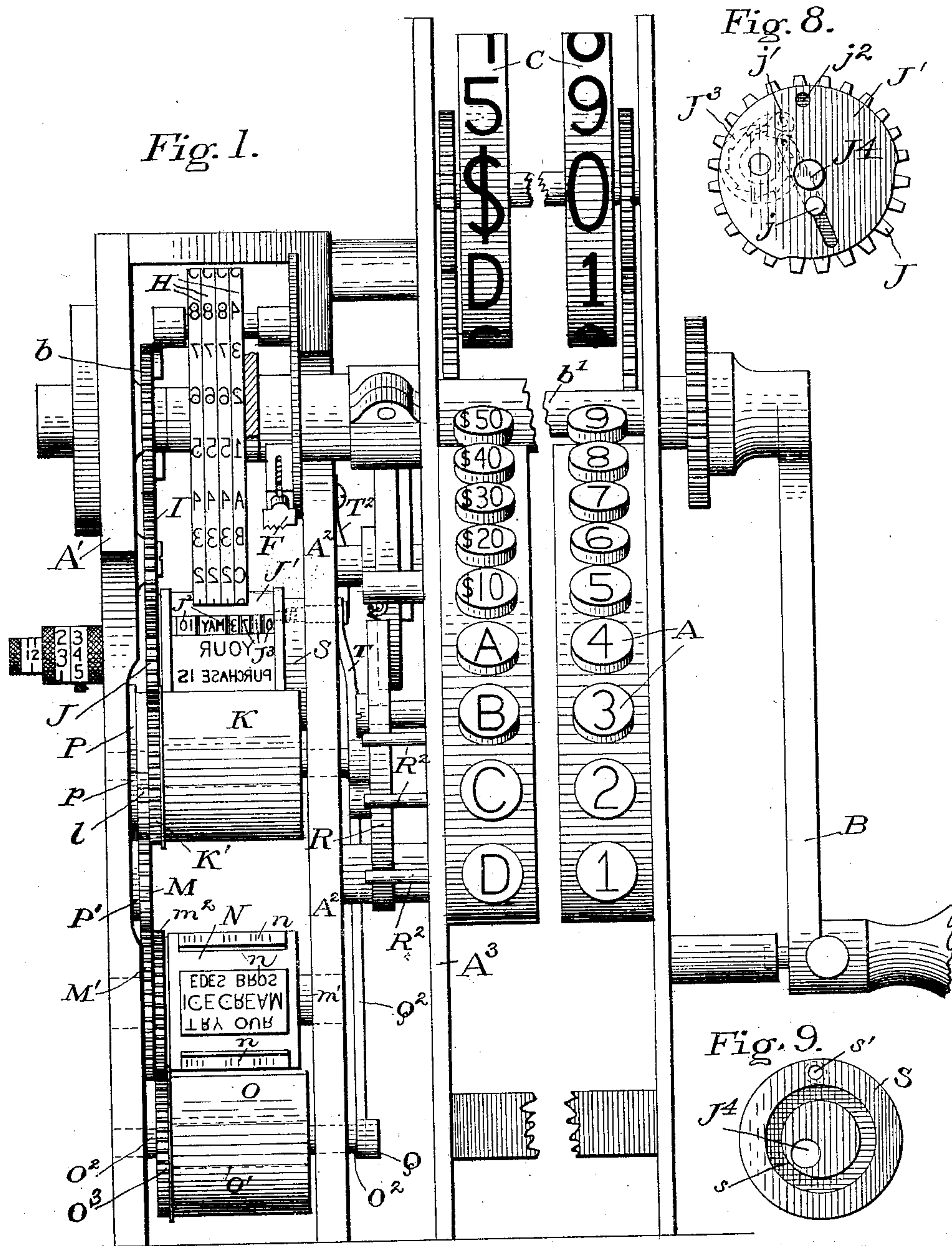


PATENTED DEC. 22, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:
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J. P. CLEAL.
PRINTING DEVICE FOR CASH REGISTERS.

APPLICATION FILED OCT. 9, 1897.

NO MODEL.

4 SHEETS—SHEET 2.

Fig. 2.

