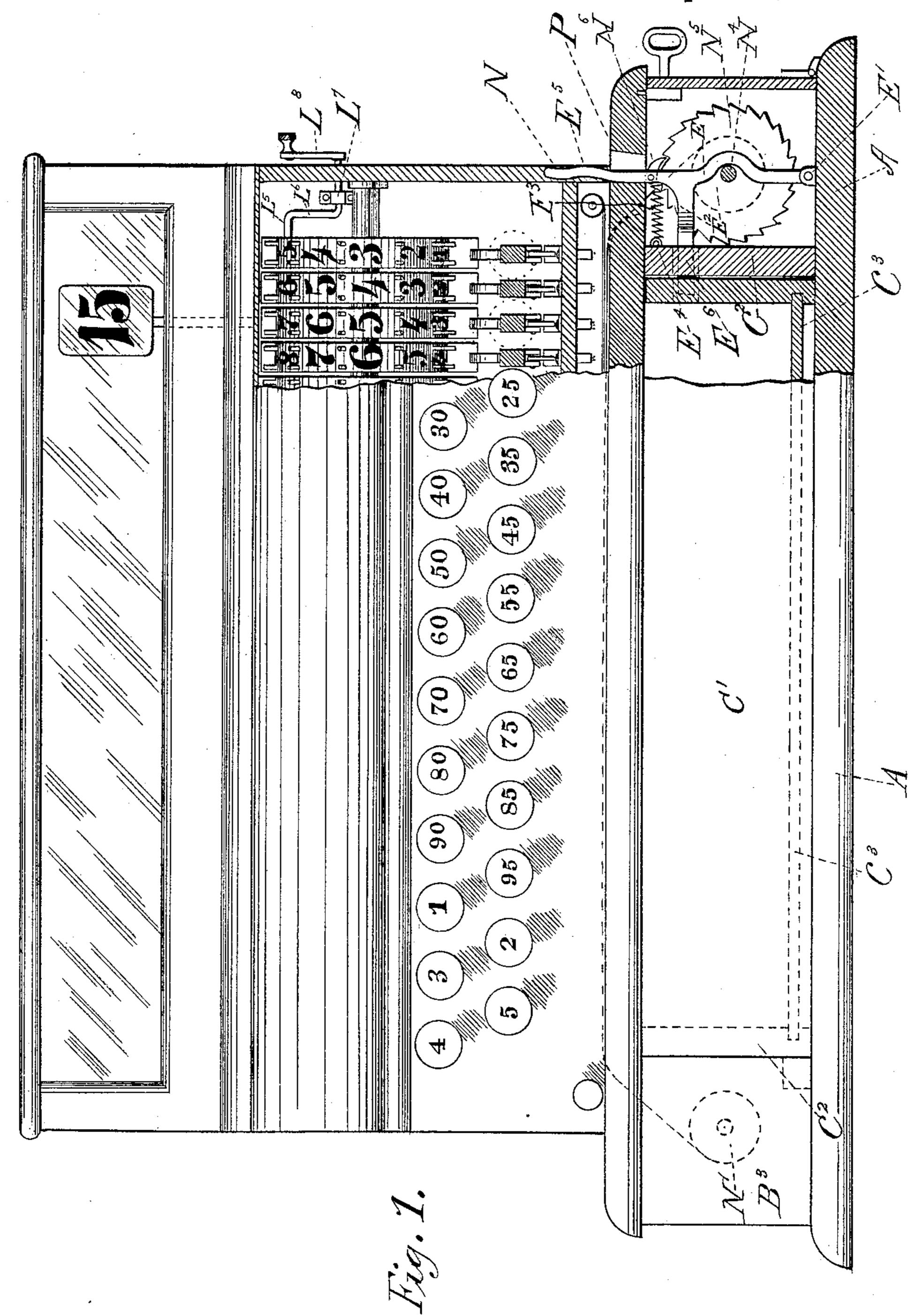
A. LE. G. PEIRCE.

CASH REGISTER, INDICATOR, AND RECORDER.

No. 450,803.

