

(No Model.)

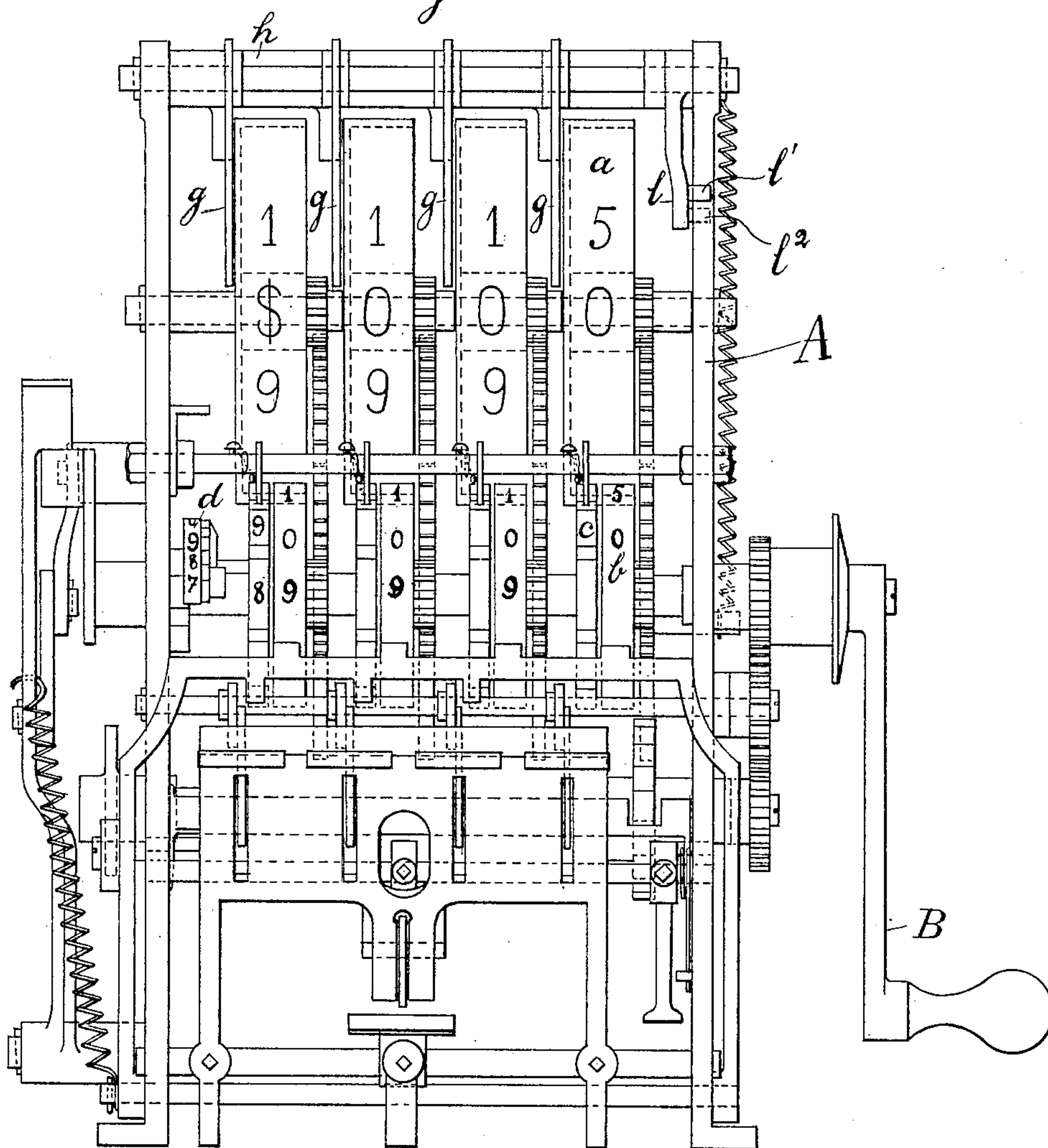
2 Sheets—Sheet 1.

A. LATHAM.
CASH REGISTER.

No. 597,504.

Patented Jan. 18, 1898.

Figr. 1.



