

(No Model.)

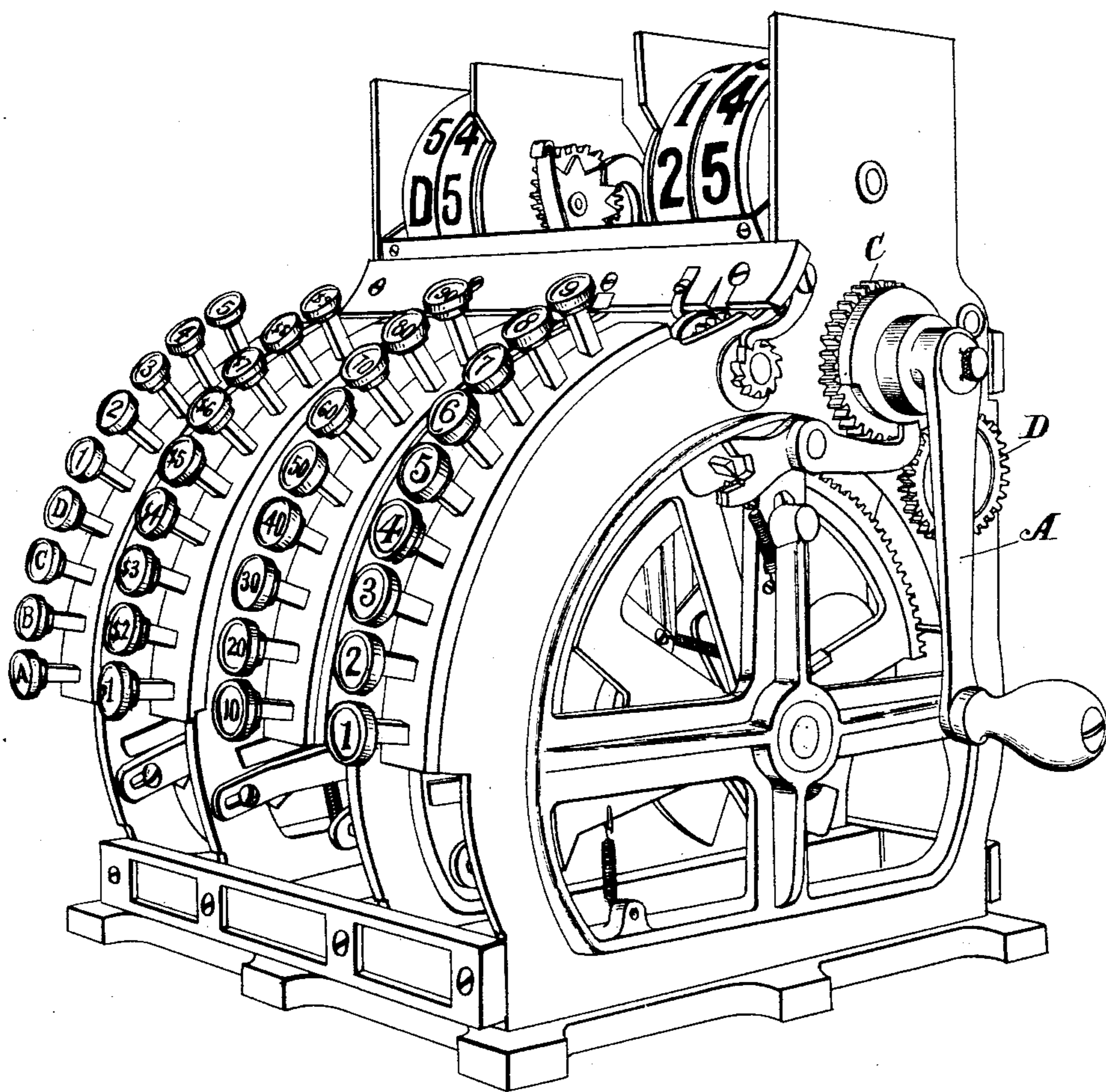
4 Sheets—Sheet 1.

H. COOK.
CASH REGISTER AND INDICATOR.

No. 511,070.

Patented Dec. 19, 1893.

Fig. 1.