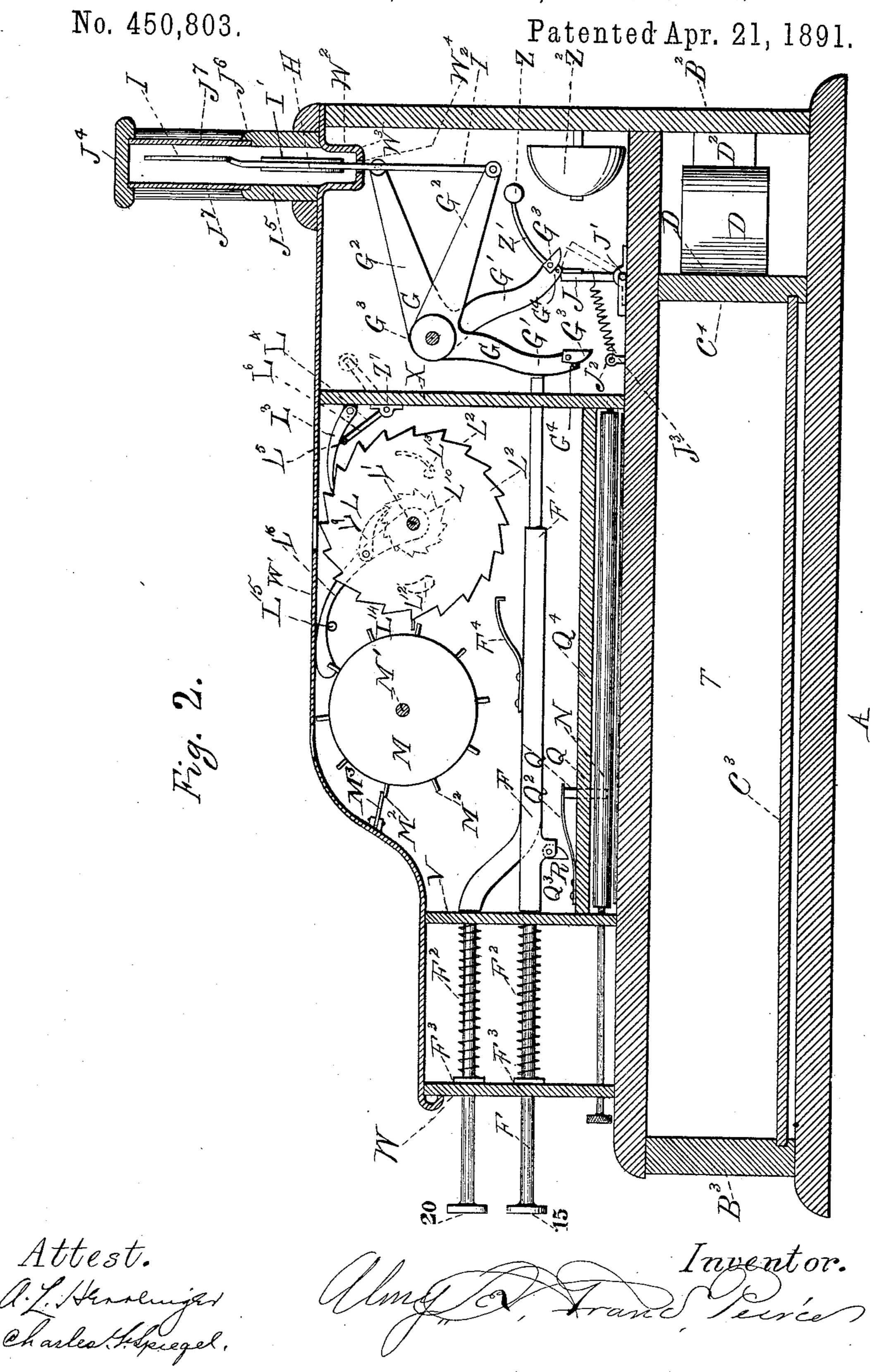
Patented Apr. 21, 1891.



Attest. A. HEndingen. Charles Hopinger.

Amy Trans Turen)

CASH REGISTER, INDICATOR, AND RECORDER.



