C. J. STIMSON.

PRINTING AND CALCULATING MACHINE.

APPLICATION FILED NOV. 27, 1917.

1,397,559.

Patented Nov. 22, 1921.

6 SHEETS—SHEET 1.

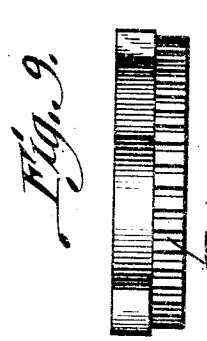


Fig. 9.



Fig. 8.

Fig. 1.

Fig. 7.

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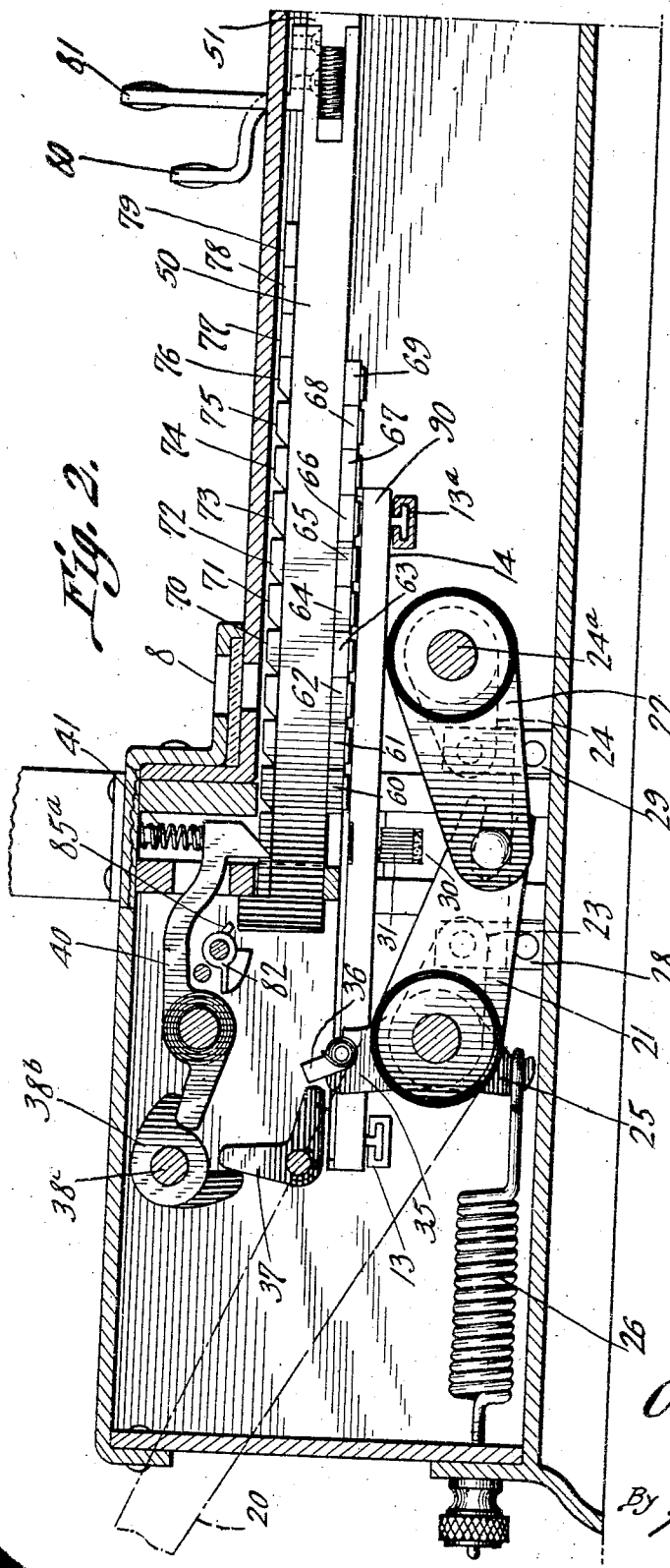


Fig. 2.

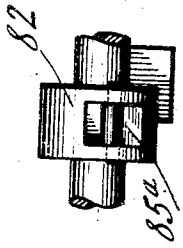


Fig. 12.