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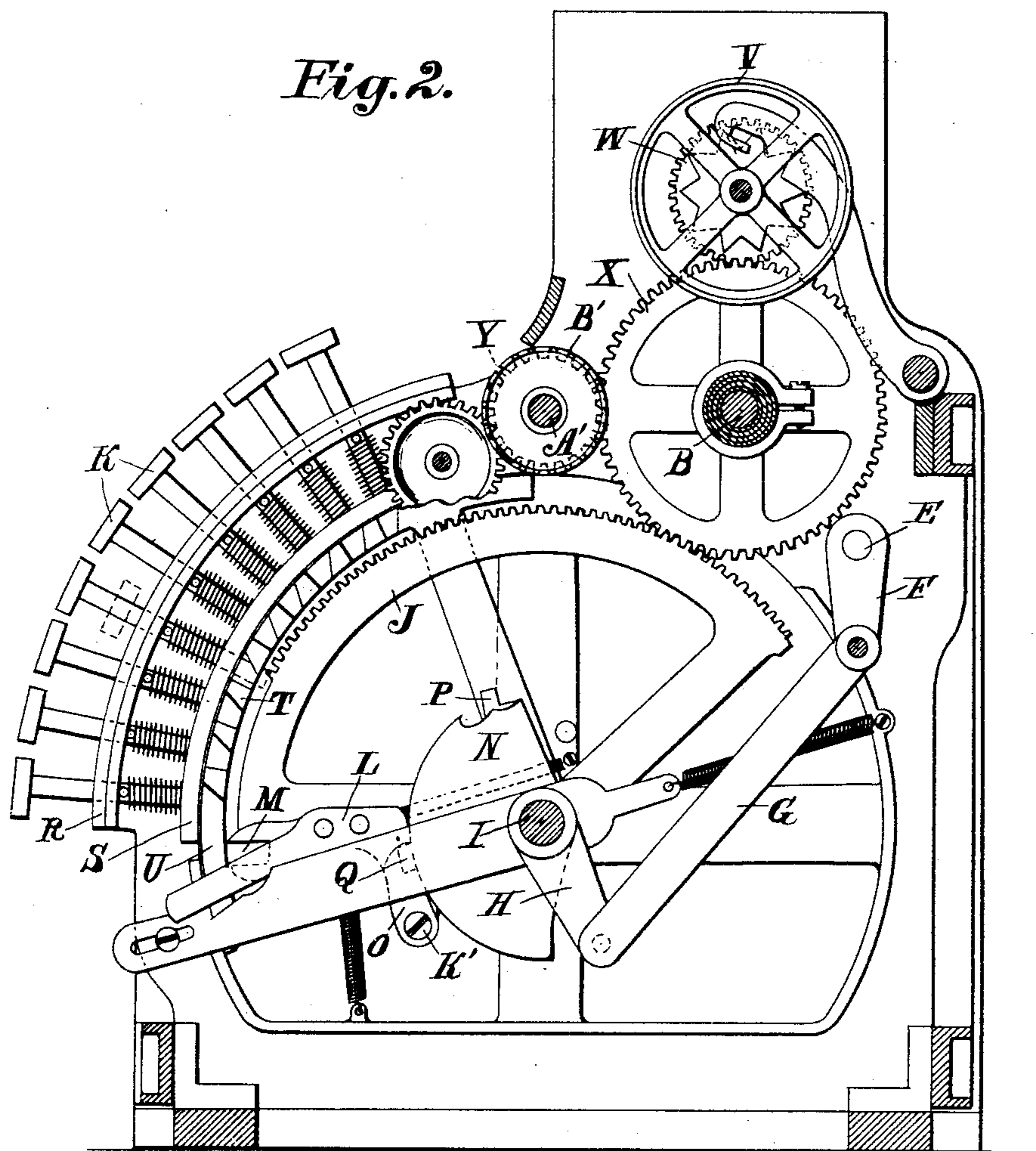
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4 Sheets—Sheet 2.

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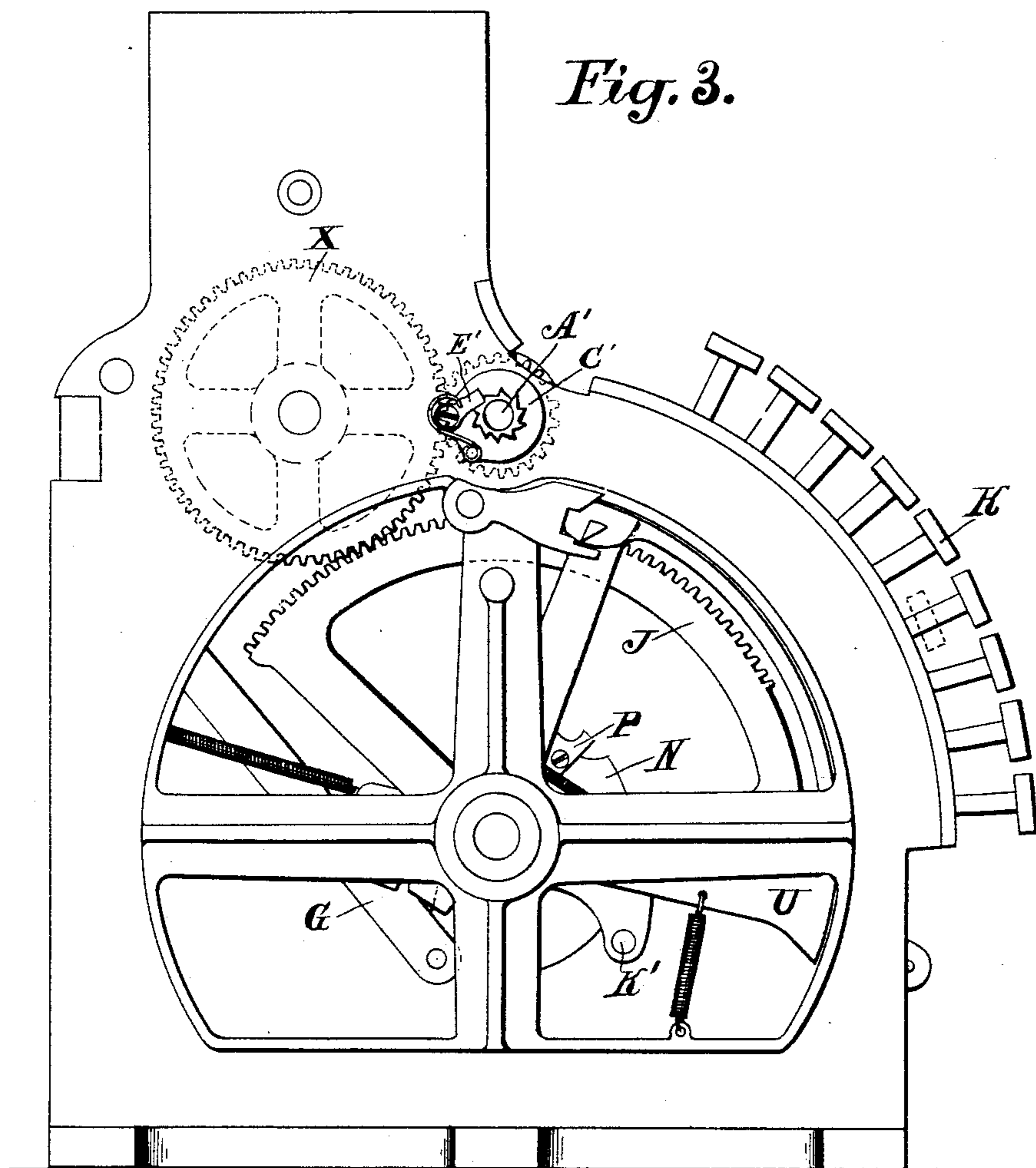
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4 Sheets—Sheet 3.

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Fig. 4.

