No. 649,019. Patented May 8, 1900.

J. A. TOOMEY.

CASH REGISTER.

(Application filed Dec. 14, 1897.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

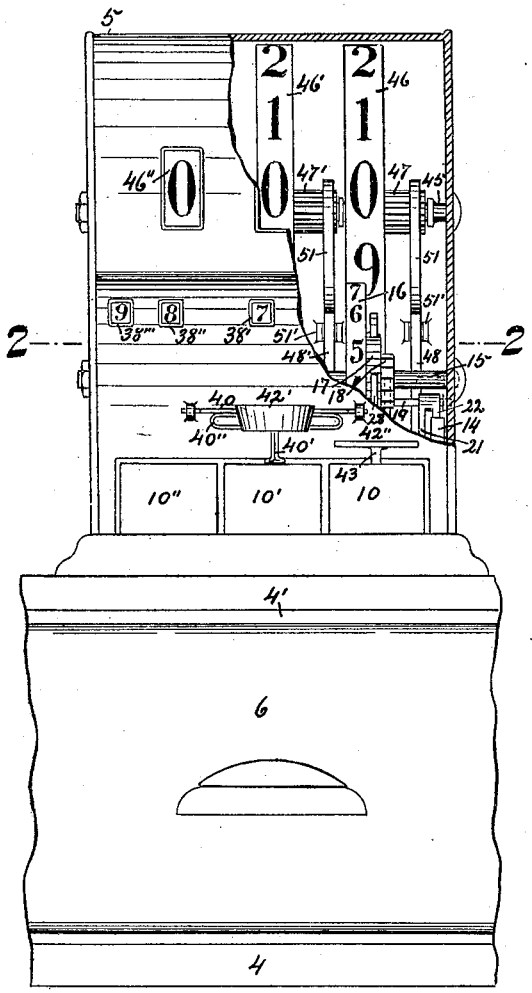
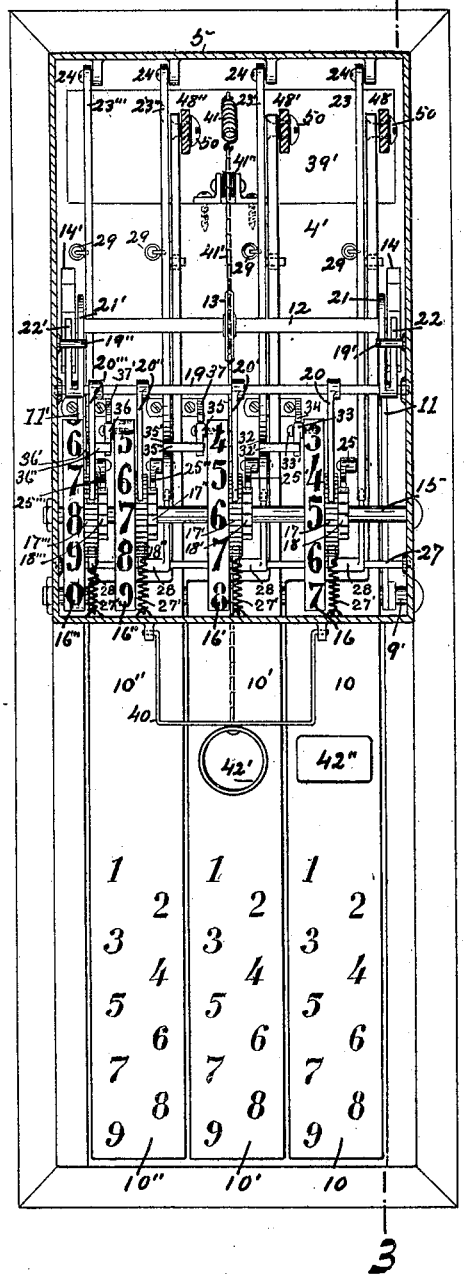


