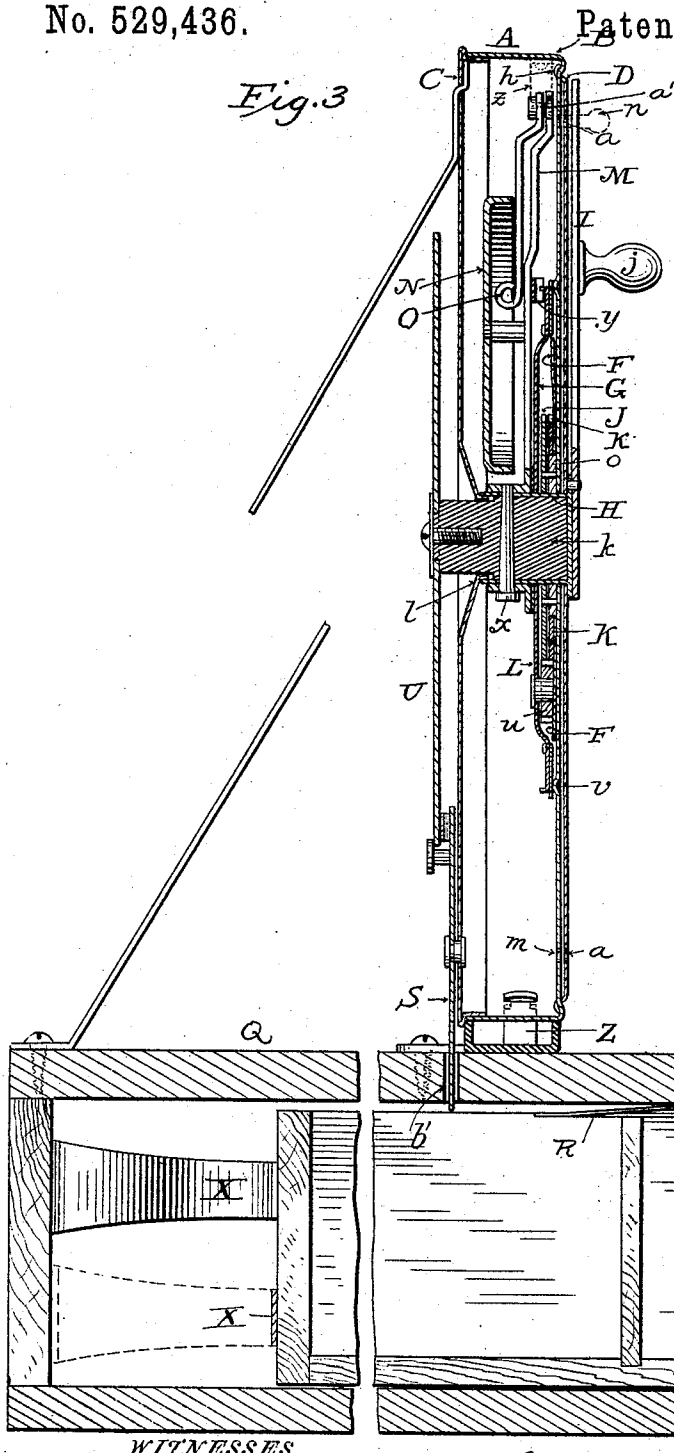
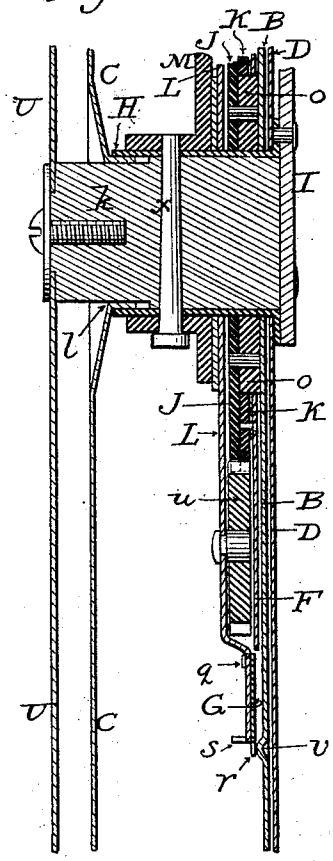


Fig. 4.