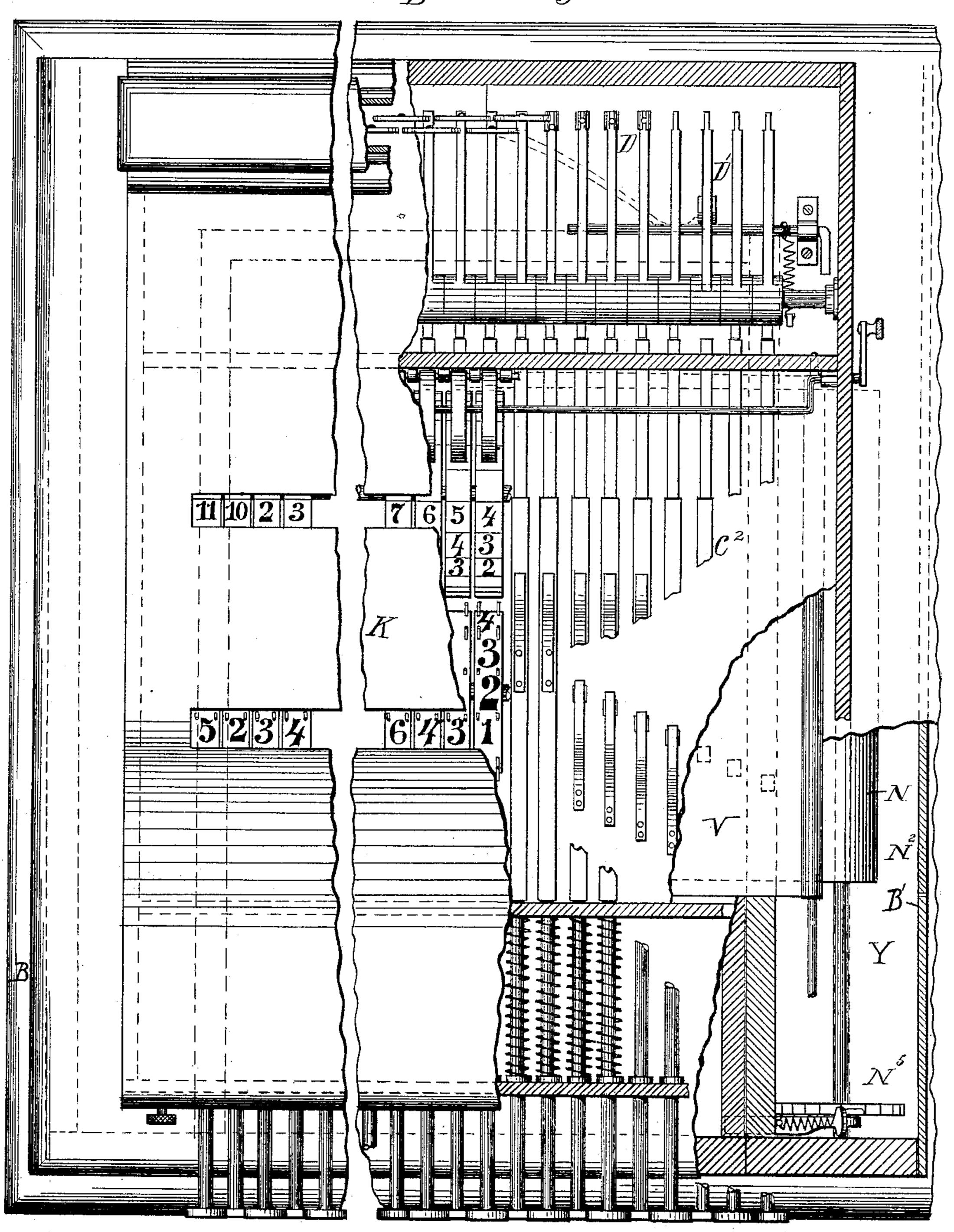
A. LE. G. PEIRCE.

CASH REGISTER, INDICATOR, AND RECORDER.

No. 450,803.

Patented Apr. 21, 1891.

 B^2 Fig. 3.



Attest a. L. Sterrlunger Charles Helpinger

Almy Frand Poerce

United States Patent Office.

ALMY LE GRAND PEIRCE, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF TO CHARLES E. KING, OF CINCINNATI, OHIO.

CASH REGISTER, INDICATOR, AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 450,803, dated April 21, 1891.

Application filed August 28, 1890. Serial No. 363,378. (No model.)

To all whom it may concern:

Beitknown that I, ALMY LE GRAND PEIRCE, a citizen of the United States, and a resident of the city of Grand Rapids, in the county of 5 Kent and State of Michigan, have invented a certain new and useful Cash-Register, of which the following is a specification.

The several features of my invention and the various advantages resulting from their 10 use, conjointly or otherwise, will be apparent from the following description and claims.