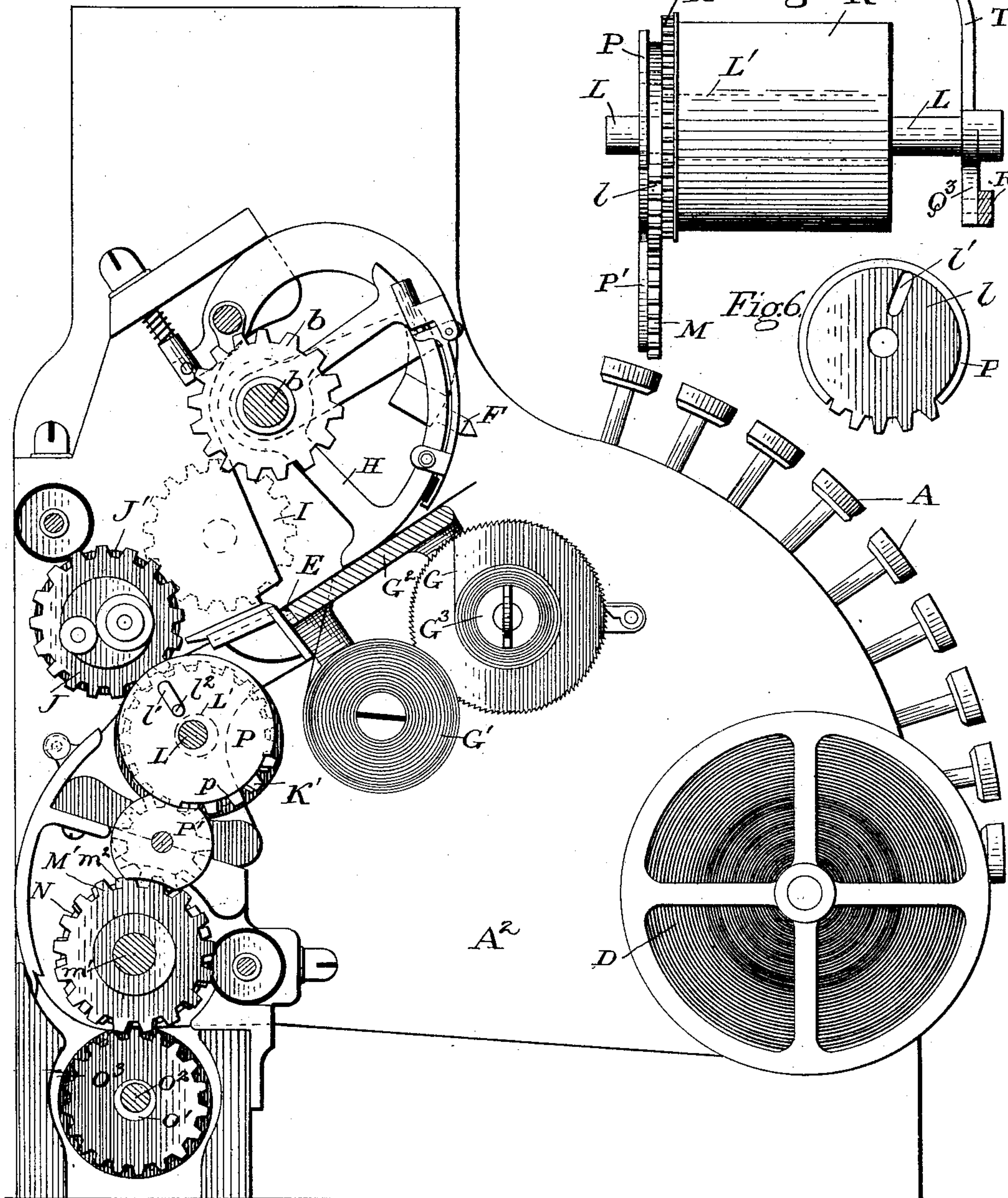


Fig. 5.