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

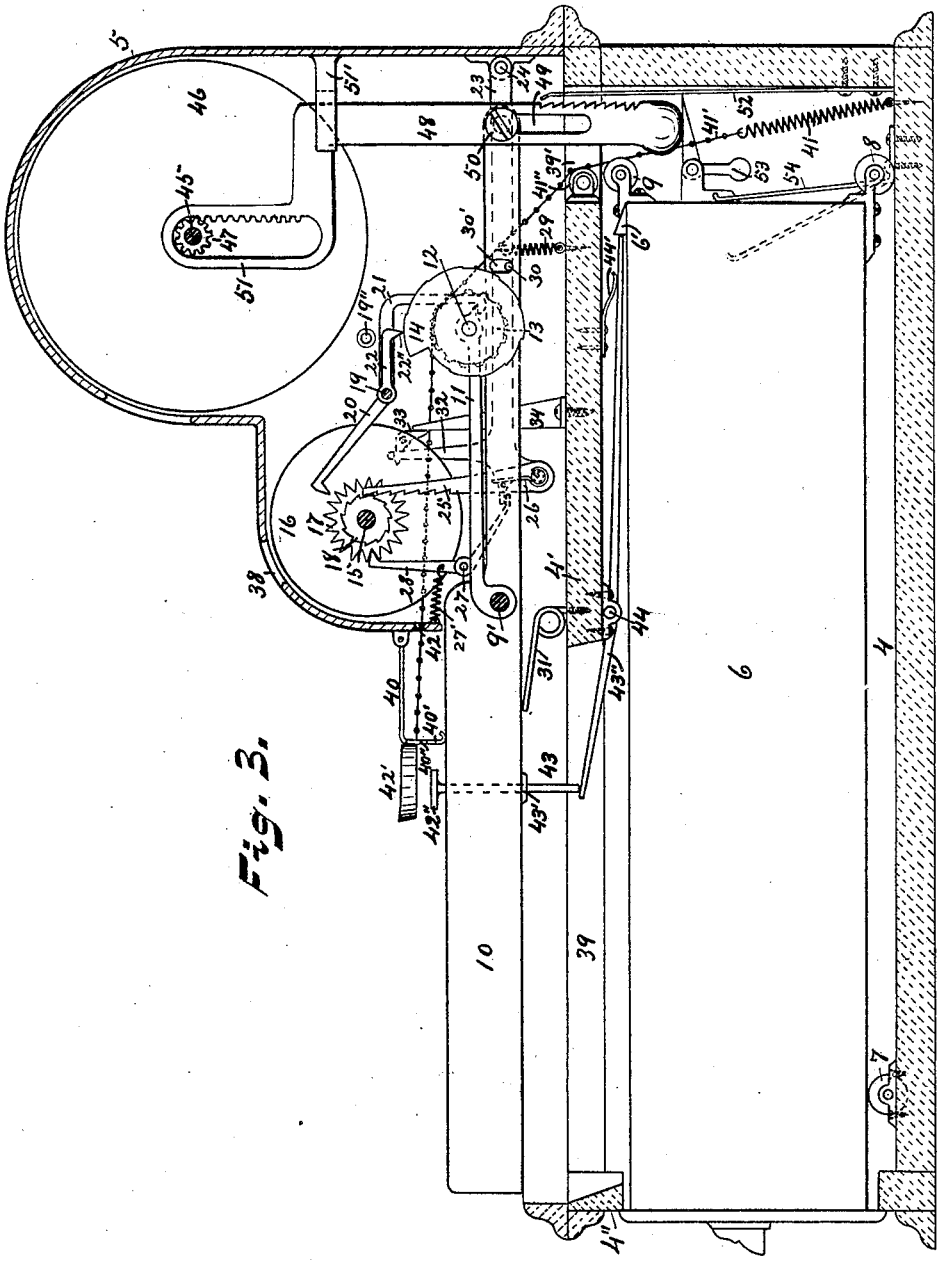

Fig. 3.

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(Application filed Dec. 14, 1897.)

(No Model.) 3 Sheets—Sheet 3.

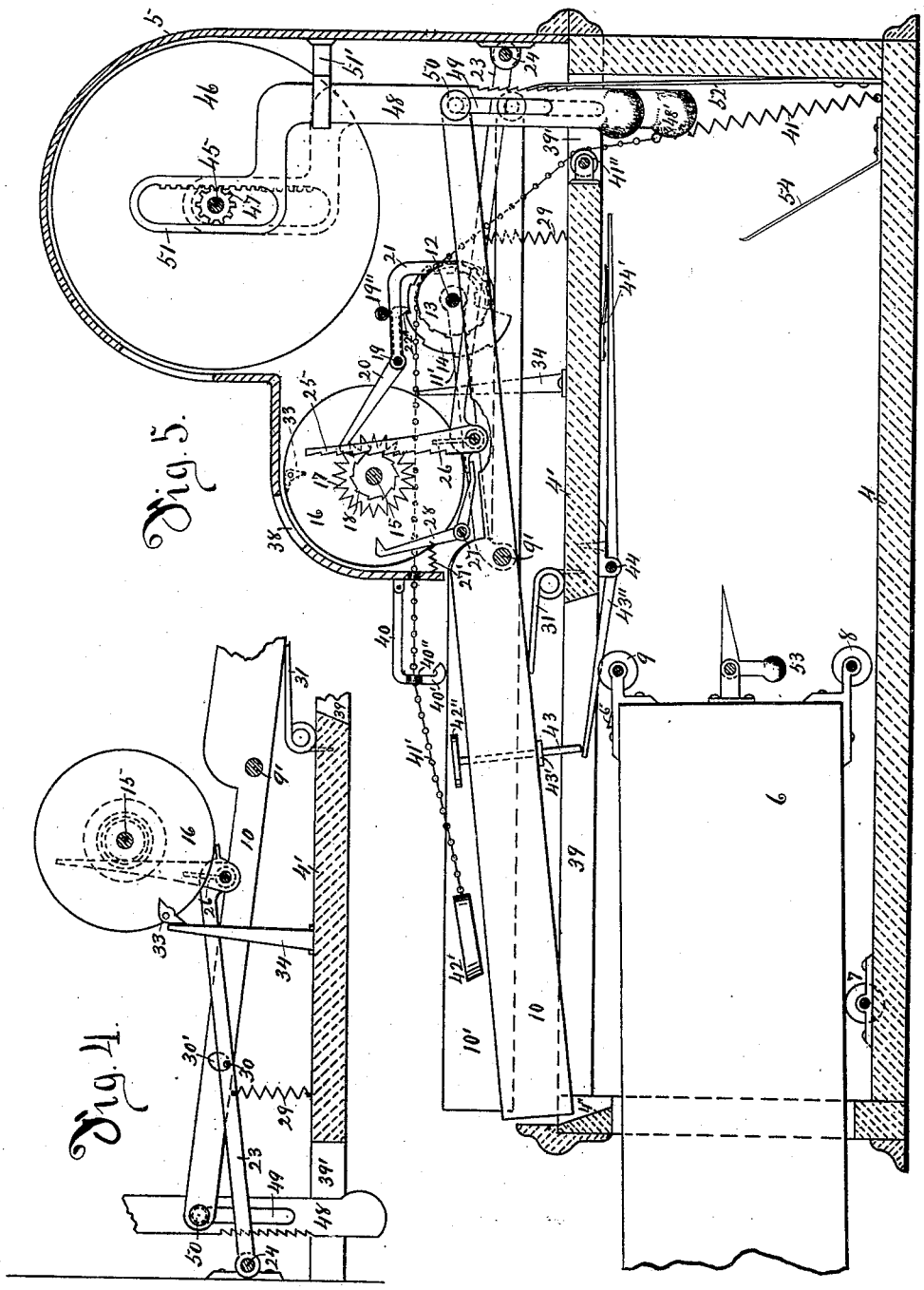

Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN A. TOOMEY, OF GOSHEN, INDIANA.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 649,019, dated May 8, 1900.