In the accompanying drawings, making a part of this specification, and to which reference is hereby made, Figure 1, Sheet 1, is a 15 front elevation of a machine embodying my improvements, the right-hand portion of the front for three-quarters of the height of the machine being broken away to disclose the mechanism in rear. Fig. 2, Sheet 2, is a ver-20 tical section of the machine from front to rear, looking toward the right hand, as seen in Fig. 1. Fig. 3 is a plan view, parts being broken away to disclose the construction beneath.

A indicates the bottom or foundation piece of the machine. Upon this bottom is located the lower division of compartments. This division has exterior side walls B' B, rear wall B², and front wall B³. The latter wall is 30 present at each end portion of the front of the machine, but is absent at the middle portion of the front, the latter portion being occupied by the front wall C' of the cash-drawer C. This cash-drawer has vertical sides or walls C² C², a bottom C³, and a rear wall C4. At the rear of the drawer is located a suitable spring for forcing the drawer forward. A preferred description of spring is shown, and consists of the well-known flat 40 spring D, bent in a form of a semi-ellipse and having each end bent somewhat backward, forming a sweep D'. The spring is fastened at middle to the stationary block D2, adjacent to the rear wall of the machine. As the drawer 45 is pushed in, the rear end of the drawer im-

pinges against the sweeps D'D' of the spring and bends backward the limbs of the spring. The drawer being pushed in and shut, it is then latched and located in place by a mech-50 anism shortly to be described. While the

against the rear end of the drawer and its pressure tends to force the drawer open. As soon as the drawer is unlocked the spring, being free to act, pushes the drawer out 55 from the machine and, in common parlance, "opens" it.

The mechanism for unlocking the drawer acts independently of the mechanism for operating the cash-register wheels and indica- 60 tory numbers, and is as follows: Located at the side of the drawer and within the lower division of the machine is a lever E, pivotally fulcrumed at E' to a stationary part—as, for instance, floor A of the machine. This lever 65 carries a locking arm or tongue E². The lever E is continually forced toward the side of the drawer by a suitable spring. Among the various kinds of springs suitable for this purpose is the one shown and indicated by the 70 character E³. This spring is strained between the lever and stationary part or partition E⁴ of the machine. The lever E is provided with a handle E⁵, which projects through the case and within easy reach of the operator. In 75 the partition and the drawer is an opening E⁶. When the drawer is closed, this opening E⁶ is opposite the locking-tongue E2, and the spring E³ causes the tongue E² to enter this opening E⁶ and lock the drawer. The latter cannot 80 then be opened until the lever E, by means of its handle, is inclined away from the drawer, and the tongue is thus withdrawn from the opening E⁶. The drawer-spring D will then open the drawer.

Above the first or lower division is a second containing mechanism, as follows, viz: Sliding rods F are present in this division. The front ends of these rods F project forward through and beyond the front wall W of this division, 90 and their front ends are each provided with a push-button bearing on its face a number.

In order to obtain compactness of construction and economy of room, I place the rods F in two rows and dodging one another. For 95 example, the upper rod will be opposite and over the space between two adjacent lower rods. The inner end of each rod slides in and is supported by a partition or wall X. A shoulder or stop F', located on each rod F, roc prevents the latter from being pressed in too drawer is shut the spring presses with force I far, this stop striking against a suitable abut.

ment. In the present instance the partition

X serves as such abutment.

A series of bell-crank levers G are present at the rear part of the machine. Each lever 5 has a lower arm G' and an upper arm G². Each lever swings or turns on a pivotal fulcrum G³, and for convenience of construction one long rod serves as the pivotal fulcrum for these levers. The levers are kept apart a 10 suitable distance from each other on said fulcrum-rod G³ by any well-known means, as washers, &c.

To the free end of the upper arm G² of each lever is pivotally connected a vertical rod H, 15 carrying at its upper end a tablet I, bearing a given number. The rod H slides in a guideway or guideways of suitable description. Convenient guides are those shown and are as follows: The roof W' extends from the 20 wall W rearward to the vertical rear wall B2

of the machine, the wall B2 being extended upward to meet the wall W'.

Under the indicating-tablets the roof W is depressed in order to provide a recess W². 25 Through a vertical opening W4 in the bottom W³ of this recess each rod passes up. This opening W4 performs the office of a guide. A further guide above consists of the sleeve I', fixed to the casing, and through 30 this sleeve passes the rod H.

