

(No Model.)

2 Sheets—Sheet 1.

A. LATHAM.
CASH REGISTER.

No. 597,505.

Patented Jan. 18, 1898.

Fig. 8.

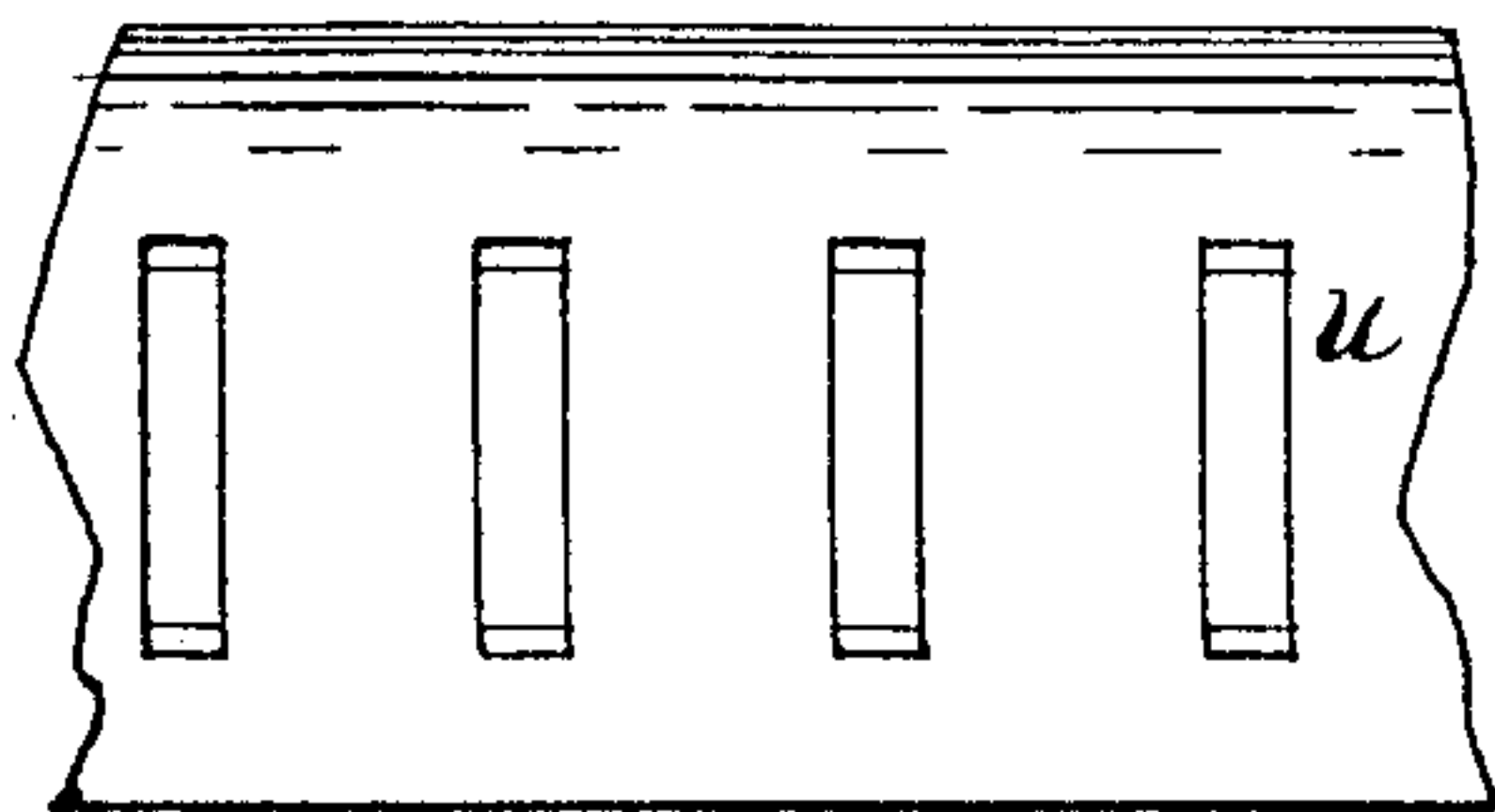
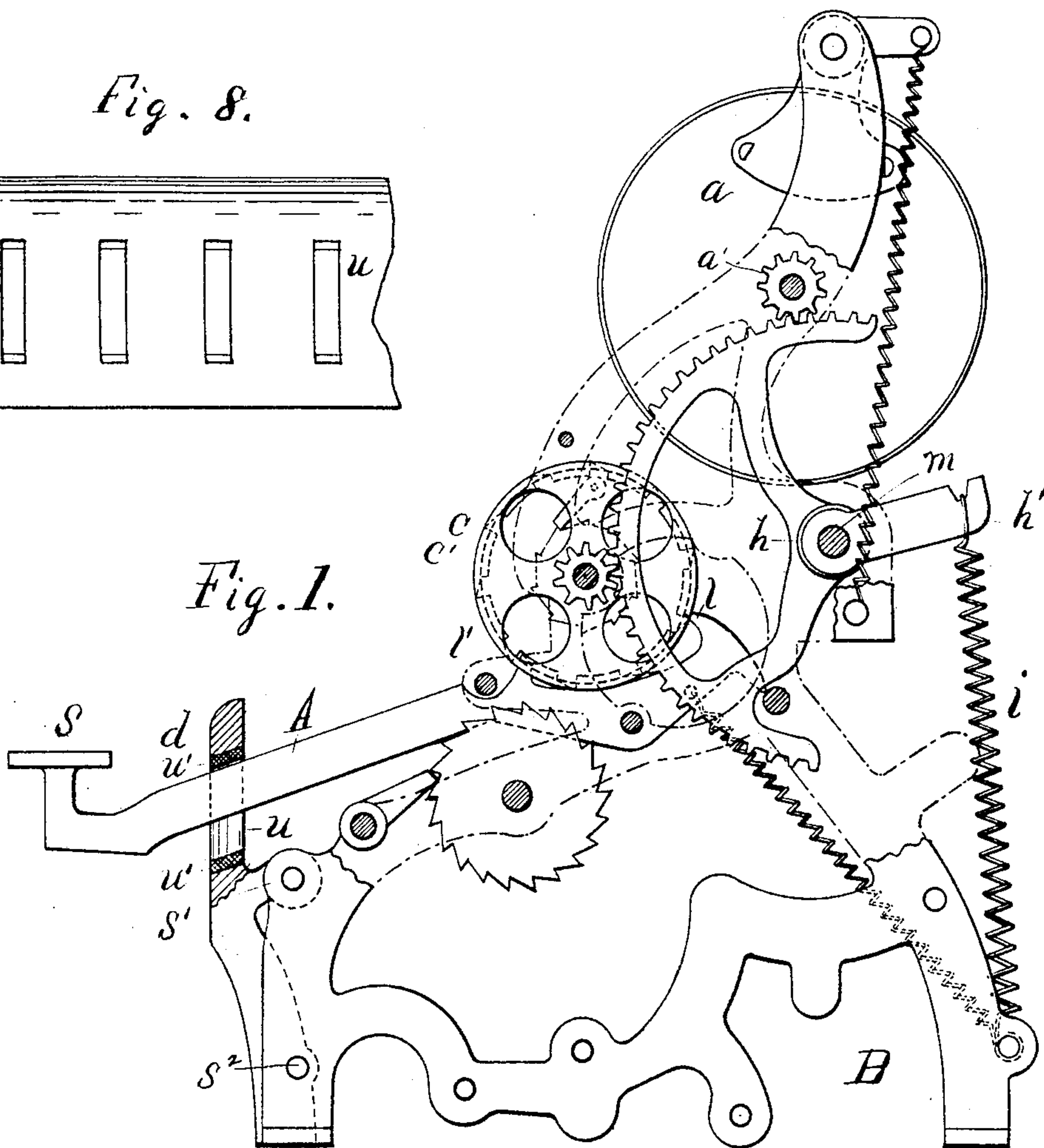


