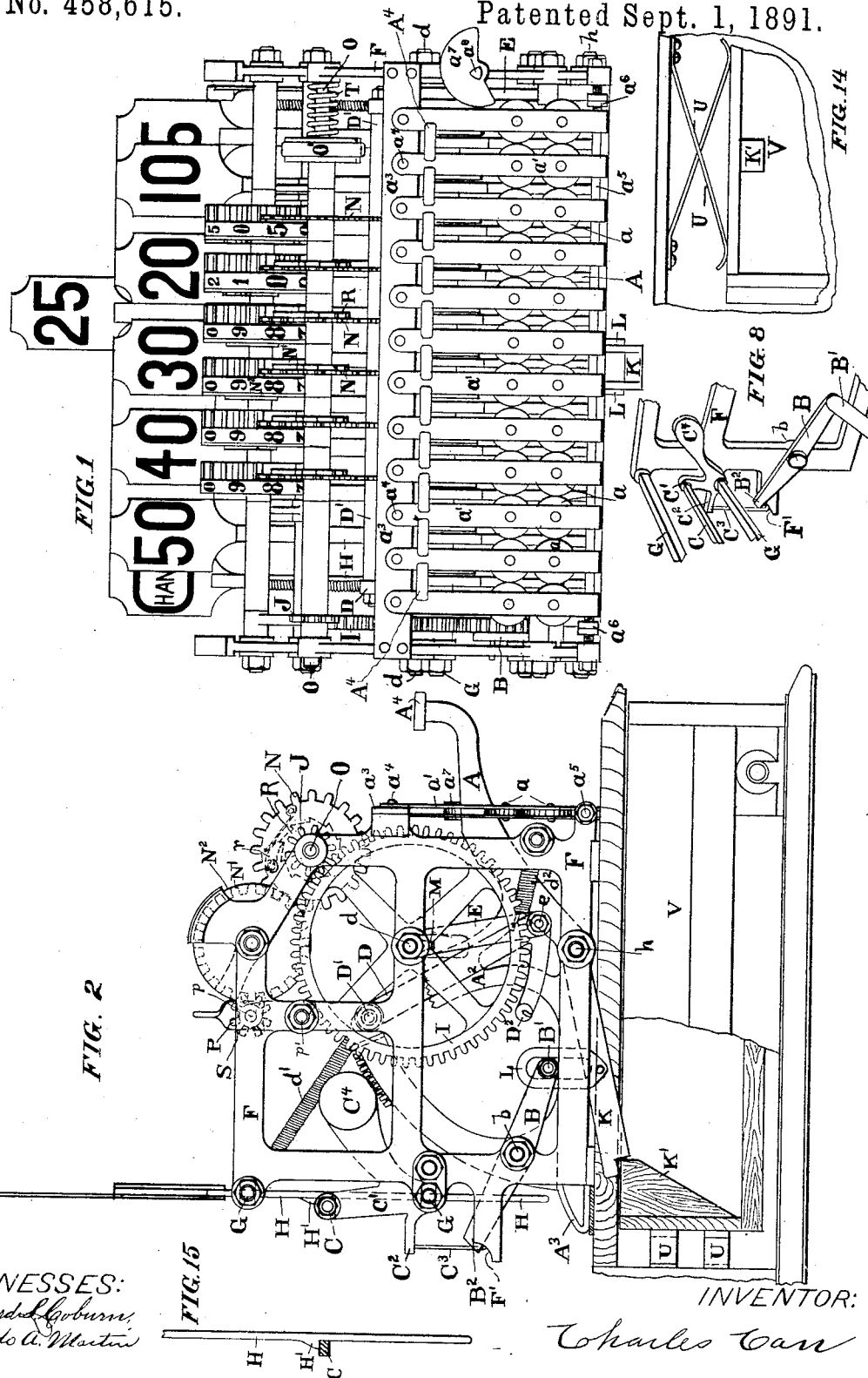


C. CARR.
CASH INDICATOR AND REGISTER.

No. 458,615.