WITNESSES

C. C. Burdine

C. B. Bull.

INVENTOR

John A. Williams

by Dodger Sons, Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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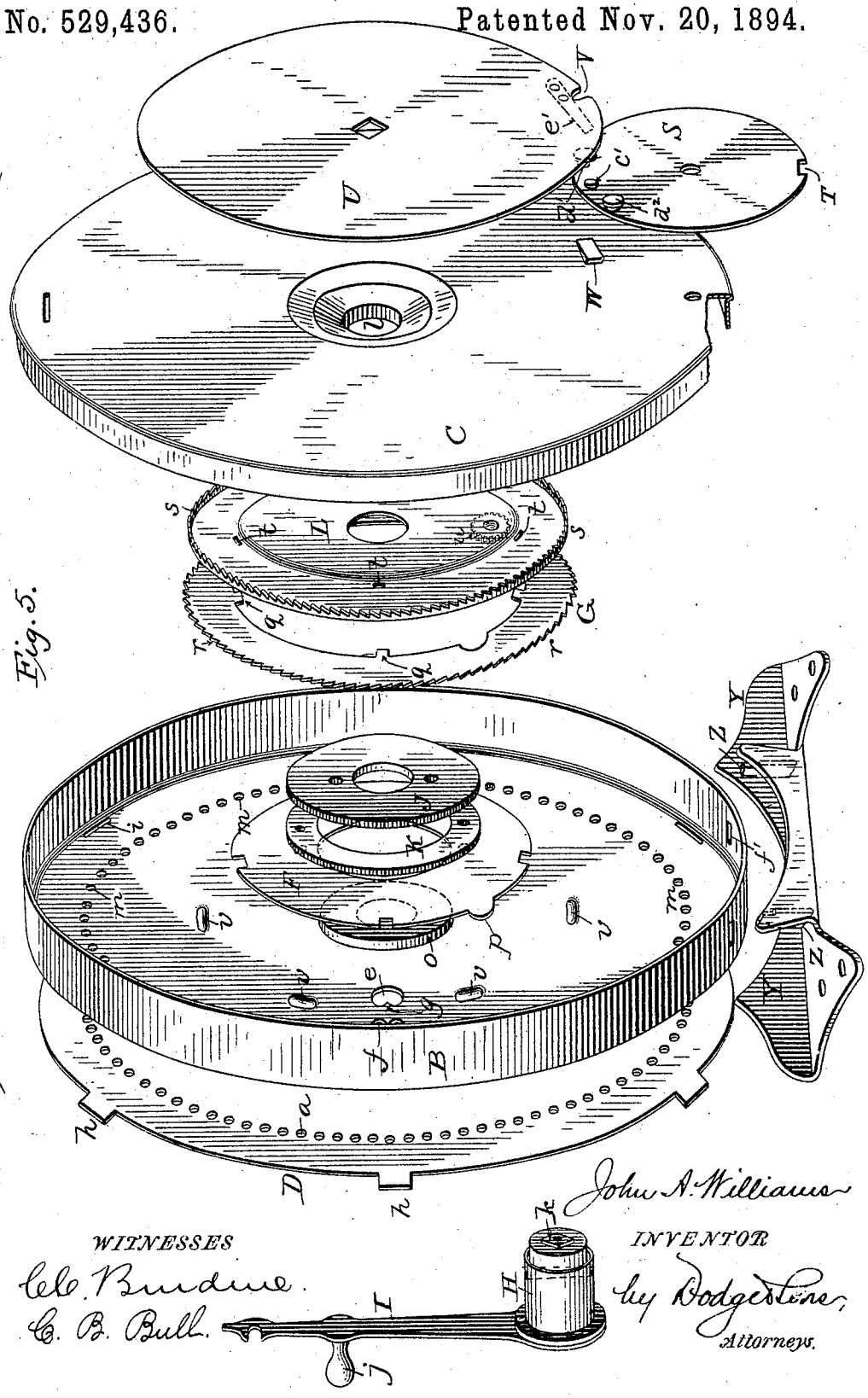

Fig. 5.

WITNESSES

C. B. Burdine.

C. B. Bull.

John A. Williams

INVENTOR

by Dodgeston,

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN A. WILLIAMS, OF BROOKLYN, NEW YORK.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 529,436, dated November 20, 1894.

Application filed May 19, 1894. Serial No. 511,852. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. WILLIAMS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification.

My invention relates to cash registers, and consists in various features and combinations hereinafter set forth and claimed.

In the drawings,—Figure 1 is a face view of my improved register; Fig. 2, a rear face view with parts broken away; Fig. 3, a vertical sectional view from front to rear; Fig. 4, a sectional view, on a larger scale, of a part of the mechanism shown in Fig. 3; and Fig. 5, a perspective view of the parts separated.