The tablet tower or case J4 surmounts the roof W' and is secured thereto. In this case J⁴ are located the various tablets. In the upper portion of the front wall J⁵ and in the 35 upper portion of the rear wall J⁶ of the case J4 are located panes of glass J7, so that when a given tablet or tablets are raised the same while thus elevated can be seen and inspected. The glass can be omitted; but its presence is 40 desirable, as it keeps the tablets clean and protects them from injury. The free or rear end of each rod F bears against arm G' of that bell-crank lever G which it is to operate.

Whenever a rod F is pushed toward the 45 wall B2 of the machine, it pushes against the arm G' of its lever G, and, moving said arm G' toward said wall, operates said lever G, and consequently elevates arm G², and the latter elevates the tablet I and brings it into view. 50 Each lever carries on its push-button the same number or character which is borne by the indicator-tablet which it operates. Thus the rod F having the push-button marked 15 operates the tablet bearing the number 55 "15." Each rod F, after it has been pushed rearward and has operated its tablet, willautomatically, as soon as the operator releases his pressure thereon, return forward to the position shown in Fig. 2. This automatic 60 movement is accomplished by means of a suitable spring. One description of such spring is shown and is a spiral one F2, embracing its rod. One end of this spring rests against the stationary abutment V, while the other 65 end of the spring rests and bears against a shoulder or abutment F3, fixed to and mov-

ing with the rod F. When the rod F is I

pushed forward to operate lever G, this spring is compressed, and when pressure upon the push-button is removed the spring expands 70 and moves the rod F back into position to be

again operated.

Upon the lower end of each arm G'of each bell-crank lever is located a pawl G³. This pawl is straight on its side which faces to- 75 ward wall B2. The opposite side—viz., the one which, when arm G' is in a vertical position, faces toward the front of the machine—is beveled. As indicated on the drawings, the pawl can oscillate toward the rear of the machine, 80 but when pressed in the opposite direction will not yield. The pawl G³ is prevented from yielding by a suitable stop or stud. In the present illustrative instance this stop consists of the lug G4, fixed immediately behind the 85 said pawl and to that bell-crank lever which carries the said pawl.

A long tripping-bar J extends across the machine. When not acted upon by a pawl, it occupies a position substantially vertical, 90 and when left free to move it will always return to its vertical position. The preferred means for causing it to so act are as follows: The bar is hinged at J' to an appropriate portion of the case—as, for example, the floor 95 K. It is provided with a stop, which latter, after the bar has assumed a vertical position, prevents its upper or free edge being moved farther toward the front of the machine. A spiral spring J² is strained between the middle 100 or upper portion of the bar and a stationary hook or eye or part, as J3, on the floor K of the machine. The operation of this bar is as follows: When a rod F is pushed rearward in elevating its tablet, the arm G' of the lever G worked 105 by the said rod is moved toward the rear of the machine. When the free end of pawl G³ reaches the upper edge bar J, it pushes this edge of the bar rearward and downward, and thus passes over this obstacle. The lever G 110 has at the same time elevated its tablet. As soon as the pawl has passed the bar J the latter automatically reassumes its vertical position. As the operator relinquishes his hold upon the push-button, the rod F is automati- 115 cally returned to its first position. The weight of the tablet and the position of the bell-crank lever cause the arm G' of lever G to move toward its first position to rest against rod F; but in moving down the lower edge 120 of the arm G' strikes against the upper edge of the tripping-bar and is there held. At the same time the tablet of this lever G is elevated and remains in a position for inspection. When another rod F is pushed rear- 125 ward, the tablet of this last-named rod is elevated. In this operation the arm G' of the last-named rod strikes the bar J and moves its upper edge rearward. As the latter thus moves, it releases the arm G' of the first-130 named lever G and allows this arm to pass over it and back to a position where it rests. against its rod F, and its tablet descends and disappears from view. The pawlof this arm

450,803

G yields while passing over the bar toward the front of the machine and presents no obstacle to the free movement of the arm. Thus each time a rod F is moved rearward and a new tablet elevated the former tablet descends out of sight. As the upper edge of the tripping-bar J is moved toward the rear wall B² it depresses the bell-hammer Z, secured by a shank Z' to the said edge of the bar J. The bell-hammer strikes the bell Z², secured to the frame-work of the machine, and announces that another indicating-tablet has been elevated.