Patented Sept. 1, 1891.



WITNESSES:
Howard A. Guburn,
Waldo A. Martin

INVENTOR:

Charles Carr

(No Model.)

3 Sheets—Sheet 2.

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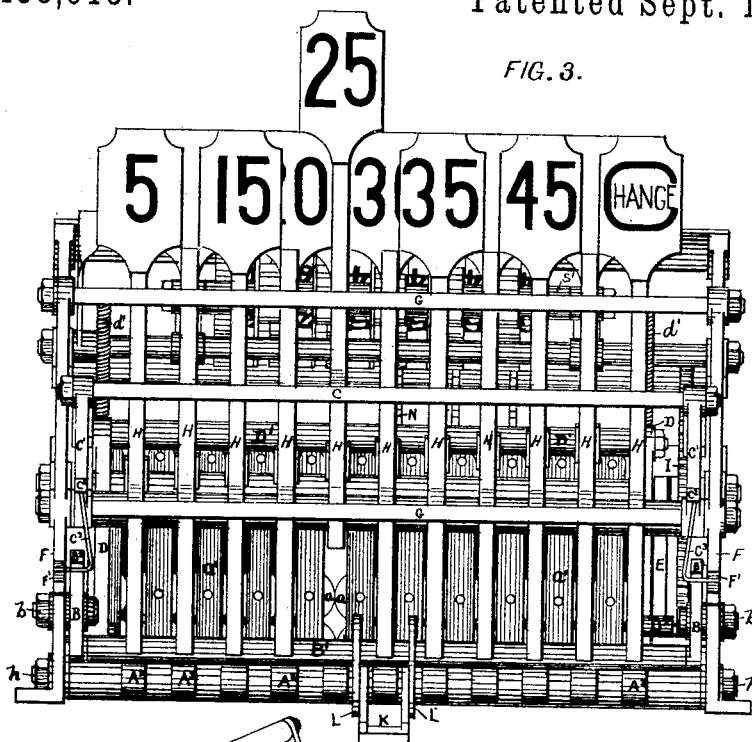


FIG. 3.

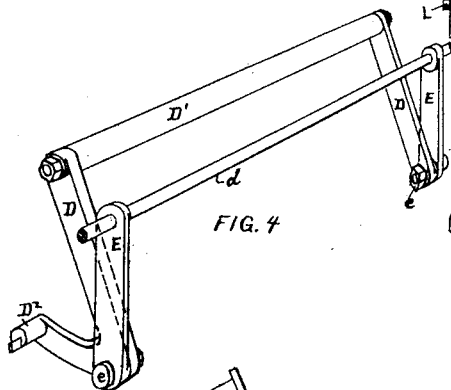


FIG. 4

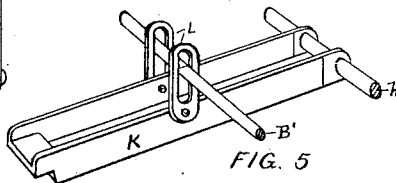


FIG. 5

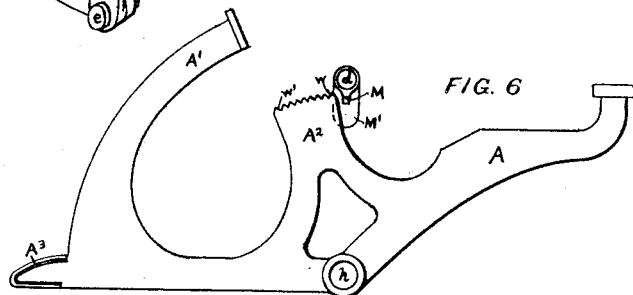


FIG. 6

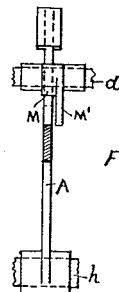


FIG. 7.