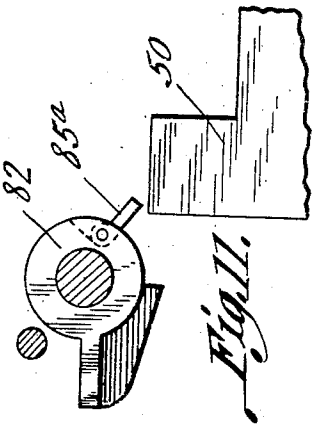


Fig. 11.

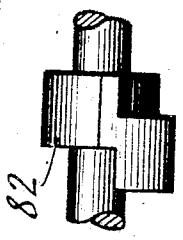


Fig. 10.

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6 SHEETS—SHEET 3.

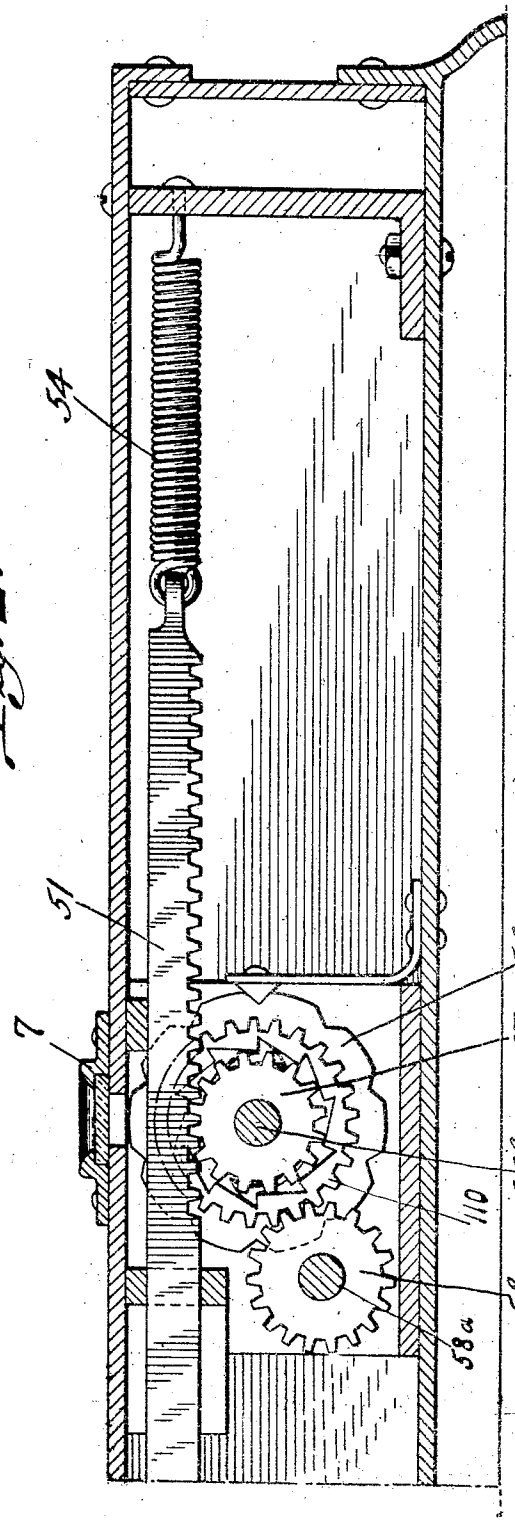


Fig. 2.



Fig. 6.

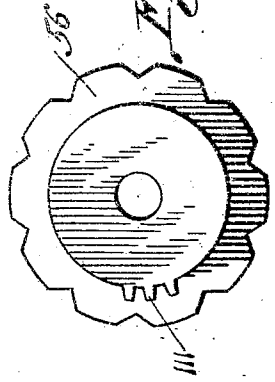


Fig. 5.

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6 SHEETS—SHEET 4.