Application filed December 14, 1897. Serial No. 661,870. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. TOOMEY, a citizen of the United States, and a resident of Goshen, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Cash-Registers, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a front elevation of a cash-register constructed in accordance with my invention, a portion of the inclosing case being broken away to more clearly disclose the form and disposition of certain interior parts. Fig. 2 is a horizontal section of same on the line 2 2 of Fig. 1. Fig. 3 is a vertical section on the line 3 3 of Fig. 2. Fig. 4 is a detail view looking from the side of the register opposite to that seen in Fig. 3 and illustrates the positions assumed by certain parts of the register upon the depression of a finger-lever. Fig. 5 is a view similar to Fig. 3, one of the finger-levers being depressed and the coöperating parts being shown in the positions that they assume as a result of such depression of the finger-lever.

Similar reference-numerals denote like parts throughout the several views.

This invention relates to improvements in registration and indication devices, and particularly to that class of registration and indication devices commonly known as "cash-registers."

The object of my invention is to provide a cash-register which shall be simple and cheap as regards construction, efficient in operation, and which shall embody in its construction a till or drawer for containing cash, mechanism capable of effecting continuous registration and indication of the cash contents of the till or drawer as the same may accumulate therein, and mechanism capable of effecting temporary indication of separate amounts of cash as the same may be added to the contents of the till or drawer, the said continuous-registration and temporary-indication mechanisms being adapted and arranged for joint operation through the depression of one of a series of actuating-levers.

My invention consists in the employment of certain novelly-formed parts, in the novel disposition and arrangement of the various parts, in certain combinations of the latter, and in certain details of construction, all of which will be hereinafter specifically referred to.

Having reference to the accompanying drawings, 4 denotes the till-case of the register, preferably of wood and common in form and construction.

4′ is the upper portion of the till-case, and thereupon is firmly mounted a case 5, preferably of metal, and the same serves to inclose the greater portion of the operative mechanism. The till-case is provided with a cash-till 6, the forward portion of which is normally supported by parallel rollers 7, mounted to rotate in suitable bearing elements fixed to the base of the till-case. The till 6 carries rollers 8, preferably one at each lower rear corner thereof, which rollers under normal conditions rest upon the base of the till-case, and said till is further provided with rollers 9, preferably one at each upper rear corner thereof. Said rollers 9, however, are not in contact, normally, with the upper portion 4′ of the till-case. The employment of rollers 7, 8, and 9 and in the manner set forth is essential in that during the operation of ejecting the cash-till from the till-case, as will be hereinafter explained, the forward portion of the cash-till rides upon the rollers 7, while the rollers 8 travel along the base of the till-case until the outer or forward portion of the cash-till overbalances the rear portion thereof, whereupon the cash-till rocks or tilts upon the rollers 7 in a manner that the forward end of said till descends and the rear end thereof ascends, with the result that the rollers 9 are brought in contact with the upper portion 4′ of the till-case, and thereafter the cash-till automatically moves outward from the till-case by reason of its own gravity until checked, as by the rollers 9 engaging the piece 4″ of the till-case.

9′ is a rigidly-disposed transverse shaft on which a suitable number of finger-levers, as 10 10′ 10″, are mounted to rock or tilt. The depressible end portions of said finger-levers project outward from the shaft 9′, (the front portion of case 5 being cut away, as shown, to admit of their so doing,) and each presents to the finger touch a broadened upper surface, upon which are arranged numerical characters, as "1" to "9," inclusive. There are

further mounted to rock on the shaft 9', one at each end thereof, radial arms 11 11', in the free ends of which is rotatably mounted or journaled a universal bar 12, which normally rests upon the finger-levers 10 10' 10''. Centrally upon the bar 12 there is firmly mounted a drive medium 13, preferably in the form of a sprocket-wheel, and there are likewise mounted on said bar 12, one at each end thereof, cam-like parts 14 14', each having a general convolute edge surface, divided, preferably, into ten concentric steps or segments with radii varying accordingly, and which I shall hereinafter refer to as "regulators." 15 is another rigidly-disposed transverse shaft, and thereon are rotatably mounted a series of continuous display-disks, as 16 16' 16'' 16''', each of which disks bears numerical characters, as "1" to "9," inclusive, and a cipher. There are also rotatably mounted on the shaft 15 a series of toothed lock-wheels 17 17' 17'' 17''', one alongside of each display-disk, together with a series of toothed drive-wheels 18 18' 18'' 18''', one alongside of each lock-wheel, and the groups of elements thus formed, each comprising a display-disk, lock-wheel adjacent thereto, and drive-wheel adjacent to the latter, are respectively secured together, as by riveting, so that each group of elements rotates as a unit on shaft 15.