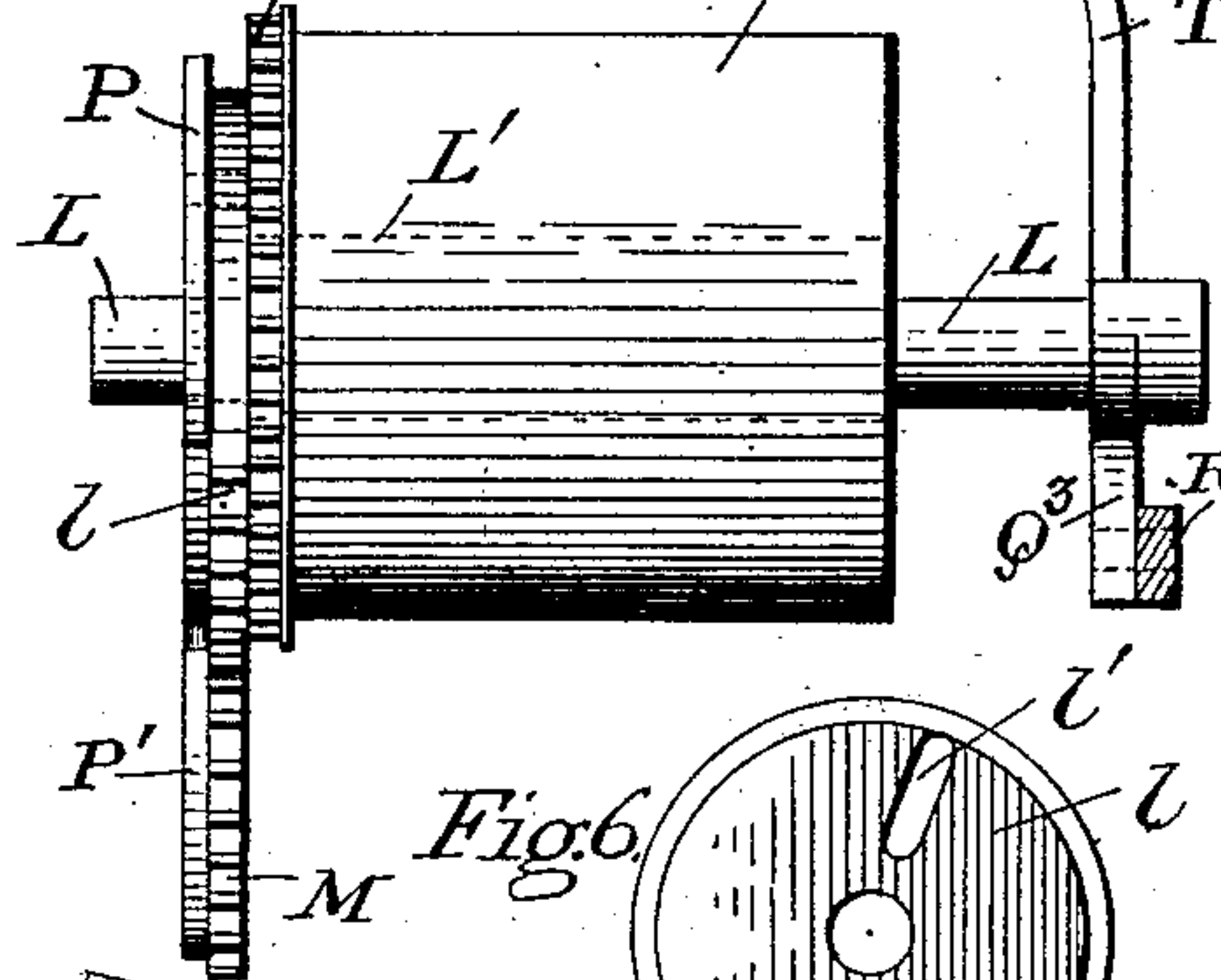
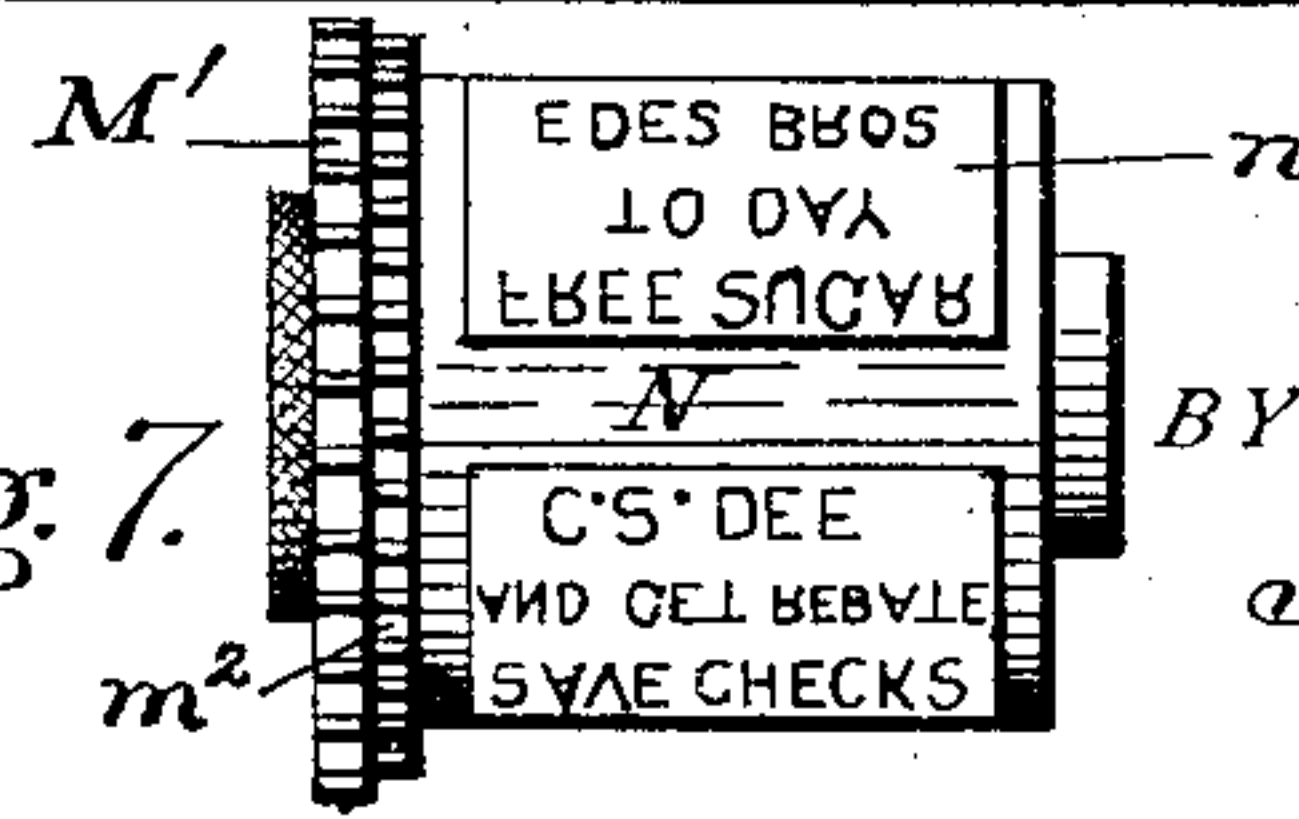
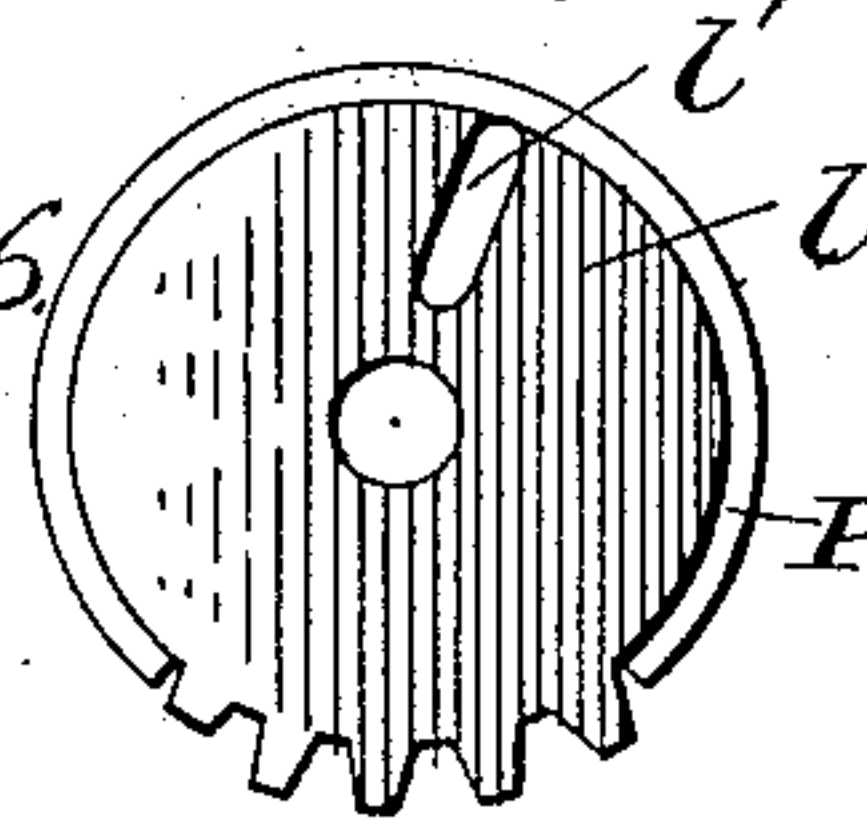