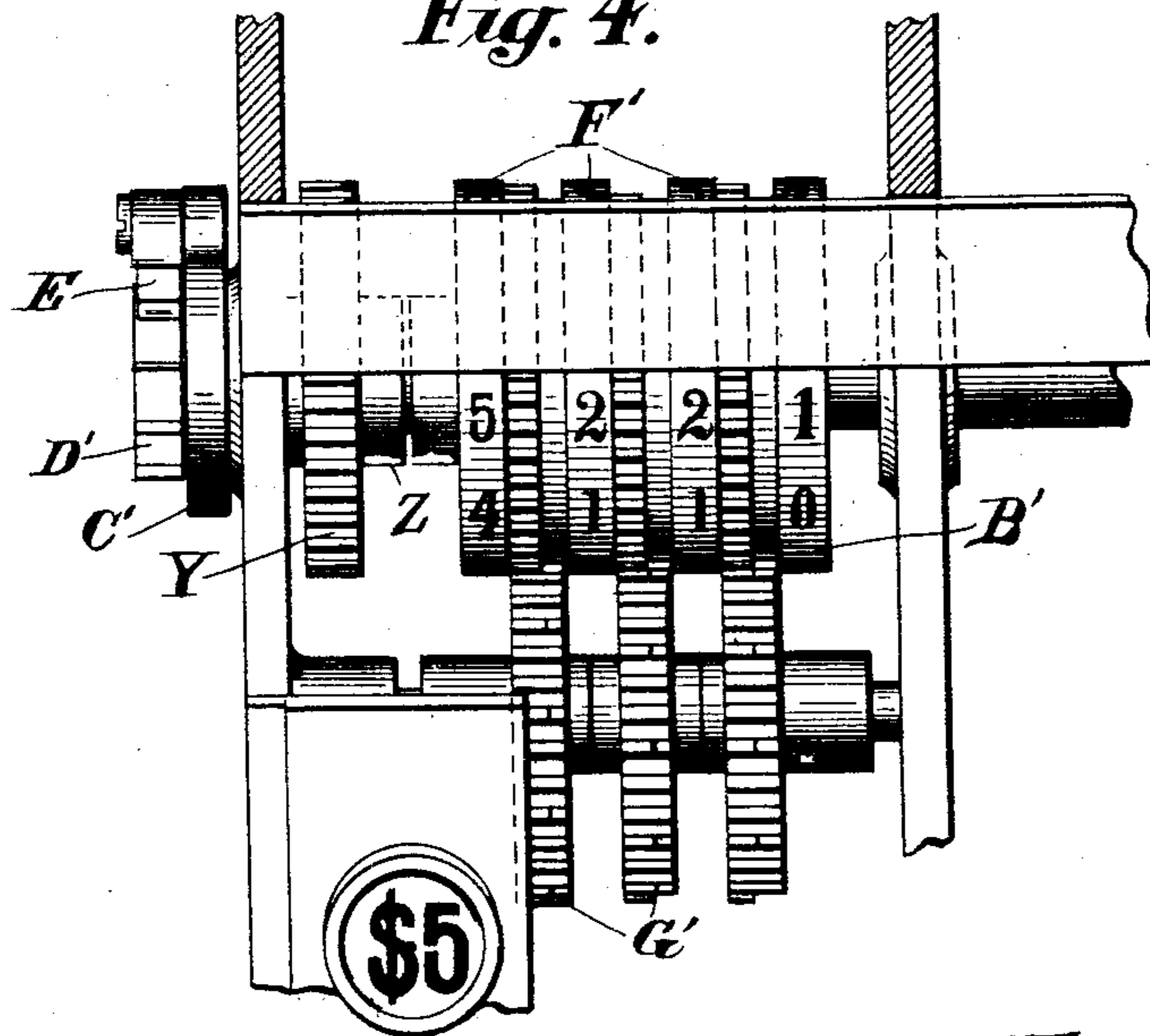


Fig. 5.