19 is a shaft arranged transversely within the case 5; but, unlike the shafts 9' and 15, the shaft 19 is so supported at its ends by the respective sides of the case 5 that a rocking motion may be imparted thereto. Shaft 19 carries a series of forwardly-projecting radial arms 20 20' 20'' 20''', one opposite each of the lock-wheels 17 17' 17'' 17'''. Said radial arms are firmly mounted on shaft 19 and move in unison when shaft 19 is rocked, and said radial arms have pawl-like free ends adapted under certain conditions to simultaneously engage each one of the lock-wheels 17 17' 17'' 17'''. There are further firmly mounted on shaft 19 rearwardly-extending angular arms 21 21', one near each end thereof, and said arms comprise each a radial and a depending member. The last-named members of the arms 21 21' are provided with hook-shaped lower ends adapted under certain conditions to simultaneously engage the one the free end of radial arm 11 and the other the free end of radial arm 11'. The shaft 19 also carries, one at each end thereof, radial arms 22 22', which project rearwardly from said shaft, the former over regulator 14 and the latter over regulator 14', and each is provided at its free end with a suitable contact-point, as 22'', Fig. 3. The upward rocking movement of shaft 19 is limited by the inwardly-projecting stops 19' 19'', which overlap the one radial arm 22 and the other radial arm 22', and the reverse movement of said shaft may be limited by like stops arranged to respectively underlap said radial arms. I further employ a series of sublevers, as 23 23' 23'' 23''', within the case 5 and fulcrumed at the rear end thereof, as at 24, from which point they extend forward and lie normally contiguous, one to each of the finger-levers 10, 10', and 10'', excepting sublever 23''', to operate which no finger-lever is required, as will hereinafter appear.

In conjunction with sublevers 23 23' 23'' 23''' I make use of a series of vertical racks 25 25' 25'' 25''', which are pivotally connected one to the free end of each of said sublevers, and the same are respectively held to permanent engagement, one with each of the respective drive-wheels 18 18' 18'' 18''', by means of suitable elastic elements, as the springs 26, Fig. 3.

There are loosely mounted on the rigidly-disposed transverse shaft 27 a series of angular lock-levers 28 28' 28'' 28''', having pawl-like upper ends adapted to engage each the teeth of one of the lock-wheels 17 17' 17'' 17''' and lower ends suitably shaped to engage and under normal conditions support each the free end of one of the sublevers 23 23' 23'' 23''', the latter being normally held yieldingly to contact therewith each by means of a spring 29, and each of said lock-levers is provided with a spring 27', the tendency of which is to so move the lock-lever as to disengage the upper end thereof from the lock-wheel when the corresponding sublever is raised. The sublevers 23 23' 23'' are provided each with a lateral projection or pin 30, and the finger-levers 10 10' 10'' are provided each with a vertical slot-like opening 30', the pin of any one of the sublevers named being adapted to project into or engage the slot-like opening in the adjacent finger-lever and in such manner that the sublever is caused to swing upward on its fulcrum when the forward end of the finger-lever is depressed, and said opening 30' in the finger-lever is such as will permit a limited upward movement of the sublever without affecting the finger-lever, as will hereinafter more clearly appear.

Springs 31 or the like are provided, one for each of the finger-levers, and the same serve to return the finger-levers each to its normal position upon the same having been depressed, as above stated.

It will be seen that repeated depressions of any one of the finger-levers result in rotatable movement of the corresponding display-disk on shaft 15; but it is essential that means be employed whereby when, say, disk 16 shall have thus been caused to make nearly one complete revolution the next disk 16' will be urged along one degree in its rotary movement, and again when the disk 16' shall have made nearly one complete revolution the next disk 16'' will be urged along one degree in its rotary movement, and so on throughout the entire series of display-disks. To this end the sublever 23' carries at its free end a vertical arm 32, preferably formed integral therewith, and this arm is provided at its upper end with an angular offset 32', which projects from said arm toward and terminates

at a point adjacent to the display-disk 16. A stop 34 is rigidly secured at its lower end to the upper portion of the till-case, projects upward therefrom, preferably at a slight forward inclination in the vertical plane of the end of the offset 32′, and terminates at a point somewhat below said offset as the latter occupies its normal position. The disk 16 carries upon one side thereof and near its peripheral edge an angular gravity-catch 33, adapted to swing on a pivot, as 33′, fixed in said disk. One member of the catch 33 is heavier than the other and normally depends from the pivot 33′, while the latter normally projects forward from said pivot in a substantially-horizontal plane. The location of the catch 33 with respect to the disk 16 is such that when said disk shall have reached a certain point in its rotary movement the depending and horizontal members of said catch will simultaneously engage, the former the upper end of the stop 34 and the latter the offset 32′, with the result that upon said disk being urged further along in its rotary movement the sublever 23′ will be swung upward on its fulcrum, and thereby cause by reason of the engagement of rack 25 with drive-wheel 18 the disk 16′ to rotate forward on shaft 15 a definite degree or until such time as disengagement of the depending member of the catch 33 from stop 34 takes place, which necessarily follows as said catch moves along with the disk 16. Disks 16′ 16″ carry the former a gravity-catch 35 and the latter a gravity-catch 36, which catches correspond in all respects with 33. Sublevers 23″ 23‴ are provided the one with a vertical arm 35′ and the other with a vertical arm 36′, each of which vertical arms corresponds in all respects with arm 32, the one having an offset 35″ and the other an offset 36″, each corresponding with offset 32′. 37 37′ are vertical stops each corresponding in all respects with stop 34, and the former is designed for operation in conjunction with catch 35 and the latter with catch 36. Now when disk 16′ shall have reached a certain point in its rotary movement the members of catch 35 simultaneously engage, the one the stop 37 and the other the offset 35″, with the result that upon disk 16′ being urged further along in its rotary movement the sublever 23″ will be swung upward on its fulcrum, and thereby cause by reason of the engagement of the rack 25″ with drive-wheel 18″ the disk 16″ to rotate forward a definite degree or until disengagement of the depending member of catch 35 from stop 37 takes place, and the same effect may be had upon disk 16‴ through like joint action of catch 36, stop 36″, sublever 23‴, and rack 25‴ engaging drive-wheel 18‴, as will be readily understood. In this connection the object of the freedom of the sublevers to move upwardly without affecting the corresponding finger-levers, as hereinbefore referred to, is apparent.