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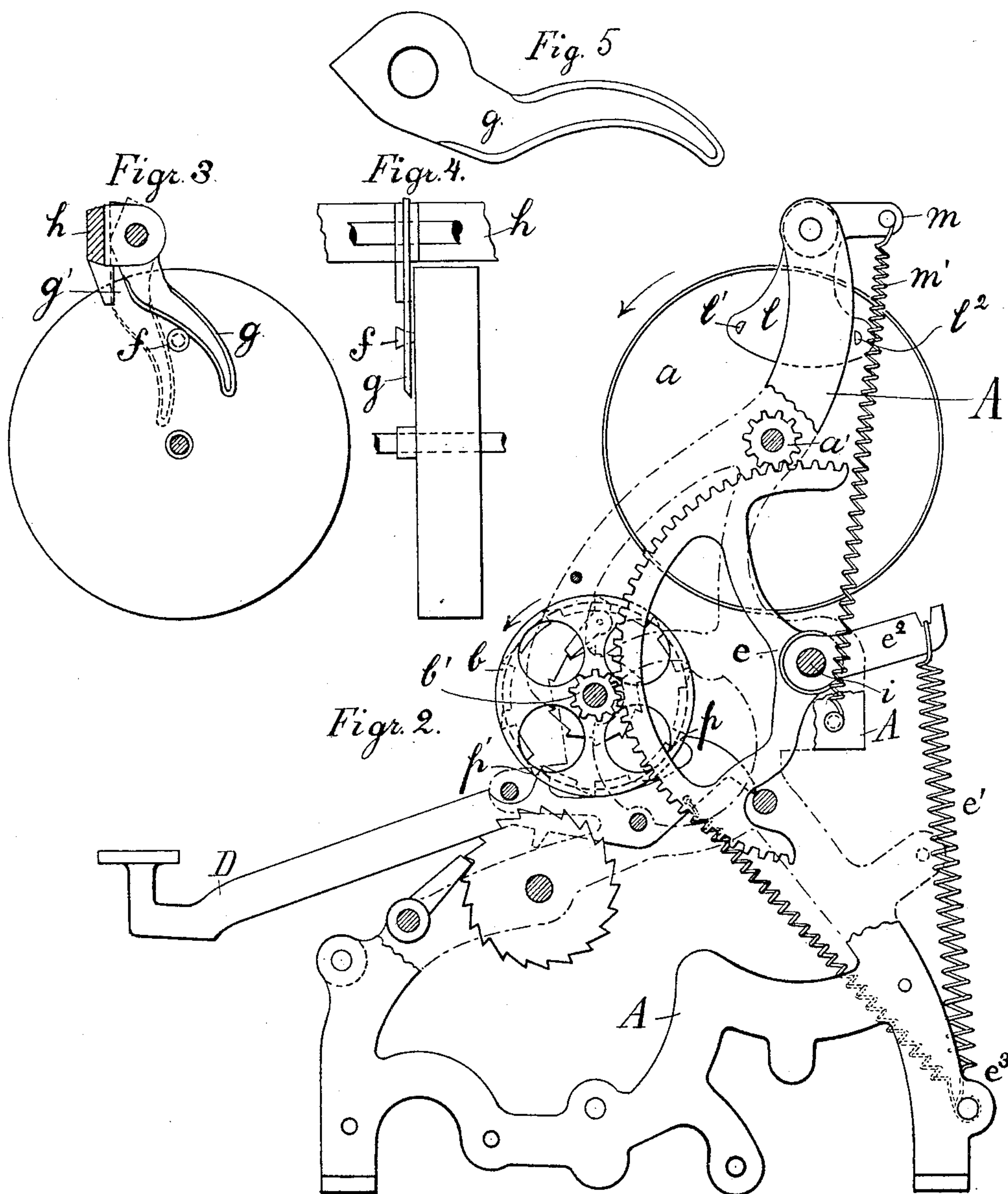
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WITNESSES:
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UNITED STATES PATENT OFFICE.

ALBERT LATHAM, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR
TO THE STERLING SUPPLY AND MANUFACTURING COMPANY,
OF NEW YORK, N. Y.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 597,504, dated January 18, 1898.

Application filed December 1, 1896. Serial No. 614,039. (No model.)