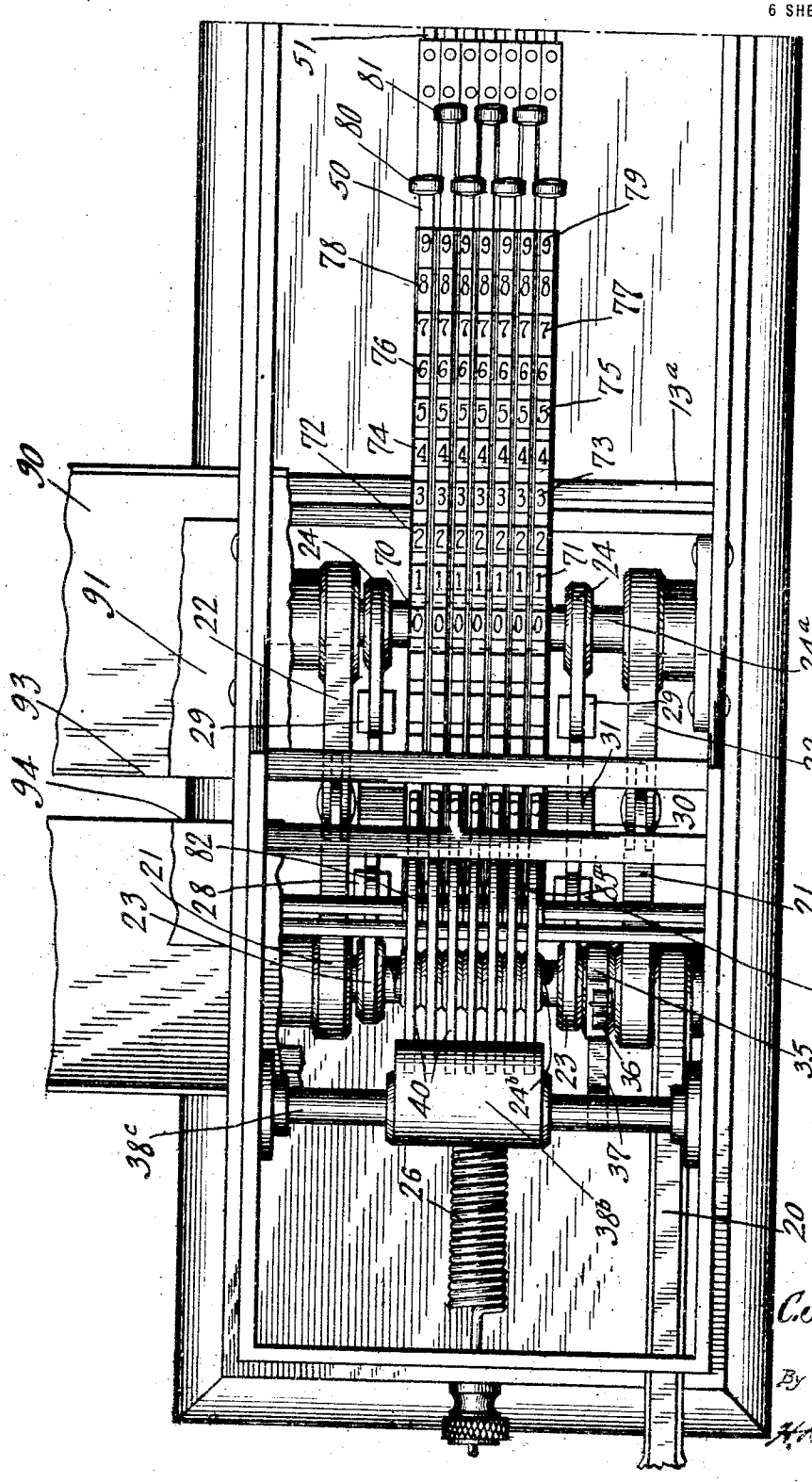


Fig. 3.