A represents the case or shell of the register as a whole, comprising, preferably, a flanged disk or body portion B, a removable flanged disk or back C, and a dial D. Dial D, Fig. 1, is provided in the present instance with one hundred holes *a* arranged in a circle; with markings *b* to indicate cents; and with numbers *c*, preferably multiples of five, to facilitate the reading and registration. There are also formed in the dial (and also in the front plate B) three holes or openings *d*, *e* and *f*, Fig. 1, through which the amounts designated upon the wheels E, F and G may be read,—the bar separating the openings *e* and *f* being provided on its edges with spurs or points *g* to facilitate the reading of dollar and cents wheels F G. This dial D is provided with lips *h* at its edges to enter slots *i* formed in the front plate or body portion B, Figs. 2, 3 and 5, which lips, after being inserted through the slots, are bent down as shown, and thus firmly unite the dial to the body portion.

H indicates a short sleeve or cylinder, preferably closed at its outer end, and carrying at its outer end the hand or pointer I, see Figs. 1, 3 and 4, which works over the front face of the dial D, and which will preferably be provided with a knob or handle *j* by which it may be conveniently moved. Sleeve H is journaled centrally within the body or case B and dial D, and is provided with a core piece *k*, Figs. 3 and 4, which is reduced in diameter at its inner end to afford an annular space to receive the hub *l* formed on the back plate C,—the said core piece *k* extending outward through and beyond said back plate for a purpose presently explained.

The body portion or disk B is provided with a circular series of holes *m* which are arranged in line with the holes *a* in the dial, and into these holes is inserted a pin *n* which is employed to limit the movement of the hand or pointer I, as shown in Figs. 1 and 3.

Secured to the rear face of the disk or body B is a ring *o* which carries on its rear face a stationary gear J, while in front of the gear J and loosely encircling the ring is a second gear K, which is adapted to be turned upon the ring, as shown in Figs. 3, 4 and 5. These gears J, K, have a different number of teeth, one being provided with one hundred and the other with one hundred and one.

The movable gear K carries or is riveted or otherwise secured to a wheel or disk F which is provided with one hundred markings to indicate dollars, which markings show through the opening *e*, as shown in Fig. 1. Wheel or disk F is provided with a single tooth *p*, Figs. 2 and 5, which at each complete revolution of said disk engages the smaller wheel or disk E and gives to the latter a tenth of a complete rotation, so that the dollars will be indicated in hundreds upon the said disk E. This dollar disk or wheel F and the cents wheel, disk, or ring, G, are cut from a single piece of sheet metal, and in the act of cutting, I provide the wheel F with the tooth or spur *p*, and the ring G with inwardly-projecting lugs *q* and the peripheral ratchet teeth *r*. By thus cutting the wheels F and G from the same piece of metal as described, much time, labor and material are saved.

L indicates a disk having its edge turned upward or outward (parallel with its axis) and notched or provided with ratchet teeth *s*, as shown in Figs. 2, 3, 4 and 5, and to the front face of this disk is secured the ring or wheel G designating the cents,—the lugs *q* on the ring G being passed through slits *t* in the disk, and then bent down to firmly unite the parts. The ring G which is united to the disk L is provided with markings from 1 to 100 to indicate cents, and these markings are read through the opening *f*.

Disk L carries on its front face a small gear *u* which, as shown in Figs. 2, 3 and 4, is designed to engage the movable gear K and

the stationary gear J; and in order to support the disk and attached ring, the front plate or body portion is provided with projections *v*, Figs. 2, 3, 4 and 5 which are formed by indenting or striking up the metal of which the front plate is formed.

In order to prevent backward rotation of the registering wheels F G, a pawl *w* is secured to the front plate, see Fig. 2, to engage the ratchet teeth *r*.

M indicates an arm rigidly affixed to the sleeve H, preferably by means of pin *x*, and carrying a pawl *y* to engage the teeth *s* formed on disk L; while *z* indicates a pawl secured to the case B to limit the backward movement of the arm. Pawl *y* is a spring pawl—that is, a spring-pressed pawl or a pawl made of spring metal,—and while it forms a rigid connection between the arm and the cents wheel, and causes the latter to turn or move with the arm, it will nevertheless ride back over the teeth of the wheel when the arm is moved backward. The pawl *z* is also a spring pawl, and while it limits the arm when the latter is moved backward, to the zero point, it will yield to allow the arm to pass under when the arm is moved around forwardly, as for instance when it is desired to register more than one dollar. Arm M also carries a bell N and striker O, which latter is pivoted near its upper end to the upper end of the arm and extends partially over a notch *a'* formed in the upper end of the arm as shown in Fig. 2, the construction and arrangement being such that when the arm is being brought back to the zero point, the pawl *z* will strike the upper end of the striker O and ring the bell before the arm itself is finally arrested.