Fig. 6.



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Fig. 7.

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No. 747,855.

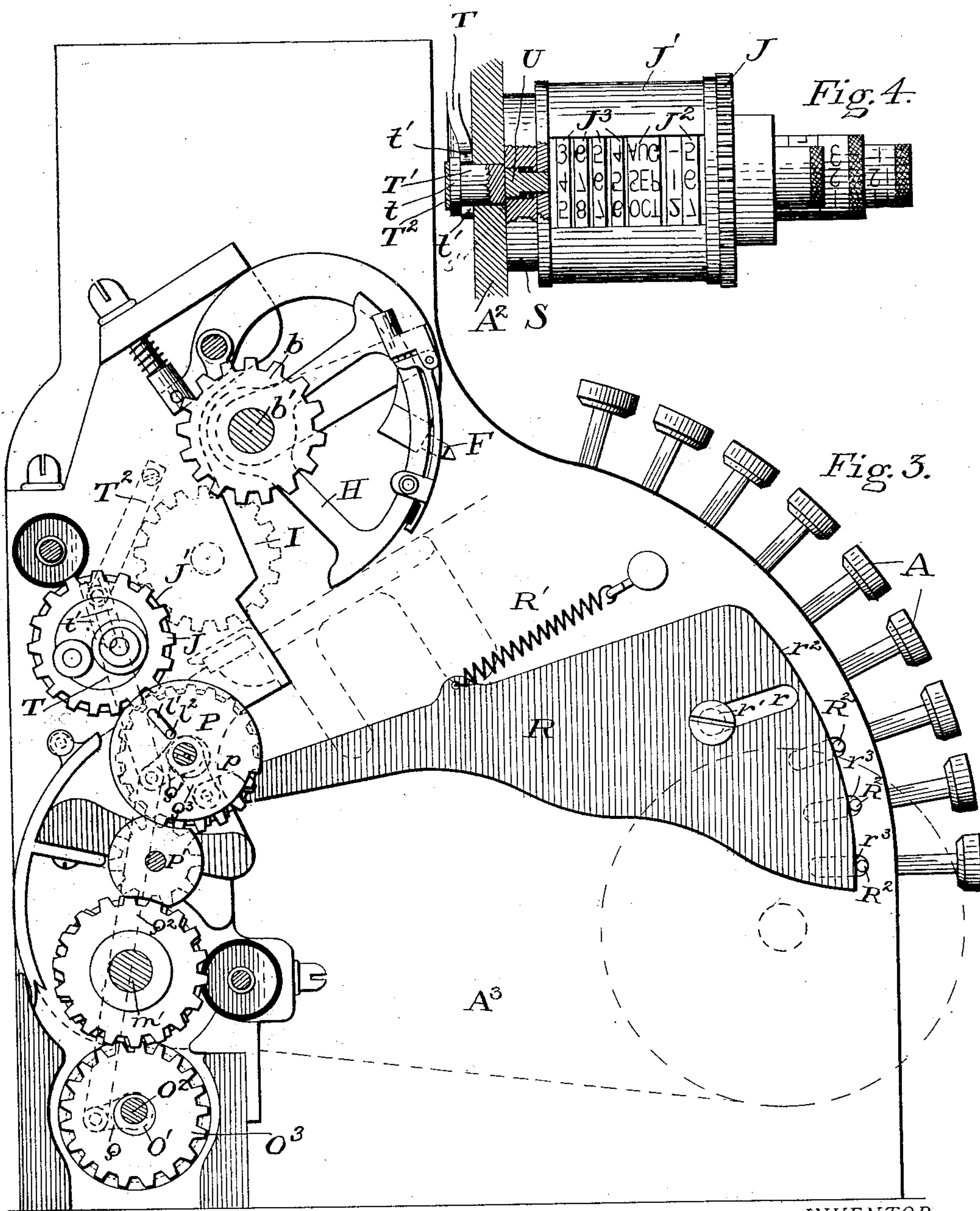
PATENTED DEC. 22, 1903.

J. P. CLEAL.
PRINTING DEVICE FOR CASH REGISTERS.

APPLICATION FILED OCT. 9, 1897.

NO MODEL.