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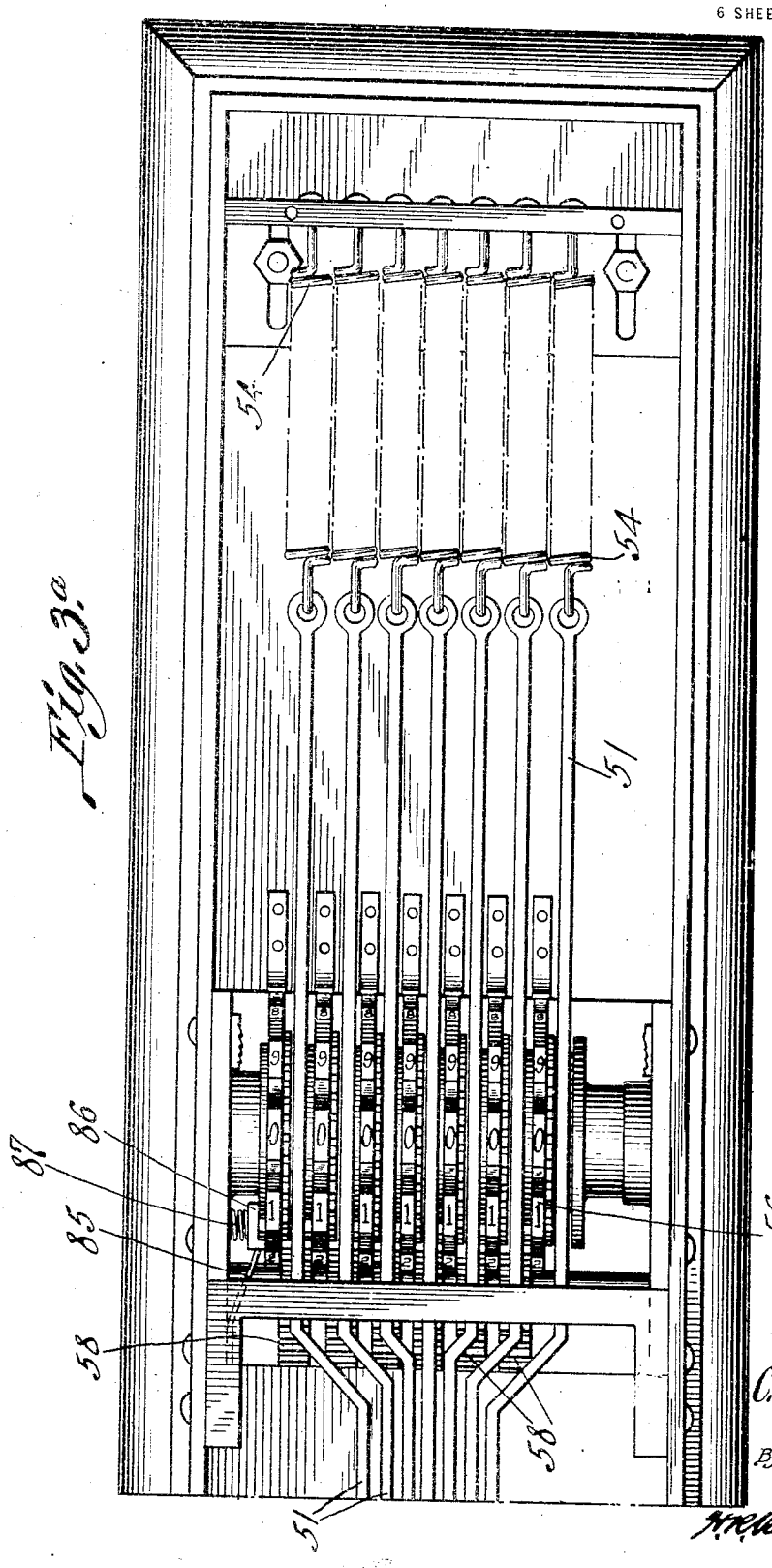
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6 SHEETS—SHEET 5.

Fig. 3a.