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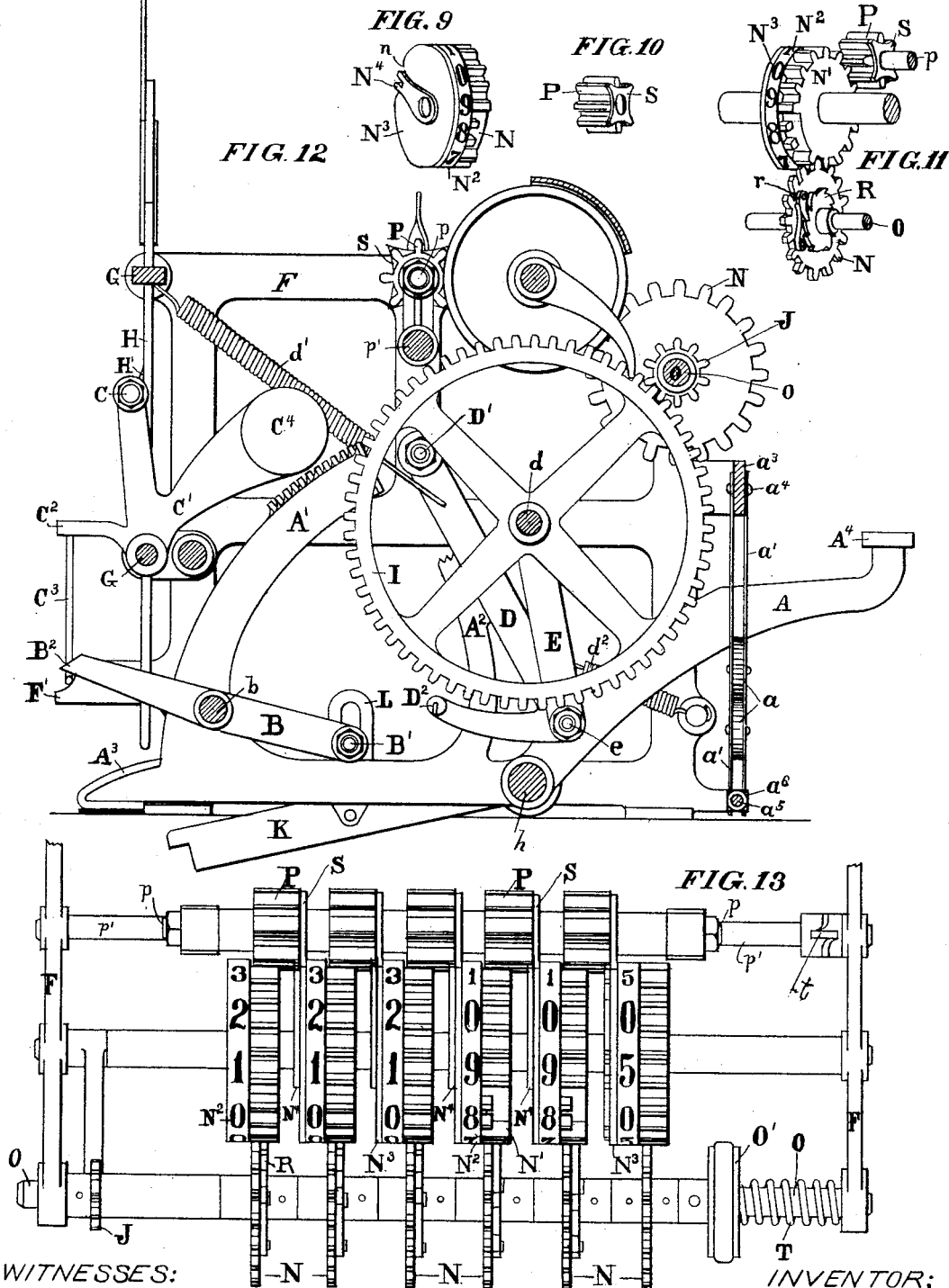
INVENTOR

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UNITED STATES PATENT OFFICE.