Fig. 1.



WITNESSES:

C. L. Malcolm
J. M. Bell

INVENTOR

Albert Latham

BY

Geoff Huntington
ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

A. LATHAM.
CASH REGISTER.

No. 597,505.

Patented Jan. 18, 1898.

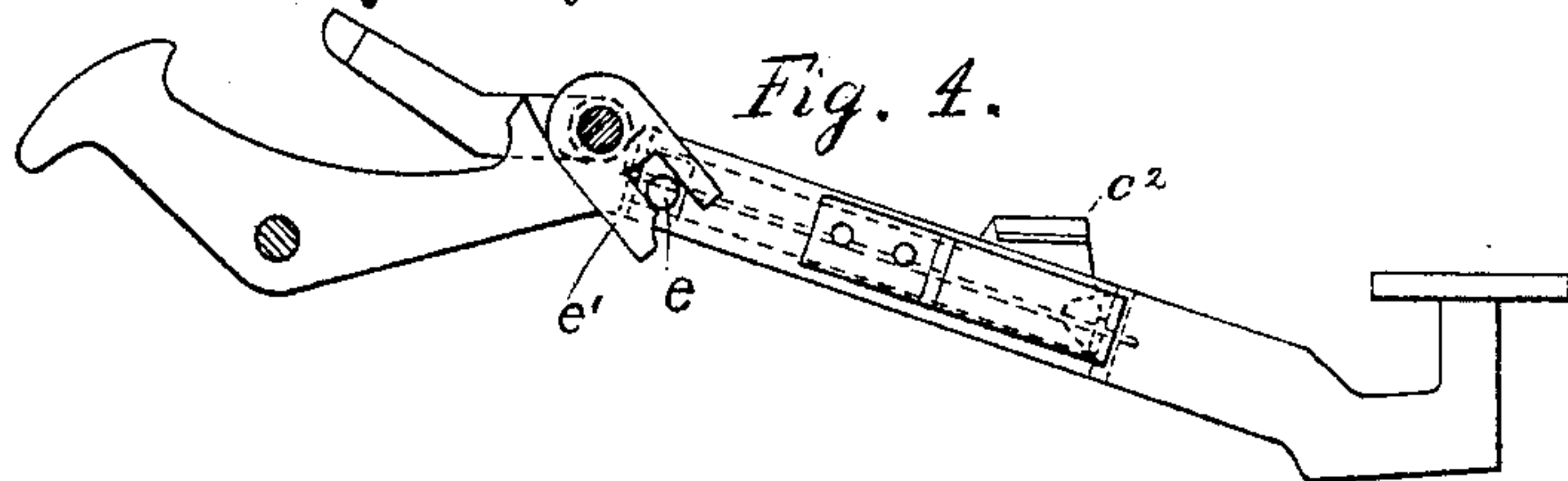
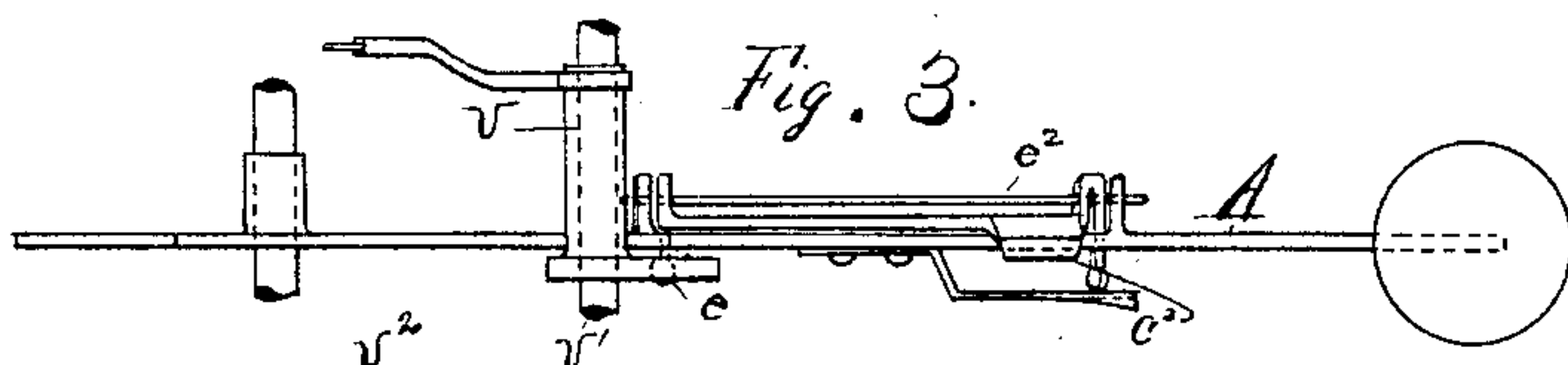


Fig. 5.