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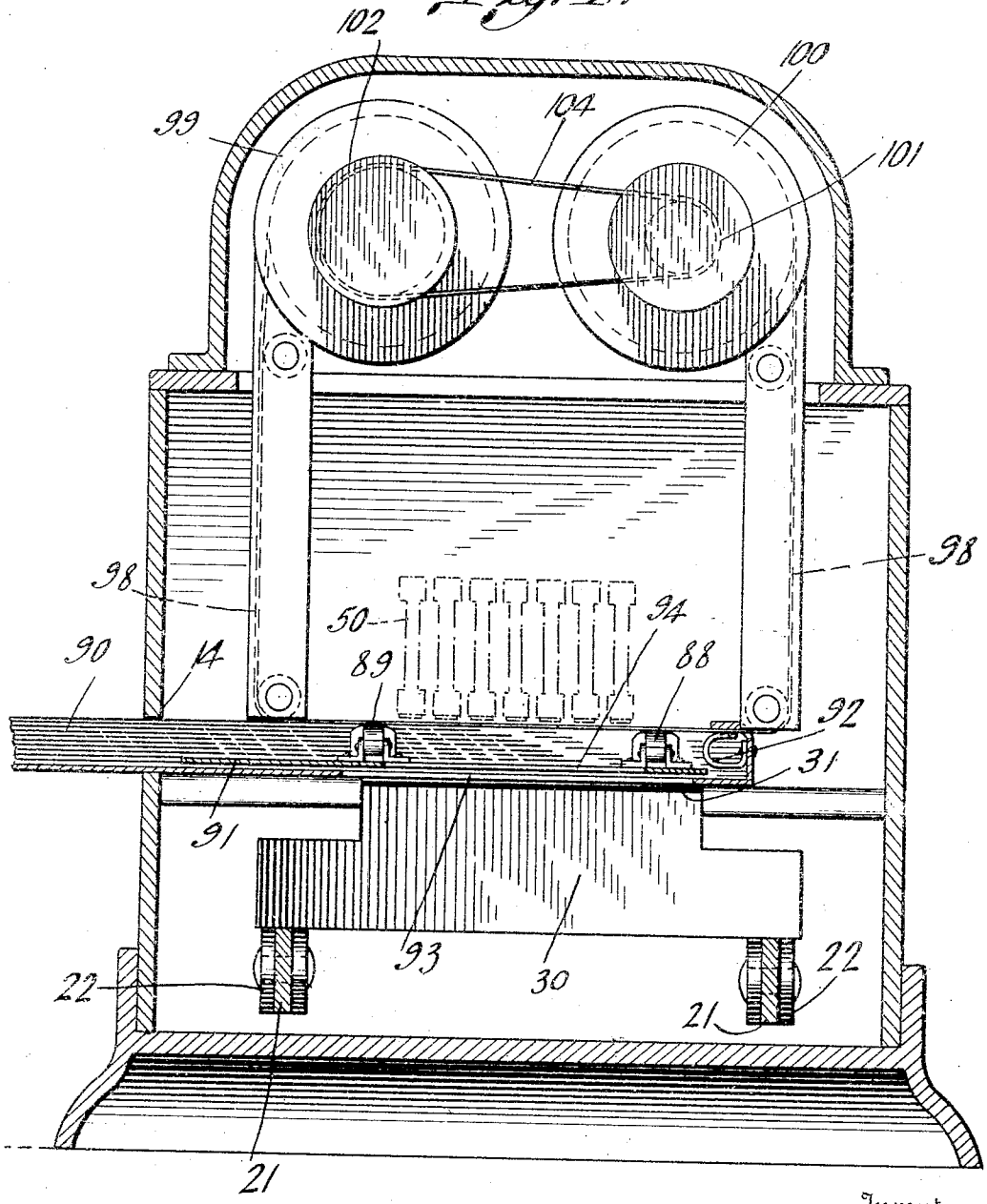
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6 SHEETS—SHEET 6.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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PRINTING AND CALCULATING MACHINE.

1,397,559. Specification of Letters Patent. Patented Nov. 22, 1921.

Application filed November 27, 1917. Serial No. 204,234.

To all whom it may concern:

Be it known that I, CLAUDE JARVIS STIMSON, a citizen of the United States, residing at Brunswick, in the county of Glynn and State of Georgia, have invented certain new and useful Improvements in Printing and Calculating Machines, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to calculating and printing devices. One of the objects of my invention is to provide a machine for the printing of checks or bank drafts and perforating the figures thereon. Another object is the computing or substracting of all checks written, from an original balance or specified sum, and showing the result obtained after each check is printed, this being accomplished in conjunction with perforating the figures. A further object is the keeping of an accurate balance shown on a dial on the instrument.

Another object is the provision of a locking device, which automatically locks itself when such specified amounts have been subtracted and the amount of the balance is at zero. This function is intended to stand as a protection against the printing of more checks than a specified sum, or overdraft of a bank balance.

To enable the invention to be readily understood, I shall first describe the operation thereof, and then describe the mechanism whereby the objects above mentioned are attained.