To all whom it may concern:

Be it known that I, ALBERT LATHAM, of the city of Springfield, county of Hampden, and State of Massachusetts, have invented a new and useful Improvement in Cash-Registers, of which the following is a specification.

This invention relates to cash-registers; and it has reference particularly to that class of such machines wherein the amount of the purchase is shown by indices arranged on the peripheries of several independently-revoluble wheels.

The invention is an improvement on the machine shown and described in the patent to Benton and Hess, No. 552,463, dated December 31, 1895. In this class of cash-registers the indicating-wheels are each adapted, by spring or other suitable power, to rotate independently in a given direction, successively presenting the figures or other indices on their peripheral surfaces. A series of levers corresponding in number to and suitably arranged in correlation with the wheels are so connected therewith that upon each depression of one of said levers its corresponding wheel is permitted to rotate far enough to present one of the indices. When it is desired, therefore, to indicate a given amount, each lever is depressed several times until the required figure of the amount is reached. When the amount has been indicated in the manner and by the means just described, the return of the indicating-wheels to the rest or zero position is accomplished by a series of elements operated by and directly under the control of the hand of the manipulator.

The object of the invention therefore is to provide means for not only accurately and positively actuating and controlling the movements of the indicating-wheels as they present their indices, but also to provide means for gradually but effectually checking the rotation of the wheels as well when each has completed a revolution in one direction by mechanical power as when they have all completed a revolution in the other direction synchronously under hand-power.

The invention will be more fully described

with reference to the accompanying drawings, in which—

Figure 1 is a view in front elevation of a cash-register provided with my improvements, the casing thereof being removed. Fig. 2 is a view in side elevation of the machine as shown in Fig. 1. Fig. 3 is a side elevation of one of the indicating-wheels and the stop or check mechanism provided therefor. Fig. 4 is a front elevation of the portion of the machine shown in Fig. 3, and Fig. 5 is a detail view of the curved arm which constitutes the stop shown in Figs. 3 and 4.

Referring to Fig. 2, *a* and *b* each represent one of the large and small indicating-wheels respectively, which have bearings, the one above the other, on suitable shafts mounted in the frame A. The usual registration and lock wheels are represented in Fig. 1 by the reference-letters *c* and *d*, respectively.

Operatively connected with each pair of pinions *a' b'*, which are preferably rigidly mounted on one side of the large and small indicating-wheels, respectively, is the segment *e*, trunnioned in the frame A at *i* and provided with teeth on its periphery, which intermesh with the teeth of the pinions, so as to simultaneously operate the indicating-wheels. Said segment *e* has a rearwardly-projecting arm *e²*, to the free end of which one end of a retractile spring *e¹* is connected, the other end of said spring being connected to the frame A of the machine at *e³*. Said spring is adapted, when power is stored therein, to normally rotate the wheels *a* and *b* through the pinions *a' b'* and segment *e*.

A lever D for each pair of indicating-wheels is fulcrumed in the frame preferably just below a registry-wheel *c*, mounted alongside of each of the small indicating-wheels and provided with projections on its periphery, with which the pallets *p* and *p'* of the lever D are adapted to engage and, when depressed, to release, so as to permit a partial rotation of said registry-wheel, the small indicating-wheel *b* (which is connected by a ratchet arrangement with said registry-wheel) and the large indicating-wheel *a* through the pinions and segment. It is thus seen that the opera-

tion of the machine is effected by the depression of the levers, which permit the escapement of the wheels in one direction until each wheel has indicated the figure necessary to the desired number.

It is of course necessary after a given amount has been indicated that the indicating-wheels be returned to the rest or zero position. This is accomplished by means of a crank B, connected to the end of the shaft which carries and revolves with the smaller indicating-wheels *b*. Said small indicating-wheels being geared with the larger ones through the segment and pinions, both sets of indicating-wheels are thus adapted to be simultaneously reset.