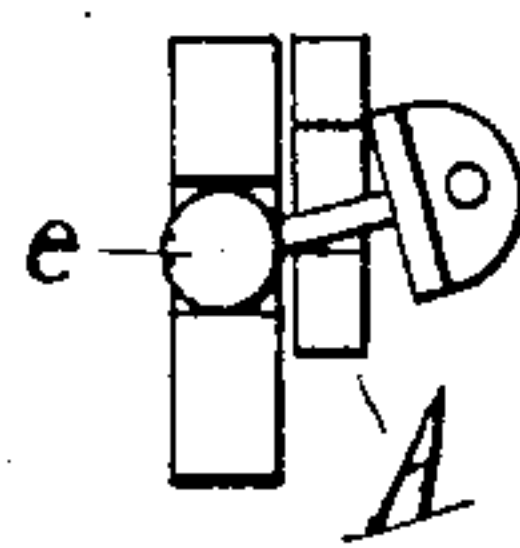


Fig. 6.

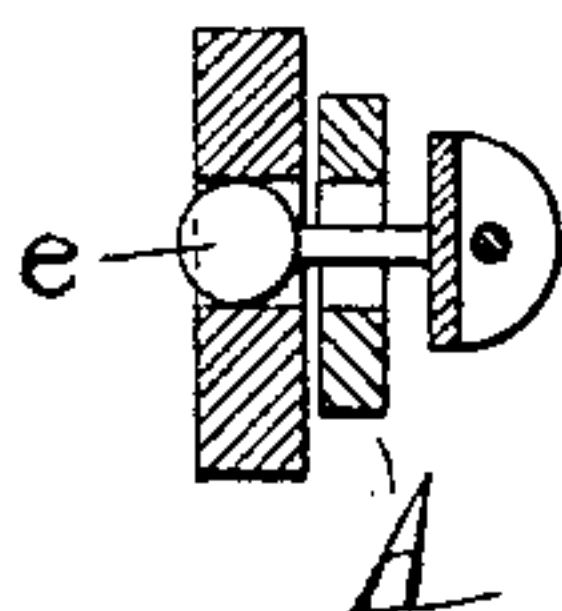
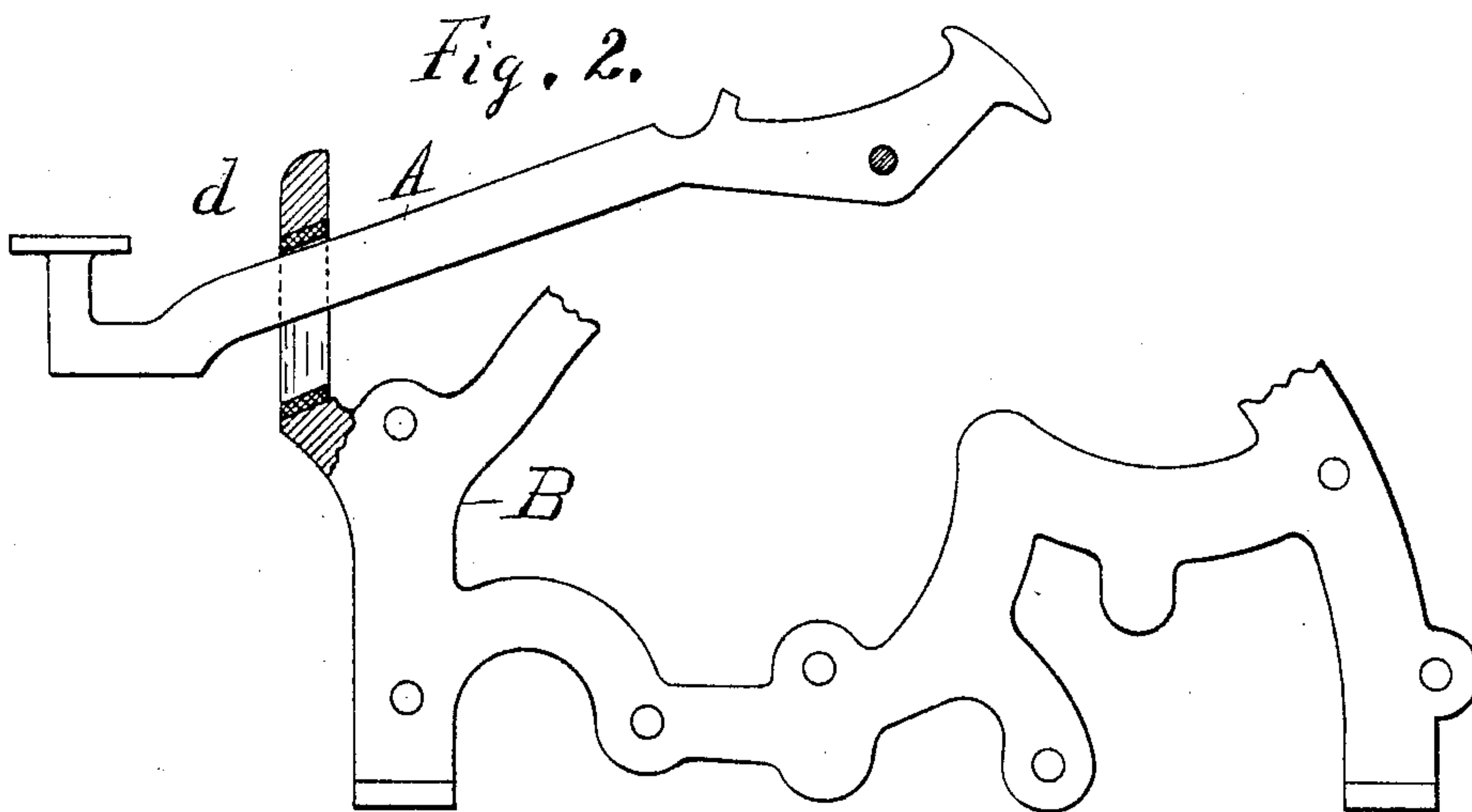
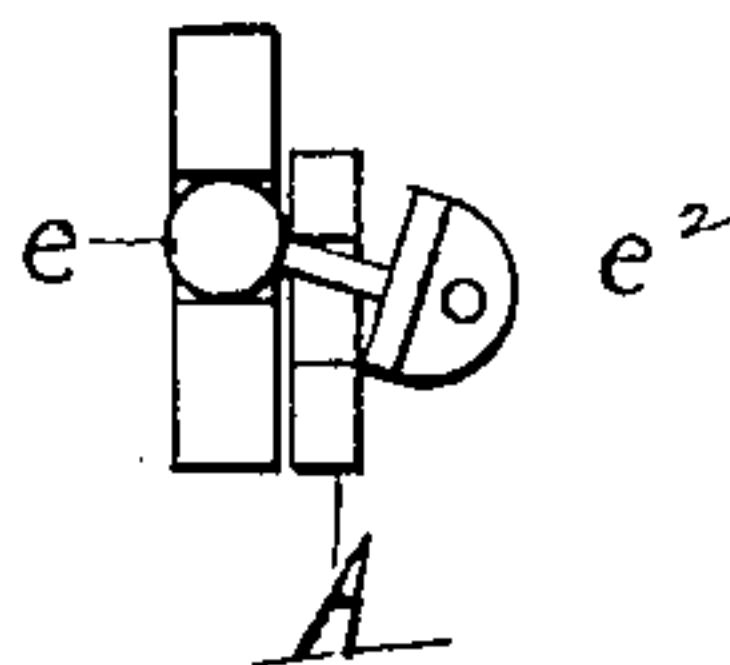