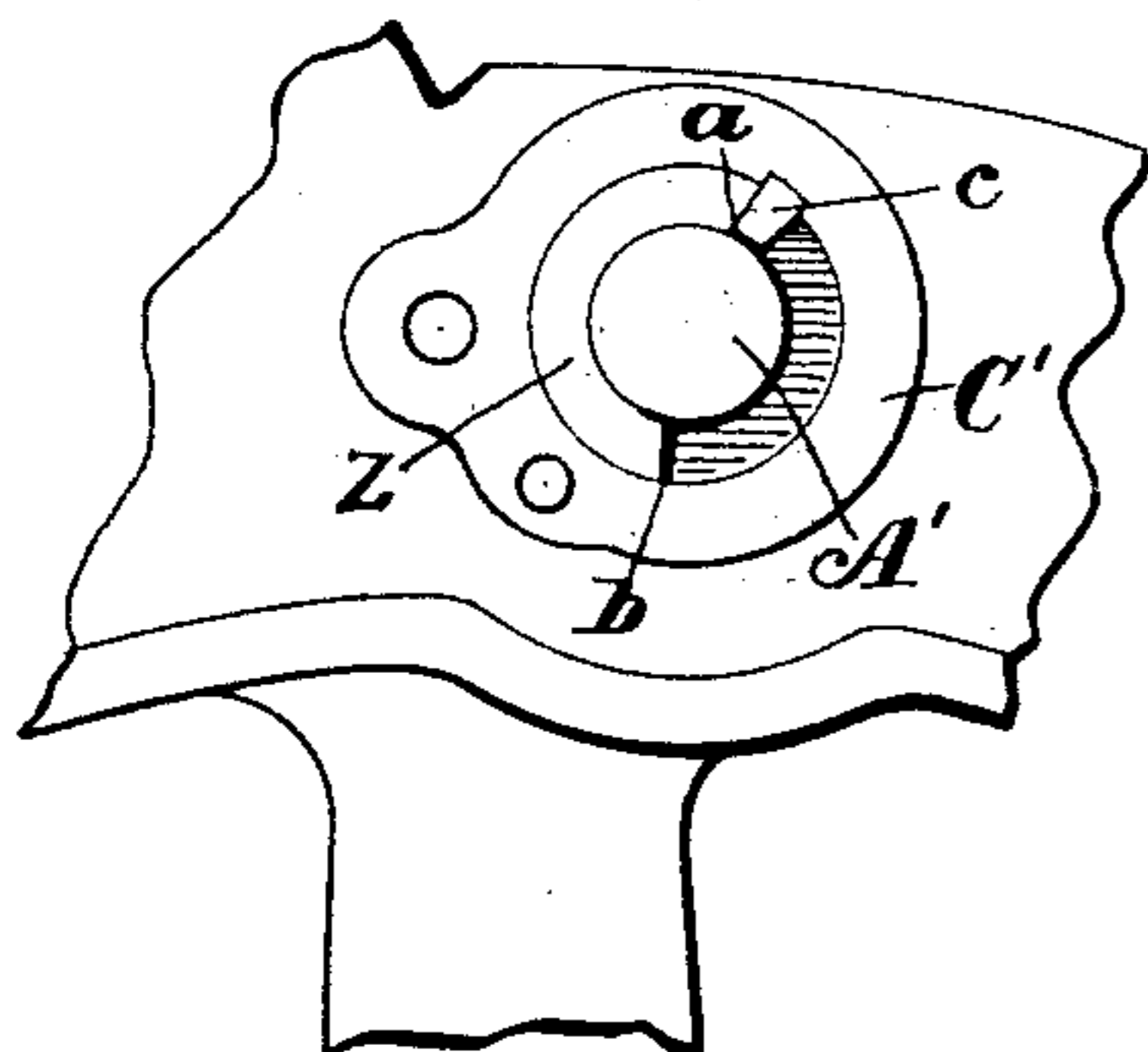


Fig. 6.

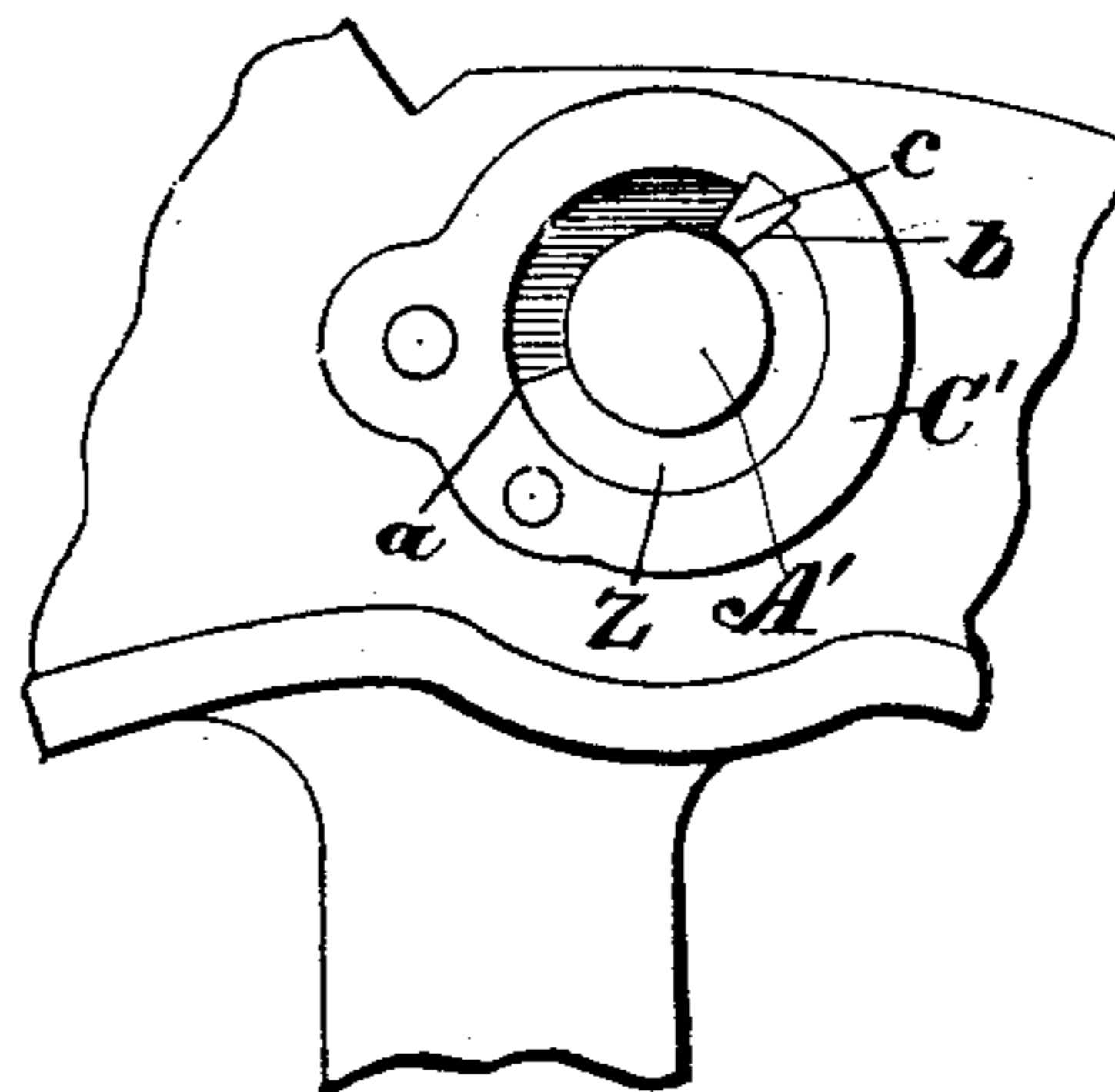
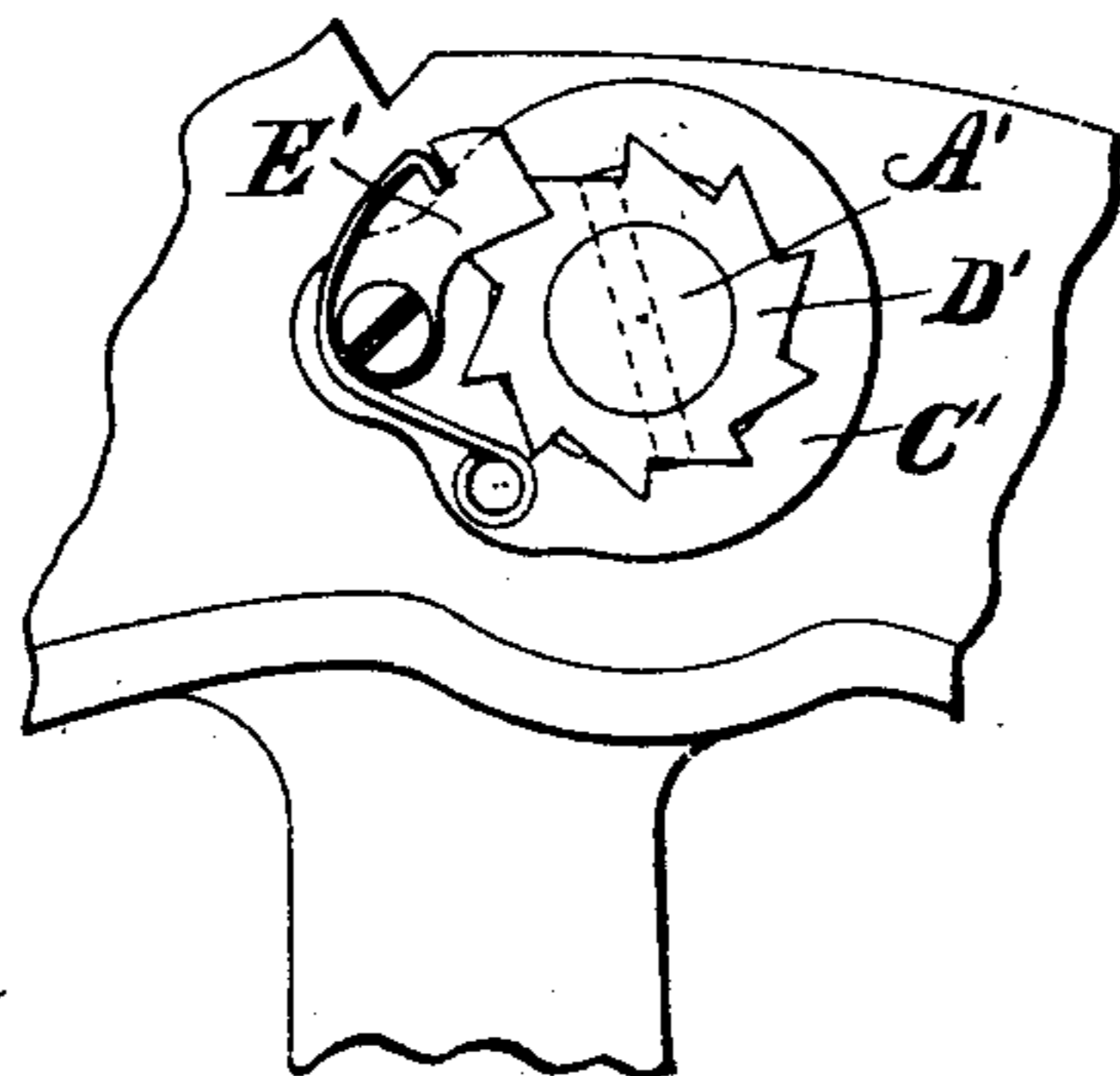