In connection with this mechanism for op-15 erating these tablets I employ automaticallyregistering mechanisms, as follows: A set of ratchet-wheels, as L, are each supported on an axial pivot L'. Each wheel turns on its pivot, and for convenience one pivot serves 20 for all. The face of each ratchet-tooth bears a given number. These wheels are for recording the number of cents deposited in the drawer, and hence the teeth of each wheel bear numbers between 1 and 100. In front 25 of each ratchet-wheel L is another toothed wheel M, having ten teeth M², and consequently the spaces between the teeth number ten. Upon these spaces are marked the dollars. Each of these wheels M turns loosely 30 upon a pivot M'. The ratchet-teeth of wheel L² of wheel L do not engage the teeth of the wheel M; but the wheel L carries a single cog L¹⁴, projecting beyond the circle in which lie the points of the ratchet-teeth L' and ex-35 tending far enough to engage the adjacent tooth M² of wheel M. Consequently for each revolution of the ratchet-wheel L the wheel M is moved one tooth, and consequently one figure. Further description of these wheels 40 and their operation is deemed unnecessary.

Upon the rod F is fixed a pawl F⁴, and as the rod is moved toward the rear this pawl F⁴ engages the adjacent tooth on the adjacent ratchet-wheel and rotates the latter forward one tooth. As the rod F is returned to its first position, the pawl F⁴ is also retracted and moves to its first-named position. The pawl F⁴ is preferably an elastic one, as it thereby is more readily retracted and makes less frictional contact with the faces of the teeth of the ratchet-wheel L.

A pawl L³, pivoted at a point L⁴ to a stationary portion, as wall X of the machine, bears against the periphery of the ratchet55 wheel L and setting behind each tooth L² in turn prevents the ratchet-wheel L from rotating backward. Thus each movement of a rod F toward the wall of the machine serves to elevate a tablet into view and cause the foregistry-wheels to register the given amount of cash deposited therein.

Above the floor K are located two rollers N N, having their respective forward end journals respectively journaled in the front portion of the machine and their respective rear journal ends journaled at the rear portion of the machine. In the present illustrative in-

stance the front journals each turn in its bearing located in abutment or wall Y, and their rear journals each rotate in its bearing in the 70 rear abutment or wall X. One of the rollers N is located on one side of the machine and the other near the right-hand side. At the left-hand side of the drawer and in the lower division is located a supply-roller N', jour- 75 naled at its front end in the front wall B³ and at its rear end in the rear wall B2 or in any other suitable journal-bearing. The function of this roller is to supply register-paper to the machine as called for, and its precise location 80 in the latter is not material so long as it is properly protected from outside manipulation and performs its aforementioned function of a supply. The paper P from the roller N' passes horizontally over the floor K, and then 85 upon and down around a large operatingroller N², upon which it is wound. This latter roller is suitably journaled, preferably, at front in the extended partition-wall Y and at rear in the extended partition-wall X. One 90 description of means for rotating it is as follows: The forward journal of the roller extends forward and carries a ratchet-wheel N5, rigidly fixed thereto. The front end of the journal in front of this wheel is preferably 95 supported in a bearing in the adjacent front wall B⁸. Pivoted to the lever E is a pawl N⁶, which latter engages an adjacent tooth of the ratchet-wheel. The journal N⁴ is preferably located to the left of the lever E and forms a 100 convenient stop against which the lever E rests. This stop prevents the locking-tongue E² from plunging too far into the opening E⁶ in the drawer. Each time the lever E is moved to the right the drawer is unlocked and the 105 ratchet-wheel N⁵ is rotated one tooth and a corresponding amount of paper drawn from the supply-roller N' and rolled upon the roller N².

In the machine there are printing-types Q, 110 and there are as many types as there are rods. Each rod operates a type, and the type bears the same number as does the push-button of its operating-rod. Each type is supported on a yielding support, which will return to its 115 first position when the operating pressure from its operating-rod F has been removed. The preferred means for enabling the type to accomplish these functions consists of a flat curved spring-piece Q2, secured at one end Q3 120 to a suitable support Q4 and curving upward to or near to the point where it is connected to the type-holder Q'. The type-holder Q' passes down through or by the support Q4 and holds the type in close proximity to the surface of 125 the paper P. On each rod F is a pawl R, which latter, when the rod is in its forward position, as shown in Fig. 2, is directly over the lower portion of the spring-piece Q2. As the rod F is pushed toward the rear of the machine, the 130 free end or point of the pawl R strikes the spring-piece, and as the pawl does not, while moving in this direction, yield to pressure the spring-piece Q² will yield and be depressed