Fig. 7.



WITNESSES:

C. L. Malesher
J. A. Bell

INVENTOR

Albert Latham

BY

Geoff Huntington

ATTORNEY

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. 597,505, dated January 18, 1898.

Application filed December 3, 1896. Serial No. 614,281. (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 has principally for its object to control and regulate the movement of the key-arm and also the construction of a transfer-pin to make a more accurate and positive throw of the registering-cam, all of which will be hereinafter more fully explained.

In the accompanying drawings, which form a part of this specification, my invention is fully illustrated with similar letters of reference to indicate corresponding parts, as follows:

Figure 1 represents a side elevation showing a mechanism which operates the indicating-wheels *a* and *c*, and particularly the lever *A* and the guard *d*, which controls its movement and keeps it in line. Fig. 2 represents a side elevation of a portion of the frame *B*, showing the lever *A* independent of its connecting parts. Fig. 3 represents a top or plan view of the lever *A* and the transfer mechanism connected thereto, showing the ball-bearing pin *e*. Fig. 4 is a side elevation of Fig. 3, showing the ball-bearing pin *e* in its position within the cam *e'*. Figs. 5, 6, and 7 represent transverse sections through the lever *A* and cam *e'*, showing the various positions assumed by the ball-bearing pin *e* in its movement. Fig. 8 represents a face view of the guard *d*, showing the four slots which control the movement of the lever *A*.