4 SHEETS—SHEET 3.



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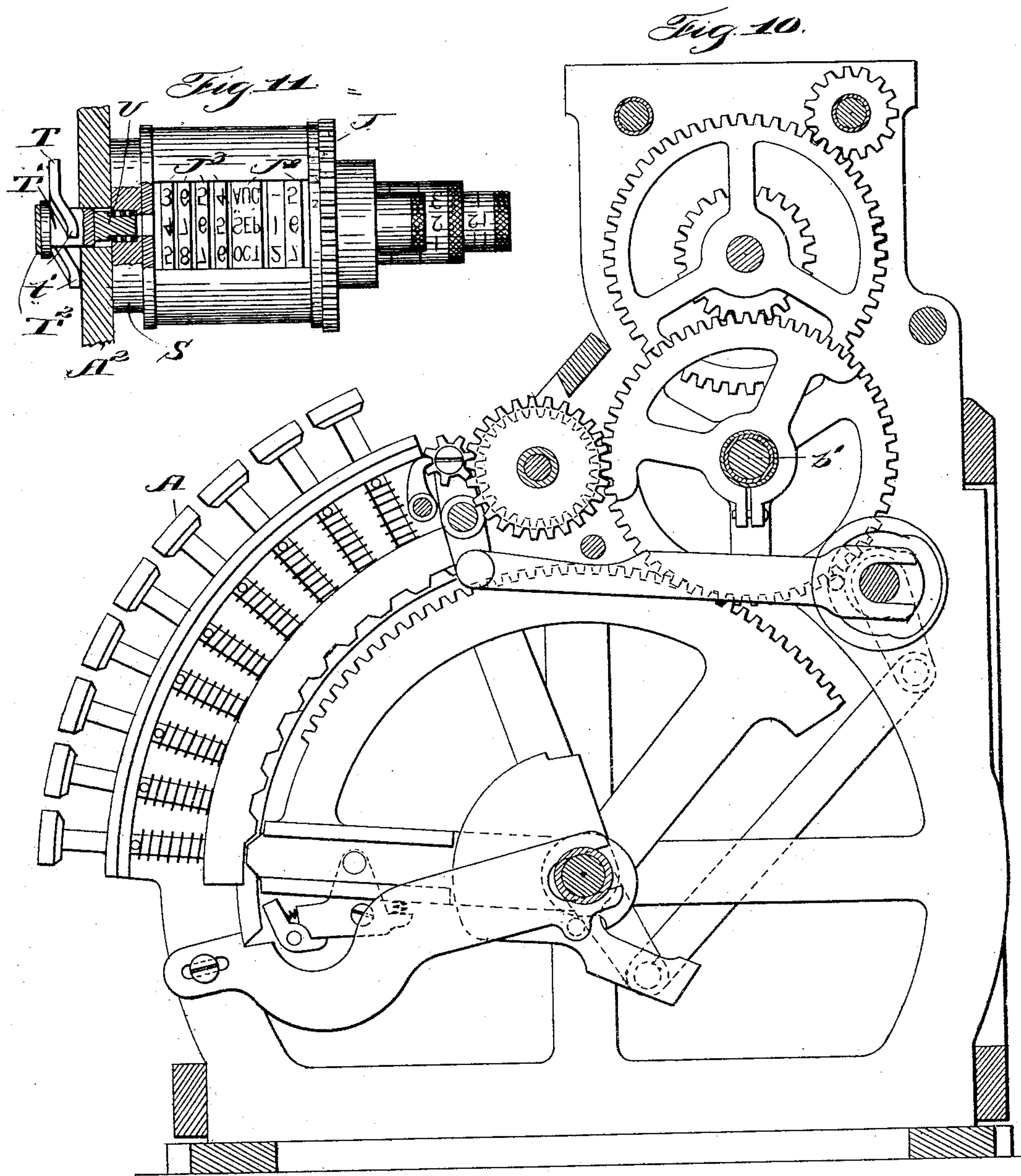
PATENTED DEC. 22, 1903.

J. P. CLEAL.
PRINTING DEVICE FOR CASH REGISTERS.

APPLICATION FILED OCT. 9, 1897.

NO MODEL.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

JOSEPH P. CLEAL, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

PRINTING DEVICE FOR CASH-REGISTERS.

SPECIFICATION forming part of Letters Patent No. 747,855, dated December 22, 1903.

Application filed October 9, 1897. Serial No. 654,616. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. CLEAL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Printing Devices for Cash-Registers; and I do hereby declare the following to be a full, clear, and exact description of the invention.

My invention relates to an improvement in printing devices as applied to cash-registers; and it consists of means intermediate certain keys or one or more of the banks of keys and the feeding or printing mechanism, whereby when certain of the keys are pressed a check will be issued and the printing mechanism will print upon it the amount of the operated keys and various data regarding the transaction—such as the consecutive number, the kind of transaction, &c.—and when other of the keys are pressed no check will be issued and the printing mechanism will be inoperative.

When my invention is applied to a machine that prints and issues a check, the intermediate mechanism before referred to operates to throw the device which feeds the check-strip into or out of engagement, according to the key pressed.

A second feature of my invention relates to means whereby the type-wheels which print the consecutive number on the check-strip are actuated only when the other printing mechanisms are operative. In other words, when a registration is made if no check be issued the consecutive-numbering wheels do not move relatively to each other. If, however, a check is issued, the numbering-wheels turn one notch to print upon the check its consecutive number.

A third feature relates to means for printing on the backs of the checks issued by a cash-register, the invention automatically printing different advertisements on the backs of successively-issued checks.

In the drawings for purposes of illustration I have shown my invention as applied to a machine like that described in the patent to Cleal and Reinhardt, No. 580,378, dated April 13, 1897.