The case 5 is provided with a series of openings 38 38′ 38″ 38‴, one opposite the peripheral surface of each permanent display-disk for exposing the characters thereon.

The upper portion 4′ of the till-case is cut away, as at 39, to admit of ample depression of the finger-levers, and said portion is further provided with an opening 39′ near its rear end.

40 is a wire frame hinged to the front of case 5 and normally sustained in a horizontal position by the vertical support 40′, surmounted by the loop-shaped portion 40″.

Within and at the rear end of the till-case there is disposed a yielding element, as the spiral spring 41, which is attached at its lower end to the base of the till-case and connected at its upper end with an adjusting medium, as the sprocket-chain 41′, which extends upward through the opening 39′ and works upon a suitably-mounted idler 41″, extends from said idler to and works upon the sprocket-wheel 13, and extends from the latter outward through the opening 42 in case 5 through the loop-shaped portion 40″ and has attached to its outer end a finger-piece 42′, preferably in the form of a ring.

42″ is a finger-key mounted on a vertical stem 43, which extends downward through a suitable opening formed, preferably, in finger-lever 10 and is capable of an upward and downward movement within said opening independent of the finger-lever, said upward movement being limited by a stop or collar 43′, fixed on said stem below the finger-lever. The lower end of the stem 43 engages the forward end of tilting lever 43″, disposed to work on pivot 44. The stem 43 is held normally at the limit of its upward play through the medium of lever 43″, in conjunction with spring 44′ or like element, the tendency of which spring is to depress at all times the rear end of lever 43″, and while so depressed the same serves to engage the rear end portion of cash-till 6 or a suitable projecting part, as 6′, secured thereto, and thus lock the cash-till against ejectment or withdrawal from the till-case.

45 is a rigidly-disposed shaft arranged transversely within the upper portion of case 5. There are mounted to rotate on said shaft a series of temporary display-disks 46 46′ 46″, each carrying upon its peripheral surface numerical characters, as "1" to "9," inclusive, and a cipher. There are further mounted on said shaft 45 a series of pinions 47 47′, one alongside of and secured to each of said disks and adapted to rotate therewith. There are formed in the upper portion of case 5 a series of openings, one opposite the peripheral surface of each of the temporary display-disks, for disclosing the characters thereon.

48 48′ 48″ are vertical gravity-arms, each weighted at its lower end, and said arms should be so connected, one to the distant end of each of the finger-levers 10 10′ 10″, that while any one of the finger-levers may serve upon its outer end being depressed, as here-

inbefore explained, to lift the arm connected therewith to any point in its upward movement the finger-lever may return to its normal position without otherwise affecting said arm. To this end I provide the gravity-arms named each with a longitudinal slot-like opening 49. The finger-levers 10 10′ 10″ are provided with lateral projections 50 50′ 50″, one at the distant end of each finger-lever. The lateral projection of any one of the finger-levers engages the slot-like opening in the gravity-arm designed for operation in connection with said lever, and said projections may comprise suitably headed and threaded screws adapted to be passed one through the slot-like opening in any one of the gravity-arms and screwed into a suitably-threaded opening in the distant end of the corresponding finger-lever. Each of the gravity-arms terminates at its upper end in an elongated eye, as 51, adapted to surround the corresponding pinion in the series 47 47′, and each has internal teeth on one side adapted to mesh with the teeth of the pinion it surrounds, and this to the end that upon movement being imparted to any one of the gravity-arms in an upward or downward direction the corresponding temporary display-disk may be rotated accordingly. Any undue tilting or lateral movement of the gravity-arms as they ascend or descend may be obviated by the employment of guides, as 51′, one for each gravity-arm. The gravity-arms are each provided with a series of notches at a suitable point in the rear edge thereof, and a series of spring-catches 52 are secured interiorly to the rear end of the till-case, one opposite each gravity-arm. Said catches have at all times a tendency each to engage at its upper end one of the series of notches with which the gravity-arm adjacent thereto is provided.

53 are angular releasing devices comprising each a horizontal member and a depending gravity member and pivotally disposed along the rear end of the cash-till 6, one opposite each spring-catch 52. The devices 53 serve to simultaneously release each the spring-catch opposite thereto from engagement with the notched rear edge surface of the adjacent gravity-arm by reason of the free or distant end of the horizontal member of said releasing device engaging said spring-catch when the cash-till 6 is closed, and in the event that any one of the gravity-arms shall have been raised and locked in an elevated position such disengagement of the corresponding spring-catch permits said arm to descend, in doing which the lower end thereof engages the horizontal member of the releasing device, causing the latter to swing on its pivot in a manner that the horizontal member thereof is depressed and the spring-catch is permitted to reëngage one of the notches in the gravity-arm. The releasing device automatically returns to its normal position upon withdrawal of the cash-till from the till-case and through the action of its depending gravity member.

For the purpose of imparting an initial impetus to the cash-till when the latter shall have been unlocked, as hereinbefore explained, I provide a series of upright leaf-springs 54, the upper ends of which lie against the rear end portion of said cash-till and tend at all times to urge the till outward.