In order to make the particular features of my improvement clear and to show their complete operation unobstructed by the usual amount of parts employed in cash-registers, I have omitted the greater portion of the parts which do not relate or bear directly upon my improvement.

The operation of the general mechanism is precisely the same as that shown and illustrated in an application filed by me in United States Patent Office, December 3, 1896, Serial No. 614,039, and in which, as in the present invention, the geared segment *h*, Fig. 1, is pro-

vided with teeth to mesh with teeth of small geared wheels *c'* and *a'*, which are secured to the small and large indicating-wheels *c* and *a*, respectively. The geared segment *h* is provided with a rearwardly-projecting arm *h'* and suitable retractile spring *i*, one end of which is secured to the back portion of the frame *B*, the opposite end being secured to the rearwardly-projecting arm *h'*. The contracting power of the retractile spring *i* upon the rearwardly-projecting arm acts as a fulcrum to throw the circular portion of the segment upward, thus causing the small gear-wheels *a'* and *c'* to rotate in the opposite direction and carry with them the indicating-wheels *a* and *c* to which they are secured. This operation is brought about by the escaping pallets *l* and *l'*, which are secured to the lever *A* and escape sufficient to permit the indicating-wheels to make a partial rotation to produce a new indication each time the lever *A* is pressed down. It is of course understood that the power or retractile nature of the spring *i* is sufficient to cause a complete rotation of the indicating-wheel referred to. The retractile spring *i* is readjusted after its power is exhausted by a crank situated on the side of the machine and acting upon a shaft *m*, as explained in my previous application referred to.

The principal feature of my invention, however, relates to the adjustment, alinement, and regulation of the lever *A*, and the ball-bearing pin *e* is connected thereto. Heretofore in all adding-machines, cash-registers, &c., where the lever *A* is used to operate the mechanism by the escaping pallets, the throw of the lever *A* was controlled by the contact of the pallets with the escape-wheel, both in its upward and downward movement, so that the blow struck on the button *s* would exert its full force on the rearward pallet *l* and the upward stroke would exert its force on the forward pallet *l'*. Thus considerable wear would undoubtedly be caused by the contact between the points of the pallet and the escaping wheel acting in connection therewith. When this wear takes place and the pallets thereby are shortened, one stroke of the lever *A* in its downward movement goes farther

than is intended and quite often a double escapement is made instead of a single one, as intended, and in this way the machine becomes absolutely unreliable. To remedy this evil, it has been the custom heretofore to regulate the throw of the lever A within the slots in the front of the case which covers the machine and through which the levers A pass, bringing the button portion s of the lever A on the outside of the case. This method, however, is found unreliable from the fact that where the cases are made of iron the contraction and expansion, together with the warping of the case, destroy the alinement of the levers, and this makes it necessary to leave sufficient room for the free movement of the lever A without bringing it in direct contact with the slots. Another objection is that the metal of the case is usually of a hard brittle cast-iron, and the constant striking of the lever A at the top and bottom of the slot will cause a depression to be worn in the lever at that particular point, and as this depression permits a greater throw of the lever a double escapement will soon take place, as above described. Where wooden cases are used instead of metal, the same objections are found, but to a more serious degree, owing to the shrinkage or warping of the case according to the temperature or dampness, and in both cases when the lever strikes against the top or bottom of the slot the case will act as a sounding-board and a very objectionable noise and clatter is the result. In order to overcome this difficulty, therefore, I have created a guard, as d . (Shown in Figs. 1 and 2.) In Fig. 1 I have shown the guard constructed so as to be attached to any of the existing frames of cash-registers now in use, but in Fig. 2 I have shown it constructed as a part of the frame itself, which is the most economic when new machines are being made.

In Fig. 8 a face view of the guard is shown with the four slots, one for each of the four levers which I employ in my present machine.