and the type be depressed. As the type is depressed, it presses down upon the ink-ribbon, and, forcing the latter against the paper, prints upon the latter the number or charac-5 ter it carries. The type are arranged in oblique rows in order to prevent one type from printing directly upon that portion of the paper upon which another type has already printed a number. For economy of ro room the type are arranged in double rows. In Fig. 3 openings through the floor or support Q⁴ for the passage of the type are shown. A suitable ribbon V intervenes between the type and the paper. This ribbon is stretched 15 or extended between two points. Each of these points is preferably a roller, as N. One of the rollers preferably contains a supply of ribbon, and as the ink in the ribbon beneath the type is exhausted the receiving-roller is 20 turned and the ribbon wound thereon, and a part of the ribbon as yet unused and full of ink is unwound from the supply-roller and brought beneath the type. At suitable intervals the printed part of the record-paper may 25 be removed from the machine for inspection and examination. The various operating parts of the machine are covered, and the cover will be locked in any suitable wellknown manner. It will thus be observed that 30 each rod F in its movement toward the rear wall B² of the machine elevates an indicatingtablet, lowers the tablet previously raised, causes the annunciator-bell to ring, and depresses a type, and thus records its part in 35 the financial transaction.

A convenient means for resetting the register-wheels consists of the rod L⁵, supported on arms L⁶, one at each end portion of the machine. These arms are pivotally supported 40 on supports, as L^7 . A lever-handle L^8 is connected to the pivotal portion or journal of one of the arms. The rod L⁵ extends under each pawl L³, respectively, belonging to each register-wheel L. On the pivot L' of the reg-45 ister-wheels L and at the outer side of a register-wheel Lat one end of the machine is pivoted a lever L¹⁶. This lever carries a pawl L⁹, engaging a ratchet-wheel L¹⁰, fixed to the register-wheel L. On the other side of the regis-50 ter-wheel is a beveled stud L¹², affixed thereto, and on the adjacent side of the next registerwheel is a spring-pawl L¹³. Each succeeding register-wheel L has on its right-hand side a stud L¹² and on its left-hand side a spring-55 pawl L¹⁰. The spring-pawl L¹³ is omitted from last wheel L on the left.

In practice, when it is desired to reset the register-wheels, the handle L⁸ is operated, and the rod L⁵ is thereby elevated, thereby lifting 60 the pawls L⁸ from their respective wheels L. The lever L¹⁶ is now reciprocated, and through the agency of the pawl L⁹ and the ratchetwheel L¹⁰ rotates the register-wheel L back to its position in readiness to be used again. As 65 this register-wheel L is being rotated, its stud

or projection impinges against the pawl L¹³ of the next wheel L, and this latter wheel L

in a similar matter rotates the next wheel, and thus all the register-wheels L are rotated back into position. As these wheels are ro- 70 tated back into position, they also by means of the single cog L¹¹ thereon rotate back the wheels M into position. When the work of resetting the register-wheels has been completed, the rod L⁵ is dropped and the pawls 75 L³ resume their functions in relation to the wheels L.

It should be here stated that a suitable rest,

as L¹⁵, for the lever L¹⁶ is provided.

As a safeguard to prevent the wheel M 80 from moving more than one space between two adjacent teeth of it at a time and from any one given impact of the single $\cos L^{14}$ of the wheel L, a spring-pawl M³ is provided. The long axis of this pawl preferably coin-85 cides with one of the radii of the wheel L, and hence yields in either direction to a positive rotative pressure communicated to wheel M from wheel L. The spring-pawl M³ is suitably supported, preferably by the roof or top 90 W', as shown in Fig. 2.

The ink-ribbon rollers N N may be rotated by any suitable means. Here they are shown as journaled in the partitions Y and X, and each roller has an axial rod projecting through 95 the front wall of the machine and furnished with a hand-wheel W. By the latter the roll-

ers N N can respectively be rotated.

The advantages of my invention over many other descriptions of cash-registering devices 100 are obvious. It is also evident that this mechanism, heretofore described and illustrating my invention, is exceedingly simple of construction and is not liable to get out of order. Its operation is easily understood and it is 105 readily operated. It is economic of manufacture.