The indicating mechanism is in the form of two dials, 7 and 8, on the top of machine, 8 indicating the figures showing the amount of check to be stamped. This is the check reading dial. The second dial 7, which is the balance reading dial, indicates the specified balance or sum at which the machine is set. As an illustration, set the balance reading dial to show $1000.00, and wishing to write checks of $100.00, $300.00, and $400.00 each, proceed as follows:

For the $100.00 check start at the left hand decimal, showing the $100.00 column in the check reading dial, pull the finger slide toward the stamping lever 20, then setting the ciphers indicating one hundred on the left hand side of the dollar period and two ciphers on the right hand, indicating the cents column. A blank check is then placed in the check holder 90, which is in the form of a slide. After the check is placed, this slide is placed in proper position to hold the check on the stamping dies. The stamping lever is now pressed down and released and returns to normal position, releasing the setting slides which also return to normal.

With this operation, the calculating device subtracts the $100.00 from the former balance of $1000.00, leaving $900.00 showing on the balance reading dial 7.

The same operation being performed in the same manner will obtain the results of $600.00 showing on the balance reading dial after $300.00 has been stamped, and $200.00 after the $400.00 check has been stamped. This would leave a balance of $200.00 showing on the balance reading dial.

An additional check for $200.00 or less, or as many checks as will make a sum total of $200.00 may be written, but when this sum of $200.00 has been subtracted from the balance the machine automatically locks itself by means of a locking device placed in the machine, which may be controlled by a key inserted at 86^a, this key allowing the machine to be reset to such amounts as may be desired.

I will now describe the mechanism whereby the foregoing is accomplished, reference being had to the accompanying drawings, in which Figure 1 is a top view of a device embodying my invention, Figs. 2, and 2^a, a side view partly in section of the device, Fig. 1. Figs. 3 and 3^a, is a top view of the interior mechanism. Fig. 4, a view partly in section, at right angles to Fig. 2, through the stamping mechanism, and Figs. 5, 6, 7, 8, 9, 10, 11, and 12, detail views of parts of the device. Like figures of reference denote the same parts wherever shown.

The stamping device of the machine is composed of a series of bars 50. This series of bars are placed in the machine, side by side, as shown in the figures, with a unit and tens bar to represent the cents, then the period space between these bars and the bars for the dollar columns. After the two bars representing the cents, we have the dollar units, tens, hundreds, thousands, etc. As many of these bars may be placed in the machine as to allow for as large size checks that may be desired. Each one of these bars has a series of figures, from 0 to 9, inclusive, placed in consecutive order as shown by the

numerals in Fig. 2 as follows: 60 represents 0, 61 represents 1, 62 represents 2, and so on up to 69 which represents 9, these dies forming regular printing dies, except that the surfaces of the dies are corrugated for the purpose of perforating the check. On top of the bars 50 are placed the indicating numbers to correspond with the figures on the dies. These figures are represented by the numerals 70 to 79, inclusive, 70 representing 0, 71 representing 1, 72 representing 2 and so on to 79 which represents 9.

Under the type bar 50 and placed in front of the die representing 0, which is designated by the numeral 60, the distance in front of the type representing 0 being the width of one die, is placed in the machine the stamping bar 31 Fig. (2). This is made up of a series of thin steel blades and embedded with a hard rubber composition in a groove on the top of the stamping bar, the stamping bar being controlled by a series of lift levers which will be described in a later paragraph.

The type bars 50 are controlled from the exterior of the machine by a series of finger slides or slide levers, as shown on Fig. (1). These slide levers, indicated by 80 and 81, Fig. (2), are used to slide the type over stamping bar, and are held in position by the spring catch 40, which automatically catches the type bar and holds it in position over the stamping bar at the desired figure, the series of catches and springs designated by the numerals 40 and 41, there being one catch to each bar. This catch is so constructed and operated by the stamping lever 20 that when one check is placed in the machine and stamped, and the stamping lever goes back to its former position, it releases all of the series of catches 40 and 41 allowing all the type bars to go back to their former position, which guards against the stamping of more than one check with one setting of the machine. The type bars are so constructed that when the bars are moved forward to show a desired amount by the indicating figures on the bars 50 in the check reading dial 8 Fig. (2), the type bars will be placed in such a position over the stamping bar 31 that the same amount showing on the dial 8 will be over the stamping bar 31, thus stamping on the check the amount as shown on the check reading dial 8.