Fig. 7.



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UNITED STATES PATENT OFFICE.

HUGO COOK, OF DAYTON, OHIO.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 511,070, dated December 19, 1893.

Application filed September 20, 1893. Serial No. 485,979. (No model.)

To all whom it may concern:

Be it known that I, HUGO COOK, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented a certain new and useful Improvement in Cash Registers and Indicators, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates more particularly to cash registers and indicators such as that patented to me in Letters Patent No. 464,294, dated December 1, 1891, though it is not restricted to such machines. The machine shown in said prior patent contained four banks or sets of keys, representing respectively units of cents, tens of cents, units of dollars and tens of dollars, and co-operating with the indicating and registering mechanisms to indicate and register those several denominations. In addition to indicating and registering the various amounts it is often desirable to print said amounts upon a paper record-strip or ticket or both, and to that end in Letters Patent No. 483,511, granted me September 27, 1892, I have shown a machine of the character described equipped with a printing mechanism by which the several amounts indicated and registered are also printed upon a record-strip carried within the machine and upon a paper check or ticket-strip delivered from the machine and cut into detached checks or tickets.

In addition to indicating, registering and printing the various amounts, it is also sometimes desirable to indicate to the customer, by displaying a suitable character or sign, the particular clerk who has made the sale or had charge of the transaction, and where the printing mechanism is employed to also print the sign or character belonging to such clerk beside the amount of the sale upon the record and check-strips. To that end in Letters Patent No. 482,165, granted me September 6, 1892, I have shown and described means for equipping machines of this character with mechanism for indicating to the customer the character or sign used to designate the clerk with whom he is dealing. In said patent the means for this purpose consists of a special set or bank of keys, similar to any one of the sets of keys used to indicate and register cash

amounts, and an indicator corresponding to the cash indicators and co-operating with the keys and other mechanism in the same manner as the cash keys. The keys of the special set or bank in that instance were provided with the first nine letters of the alphabet and the indicator bore upon its periphery corresponding letters, such letters being intended to designate the different clerks in the establishment in which the machine was used. Upon setting the proper keys to indicate and register the amount of the sale and also setting the key in the special bank corresponding to the clerk making the sale, and then operating the machine, the amount of the sale would be registered and indicated to the customer and the special indicator would be turned to also display to the customer the letter corresponding to that upon the key in the special bank which had been set. In a machine equipped with the printing attachment such letter would also be printed upon the paper strips beside the amount of the sale.