In the drawings, Figure 1 is a front eleva-

tion view of part of the machine like that described in the Cleal and Reinhardt patent above referred to, with my invention applied thereto. Fig. 2 is a side elevation of the cash-register with my improvement added to the printing device thereof. Fig. 3 is a view similar to Fig. 2, except that the side of the case of the machine is removed to more clearly show the intermediate means connecting the keys and the feeding and printing devices. Fig. 4 is a detached view of the printing-cylinder, partly in section, to show the means employed whereby the printing-cylinder becomes operative when certain of the keys are pressed, though it is normally inoperative. Fig. 5 is a detached view of the feed-roller which is eccentrically journaled and normally inoperative, but arranged so that if certain of the cash-keys are pressed it is thrown into operative position to feed the check-strip. Fig. 6 is an end view of a mutilated gear and locking-disk that are shown at the left-hand end of the feed-roller shown in Fig. 5. Fig. 7 is a detail view showing the cylinder which is arranged to print upon the back of the checks. Fig. 8 is an elevation view of the right-hand end of printing-cylinder as shown in Fig. 1. Fig. 9 shows an eccentrically-grooved disk located at the right-hand end of the printing-cylinder shown in Fig. 8. Fig. 10 shows a vertical section through the machine. Fig. 11 shows a detail elevation of the printing-cylinder in condition so that the consecutive-numbering device will be advanced one number by the subsequent operation of the machine.

In all the figures of the drawings the same letters of reference indicate identical parts.

The type of cash-register to which my invention as shown is applied is fully described in the patent to Cleal and Reinhardt, before referred to, also in a number of other patents, and the machine is, moreover, well known, so that I shall describe only so much of the cash-register as is necessary to an understanding of my invention, reference being had for a fuller description to the prior art.

In a cash-register like that shown in the drawings when a transaction is to be recorded the proper cash-keys A are pressed and the crank B turned, whereupon the amount and

character of the transaction are shown upon the indicators C, the amount of the transaction is added upon the registering-wheels, (not shown,) and simultaneously a check from the paper roll D is printed by the printing device, severed by the reciprocating knife E, and ejected by the check-ejector arm F in the usual manner. At the same time also the amount and character of the recorded transaction is also printed upon the detail-strip G, which is led from the supply-roll G' over the platen G² to the record-roll G³. The supply-roll and the record-roll, it will be understood, are secured upon and movable with the platen-frame, which also carries the knife E. When the keys are pressed and the handle turned, the platen immediately moves up and presses the detail-strip against the type-segments H, thereby printing on the said strip the amount of the last-recorded transaction. The platen then moves downward, the type-segments assume a new position according to the keys which have been pressed, the end of the check-strip is projected across the platen between it and the type-segments, the platen then moves up forcing the end of the check-strip against the type-segments, so that the amount of the recorded transaction is then printed upon the check, and the knife E then severs the check from the check-strip, and finally the spring-impelled check-ejector F throws the severed check out into a suitable receiver, all as described in the patents before referred to. In the machine shown in the drawings the feed-rollers, &c., which lead the end of the check-strip across the knife E and the platen G² are normally inoperative; but when certain of the keys are pressed various connecting mechanisms are thrown into engagement, so that the feeding devices become operative and the check is issued. It is entirely a matter of preference which of the keys are arranged to cause a check to be issued when they are operated. In the drawings I have shown the special keys in the left-hand bank (designated B', C', and D', respectively) so arranged, but this arrangement is simply for purposes of illustration and any other desired arrangement can be made.

The driving mechanism consists in the present instance of the crank B, and every time it is turned the main gear b, which is secured upon the end of the transverse shaft b', is given a complete revolution. From said gear the motion is transmitted through the intermediate gear I to the gear J, which is secured upon the left-hand end (see Fig. 1) of the printing-cylinder J', within which are the type-wheels for dating and numbering the checks and printing the proprietor's business card upon the front thereof in the usual manner. For a fuller description of the printing-cylinder reference may be had to the patent to Wm. Murphy, No. 541,247, dated September 18, 1895, where it is described in detail. The main gear b, the intermediate gear I, and the gear J are so proportioned that whenever

the crank is turned the printing-cylinder is given a complete revolution. Journaled upon a transverse shaft below and slightly in front of the type-cylinder is a feed-roller K. The said transverse shaft is journaled at its ends L in suitable bearings in the fixed frames A' A². Between said ends L the transverse shaft has a portion L' of enlarged diameter which is eccentric with respect to the said ends. The feed-roller K is mounted to turn on the enlarged eccentric portion L', and the gear K', which is secured rigidly to the end of the feed-roll, is in constant mesh with the gear J of the printing-cylinder, so that the feed-roller also is given a complete revolution every time the crank B is turned. Mounted also upon the transverse shaft, but upon the left-hand end L thereof and on the left-hand side of the gear K', is a mutilated gear l, which has teeth upon but a fourth of its periphery. When the feed-roller K is turned by the driving mechanism, the mutilated gear meshes with and partly revolves a second intermediate gear M, which in turn meshes with a gear M' upon the left-hand end of the type-cylinder N, which in the present instance bears four electros n. The type-cylinder, the gear M', and the gear m² adjacent thereto all turn upon the transverse shaft m'. Directly below the type-cylinder N is the lower feed-roller O, which is mounted upon the enlarged middle portion O' of the lower eccentric shaft, the small ends O² of which are journaled in suitable bearings in the frames A' A². The lower feed-roller is driven from the type-cylinder by the gear m², which meshes with the gear O³, secured upon the left-hand end of the feed-roller O. Journaled on the left-hand end L of the upper eccentric shaft against the left-hand side of the mutilated gear l is the upper locking-disk P, and the rim of the disk adjacent the teeth of the mutilated gear is cut away, as shown at p. The said locking-disk coöperates with the lower locking-disk P', which is secured to the left-hand side of the intermediate gear M and turns with it. By this arrangement, which is well known in the art, the intermediate gear is held rigid and immovable until the mutilated gear is turned so that the teeth thereof mesh with the intermediate gear. Extending through the locking-disk P and the mutilated gear l is a radially-extending slot l', and the pin l², which is fastened to and projects laterally from the left-hand end of the upper feed-roller K, fits within the radial slot for a purpose to be presently described. The printing-cylinder J', besides containing the dating and numbering type-wheels J² J³, serves as a feed-roller and coöperates with the feed-roller K to feed the end of the check-strip past the knife E. The type-cylinder N likewise serves as a feed-roller, for which purpose it coöperates with the lower feed-roller O. The feed-rollers K and O are normally not close enough to the type-cylinders with which they coöperate as feed-rollers to feed the check-