It will be understood that disk 16 represents units, disk 16′ tens, disk 16″ hundreds, and disk 16‴ thousands.

The operation of my improved register is as follows: Assuming that one or more units or cents are to be placed in the cash-till, the user grasps finger-piece 42′, draws chain 41′ outward, and carries and holds the finger-piece over the character on lever 10 which represents the number of units or cents he wishes to place in the cash-till, whereupon he depresses lever 10. In thus drawing the chain 41′ outward the universal bar 12 is rotated forward in its bearings, and the regulators 14 14′ are consequently adjusted so that the corresponding steps or segments of said regulators are uppermost, and the depression of the finger-lever results in an upward movement of the universal bar 12, which takes with it the radial arms 11 11′ and also said regulators, at the same time sublever 23 is swung upward on its fulcrum, at the outset of which upward movement of said sublever the angular lock-lever 28, through the action of spring 27′, disengages lock-wheel 17, and through the engagement of rack 25 with the drive-wheel 18 a forward rotary movement is imparted to disk 16, which continues till the character thereon which corresponds with that over which the finger-piece 42′ is held appears at the opening 38, whereupon the regulators 14 14′ in their upward travel will have respectively lifted the radial arms 22 22′, thereby imparting a corresponding rocking movement to shaft 19, with the result that the pawl-like end of radial arm 20 engages the lock-wheel 17, thus locking said disk against further movement. The extent to which any one of the finger-levers may be depressed is determined by the extent of the radial dimension of each of the parallel regulator-segments that may be uppermost. For instance, when those segments having each the least radial dimension are uppermost the depression of a finger-lever sufficient to cause nearly one complete rotation of the corresponding display-disk is permitted before said segments engage, respectively, the points 22″ of the radial arms 22 22′ and force the latter upward against stops 19′ 19″, thereby locking said disk, and consequently checking further depression of said finger-lever, and when the segments of said regulators having each the next greatest radial dimension are uppermost the depression of a finger-lever, and consequently the rotation of the corresponding display-disk, are limited accordingly, and so

on with respect to the remaining regulator-segments in the entire series. Therefore a corresponding effect is had upon the temporary display-disks 46 46′ 46″ through the medium of the gravity-arms 48 48′ 48″ when any one of the finger-levers is depressed, the corresponding gravity-arm being lifted accordingly and held against any return movement by means of the spring-catch 52, designed to engage the same. The required number of units having been thus displayed at the opening 38 and at the opening opposite the corresponding temporary display-disk and the depression of lever 10 having resulted in forcing stem 43 downward upon the forward end of lever 43″, thus unlocking the cash-till and allowing springs 54 to urge the same outward, the user releases lever 10, which returns to its normal position through the action of spring 31, thus permitting the remaining parts, excepting gravity-arm 48, to return each to its normal position. Having now placed the required number of units in the cash-till, the user closes said cash-till, which results in releasing device 53, engaging spring-catch 52 and disengaging said spring-catch from gravity-arm 48, whereupon the latter descends to its normal position and disk 46 is rotated backward till the cipher character is shown at the opening opposite said disk. Assuming, further, that nine units or cents were thus registered and indicated at opening 38, disk 16 will have been rotated to the position shown in Fig. 2, and catch 33 will engage the offset on sublever 23′, together with the vertical stop 34. Now if it is desired to add one more unit to the number indicated at opening 38, the user grasps finger-piece 42′, draws chain 41′ outward, and carries and holds the finger-piece over the numeral "1" on finger-lever 10, whereupon he depresses the latter. This again results in disk 16 being moved along one degree, thereby displaying the cipher character at opening 38, and by reason of such movement of disk 16 catch 33 trips sublever 23′, thereby causing, through the action of rack 25′ engaging drive-wheel 18′, disk 16′ to move along one degree, thus presenting to view at opening 38′ the numeral "1," which, with the cipher exposed at opening 38, will indicate the total number of units that the cash-till should contain. The depression of finger-lever 10 in this instance further resulted, through the action of gravity-arm 48, in the numeral "1" being temporarily displayed at the opening in case 5 opposite the temporary display-disk 46. Now by again closing the cash-till disk 46 will be returned to its normal position, and the cipher character will be again displayed at the opening last named. If it is desired now to add ten units to the number contained in the cash-till, the user grasps finger-piece 42′, draws chain 41′ outward, and carries and holds the finger-piece over "1" on finger-lever 10′, whereupon he depresses the latter. The result will be to move disk 16′ one degree along in its rotary travel, thus displaying the numeral "2" at opening 38′, and the same numeral will appear at the opening in case 5 opposite disk 46′ and there remain displayed until the cash-till shall again have been closed. Other and higher amounts may be duly registered and indicated through like manipulation of chain 41′ and depression of finger-lever 10″, as will be readily understood.

When desired, the cash-till may be unlocked without disturbance of the registering and indicating mechanism by simply depressing key 42″, which is movable independently of finger-lever 10.

From the foregoing description of my improved register it will be seen that the same is well adapted for the purpose for which it is designed, and, further, that the same admits of considerable modification without material departure from its principles and spirit, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of parts herein shown and described.

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

1. In an apparatus of the class described, the combination of a till-case, rollers mounted on the base of said till-case, and a cash-till on said rollers and thereon arranged to tilt, the said cash-till carrying at its rear portion rollers adapted to engage and roll along the base of the till-case and rollers adapted to engage and roll along the top portion of the till-case, as herein specified.