Pivotaly connected at each of its ends between the side pieces of the frame A of the machine is a transverse bracket *h*, consisting of a flat bar provided with pairs of perforated lugs, a rod projecting through said lugs and arranged parallel to the bar and having its ends loosely mounted in the side pieces of the frame A, so as to constitute the axis of the bracket, and a downwardly-projecting stop *l*, rigidly secured to the rod. The stop *l* has a rearwardly-projecting arm *m*, connected by a spring *m'* to the frame, so as to be normally drawn downward and throw the bracket forward. Said stop is, furthermore, provided with projections *l'* *l''* on its outer face, which engage a portion of the side piece of the frame A and limit the swing of the bracket.

Pivotaly connected to the rod and depending therefrom so as to hang closely to the sides of the large indicating-wheels are flat curved arms or stops *g*, which are connected to the rod between the lugs that support the rod. Each of the arms has both of its edges beveled, and the portion of said arm which is contiguous to the flat surface of the bar is provided with two flat edges, which are arranged at an obtuse angle to each other. An abutment *g'* for the stop *g* is made integral with the flat bar and depends therefrom in alinement with each stop, so as to limit its movement when the latter is moved in that direction.

Each of the large indicating-wheels is provided with a stop-pin *f* on the side adjacent to the stop *g*. This stop-pin tapers toward the wheel and is adapted to engage the stop *g*, so as to check the rotation of the wheel in either direction, and the tapering thereof is adapted to coact with the corresponding beveling of the edges of the stop *g* to prevent the pin from slipping past the stop out of engagement therewith.

It is intended that the arm *g* should act upon the principle of the ordinary jackknife-blade. For this reason the portion of the arm between the rod (its pivot) and the flat bar has an obtuse angular edge or bearing-surface, as above described, one of the edges of which bears against the flat surface of the bar, so as to hold the arm in either of two positions. To simplify the construction and

to avoid the necessity of an extra spring disposed between the angular portion of the arm and the bar, the parts are formed of some metal which possesses the desired degree of elasticity, so that under the required amount of force applied at the power end of the lever, which the arm *g* constitutes, said arm may be moved from the one to the other position. A careful adjustment of these parts when the machine is set up so that they do not fit too snugly and so that a very moderate degree of play is permitted between the angular edge of the arm *g* and the flat bar as the former is moved will further insure the desired operation of the arm.

The operation of the machine as provided with the improvements above described is as follows: The indicating-wheels being all set at zero, each key or lever D is depressed the required number of times until the necessary figure of the amount to be indicated has been shown. Such depressions of the levers have successively produced escapements of each indicating-wheel in the direction indicated by the arrows shown in the drawings, said wheel being rotated by the power that is stored up in its corresponding spring *e'*, which, being released, actuates the segment and the pinions which are in rigid connection with and act to revolve said wheel. By this arrangement a system of gearing is provided by which motion is immediately and accurately conveyed to the indicating-wheels as soon as the springs *e'* are free to operate. If any of the indicating-wheels has been caused to revolve so far as to exhaust its numbers, the stop-pin *f* on the side thereof engages the concave edge of the stop *g*, moves the latter, and by means of the effect of the knife-joint hinge and the peculiar shape of the arm is gradually checked. In the movement of the wheels in this direction the bracket *h* of course is not moved, because it is normally held by spring *m''* with the projection *l''* in contact with the frame A, as shown in Fig. 2. When the wheels are all reset to zero, as is necessary before a new amount is indicated, they are rotated by the crank B, which is manipulated by the operator's hand, as already described. The stop-pins on the wheels strike the curved arms, in this instance on the convex edges thereof, and their rotation is gradually restrained, as before, the arms being moved to the position shown in full lines, Fig. 3. Since the power which moves the wheels to the zero position is naturally greater and less susceptible of regulation than the power which moves them in the other direction, (the movement in the one case being produced by hand and in the other by mechanical power,) the checking of the wheels is concluded by the swinging spring-actuated bracket *h* after the stops have accomplished their portion of the checking operation and have been forced to the limit of their movement.

It is thus seen that the indication of the

desired amount is rendered more accurate because the direct system of gearing prevents any loss of power in its transmission from the spring *e'* to the indicating-wheels. Furthermore, much of the wear on the weaker parts of the machine is obviated by providing the several elastic elements above referred to.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a cash-register machine the oscillating transverse bracket *h* provided with the flexible stops *g* suspended therefrom as described, in combination with the indicating-wheels *a* provided with the stop-pins *f*, the oscillating transverse bracket *h* being provided with a resisting-stop as *l* held in position by the retractile spring *m'*, substantially as described.