The attachment placed at the end of type bar under the slide levers consists of a small expansion spring which pulls the type bar 50 when released back the width of one type beyond the stamping bar 31. This attachment is provided so as to prevent the computing device registering more than the desired amount and to prevent the 0 from being stamped at the left hand side of the figures of the check.

The stamping device is controlled by the stamping lever 20 which is fixed on two shafts 24^a and 24^b, there being a series of cams and lift bars, 21, 22, 23, 24 for the cams and lift bars 28 and 29 lifting bars 30 which bear under each end of stamping bar 31, there being a set of these cams and lift bars on each side of the machine so placed as to lift the stamping bar 31 against the type when the stamping lever is pressed down to stamp the check, this operation stamping and perforating the check.

Attached to the shaft 24^b is a cam 25 attached to a tension spring 26 which creates the tension on stamping lever 20 and pulls it back to normal position after the check is stamped and lever is released.

There is also a cam 35 attached to shaft 24^b, with rolling catch 36, which when stamping lever 20 is pressed down, drops under small cam lever 37 and when lever 20 is released the upward pressure forces the cam 37 to revolve the tripping cam 38^b, revolving on shaft 38^c. The tripping cam presses on the series of catches indicated by the numeral 40, so that the final operation of the stamping lever 20, being pulled back up to normal position releases all of the type bars 50, thus restoring the machine to normal. The type bars 50, when released by the above operation, are pulled back to normal by means of tension springs 54.

The series of bars represented by the numeral 51, Fig. (2) with the cog gear on the bottom edge, which when pulled forward by the setting levers 80 and 81 and bars 50, revolve the ratchet cog gear 57 on shaft 56^a, this ratchet being constructed in such a manner as to only revolve the computing units 56, so that when the type bar 50 is moved forward one figure, it revolves the computing unit 56, one tenth of a revolution, or as many tenths as represented by the figure to which the type bar 20 is set, viz: if set at 5, the computing unit is revolved five tenths of a revolution. Upon the right-hand face of each unit 56 is a gear 110 (see Fig. 2^a), and on the left-hand face of each unit are three cogs 111 which represent one-tenth of a complete revolution of the unit. Loosely mounted on a shaft 58^a, and located between the adjacent units 56, are cog gears 58 which are at all times in mesh with the gear teeth 110, and with which cogs 111 mesh when the unit to which they are attached is rotated. With this arrangement, upon rotation of one unit through a complete revolution the cogs 111 of this unit will be brought into engagement with the gear 58 causing the same to rotate the next succeeding unit. An inspection of Fig. 3^a will show that the gears 58 are of appropriate width to engage the gear 110 at all times and to be engaged by the teeth 111 as they approach. Thus, with each complete revolution of the computing

unit, the next higher decimal of the computing units, or the next one to the left is revolved one tenth of a revolution, thus carrying or transferring the amounts from one decimal unit to the next forward computing unit.

A sectional detail of the computing units is shown by the Figs. (6), (7), (8) and (9), and a sectional detail of the revolving ratchet is shown by Figs. (10), (11), and (12), this ratchet revolving on the same shaft as the computing unit and working in conjunction with the slide bars revolves the computing unit only in one desired direction, these units working in conjunction with each other by means of a series of cog gears 56 and the subtracting result being obtained by simply placing the figures on the computing units to read downward or from 9 to 0 and in this manner acting as a subtractor.

The locking device is controlled by a key which may be inserted at 86ª, and which engages a member 86 pivoted at one end and pressed by spring 87 at its other end and operating locking bar 85. This lock is held against the largest decimal computing unit, so that when this computing unit revolves to zero or position shown in Fig. (3), its gear teeth 111 are stopped by the member 86 and the unit blocked automatically, and as each of the remaining units revolves to the same position they are in turn locked automatically; that is, when all the computing units stand at 0 the entire machine is automatically locked. The key for actuating the spring bar 85 and the lock or latch 86 is inserted in the key-hole 86ª, shown in Fig. 1, causing the release of the lock during such time as the registering apparatus is being set with the maximum desired. As soon as the setting is complete the key is turned permitting the lock 86 to lie in the path of the teeth 111 and engage the same at the expiration of the registering function allowed by the setting. It will be evident that this mechanism provides for the functioning of the printing and registering device only so long as the latter is free from the action of the lock. As soon as the register totals are exhausted by the successive movements of the type bars, the lock becomes effective and the machine prevented from further use until such time as the lock is released and the registering mechanism reset.