2. In an apparatus of the class described, the combination of a till-case, rollers mounted on the base of said till-case, a cash-till on said rollers and thereon arranged to tilt, the said cash-till carrying at its rear portion rollers adapted to engage and roll along the base of the till-case and rollers adapted to engage and roll along the top portion of the till-case, elastic elements for imparting an initial impetus to said cash-till, and means for locking the cash-till against the action of said elastic elements, as herein specified.

3. In an apparatus of the class described, in combination, a number of suitably-mounted finger-levers, depressible at their outer ends; an equal number of vertically-movable gravity-arms, one operative in conjunction with each finger-lever and each provided with a rack; an equal number of resilient lock elements, each capable of engaging the rack of its coöperating gravity-arm and thereby locking the same at variable points in the upward travel thereof; a cash-till; and a series of gravity releasing devices, the latter located at the inner end of the cash-till, one opposite each lock element, and adapted, each to release the opposite lock element from engagement with the rack of its coöperating gravity-arm, when the latter shall have been raised, and upon the cash-till being closed, as herein specified.

4. In an apparatus of the class described, in combination, a number of suitably-mounted finger-levers, depressible at their outer ends; an equal number of vertically-movable gravity-arms, one operative in conjunction with each finger-lever and each provided with a rack; an equal number of lock elements, each capable of engaging the rack of its coöperating gravity-arm and thereby locking the same at variable points in the upward travel thereof; an equal number of rotatably-mounted, temporary display-disks, so operative, one in conjunction with each gravity-arm, as to receive therefrom a rotary movement, when said gravity-arm is raised; cam-like regulators for varying the extent to which any one of the finger-levers may be depressed, and means for adjusting said regulators, as herein specified.

5. In an apparatus of the class described, in combination, a number of suitably-mounted finger-levers, depressible at their outer ends, each against an elastic element; an equal number of vertically-disposed gravity-arms, vertically movable, one through depression of any one of the finger-levers, and said arms being so connected, one with each finger-lever, as to permit a return movement of the latter, independent of its coöperating gravity-arm; an equal number of lock elements one opposite each gravity-arm, and each capable of locking its coöperating gravity-arm at variable points in the upward travel thereof; and means for varying the extent to which any one of the finger-levers may be depressed, as herein specified.

6. In an apparatus of the class described, in combination, a series of finger-levers, each depressible at its outer end; suitably-mounted radial arms, said arms and said levers having a common bearing-point; a universal bar, rotatably mounted in the radial arms, and adapted to rest normally upon the finger-levers; regulators, fixed on the universal bar; a drive medium, also fixed on the universal bar; and a spring-controlled adjusting medium, normally engaging the drive medium, and, when drawn outward against its controlling-spring, adapted to rotate said drive medium, and accordingly adjust said regulators, the said finger-levers each bearing characters indicative of varying degrees of withdrawal of said adjusting medium, and consequently, varying degrees of adjustment of said regulators, as herein specified.

7. In an apparatus of the class described, in combination, a centrally-fulcrumed finger-lever, depressible at its outer end; a sublever, suitably fulcrumed, and so connected with the finger-lever as to swing on its fulcrum, when the finger-lever is depressed; a suitably-mounted, rotatable drive-wheel; a display-disk, suitably mounted to rotate with said drive-wheel; a rack, pivotally connected to the sublever, and adapted to permanently engage said drive-wheel; and means for varying the extent to which said finger-lever may be depressed, as herein specified.

8. In an apparatus of the class described, in combination, a series of suitably-mounted finger-levers, each depressible at its outer end; suitably-mounted radial arms, said arms and said levers having a common bearing-point; a universal bar, rotatably mounted in the radial arms, and adapted to rest normally upon the finger-levers; a suitably-supported rock-shaft; radial arms, fixed on said rock-shaft; means for limiting the play of the last-named radial arms; regulators, fixed on said universal bar, and adapted to engage, respectively, said radial arms last named; and means whereby the adjustment of said regulators, and, consequently, the extent of the depression of any one of the finger-levers, may be varied, as herein specified.

9. In an apparatus of the class described, in combination, a series of suitably-mounted finger-levers, depressible at their outer ends; suitably-mounted radial arms, said arms and said levers having a common bearing-point; a universal bar, rotatably mounted in the radial arms; a series of rotatably-mounted display-disks; a like series of lock-wheels, mounted to rotate one with each display-disk; a suitably-supported rock-shaft; a series of forwardly-extending radial arms, fixed on said rock-shaft, and adapted, when said shaft is rocked in one direction, to simultaneously engage, one each of said lock-wheels; rearwardly-extending radial arms, also fixed on said rock-shaft; means for limiting the play of the radial arms last named; means, operative jointly with said finger-levers for rotating said lock-wheels; regulators, fixed on the universal bar, and adapted to engage, respectively, the radial arms last referred to; and means for variably adjusting said regulators, and, consequently, varying the extent to which any one of the finger-levers may be depressed, as herein specified.

10. In an apparatus of the class described, in combination, a centrally-fulcrumed finger-lever, depressible at its outer end; a suitably-fulcrumed sublever, movable with the depression of said finger-lever; a suitably-mounted, rotatable drive-wheel; a permanent display-disk, mounted to rotate with the drive-wheel; a rack, pivotally connected to the sublever, and adapted to permanently engage the drive-wheel; a gravity-arm, movable with the depression of said finger-lever; a temporary display-disk, rotatably mounted, and so operative in conjunction with the gravity-arm, as to receive therefrom a rotary movement, when said gravity-arm is moved; and means for varying the extent to which the finger-lever may be depressed, as herein specified.