CHARLES CARR, OF BOSTON, MASSACHUSETTS.

CASH INDICATOR AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 458,615, dated September 1, 1891.

Application filed September 20, 1890. Serial No. 365,683. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CARR, of the city of Boston, county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Cash Counting, Registering, and Indicating Machines, of which the following is a specification.

The following, together with the accompanying drawings, having reference-letters herein referred to, is a full and exact description of the said invention.

The nature of my invention relates to devices for counting, indicating, and registering.

It consists of counting and registering wheels and indicating devices, actuating-levers and devices for controlling their action, co-operative mechanism, and combinations, substantially as hereinafter more fully set forth.

Referring to the drawings, Figure 1 is a front view in elevation which represents the main features of a machine illustrating my invention. Fig. 2 is an end elevation of the same and is represented as resting upon a base containing a cash-drawer, which is co-operative with the mechanism above. Fig. 3 is a rear elevation corresponding to the front view shown in Fig. 1. Fig. 4 is a perspective view showing the several parts designated by letters D, D', D², d, E, and e, separately from the machine as a whole. Fig. 5 is a similar view showing parts K, L, B, and h and their relative arrangement. Fig. 6 is a side elevation of one of the actuating-levers, pawl M, &c. Fig. 7 is an end elevation of the same. Fig. 8 is a perspective view illustrating several parts and their relations, as indicated by reference-letters referring to the description of them in the specification later on. Figs. 9, 10, and 11 are similar views of parts and their relations similarly designated. Fig. 12 is an enlarged sectional elevation, plane of section parallel to and just inside of left-hand end frame-casting, as shown in Fig. 1. Fig. 13 is an enlarged plan of adding and resetting at zero mechanism. Fig. 14 is a plan of drawer-springs. Fig. 15 is a sectional end elevation of catch-rod C, with disk-rod H and its lug H'.

The frame of the machine containing and supporting the operative parts consists, in the main, of two end plates or castings F,

connected by rods G and other parts. This frame rests upon a base containing a cash drawer or drawers V.

Any suitable case of ornamental or useful design may be made to rest upon the base and inclose the other mechanism.

Arranged conveniently for observation at the top of the machine is a series of numeral disks used to indicate the various sums to be taken account of. These disks rise into view singly, so indicating the sum to be noted.

For the purpose of elevating these disks and operating other mechanism, as described hereinafter, a series of operating or actuating levers A are provided and arranged in a bank, each having an accessible finger tap or key end, as appears in Figs. 1, 2, 6, and 12. One of these levers is shown in detail in Fig. 6, together with a pawl M for controlling its movement by means of a rack A² w w', projecting upward centrally between the finger-tap and the opposite end, on which is formed the lifter A³, and from which a segmental or arc-shaped tappet A', concentric to its pivot, springs upward and forward for the purpose of giving movement to the other parts. Each lever has a tappet A' of a different length from its neighbors, (see Figs. 2 and 12,) whereby the movement of the mechanism is graduated by the length of the tappet, according to the amount of the sum to be noted. The pivot of lever A is at h and is supported in the frame. The indicating-disks are mounted on rods H over the lifter A³ on lever A, by which they are lifted, each by its own lever. On rod H is a lug H', and a bell-crank C' carries a latch-rod at C for the purpose of catching under said lug and so holding up the rod H. A counter-weight C⁴, attached to bell-crank C', keeps rod C in contact with rod H and in engagement with lug H' till otherwise released. For the purpose of releasing it a link C³ depends from arm C², inclosing the end of lever B, so that when the outer arm of lever B is depressed this link operates the bell-crank and so releases latch-rod C from lug H' and allows said rod H to drop; but the lower end of link C³ is adjusted over a fixed cam F' on the frame, so that after releasing latch-rod C from lug H' the further movement of lever B, by means of the action of cam F', forces link C³ off from the end of lever B, al-

lowing weight C^4 to cause the crank-arm C' to bring latch-rod C back against the rods H , ready to catch any one of the rods H by means of their lug H' whenever one shall be raised, as aforesaid. Lever A has its operating movement downward at the finger-tap A^4 . The first movement of lever A causes lever B , acted on at B' , to unlatch any indicating disk-rod H which is being held up, as above described, allowing it to drop into uniform position with its fellows of the series.