strip, so that when the crank is turned the feed-rollers and printing-cylinders turn idly without either printing the check or feeding the strip; but as both the feed-rollers are
 5 mounted on eccentric shafts, as heretofore explained, by giving the said eccentric shafts a partial turn the feed-rollers can be thrown against the printing-cylinders, whereupon the check will be both fed and printed, and by
 10 means of the automatic mechanism coöperating with the keys I arrange to automatically give the eccentric shafts the required turn whenever special keys B', C', or D' are pressed. To this end I secure a crank Q
 15 (shown in broken lines in Fig. 3) upon the right-hand end O² of the eccentric shaft upon which the lower feed-roller O is journaled. A similar crank Q' is secured to the right-hand end L of the upper feed-roller, and a
 20 link or pitman Q² is pivoted at its ends to the cranks Q Q', respectively. Secured also to the right-hand end L of the eccentric shaft on which the upper feed-roller is journaled is a third crank Q³, to the end of which is
 25 jointed the inner end of the connecting-bar R, which at its outer end is provided with a slot r, in which is fitted a stud r', and the spring R', attached at one end to the connecting-bar and at the other to the fixed frame, serves
 30 to keep the connecting-bar in its extreme forward position and with its curved front edge r² pressed against the pins R², which are secured to and carried by special keys B', C', and D', respectively, and which extend lat-
 35 terly through slots r³ in the inner frame A³ of the machine.

Another feature of my invention relates to the means by which when a registration is made if no check is issued the consecutive-
 40 numbering device, consisting of the type-wheels J³, remains inoperative within the printing-cylinder J', and the type-wheels are not turned one notch, as they are each time a check is issued. Of course the wheels J³
 45 for printing the consecutive number on the check are old and well known in the art, and the Murphy patent, above referred to, shows the means employed for advancing the consecutive-numbering wheels one notch at each
 50 operation of the machine, and the means shown in the Murphy patent for accomplishing this end are those used in my invention, as shown in the drawings. A button or other manually-operated device by which the feed-
 55 rollers may be turned on an eccentric shaft to prevent the issue of the check is also well known in the art; but heretofore it has not been possible when the check-strip was turned off to prevent the consecutive-numbering wheels
 60 from advancing. In other words, it has been impossible to prevent their progressing one notch at each turn of the handle irrespective of whether the check-strip was turned on or off. The feature of my invention which I
 65 am about to describe automatically shifts the mechanism so that the consecutive-numbering wheels advance one notch whenever

the keys B', C', or D' are pressed; but at other times they remain quiescent, although, as before remarked, the printing-cylinder J' 70 makes a complete revolution at every turn of the crank regardless of the key pressed, as heretofore stated.

Between the printing-cylinder J' and the frame A² is a disk S. (Shown in Fig. 9 and 75 also in Fig. 4 of the patent to Murphy before referred to.) This disk has a concentric circular groove s, in which fits a stud j, which is secured to one end of the pitman which operates the actuating-pawl j', which turns the 80 consecutive-numbering wheels. The shaft J⁴ upon which the printing-cylinder is journaled passes through the disk S, which is also journaled thereon, but eccentrically with respect to the printing-cylinder, and the stud j 85 slides in the groove s. From this it will readily be seen that whenever the disk is held fixed and the printing-cylinder rotated the actuating-pawl will be moved to turn the consecutive-numbering wheels. In the device 90 as shown in the Murphy patent the disk is always fixed rigidly in position, so that the consecutive-numbering wheels advance one notch whenever the machine is operated. The present feature of my invention, how- 95 ever, consists, specifically, of means operated by the keys which make the disk rigid or otherwise with respect to the rotation of the printing-cylinder J', according to the key which is pressed. If special keys B', C', and 100 D' be pressed, the connecting-bar R is pushed inward, thereby swinging upward the crank Q'. The crank in swinging upward presses up the bar T. (See Fig. 3) It is shown in reverse position in Fig. 4. The upper end of the bar T is 105 slotted, forming the two tines t', and through this slot between the tines passes a stud T', having a head t, which rests on the tines. A flat spring T² rests upon the head of the stud and presses the latter inward. At its slotted 110 end the bar T is bent laterally, (see Figs. 4 and 5,) the effect of which is that when one of the special keys B', C', or D' is pressed the bar T is pushed upward and sliding under the head of the stud it pulls the latter partly 115 out of its socket in the frame A² against the pressure of the spring C². When the stud T' is in normal position, as shown in Fig. 4, its inner end is flush with the surface of the frame A². Normally spring-pressed against 120 the inner end of the stud T' is a plunger U, which normally fits in a suitable recess s' in the disk S, the inner end, however, extending through into a socket j² in the right-hand end of the printing-cylinder, (see Fig. 1,) 125 whereby the printing-cylinder J and the disk S are normally locked together. When, however, one of the special keys B', C', or D' is pressed, the stud T' is raised partly out of its socket and is followed by the spring-pressed 130 plunger U, the head of which moves into the socket of the stud T', its inner end at the same time being withdrawn from its notch or socket j² in the end of the printing-cylinder,