As shown in Fig. 1, the guard is formed of one casting, which extends across the face of the frame B and is bolted rigidly to the sides thereof, as shown at s' and s'' . Thus any movement of the guard independent of the frame B becomes absolutely impossible, and when the slots u are closely adjusted, as a guide to the movement of the lever A, it will be quite impossible for the lever to get out of alinement, either laterally or vertically, or to vibrate sufficiently to make it unreliable. At the top or bottom of the slot u I insert a piece of leather u' , which acts as a cushion and absorbs the blow of the lever A. It destroys the metal contact and sound, which is so objectionable and destructive upon the lever. The distance between the leathers u' is such that the throw of the lever is controlled absolutely by the guard d and no strain or wear is permitted on the pallets, as heretofore described.

When the leathers are worn, new ones may

be inserted at very little or practically no cost. Thus the alinement and regulation of the lever A is always maintained and positive and reliable action of the pallets are secured. Ordinarily leather or a vegetable substance—such as compressed paper, leatheroid, or rubber—can be used in the top or bottom of the slot; but it may be desirable in some cases to insert a soft metal—such as lead or a suitable compound of like nature—which would give more wearing and be non-metallic in its sound, thus acting as a cushion to deaden the noise.

Referring to Figs. 3 to 7, inclusive, it will be seen that the transfer mechanism consists substantially of a tripping-plate e^2 , which is carried by the lever A, and which is so mounted and constructed as to be capable of assuming each of two positions, and of a rearwardly-projecting fulcrumed arm or lever, which is suitably connected with and adapted to actuate said tripping-plate, as hereinafter more particularly described. The lever A is provided on one of its sides (the left) with perforated lugs a^2 and on the other side with a flat spring b^2 , which is so shaped as to extend substantially parallel to the side of the lever. A tripping-plate e^2 is mounted upon a suitable pin d^2 , which has bearings at its ends in the perforated lugs of the lever A, and its outer end is bent at right angles to the arm itself and extends through an aperture in the lever A. Its extreme end, which is provided with the usual angular edge, bears against the spring b^2 , by which arrangement the arm is capable of assuming either of two positions. The other or rear end of said tripping-plate e^2 carries a pin f , which projects through the lever A and is provided with a ball-shaped head e . A tongue c^2 forms a portion of the tripping-plate and projects therefrom over the top of the lever. The edge of the tongue, which is nearer to the machine, is inclined for a purpose hereinafter set forth. Contiguous to the rear end of the tripping-plate a rock-shaft v' , having bearings in a tubular v , is journaled. It carries at one of its ends a rearwardly-projecting arm or lever v^2 , which latter is so situated as to be struck by a pin on the indicating-wheel that is operated by the adjoining lever at the right whenever said wheel has exhausted its numbers. At its other end said shaft carries a block or arm f^2 , which is secured at one end to said shaft and which is forked at its other or free end. The forked end of said block is in engagement with the ball-head of the pin f , above described. As will hereinafter be set forth in describing the operation of this mechanism, the tripping-plate e^2 is thrown away from the lever by the upward movement of the block f^2 , actuated by its lever or arm v^2 when the latter is impelled by the blow from the pin on the side of the adjoining indicating-wheel. The means for throwing said tripping-plate back to its normal position is old, as described in the patent to Benton and Hess, already referred to,

and consists of a horizontal bar arranged above the keys and supported by suitable legs pivotally connected at the side and base of the machine-frame. Whenever the crank, by which the indicating-wheels are all returned to the zero positions, is operated this bar, by means of a cam arrangement, is thrown forward and backward above the keys during the revolution of said crank. The bar is furthermore provided with downwardly-projecting lugs, which are beveled on their rear faces, and which when any of the plates on the levers A are thrown away therefrom and during the movement of the horizontal bar actuated by the crank and cam arrangement, engage the tongues on said tripping-plates, so as to throw the latter back to their normal positions. The most important function of this horizontal bar, however, is to depress the levers A whenever their tripping-plates are thrown away from the sides of the levers, so as to be in the path of the lugs on the horizontal bar as the latter is moved outward or forward.

The operation of this transfer mechanism may be described as follows: It must be borne in mind that this mechanism is provided for all but the extreme right lever. Whenever one of the indicating-wheels has exhausted its numbers, its pin, which is arranged on its side, engages the arm v^2 of the transfer mechanism of the adjoining lever, depresses the same, which actuates the forked block so that the tripping-plate, through pin f , is made to assume a position at an angle to the side of the lever A. When the crank by which the indicating-wheels are returned to their zero positions is revolved, the horizontal bar is thrown forward, its downwardly-projecting lugs engage the tongues on the tripping-plates and cause the depression of the levers to which said tripping-plates are connected. The depression of the levers obviously causes one escapement in each wheel which they are adapted to operate. At the return of the horizontal bar the beveled sides of its lugs come into contact with the tongues, so that the same being moved laterally effect the return of the tripping-plate to their normal positions.