While the various features of my invention are preferably employed together, one or more of the said features may be employed without 110 the remainder, and in so far as applicable one or more of said features may be used in connection with cash-registers other than the one herein specifically described.

What I claim as new and of my invention, 115 and desire to secure by Letters Patent, is—

1. The combination of the push-rod F and lever G, having arms G' G2, the arm G' having pawl G³ and tripping-bar J and spring J² for retracting it, the pawl G³ striking the 120 tripping-bar as the lever G is moved by rod F, the arm G² carrying the tablet I, substantially as and for the purposes specified.

2. The combination of the push-rod F and lever G, having arms G' G2, the arm G' hav- 125 ing pawl G³ and tripping-bar J and spring J² for retracting it, the pawl G³ striking the tripping-bar as the lever G is moved by rod F, the arm G² carrying the tablet I, and the tripping-bar J carrying the bell-hammer Z and 130 the bell Z2, substantially as and for the purposes specified.

3. In combination with a paper-supply roller and the winding-roller N² and floor or 450,803

platen K, the ink-ribbon stretched over the paper, and a series of type, each carried by a resilient lever, and the push-rods, each carrying a projection R, which bears on its adja-5 cent said resilient lever and depresses the latter as said rod is pushed toward the rear of the machine, substantially as and for the

purposes specified.

4. In combination with a paper-supply 10 reller and the winding-roller N² and floor or platen K, the ink-ribbon stretched over the paper, and a series of type, each carried by a resilient lever, and the push-rods, each carrying a pawl R, which depresses its adjacent 15 resilient lever as the rod F is pushed toward the rear of the machine, substantially as and

for the purposes specified.

5. In combination with a paper-supply roller and the winding-roller N² and floor or 20 platen K, the ink-ribbon stretched over the paper, and a series of type, each carried by a resilient lever, and the push-rods, each carrying a pawl R, which depresses its adjacent resilient lever as the rod F is pushed toward 25 the rear of the machine, and ratchet-wheel turning shaft N4, and lever E, having tongue E2, and cash-drawer and spring for opening it (the drawer) when closed, engaging said tongue, the lever-carrying pawl N⁶ engaging the said 3° ratchet-wheel, thus compelling the paper each time the drawer is opened to be moved forward the distance of one of the teeth of ratchet-wheel N⁵, substantially as and for the purposes specified.

6. In combination with a paper-supply roller and the winding-roller N² and floor or platen K, the ink-ribbon stretched over the paper, and a series of type, each carried by a resilient lever, and the push-rods, each carry-40 ing a pawl R, which depresses its adjacent resilient lever as the rod F is pushed toward the rear of the machine, and ratchet-wheel turningshaft N4, and lever E, having tongue E2, 1

and cash-drawer and spring for opening it, the drawer having opening receiving the tongue 45 E², and the lever E provided with pawl N⁶ and automatically drawn toward the drawer, substantially as and for the purposes specified.

7. The push-rod F and the ink-ribbon and paper and type, substantially as described, 50 and the inclined spring lever or arm Q², the push-rod carrying a projection, substantially as R, for depressing the type as the push-rod is advanced, the register-wheels, and the push-rod having the spring pawl or arm F4, 55 engaging the teeth of a register-wheel as the push-rod is moved toward the rear of the machine and partially rotating said wheel, substantially as and for the purposes specified.

8. The push-rod F and the ink-ribbon and 60 paper and type, substantially as described, and the inclined spring lever or arm Q², the push-rod carrying a projection, substantially as R, for depressing the type as the push-rod is advanced, the register-wheels, and the 65 push-rod having the spring pawl or arm F⁴, engaging the teeth of a register-wheel as the push-rod is moved toward the rear of the machine and partially rotating said wheel, and the angle-lever G' G² and the tablet operated 70 by the latter, the push-rod F moving the said lever G' G² to operate the tablet, substantially as and for the purposes specified.

9. In a cash-register, the register-wheel, as L, and pawl L³, and wheels M, and pawl M³, 75 and elevating-rod L⁵, the wheels having the studs L^{12} and pawls L^{13} , and the lever L^{16} and the pawl L⁹ thereof, and ratchet-wheel L¹⁰, fixed to a wheel L and engaged by said pawl L⁹, substantially as and for the purposes speci- 80

fied.

ALMY LE GRAND PEIRCE.

Attest:

A. L. HERRLINGER, K. SMITH.