so that the disk S is locked fast to the frame A² by the plunger U; but the printing-cylinder is unlocked from the disk S and rotates independently thereof, whereby the stud j will be reciprocated and the consecutive-numbering wheels advanced one notch, as before explained. Just before the end of the movement of the crank-handle B the usual springs return the operated key B', C', or D' to normal position, and the spring R' draws the connecting-bar forward, thereby rocking the printing-cylinders away from their respective printing-cylinders. At the same time the bar T is returned to normal position. The spring P² forces the stud P' back to normal position and drives the inner end of the plunger U into its socket in the right-hand end of the printing-cylinder J'. If upon any registration none of the keys B', C', or D' is pressed, the bar R would not be moved. Consequently no check will be printed or issued and the consecutive-numbering wheels will not be turned. Whenever the keys are pressed and the handle turned, the mutilated gear makes a revolution and through the intermediate gear M gives the lower type-cylinder N a quarter-turn, and thereby a different one of the four electrotype is printed on the back of each of any four succeeding checks issued by the machine. If, however, a registration be made without pressing one of the special keys B', C', or D', although they make a quarter-turn, as usual, the feed-roller O is not rocked into position to press the check-strip against the type-cylinder N, so that no check is issued or printed.

For purposes of illustration I have shown and described a specific form of my invention as applied to a particular type of cash-register. It may, however, be applied to any machine which comprises a printing mechanism and a series of keys. Likewise, while in this instance, I have shown and described the keys B', C', and D' as arranged to cause a check to be printed and issued and the consecutive-numbering device to be thrown into operative connection, the arrangement of the keys is entirely one of selection. If for any reason it should be desired, the same connections could be made with the cash-keys or with any special keys with which the machine might be provided.

It will be readily understood, too, that while I have shown and described the printing and feeding devices as normally inoperative and arranged to be thrown into operative relation when certain of the keys are pressed it is wholly within the scope of my invention to reverse this arrangement and have the printing devices normally operative and arranged to be thrown out of operative relation when certain of the keys are pressed. In other words, the scope of my invention is not limited to the construction shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a cash-register, the combination with the cash-keys and an operating handle or member, of the special keys, a normally inoperative printer arranged to print upon a paper strip the details of a recorded transaction, a consecutive-numbering device arranged to print upon said paper strip, and means controlled by the special keys to advance the consecutive-numbering device and to cause the said printer to make an impression upon the paper strip as the operating handle or member is actuated.

2. In a cash-register, the combination with the cash-keys and special keys and a handle or operating member, of a printing device controlled by the cash-keys, a normally inoperative feeding mechanism which is independent of the cash-keys for leading a paper strip to said printing device, an independent printing device controlled by the special keys, and means controlled by the special keys only for causing said paper strip to be fed to the printer and an impression printed thereupon, when the handle or operating member is actuated.

3. In a cash-register, the combination with a printing device, of a feeding-roller journaled on an eccentric shaft, a crank secured to said shaft, a series of keys cooperating with the printing device and a connecting-bar secured to said crank and adapted to be operated by a portion of said keys only.

4. In a cash-register of the class described which is arranged to print a paper check, the combination with a series of consecutive-numbering wheels, of a series of keys, means intermediate a portion of said keys and the printing devices to throw the latter into operative positions only when one of said particular keys is operated and devices for causing the relative positions of the consecutive-numbering wheels to be changed only when one of said particular keys is operated.

5. In a cash-register of the class described, the combination with a printing device, of a series of consecutive-numbering wheels, a series of keys cooperating with said printing device, and means intermediate a portion of said keys and the consecutive-numbering wheels for causing the relative positions of said wheels to be changed only when one of said particular keys is operated.

6. In a cash-register of the class described, the combination with the consecutive-numbering wheels, a series of keys and a driving mechanism, of means controlled by a portion of the keys for causing said wheels to be actuated by the driving mechanism only when one of said particular keys is pressed.

7. In a cash-register having a printing device and arranged to issue or not issue a check as desired, the combination with consecutive-numbering wheels, a series of keys, means controlled by the keys for moving said wheels relatively to each other only when a check is printed or issued.

8. In a cash-register of the class described,

the combination with a driving means and printing device, of a feeding-roller cooperating with the latter, consecutive-numbering wheels mounted on said printing device, a series of keys cooperating with the printing device and means controlled by a portion of the keys only for moving the feeding-roller into operative position, and for causing the consecutive-numbering wheels to be turned by the driving means.

9. In a cash-register of the class described, the combination with the printing-cylinder arranged to print upon one side of a check, and a type-cylinder arranged to print upon the opposite side of the same, feed-rollers cooperating with the printing-cylinder and type-cylinder respectively, a series of keys, and means actuated by a portion of said keys for throwing the rollers into operative relation with their respective cylinders.

10. In a cash-register employing a check-

strip, the combination with the cash-keys and the special keys, of the type-segments cooperating with the cash-keys to record the cash-keys that have been operated, the type-segments controlled by the special keys to record the special key that has been operated, devices for feeding the check-strip to type-segments and means intermediate the special keys and said feeding devices whereby when certain of the special keys are pressed and the register operated, a check will be automatically printed and whereby the machine may be operated in connection with the other special keys without printing a check.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH P. CLEAL.

Witnesses:

PEARL N. SIGLER,
ALVAN MACAULEY.