It is to be noted that were a straight pin instead of one having a ball-head provided the wear on the parts of such a mechanism as has been described would be considerable, especially if the parts were put together in such a way as to fit nicely and precisely.

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 provided with an indicating-wheel, the combination with the lever A and the tripping-plate e^2 mounted substantially parallel to and at one side of said lever and so constructed as to be adapted to be tripped to either of two positions relatively to said lever, of suitable independent mechanism constituting operative connection be-

tween the tripping-plate and the wheel, substantially as described.

2. In a cash-register provided with an indicating-wheel, the combination with the lever A and the tripping-plate e^2 mounted substantially parallel to and at one side of said lever and so constructed as to be adapted to be tripped to either of two positions relatively to said lever, of a rock-shaft journaled in the lever and provided with arms, by the one of which the rock-shaft is adapted to be actuated by said wheel and by the other of which said rock-shaft is adapted to actuate the tripping-plate, substantially as described.

3. In a cash-register provided with an indicating-wheel, the combination with the lever A and the tripping-plate e^2 , having a laterally-extending pin e , mounted substantially parallel to and at one side of said lever and so constructed as to be adapted to be tripped to either of two positions relatively to said lever, of a rock-shaft journaled in the lever and provided with a forked arm operatively connected with the pin e , and with a rearwardly-projecting arm adapted to be actuated by the wheel so as to rock the rock-shaft and trip the tripping-plate, substantially as described.

4. In a cash-register provided with an indicating-wheel, the combination with the lever A and the tripping-plate e^2 having a laterally-projecting ball-head pin e and mounted substantially parallel to and at one side of said lever and so constructed as to be adapted to be tripped to either of two positions relatively to said lever, of a rock-shaft journaled in the lever and provided with a forked arm receiving the ball-head of said pin e , and with a rearwardly-projecting arm adapted to be actuated by the wheel so as to rock the rock-shaft and trip the tripping-plate, substantially as described.

5. In a cash-register provided with an indicating-wheel, the combination with the lever A and the tripping-plate e^2 having a laterally-projecting ball-head pin e penetrating said lever, said tripping-plate being mounted substantially parallel to and at one side of said lever and being so constructed as to be adapted to be tripped to either of two positions relatively to said lever, of a rock-shaft journaled in the lever and provided with a forwardly-extending forked arm receiving the ball-head of said pin e and with a rearwardly-projecting arm adapted to be actuated by the wheel so as to rock the rock-shaft and trip the tripping-plate, substantially as described.

6. In a cash-register provided with indicating-wheels, the combination with each pair of said wheels, of a lever A adapted to operate one of said wheels in each pair, a tripping-plate e^2 having a laterally-projecting ball-head pin e which penetrates said lever, said tripping-plate being mounted substantially parallel to and at one side of said lever and so constructed as to be adapted to be tripped to either of two positions relatively to said

lever, a rock-shaft journaled in the lever and provided with a forwardly-extending forked arm receiving the ball-head of said pin *e*, and with a rearwardly-projecting arm adapted to
5 be actuated by the other of said wheels of each pair so as to rock the rock-shaft and trip the tripping-plate, and suitable mechanism for engaging the tripping-plate in its tripped position so as to actuate the lever and for re-
10 turning said tripping-plate and the rock-shaft to their initial positions, substantially as described.

7. In a cash-register, the combination with the frame and with the operating key-levers
15 of said cash-register, of a detachable plate mounted on said frame and provided with slots through which said levers are adapted to project and which are adapted to limit the

vibrations of said levers, the surfaces at the ends of each slot being arranged parallel to
20 the contact portions of the surface of the corresponding lever in the respective limits of its vibrations, a downwardly-projecting and a rearwardly-projecting supporting-arm carried by said plate near each end thereof, and
25 a flat elastic buffer mounted on each end surface of each slot, substantially as described.

In testimony that I claim the foregoing improvements in cash-registers, as described, I have hereunto set my hand this 19th day of
30 November, 1896.

ALBERT LATHAM.

Witnesses:

CHAS. E. STRONG,
M. E. HECKMAN.