2. In a cash-register machine a suitable transverse bracket as *h* provided with the suspended knife-jointed regulating-stops *g* having beveled edges as described in combination with the indicating-wheels *a* provided with the under-beveled pin *f* arranged to make the regulating-stop *g* hug the side of the indicating-wheel *a* when taking the thrust, substantially as set forth.

3. In a cash-register the indicating-wheels *a* and *b* provided with the small pinions *a'* and *b'* operated by the geared segment *e* as described, in combination with the oscillating transverse bracket *h* provided with the resisting-stop *l* and suspended flexible stops *g* to act against the stop-pins *f* and situated in the sides of the indicating-wheel *a*, all arranged to operate substantially as described.

4. In a cash-register machine the geared segment *e* provided with retractile springs as *e'*, the small pinions as *a'* and *b'* meshing with the geared segment *e* and arranged to rotate the indicating-wheels *a* and *b* as described, in combination with the oscillating transverse bracket *h* and resisting-stop *l* provided with the pins *l'* and *l''*, rearwardly-projecting arm *m* and retractile spring *m'*, the flexible stops *g* suspended from said transverse bracket as described, and beveled to correspond with and operate against the stop-pin *f* situated in the side of the indicating-wheel *a*, all constructed and operated substantially as specified.

5. In a cash-register, the combination with the frame, of indicating-wheels journaled in said frame and each provided with a stop-pin on one of its faces, and flexible stops carried by the frame and each having a concave edge with which the stop-pins may come into contact to check the rotation of said wheels, substantially as described.

6. In a cash-register, the combination with the frame, of a series of indicating-wheels each of which is provided with a stop-pin on one of its faces which tapers toward the wheel, and a flexible stop for each wheel consisting of a flat arm carried by the frame close to the side of said wheel, and having a concave edge with which the pin is adapted

to come into contact to check the rotation of said wheel, substantially as described.

7. In a cash-register, the combination with the frame, of a series of indicating-wheels each of which is provided with a stop-pin on one of its faces which tapers toward the wheel, and a flexible stop for each wheel consisting of a flat downwardly-projecting arm carried by the frame above said wheel and close to the side thereof, and having a concave edge which is beveled to coincide with the taper of the stop-pin and with which the stop-pin is adapted to come into contact to check the rotation of said wheel, substantially as described.

8. In a cash-register, the combination with the frame, of a series of indicating-wheels each of which is provided with a stop-pin on one of its faces which tapers toward the wheel, and a flexible stop for each wheel consisting of a flat downwardly-projecting curved arm carried by the frame above said wheel and close to the side thereof, and having its edges beveled to coincide with the taper of the stop-pin, said stop-pin being adapted to come into contact with either edge of said arm and to check the rotation of the wheel in either direction, substantially as described.

9. In a cash-register, the combination with the frame, of a series of indicating-wheels each of which is provided with a stop-pin on one of its faces, means for revolving each wheel independently in one-direction and means for revolving said wheels simultaneously in the other direction, a bracket pivoted in the frame above the wheels, downwardly-projecting flexible stops carried by the bracket, said stop-pins being adapted to severally come into contact with the stops and to check the rotation of the wheels when said wheels are rotated in one direction, and to simultaneously check the rotation of said wheels when said wheels are simultaneously rotated in the other direction, and a spring connecting the bracket to the frame and adapted to reduce the jar when the rotations of the wheels are simultaneously checked, substantially as described.

10. In a cash-register, the combination with the frame, of an indicating-wheel journaled therein and having an abutment, and a stop mechanism for the wheel consisting of a bracket secured to the frame, and an arm connected to said bracket by a jackknife-joint hinge so as to be held in one of two positions, and adapted when said wheel is rotated to be impelled by the abutment from one of said positions to the other, substantially as described.

In testimony that I claim the foregoing improvement in cash-registers, as above described, I have hereunto set my hand this 10th day of November, 1896.

ALBERT LATHAM.

Witnesses:

CHARLES L. MALCOLM,
M. E. HECKMAN.