The machines above described represent the state of the art prior to my present invention, so far as it relates to that invention. When it was desired to provide means for indicating, or indicating and printing, a letter or other character designating the clerk, in addition to indicating and registering the amount of the sale, it was necessary to equip the machine with an additional and entirely distinct set or bank of keys, containing nothing but the keys bearing the letters or characters designating the clerks, and to provide also a special indicator co-operating with such keys for the sole purpose of indicating the letters or characters represented by the keys. In a machine, therefore, containing four sets or banks of cash keys, (giving it an indicating and registering capacity from one cent to ninety-nine dollars and ninety-nine cents,) it was necessary to provide the machine with a fifth set of keys and fifth indicator, which added substantially one-fourth to the width of the machine otherwise necessary, thereby rendering it larger and heavier and more cumbersome, and also materially increased the expense of building it. In many classes of trade it is not necessary that the machine shall have a capacity so great as that above referred to, and in many machines the fourth bank is

provided with only one key, representing ten dollars, or with considerably less than the full number of nine keys. So, too, in many establishments where such machines are used
 5 a less number than nine clerks are employed, so that there is no necessity for providing the machine with a full bank or set of nine special keys for designating the different clerks. Nevertheless, no matter what the capacity of
 10 the machine required is, (provided it exceeds nine dollars and ninety-nine cents,) and no matter how few the clerks, it has heretofore been necessary to equip the machine with one set of keys representing tens of dollars, and
 15 with another set representing the letters or characters designating the clerks, and this often though each of said sets contained but a few keys each.

It was the object of my present invention
 20 to arrange the special letter or character keys and the keys representing tens of dollars all in a single bank or set and combine them with a single indicator; but inasmuch as the cash keys must co-operate with the registering mechanism, while the character keys must
 25 not co-operate with it, the problem was to combine this single set or bank, containing the two classes of keys, with the indicating and registering mechanisms in such manner
 30 that whenever one of the cash keys was set and the machine operated the value of such key would be displayed by the indicator and also added upon the register, and that whenever any one of the character keys in the bank
 35 was set and the machine operated the letter or character represented by such key would be displayed by the indicator while the registering mechanism corresponding to this bank of keys would remain unaffected by the
 40 operation. That problem has been solved by my present invention in an exceedingly simple and effective manner, which may now be explained in connection with a more detailed description of the machine by reference to
 45 the accompanying drawings, in which—

Figure 1 is a perspective view of a machine such as that described, removed from its casing; Fig. 2 a vertical section of the same between the third and fourth banks of keys,
 50 looking toward the left of the machine; Fig. 3 an elevation of the left hand side of the machine; Fig. 4 an enlarged detail of the registering mechanism and associated devices corresponding to the fourth bank of keys; Fig. 5 an
 55 enlarged detail of the end of the pinion hub and the pawl-carrier mounted thereon; Fig. 6 a corresponding view with the pinion hub in different position; and Fig. 7 an enlarged detail of the pawl-carrier, pawl and ratchet.

60 The same letters of reference are used to indicate identical parts in all the figures.

The general construction and mode of operation of the machine have been illustrated and described at length in my prior patents,
 65 and brief reference to them will be sufficient here. The main operating handle A, Fig. 1, is mounted upon the outer end of a shaft B

extending through the machine and journaled in the framework. This shaft has fast upon it a gear C which meshes with a gear D fast
 70 upon a second horizontal shaft E journaled in the framework below and in rear of the shaft B. At a point near its left hand end the shaft E has interposed in it a crank F, Fig. 2, to which is connected the upper rear end of
 75 a link G whose lower forward end is connected to an arm H fast upon a horizontal rock-shaft I. This rock-shaft may be considered the main driving shaft of the machine, since the operating handle and parts between it
 80 and said shaft are chiefly employed for the purpose of oscillating said shaft. At each complete revolution of the operating handle the shaft I will be given a definite movement forward and backward. Loosely mounted
 85 upon the shaft I is a series of gear-toothed segments J, one approximately in line with each row of keys K. Each of these segments has pivoted upon it at K' a latch-plate L whose outer end is provided with an open
 90 mouth or recess M adapted to co-operate with the inner ends of the keys K. Fast upon the shaft I beside each of the segments J is a cam plate N co-operating with an arm or plate
 95 O fast upon the side of the latch-plate L, and provided upon one side at its upper end with a coupling lug P adapted to co-operate with a recess Q in the rear edge of the latch-plate L. The sliding keys K are mounted radially
 100 to the shaft I in curved guide plates R S. They have pins passed through them beneath the plate R, and springs coiled around them between said pins and the guide plate S press them outward and yieldingly hold them in
 105 normal position. Near their inner ends the keys are provided with notches which co-operate with beveled lugs or detents T upon the side of a curved detent plate U mounted to slide in a guide-way beneath the keys. Whenever any key is pressed inward, as in
 110 the case of the fourth key from the bottom in Fig. 2, its notch will be engaged by the corresponding detent T and the key thereby held in such inner position against the stress of its spring. With the parts in the position
 115 shown in Fig. 2, if the operating handle be given a revolution the shaft I will be first rocked forward and at the end of its stroke the coupling lug P upon the cam plate N will engage the notch Q in the latch-plate L. At
 120 the backward stroke of the shaft I the segment J, being thus coupled to the shaft by the engagement of the lug P with the recess in the latch-plate L, will be carried with the shaft until the outer end of the latch-plate L
 125 comes opposite the inner end of the operated key, whereupon the mouth M of the latch-plate will catch over the key, the latch-plate will be rocked upon its pivot by the stress of the lug P tending to escape from the recess Q until it has been moved far enough
 130 to permit the escape of the lug, and thereby uncouple the segment from the shaft I. This rocking of the latch-plate throws its

outer end outward so that its mouth M fully embraces the inner end of the operated key and thereby locks it and the segment from further movement in either direction.

5 At the end of the backward stroke of the shaft I the detent plate U is lifted, by means described in my prior patents, to release the operated key and permit its spring to throw it outward to normal position. At the next

10 operation of the machine and forward movement of the rock-shaft I the lug P upon the cam plate N will re-engage the notch in the latch-plate and carry the latter and the segment J forward and downward to the position shown in Fig. 2, where, if no key in that

15 particular bank has been set for this operation of the machine, it will leave them and return to normal position alone, special means to this end being shown and described in the

20 first of my aforesaid patents.