11. In an apparatus of the class described, in combination, a series of centrally-fulcrumed finger-levers, depressible at their outer ends; a like series of suitably-fulcrumed

sublevers, movable each with the depression of its coöperating finger-lever, and independently thereof, when the latter is normally at rest; a series of suitably-mounted, rotatable drive-wheels; a like series of display-disks, mounted to rotate, one with each drive-wheel, and capable of joint action, consecutively, once in each revolution of one of said disks; a series of racks, one pivotally connected to each sublever, and adapted, respectively, to permanently engage the respective drive-wheels; and means for varying the extent to which any one of the finger-levers may be depressed, as herein specified.

12. In an apparatus of the class described, in combination, a series of centrally-fulcrumed finger-levers; a series of suitably-fulcrumed sublevers, each movable with the depression of its coöperating finger-lever; a series of suitably-mounted, rotatable drive-wheels; a like series of figured display-disks, mounted to rotate, one with each drive-wheel; a series of lock-wheels, mounted to rotate, one with each drive-wheel and display-disk; a series of racks, one pivotally connected to each sublever, and adapted to permanently engage its coöperating drive-wheel; a suitably-supported rock-shaft; a series of forwardly-extending radial arms, fixed on said rock-shaft, and adapted, when said shaft is rocked in one direction, to simultaneously engage, each its coöperating lock-wheel; rearwardly-extending radial arms, also fixed on said rock-shaft; means for limiting the play of the radial arms last named; further radial arms, located one at each side of the series of finger-levers, the last-named radial arms and said finger-levers having a common bearing-point; a universal bar, rotatably mounted in the last-named radial arms; regulators, fixed on said universal bar, and adapted to engage, respectively, the rearwardly-extending radial arms fixed on said rock-shaft; a drive medium, fixed on said universal bar; and a spring-controlled adjusting medium, normally engaging said drive medium, and, when drawn outward against its controlling-spring, adapted to rotate said drive medium, and accordingly adjust said regulators; the said finger-levers each bearing characters indicative of varying degrees of withdrawal of said adjusting medium, and corresponding with the figures on said display-disks, as herein specified.

13. In an apparatus of the class described, in combination, a series of suitably-mounted finger-levers, depressible at their outer ends; a series of suitably-fulcrumed sublevers, movable each with the depression of its coöperating finger-lever, and independently thereof when the latter is normally at rest, said sublevers, in the main, having each a vertical arm, provided with an offset; a series of suitably-mounted, rotatable drive-wheels; a like series of display-disks, mounted to rotate, one with each drive-wheel, and each provided with a pivotally-disposed gravity-catch; a series of racks, one pivotally secured to each sublever, and adapted, respectively, to permanently engage the respective drive-wheels; and a series of suitably-arranged stops, one for operation in conjunction with each gravity-catch, the gravity-catch of any one of said disks being capable of simultaneously engaging its coöperating stop, and the offset of the sublever-arm adjacent thereto, once in each revolution of its coöperating disk, as herein specified.

14. In an apparatus of the class described, in combination, a series of suitably-mounted finger-levers, depressible at their outer ends; a series of suitably-fulcrumed sublevers, each movable with its coöperating finger-lever; a series of suitably-mounted, rotatable drive-wheels; a like series of display-disks, mounted to rotate one with each drive-wheel; a like series of lock-wheels, one mounted to rotate with each drive-wheel and display-disk; a series of racks, one pivotally secured to each sublever, and adapted, respectively, to permanently engage the respective drive-wheels; and a series of loosely-mounted lock-levers, the latter capable of respectively engaging, and normally locking, the respective drive-wheels, and each capable of being liberated from such engagement with its coöperating drive-wheel, upon movement being imparted to its coöperating sublever, as herein specified.

15. In an apparatus of the class described, in combination, a series of suitably-mounted finger-levers, depressible at their outer ends; suitably-mounted radial arms, said arms and said levers having a common bearing-point; a universal bar, mounted in the radial arms, and adapted to normally rest upon said finger-levers; a suitably-supported rock-shaft; and parallel radial arms, fixed on said rock-shaft, said radial arms last named terminating, respectively, in depending members, having hook-shaped lower ends, adapted, respectively, to engage the radial arms first named, as herein specified.

16. In an apparatus of the class described, in combination, a suitably-mounted finger-lever, depressible at its outer end; a gravity-arm, movable with the depression of said finger-lever; a rotatably-mounted, temporary display-disk; a pinion, mounted to rotate with said display-disk, the gravity-arm named being provided with a rack adapted to permanently engage said pinion and impart thereto a rotary movement, when said gravity-arm is moved; cam-like regulators for varying the extent to which said finger-lever may be depressed, and means for adjusting said regulators, as herein specified.

17. In an apparatus of the class described, suitably-mounted parallel radial arms, a shaft rotatably mounted in the free ends of said radial arms, a cam-like regulator rigidly mounted on said shaft, and means for rotating said shaft as herein specified.

18. In an apparatus of the class described,

suitably-mounted parallel radial arms, a shaft rotatably mounted in the free ends of said radial arms, a regulator having a series of concentric peripheral surfaces of varying radii, fixed on said shaft, and means for rotating said shaft, as herein specified.

19. In an apparatus of the class described, a suitably-mounted finger-lever, a rotatably-mounted shaft arranged at right angles to said finger-lever, a drive-wheel fixed on said shaft, a regulator also fixed on said shaft, the said regulator having a series of concentric peripheral surfaces of varying radii, and a spring-controlled adjusting medium engaging said drive-wheel and adapted to rotate the same when drawn outward, the said finger-lever being longitudinally figured to indicate varying degrees of withdrawal of said adjusting medium, as herein specified.

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