In addition to these parts of the locking device and working in conjunction with it, are a series of tumblers 82. These tumblers operate to prevent the slides being set only from left to right of the machine. These tumblers operate so that when the bar 50 is moved forward to any figure to be stamped, it revolves these, each tumbler in turn revolving all the tumblers to the left, and causing the locking bar 85ª to drop down in front of the ends of all the remaining bars 50 to the left of the bar thus moved, making it impossible to set any of the type bars to the left of the first one set, this completing the locking of the machine, and preventing the false computation of any amounts other than the exact amounts printed on the checks.

The check holding slide 90 operating in slot 14 on the guide tracks 13 and 13ª is so constructed that when it is desired to place the blank check in the machine this slide is pulled out of the machine to a point where the check can be easily placed in the slide under the holder 91. Actuated by the springs 88 and 89, the holder 91 holds down the check in the slide in the desired position. The slide and holder are provided with slots 93 and 94, so as to allow the stamping bar 31 to pass through these slots and press the check against the type.

The check slide operates the ribbon attachment, the ribbon attachment being shown by the dotted line 98 passing through the spring clamp 92 which only operates the ribbon in one direction, thus renewing the ribbon under the type each time the slide is pushed in to insert the check. The ribbon attachment comprises a spool 99 for unwinding, and a winding spool 100 placed on the cylinders 101 and 102, the ribbon being wound on to the winding spool by means of the friction belt 104 revolving the cylinder 101 as the cylinder 102 is revolved by the ribbon being pulled off this spool by the operation of the check slide. The unwinding cylinder having a larger pulley than the winding pulley, it by means of the friction belt 104 keeps a tension on the ribbon as it passes over the type. The clamp 92 has a free end directed toward the inner end of the slide 90, and this free end of the clamp engages against the overturned edge of the end of the slide so that when the slide is pulled outwardly, movement of the ribbon is not effected, but when the slide is pushed inwardly the end of the clamp tends to bite into the ribbon so that the ribbon is gripped between the clamp and the overhanging flange or edge of the slide and the ribbon will be unwound from the spool 102 and wound upon the spool 101.

Having thus described my invention, I claim:

1. In a device of the class described, a plurality of type elements, a platen, means for shifting said elements, means for moving said platen, and means for preventing actuation of the typing elements of higher order after the operation of a typing element of lower order.

2. In a device of the class described, a plurality of type bars, a platen, means for shifting said bars, means for moving said platen, and means for preventing the actua-

tion of the bars of higher order after the actuation of a bar of lower order.

3. In a device of the class described, a plurality of type bars, a platen, means for shifting said bars, means for moving the platen, a totalizer operated upon actuation of the shifting means, and means for preventing the actuation of a bar of higher order after the actuation of a bar of lesser order, said means comprising a plurality of tumblers so arranged that upon actuation of one of the tumblers all of the tumblers to one side thereof will also be actuated so as to move into the path of the bars of higher order.

4. In a device of the class described, a plurality of type bars, means for shifting the same, a stamping bar below said type bars, a slide adapted to receive a check or the like and to be moved into and from position between the type bars and stamping bar, a ribbon, and flexible ribbon-engaging means carried by the slide for moving the ribbon when the slide is moved.

5. In a device of the class described, a plurality of type bars, a stamping bar below the same, a slide adapted to be moved between the type bars and stamping bar, a ribbon, and a clamp carried by the slide and coöperating with the ribbon for moving the ribbon when the slide is inserted into position between the type bars and stamping bar.

6. In a device of the class described, a plurality of type elements, a stamping bar, a slide carrying an abutment and adapted to be moved to and from position between the type elements and stamping bar, a ribbon movable across the face of the type elements, and a spring clamp having a free end turned toward the inner end of the slide and adapted when the slide is pushed inwardly to force the ribbon against the abutment on the slide whereby the ribbon is given a step-by-step movement.

7. In a device of the class described, a plurality of type bars, a registering disk operatively connected to each of said type bars, a projection on each disk, means in engagement with said disks and projections for transmitting motion between adjacent disks, and a displaceable detent normally in the path of one of said projections.

In testimony whereof I hereunto affix my signature.

CLAUDE JARVIS STIMSON.