From the foregoing description it will be understood that the driving shaft I is given a definite forward and backward movement at each operation of the machine, and that

25 when any key in a given bank has been set prior to such movement the shaft I will carry the corresponding segment backward with it a distance determined by the position of such key. Thus, if the lowest key in the bank be

30 set the segment will be moved one unit of distance; if the second key be set it will be moved two units of distance; while if the uppermost key be set it will be moved nine units of distance.

35 The indicators consist of wheels V geared to the segments J by intermediate gears W X, Fig. 2, the adjustment of the parts being such that when a given segment is moved upward and backward until its latch engages

40 the operated key the corresponding indicator will be turned until the number represented by such key is displayed at the indicating point, and that at the succeeding operation of the machine and movement of the segment J

45 to the position shown in Fig. 2 all of the indicators will be turned until their naughts are displayed at the reading point, and such of them as do not correspond to the banks containing the newly operated keys will be allowed to remain in such position. Now, the

50 bank of keys and co-operating mechanism shown in Fig. 2 may be taken to represent the fourth or left hand bank of keys and its co-operating mechanism in Fig. 1, and the

55 four lower keys in Fig. 2 may be assumed to bear the first four letters of the alphabet, and the five upper keys the first five digits, the four lower keys being the special or character keys heretofore referred to, and the five

60 upper keys the cash keys. It will be seen that by properly arranging the letters and numbers upon the corresponding indicator wheel V this part of the mechanism may be readily operated to cause the indicator to display any one of the letters represented by the

65 four lower keys, or any one of the numbers represented by the five upper keys. Thus, if

the lower key in the bank be set and the machine operated the indicator V will be turned to display the letter "A" at the indicating 70 point; if the second key from the bottom be set the letter "B" will be displayed, while the third will cause the letter "C" to be displayed, and the fourth the letter "D." So, if the fifth

75 key from the bottom be set the indicator will be moved to display the number "1," while the sixth key will cause it to display the number "2," the seventh the number "3," the eighth the number "4," and the ninth the

80 number "5." It will thus be understood that, so far as the indicating mechanism is concerned, the arrangement of the character keys and the cash keys in a single bank is a very

85 simple matter, involving merely the placing of the letters and numbers upon the keys and indicator in corresponding order; but it is necessary that the registering mechanism shall be actuated by the segment J whenever

90 any one of the cash keys is set and the machine operated, and it is necessary that it shall not be actuated when any one of the character keys is set and the machine operated, and the manner in which this is accomplished may now be described as follows, reference being had more particularly to Figs. 95

2 to 7: The gear-wheel X, Fig. 2, meshes with a pinion Y which is fast upon a hub or sleeve Z loose upon a rotary shaft A' journaled in the frame-work. This shaft has fast upon it the registering wheel B' which co-operates 100 with the cash keys of the fourth bank to register tens of dollars, Fig. 4. The sleeve or hub Z of the pinion Y projects to the left through the side plate of the casing and has loosely mounted upon it a pawl-carrier C'. 105

Fast upon the shaft A' immediately to the left of the pawl-carrier C' and end of the sleeve Z is a ratchet D' engaged by a pawl E' pivoted to the pawl-carrier and spring-pressed against the ratchet. It will thus be seen that 110 the pawl-carrier and pawl will turn the ratchet, and consequently the shaft A' and registering wheel B', with them during their movement in one direction, and not in the other. It will

115 also be understood that if the pawl-carrier were fast upon the hub of the pinion the shaft and registering wheel would be turned with the pinion during its full movement in one direction, while during its movement in the opposite direction the pawl would slip idly 120 over the ratchet. Now, this would be the arrangement of the parts if all of the keys in the bank were cash keys and intended to co-operate with the register, but inasmuch as the

125 four lower keys of the bank must not co-operate with the register provision is made for idle movement of the pinion Y during the time the segment J is being moved from the position shown in Fig. 2 to the position at which its latch-plate L will engage the fourth 130 or uppermost one of the character keys. This provision for idle movement of the pinion Y is made in the present instance by cutting away the outer end of its hub or sleeve Z,

thereby forming an open space in which fits a lug *c* upon the pawl-carrier, Figs. 5 and 6. The pawl-carrier is moved by the engagement with its lugs *c* of the driving shoulders *a b* formed by the cutting away of the end of the sleeve *Z*, and it will be seen that the pinion and sleeve can move a considerable portion of a revolution (in this instance four-tenths) without moving the pawl-carrier, but that when they are given more than this portion of a revolution they will carry the pawl-carrier with them by reason of the engagement of one or the other of the shoulders *a b* with the lug *c*. In Fig. 5 the pawl-carrier and driving shoulders *a b* of the pinion are shown in the position they occupy when the segment *J* is in the position shown in Fig. 2. If, now, the fourth key from the bottom, bearing the letter "D" be pressed in and the machine operated the segment *J* will be carried backward with the shaft *I* until the latch *L* is arrested by the inner end of the key, and this backward movement of the segment *J* will impart four-tenths of a revolution to the pinion *J* and bring its hub to the position shown in Fig. 6 with its driving shoulder *b* against the lug *c*. This movement of the pinion *Y* will have been an idle one, and the pawl-carrier and pawl, and consequently the ratchet and registering wheel, will have remained stationary. If, however, instead of the fourth key, one of the upper keys, say the seventh key from the bottom, representing the number 3, had been the one pressed in, the segment *J* would have been carried backward with the shaft *I* a greater distance (until the latch *L* was arrested by such seventh key), and would have imparted seven-tenths of a revolution to the pinion *Y*, four-tenths of which would have been an idle movement, as before, but during the last three-tenths of which the engagement of the shoulder *b* with the lug *c* would have carried the pawl-carrier with the pinion and have drawn the pawl *E'* backward from its normal position, Fig. 7, over three teeth of the ratchet *D'*, and when said pawl was subsequently returned to normal position it would carry the ratchet and registering wheel with it, turning them three-tenths of a revolution and adding three upon the wheel. It will be understood that the pawl-carrier and pawl will be returned to the position shown in Figs. 5, 6 and 7 at each operation of the machine by the engagement of the driving shoulder *a* of the pinion hub *Z* with the lug *c* of the pawl-carrier. If at any operation of the machine no key in the left hand bank be operated the segment *J* and connected parts will be simply moved to the position shown in Fig. 2 and left there, or if already in that position will remain stationary, with the pinion hub *Z* and its driving shoulders in the position shown in Fig. 5. If, however, one of the cash keys in said bank be operated the pinion hub *Z* will be turned to and beyond the position shown in Fig. 6, its shoulder *b* engaging the lug *c* of the pawl-