It will be readily understood from the foregoing that the arm M partakes of every movement of the hand or pointer I, and, as the pawl *y* is carried by the arm, the forward movement of the pointer will effect a rotation of the cents-wheel G L through an arc corresponding to the movement of the pointer. For instance, in Fig. 1 the pointer I has been moved to opposite the number 10 on the dial, and the cents wheel has by this same movement been moved so as to bring the number 10 thereon behind opening *f* and into line with the spur or point *g*. The hand or pointer I is after each registration returned to the zero point, but the cents wheel remains at rest during such backward movement. Then of course if it be desired to register an additional ten cents, the hand or pointer will again be moved from zero to the number 10 on the dial, and thus move the cents wheel to such position as that the number 20 thereon will show through the opening *f*. As the cents wheel G L is thus turned (always in one and the same direction) its small gear or pinion *u* is carried around with it and rolls around the periphery of the fixed gear J, which it engages. This pinion also engages the loose gear K, but as one of these gears has one tooth more than the other, it will be seen that by the time that the cents wheel has made one complete revolution (which is required in registering sums amounting to a total of one dollar), the difference in the gears J K will cause the dollar wheel F attached to the loose gear K, to move a distance represented by the difference in the number of teeth in the two gears. In other words, at the completion of each registration of one hundred cents upon or by the cents-wheel, the dollar-wheel will be moved one space and the markings thereof brought successively behind the opening *e* as shown in Fig. 1, so that by mere inspection of the dial, the total amount registered may be read in dollars and cents through the openings *e* and *f*.

Dollar wheel F is arranged to register from 1 to 100, and at each complete revolution it imparts to the wheel E a partial rotation or revolution, and brings the markings thereon successively in line with the opening *d*, Fig. 1. The reading of the register as portrayed in Fig. 1, is $205.10.

It is desirable to use in connection with the register a cash drawer P, which shall be automatically unlocked upon returning the hand or pointer to zero; and to secure this result, the drawer, which is mounted in a suitable box or case Q, is provided along its upper edge with a spring latch R, Figs. 2 and 3, which, when the drawer is closed, engages the lower edge of a locking plate or disk S. Disk S, Figs. 1, 2, 3 and 5, is pivoted to the back plate C of the register and extends downward through a slit *b'* formed in the top of the box or case Q, as shown in Figs. 2 and 3, so as to come in front of the spring latch R. The disk S is further provided on its lower edge with a notch T, Figs. 1, 2 and 5, of a width equal to the width of the latch, and at its upper side or edge with a lug *c'* and two pins or studs *d'* *d*². Secured to the core piece *k* is a larger disk U which has on that face next to the register a pawl *e'*, which is designed to engage the lug *c'* and turn the smaller disk in one direction; and said disk U is also provided with a notch V to engage the pin *d'* of disk S under certain conditions. As the disk U sits away from the disk S, it is necessary that the pawl *e'* be prevented from catching under the disk, and to secure this result I provide the back C of the case with an inclined lug W, Figs. 2 and 5, along and up which the pawl rides.

It will be noticed upon reference to Figs. 1 and 2 that the pins *d'* *d*² are so placed relatively to the disk U that under certain conditions they just clear the lower edge of said disk and permit the disk U to be turned without affecting the lower disk S; but when disk U is turned backward and the pawl engages the lug *c'* and turns the disk S, so as to bring the notch T into line with the spring latch R, the pin *d'* is brought up into the notch V of disk U. Now if disk U be turned forwardly, the notch V engaging the pin *d'* will

rotate the disk S backward a limited distance and to the position shown in Fig. 1. When the hand or pointer is at zero, as in Fig. 2, the disk S has its notch T in line with the spring latch R, and the spring or springs X in rear of the drawer will force the drawer outward. If the hand be moved to register 10 as in Fig. 1, the disk U will be correspondingly moved and its pawl *y* carried away from the lug *c'* of disk S, and as the pin *d'* is in engagement with the notch V of disk U, the disk S will be carried to the position shown in Fig. 1. When, however, the pointer is moved from the 10 mark (or any other mark, for that matter) back to zero, the disk U will also be turned backward, and its pawl *y* striking against lug *c'* will turn the disk S to bring its notch T into line with the spring latch R and throw the pin *d'* up into the notch V. From this it will be seen that when the hand or pointer is at zero, the drawer will be unlocked, but when the hand is at any other point, the disk S will be in the position shown in Fig. 1. If the drawer should be open and the locking disk be in the position shown in Fig. 1, the drawer may be locked by merely pushing it inward, its spring latch R riding freely beneath the lower edge of disk S, and springing up behind the same. The pin d^2 on disk S is employed to prevent the said disk from being turned backward too far.