As before stated, each tappet A' varies from its neighbor in length, measuring thereby in its action the difference between one numeral and the next on the counting-wheels. The numeral-wheels are marked N^2 and are mounted beside and connected to the mutilated gears N' on the same shaft. The right-hand gear N on shaft O meshes with and gives impulse to right-hand gear N' and is driven by pinion J , which is also on shaft O , and meshes with and is driven by gear I , the first moving gear of the machine. Gear I receives its impulse from the catch or catch-pin D^2 on the short arm of lever D , the angle of which lever is pivoted to a swinging arm E , hung at d , its pivotal shaft, which is also a fulcrum-rod to lever D , and shaft on which wheel I is mounted. The impulse is given by tappet A' pushing rod D' in the long arm of lever D , which lever on striking fulcrum-rod d causes catch D^2 on its short arm, after having engaged with teeth of wheel I to give a movement to wheel I proportionate to the length of the tappet A' , and to the requisite and corresponding movement communicated by it to the numeral-wheel through wheel I , pinion J , shaft O , gear N , and gear N' . As already stated, each tappet A' varies in length from its neighbor the measure of the movement of the numeral-wheel from one number to the next. Thus by the pressing down of the corresponding "key" or lever the desired numeral is made to appear.

The operation is as follows: The tappet A' moves rod D' , attached to crank-arm D , which is pivoted to swinging arm E , causing catch-pin D^2 , which is fixed upon the crank-arm D , to engage wheel I , which is the first moving wheel. Then arm D comes in contact with fulcrum-rod d and propels wheel I , which, through pinion J , shaft O , gears N and N' , moves the numeral-wheel N^2 the required number-space for a unit in the adding process—viz., in the present case one-tenth of a revolution. On shaft O are fastened the ratchet-wheels R , also the right-hand one of the series of gears N . The other five gears N are loose on the same shaft. On the side of numeral-wheel N^2 and attached to it is the segment of a gear N^4 and a notched or scalloped disk N^3 , (see Figs. 9 and 11,) the notch or scallop being located adjacent to and radially coincident with the segment. When the numeral-wheel N^2 has about reached a multiple of ten and it becomes necessary to carry the registration forward

to the next wheel, it is accomplished as follows—viz., the properly-adjusted segment N^4 meshes into pinion P , which pinion is loosely mounted on shaft p and meshes also with gear N' , (see Figs. 2, 10, and 11,) turning it and through it the next gear N' in the series a tenth of a revolution, so bringing forward the next number, the scalloped disk S or "Geneva stop" swinging into notch n . Then as it rolls out again, one of its scallops fitting to the periphery of disk N^3 , the pinion P is thereby prevented from turning farther, thus measuring the requisite movement. The like action is repeated through the series. For the purpose of resetting the numeral-wheels at the zero-point the gears N' have three (more or less) of their teeth cut away in part—i. e., to about the width of the face of gears N . (See Figs. 9, 11, and 13.) The pinions P and Geneva stops S being hung in a frame which swings on shaft p' , they are swung back out of mesh with gears N' , disks N^3 , and segmental gears N^4 . This frame is operated by means of the handle t , attached to shaft p' for this purpose. The shaft O , being provided with a hand-wheel O' , is moved endwise against a spring T , which it compresses. This endwise motion disengages gears J and I , so that shaft O may be turned free of gear I , and also brings gears N into the plane of the mutilation of gears N' . By turning shaft O the gears N drive the gears N' until they arrive at the position where the blank space in gear N' is at the "point of contact," when, as is obvious, gear N ceases to drive gear N' and is free to turn, which it does, until all the gears N and N' are in the same relation. As the mutilation or blank space in gears N' corresponds relatively to the zero-point of the attached numeral-wheels, it is obvious that when all the gears N have reached the point of mutilation in gears N' the numeral-wheels will all stand at the zero-point. On releasing the hand-wheel O' the shaft O is forced to its normal position by spring T re-engaging gears J and I and moving gears N into the plane of the continuous or unmutilated teeth of gears N' . By swinging shaft p with pinions P and stops S forward into their normal position the mechanism is ready to resume the adding process. Returning now to the movement of the keys or actuating-levers A , during the downward movement of the finger-tap A^4 of this lever the ratchet A^2 *w w'* travels toward the operator in a circular arc. Immediately over this ratchet is pivoted to a stationary part a pawl M , provided with a counterpoise M' or weight, which keeps it in contact with the ratchet. This pawl therefore drags over as the ratchet passes under it, and is ready thus to engage its teeth and prevent any backward movement during its passage. When it has passed the weight causes it to hang in such a position that the return of the ratchet will cause it to drag over it in the reverse direction and, as before, prevent any retrograde motion until the pas-

sage is completed, when it hangs, as before, ready for the next movement. A lock bolt or bar K is pivoted or hinged at *h*, so as to engage, when the drawer is closed, with a suitable stop, as K', at the rear of the drawer, but dragging freely over it while the drawer is being closed by the operator. It has attached the link L, by which the rod B' passing through lifts it by the action of lever A. Links L are long enough to permit "lost motion"—i. e., give lever A time for its other functions before operating it. The downward movement of the finger-tap A⁴ of lever A causes a corresponding lifting of the opposite end beyond the fulcrum, which operates lever B, as before stated, so that a rod B' for the purpose in the end of lever B and passing through links L, connected to bar or bolt K, lifts said lock-bar K from stop K', when any suitable spring or springs U U, (see Figs. 2 and 14,) compressed by the closing of the drawer, immediately react and push the drawer open. These springs may be of any preferred construction or may be substituted by any other suitable force. In Fig. 1 may be noted two horizontal rows or series of rollers *a*. There may be two or more rows. These rollers are journaled in a series of pendent hangers *a'*, which hangers are also journaled or pivoted at *a*⁴. These hangers and rollers are alternated with and between the actuating or key levers. Stops *a*⁶ on rod *a*⁵ at each end of the series (see bottom of Fig. 1) allow the rollers to separate horizontally in the aggregate far enough to allow one lever only to pass at one time between them. The lever is made deep enough where it passes between the rollers, so that it cannot leave one pair of rollers before it passes between another pair above or below it. Thus it is obvious that while one lever is in operation the rollers prevent all others from being operated. A cam *a*⁷ (see right-hand end of Fig. 1) is provided, having a key-post *a*⁸ for turning it. When it is desired to prevent all the levers from being operated, this cam is turned over toward the left. This pushes all the rollers horizontally into contact, or so nearly so, the hangers being suitably long as to prevent any lever from being operated between them. When in the position shown, there is sufficient space, and only sufficient, to allow one lever only to operate at one time. The indicating-disk corresponding to each lever A is lifted by said lever during its operation by means of the lifter A³ at its inner end to the point where stop-bar C, before referred to, catches the lug H' upon the disk-rod H. Here it (the disk-rod) rests until the next operation of a lever, whereby it is then caused to drop, as before described. Springs *d*¹ and *d*², Figs. 2 and 12, may be used to make positive the return movement of rod D', catch-pin D², and arm E.

The devices thus described have the advantages over other devices of this class of being more positive and certain in their ac-

tion, simple, inexpensive, and durable. The parts may all be made of the same materials as are ordinarily used in the construction of this class of machines.