The register proper will be provided with a foot piece or support Y made of a single piece of metal bent into U-form in cross section, and having cut and bent therefrom the tongues Z, Figs. 3 and 5, which after being passed through suitable holes *f'* in the body portion B are riveted or headed down.

It has been my aim to reduce the cost of manufacture in this class of machines, and this I have accomplished by using sheet metal for practically all the parts, and by cutting, punching, and shaping the parts in suitable dies.

I have previously stated that after the hand or pointer I has been moved to register a certain amount, it is returned to zero. This is true only when the register is employed without reference to the cash drawer and its locking mechanism; but when the latter mechanism is employed, the hand is not returned to zero, but is allowed to remain opposite the amount registered, as will now be described.

Suppose the register to be ready for business and the pointer at zero. The notch T in the disk S is now in line with the latch R as shown in Fig. 2, and the drawer is therefore unlocked. Now if the first purchase registered be ten cents, the pointer is to be moved to the number 10 on the dial and left there, showing to the customer the amount registered. In thus moving the hand or pointer I, the notch T in the disk S was moved out of line with the latch R, as indicated by the dotted lines in Fig. 1. Change is made and the drawer closed and automatically locked,—the spring latch R riding freely beneath and then springing up behind the disk S as the drawer is pushed inward. Now before the amount of the next purchase can be shown, the pointer must be returned to zero in order to bring the disk S into position to unlock the drawer.

Inasmuch as it is necessary to return the hand to zero to release the drawer, it will be noted that every time the cash drawer is opened an alarm will be sounded, for the return of the hand or pointer to the zero point always rings the bell N.

Having thus described my invention, what I claim is—

1. A cents-wheel comprising a sheet metal disk L having its edge flanged and toothed, and a ring G with its edge toothed, and secured to the front face of the disk, substantially as shown and described.

2. In a cash register, the combination with disk L provided with the flanged and toothed edge and countersunk at the center; of the toothed ring G secured to the flat front face of the disk, and constituting a cents-wheel; the dollar wheel in front of the cents-wheel; the gears J K situated between the cents and dollar wheels; and the pinion *u* journaled in the countersunk portion of the disk L.

3. In a cash register, the combination with the fixed gear J and the movable gear K having a different number of teeth; of the cents wheel provided with pinion *u;* and a dollar wheel secured to the movable gear; and means for turning the cents wheel.

4. In a cash register, the combination with the body or front B; of a ring *o* secured thereto; a gear J secured to the ring; a gear K having a different number of teeth from gear J and encircling the ring *o;* a dollar wheel secured to gear K; a cents wheel provided with pinion *u* to engage the gears J K; and means for turning the cents wheel.

5. In a cash register, the combination with the body or front B; of a ring *o* secured thereto; a gear J secured to the ring; a gear K having a different number of teeth from gear J and encircling the ring *o;* a dollar wheel secured to gear K; a cents wheel provided with pinion *u* to engage the gears J K; and a hand or pointer having a pawl and ratchet connection with the cents wheel.

6. In a cash register, the combination with the body or front B; of a ring *o* secured thereto; a gear J secured to the ring; a gear K having a different number of teeth from gear J and encircling the ring *o;* a dollar wheel secured to gear K; a cents wheel provided with pinion *u* to engage the gears J K; a hand or pointer having a pawl and ratchet connection with the cents wheel; and a pawl to prevent backward rotation of the cents wheel.

7. In a cash register, the combination with the cents wheel and dollar wheel; of the hand or pointer; the arm M secured to the shaft of the pointer, and provided with a pawl to engage the cents wheel; a bell carried by the arm; and means for ringing the bell.

8. In a cash register, the combination with the actuating arm M notched as at a'; of the bell N carried thereby; the pivoted striker O; and the pawl z to limit the movement of the arm.

9. In combination with the dial and pointer; the disk U movable with the pointer and provided with notch V and pawl e'; the disk S provided with pin d', lug c', and notch T; and the drawer P provided with latch R.

10. In combination with the dial and pointer; the disk U movable with the pointer and provided with notch V and pawl e'; the disk S provided with pin d', lug c', and notch T; box Q provided with slit b' to receive the disk S; and the drawer P provided with latch R.

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

JOHN A. WILLIAMS.

Witnesses:
H. M. ADAMS,
A. H. CLARK.