I claim—

1. In a cash indicating and registering machine, the actuating-lever having a finger-tap at one end and disk-lifter at the other and an intermediate fulcrum and segmental rack projecting upward, in combination with the full-motion pawl, indicating-disk, and rod H, rod D', crank having catch D², suspension-arm E, fulcrum-rod *d*, wheel I, pinion J, gear N, pawl *r*, ratchet-wheel R, numeral-wheel N², scalloped disk N³, stop *s*, pinion P, segment of gear N⁴, rod B', link L, lock-bar K, and the money-drawer, co-operating substantially as and for the purposes set forth.

2. The actuating-lever as constructed—viz., having the operating-key or finger-tap A⁴ and lifter A³ at opposite extremities from and attached to a central pivot *h*, and the segmental rack A² *w w'*, and having the tappet A', also central but springing in a pivotally-concentric curve from the end near A³ and radially beyond the rack, substantially as shown.

3. The described actuating-lever having lifter A³, tappet A', and rack A² *w w'*, pivot *h*, and finger-key, in combination with the full-motion pawl meshing with the rack from above, substantially as described.

4. The link L and lock-bar K, to which it is pivoted, in combination with lever B, the rod B', made to travel in said link, the lever A, said rod B' being pivoted at *b*, and the drawer, substantially as set forth.

5. The stationary cam F', in combination with lever A, lever B, link C³, bell-crank C', rod C, indicator-rod H, lug H' on rod H, and indicating-disk, substantially as and for the purpose set forth.

6. The combination of the sliding shaft O, ratchet-wheel R, pawl *r*, gear N, with the gear N', constructed with the toothless space occupying a part of the width of its face, and the numeral-wheel N², fixed to it, said gear N meshing with and turning gear N' until its partly-toothless space is reached, whereby the two are disengaged, so leaving the zero-point on said numeral-wheel N² at the proper normal position, substantially as described.

7. The combination of the swinging arm E, carrying the crank-lever and catch D², the said lever and catch, tappet A', and first-moving wheel I co-operating, substantially as and for the purpose set forth.

8. The sliding shaft O, its hand-nut O', spring T, ratchet R, pawl *r*, and gear N, in combination with the described mutilated gear N' and numeral-wheel for resetting, substantially as described.

9. The sliding shaft O and spring T, in combination with wheels N, mutilated gear N', ratchets R, and their pawls, substantially as and for the purpose set forth.

10. The crank D *e*, having catch D², meshing with wheel I, and having its pivotal sup-

port on the swinging arm E, in combination with said swinging arm E, tappet A', fulcrum-rod d, and wheel I, substantially as described.

5 11. The combination of the three-armed crank C' C² C⁴, rod C, lug II', link C³, cam F', lever B, and lever A with and for the purpose of catching and dropping indicating disk-rod H, substantially as described.

10 12. The combination of the actuating-lever A, rod B', lever B, link C³, cam F', and the bell-crank, substantially as and for the purpose of operating the indicating disk-rod, as set forth.

15 13. The combination of two or more horizontal rows of journaled rollers, their hangers a', the stops a⁶, and the actuating-levers having a depth at the point of contact sufficient to reach one row of rollers before leaving the other, substantially as described.

20 14. The combination of the cam a⁷, the two or more horizontal rows of journaled rollers,

their pivoted hangers a', stops a⁶, and the actuating-levers, substantially as and for the purpose set forth.

25 15. The gravity-pawl constructed with single-acting point and provided with the counterpoise or weight M', in combination with the rack A² w w', the lever A, having members A' A³, and the finger-tap A⁴, substantially as described.

16. The stops a⁶, in combination with the cam a⁷, the double horizontal line of rollers a, their pivoted hangers, and the lever A, having a depth equal to the span from one row 35 or line to the next, substantially as described.

17. The partial-movement link L, pivoted to lock-bar K, in combination with said bar, the long-throw lever A, and short-movement lever B, substantially as described.

CHARLES CARR.

Witnesses:

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H. L. COBURN.