carrier and turning the latter as many tenths of a revolution backward as there are units in the value of the key operated, and causing the pawl *E'*, Fig. 7, to slip backward over a corresponding number of teeth of the ratchet *D'*. At the end of the operation of the machine the parts will be left in this position, and at the next succeeding operation the pinion hub *Z* will be restored to the position shown in Fig. 5 and its shoulder *a* will engage the lug *c* of the pawl-carrier and restore the latter and its pawl to the position shown in Figs. 6 and 7, causing the pawl to turn the ratchet and registering wheel as many tenths of a revolution as the pawl-carrier and pawl had been turned backward at the preceding operation.

It will be seen from the above that in the machine illustrated the values of the cash keys in the fourth bank are actually registered upon the registering wheel at the operations of the machine next succeeding the ones at which the keys are set. This has been found desirable in the practical use of machines such as that illustrated in the drawings, for reasons which are not pertinent to my present invention and which need not be explained in detail; but it will be readily understood that by simply reversing the ratchet upon the shaft *A'*, and changing the position of the pawl *E'* accordingly, the values of these keys might be registered at the same operations at which they are set. In such case when the pinion and its hub *Z* had turned from the position shown in Fig. 5 to and beyond the position shown in Fig. 6 the pawl would turn the ratchet and registering wheel as many tenths of a revolution as the parts were moved beyond the position shown in Fig. 6. At the next succeeding operation of the machine the pawl-carrier would be returned to the positions shown in Figs. 5, 6 and 7 and the pawl would slip idly backward over the ratchet. If no key in the fourth bank were set at this operation they would remain in this position at the end of the operation, but if a cash key were set they would be turned forward again the proper distance and the pawl would turn the ratchet and registering wheel with them after the pinion hub had passed the position shown in Fig. 6.

From the foregoing description it will be understood that whenever any one of the four lower keys in the fourth bank is set and the machine operated the hub of the pinion will play idly back and forth within the pawl-carrier, without moving the latter or actuating the register, and that if either one of the five upper keys be set and the machine operated the pawl-carrier will be moved as many units of distance as are represented by the number of the operated key, and such number be added upon the register. If the uppermost key in the bank be the one set the pinion will be turned nine-tenths of a revolution and the pawl-carrier carried with it during the last five-tenths of the revolution and the register-

ing wheel be turned to add five upon it; if the key next to the uppermost one be set the pinion will be turned eight-tenths of a revolution and the pawl-carrier will be carried with it during the last four-tenths of the revolution and the registering wheel turned to add four upon it; and so on.

The amount of idle movement provided for the pinion, with respect to the pawl-carrier, will depend upon the number of character keys employed in the set. In the present instance there are four character keys in the bank and provision is made for idle movement of approximately four-tenths of a revolution; if there were five character keys in the bank there would have to be provision for idle movement equal to five-tenths of a revolution, and so on. There are in this instance mounted upon the shaft A' immediately to the left of the registering wheel B', three secondary wheels F', and each of the wheels is intermittently actuated by the revolutions of its immediately preceding wheel by means of the usual transfer pinions G' and the co-operating pinions and projections upon the register wheels.

In the description of my invention which I have given I have confined myself to the employment of the character keys for the purpose of designating the different clerks who have access to and operate the machine, but the utility of such character keys, both in the present instance and in my prior machines, is not restricted to such purpose. Instead of being employed to designate the different clerks they may be employed to designate the different classes of goods sold, or transactions of different characters. This is especially true where the machine is provided with a printing attachment by which the various amounts indicated and registered are printed upon a paper record-strip, as heretofore referred to and as shown and described in my prior Letters Patent. Thus, for instance, in a drug store it might be desirable to preserve separate records of the cash received for general merchandise, for soda water, and for cigars. By providing a character key to represent each class of sales the printed record will indicate the class of goods for which each amount recorded was received. Again, in the employment of character keys for indicating transactions of different character, one key may be employed to represent credit sales, another to represent money paid out on account, and another to represent money received on account. By employing three keys to represent these three different transactions a record may be preserved of each one, so that at the end of a day's business the proprietor, in addition to knowing just how much cash has been received for cash sales, may know how many credit sales, and of what amount, have been made, and how many amounts had been paid out on account and how many received on account.

So far as I am aware I am the first in the art to combine a single set or bank of keys containing both cash and character keys with an indicator which co-operates with all of the keys and with a register which co-operates with only the cash keys, in any manner or by any means whatsoever. My invention is therefore not restricted, in its broader scope, to any of the details of construction or arrangement of parts, but contemplates broadly the new combination and mode of operation described, as will be set forth in my claims.

Having thus fully described my invention, I claim—

1. In an indicating and registering machine, the combination of a single set or bank of keys containing both cash and character keys, an indicator co-operating with all of the keys and a register co-operating with only the cash keys, and means controlled by the keys for actuating the indicator and register, substantially as and for the purpose described.

2. In an indicating and registering machine, the combination of a single set or bank of keys containing both cash and character keys, an indicator co-operating with all of the keys and a register co-operating with only the cash keys, a driving mechanism, and means controlled by the keys for intermittently connecting the driving mechanism with the indicator and register, substantially as and for the purpose described.

3. In an indicating and registering machine, the combination of a driving mechanism, an oscillatory segment, means for intermittently connecting them, a single bank of keys co-operating with such means to control the extent of movement imparted by the driving mechanism to the segment, said single bank containing both cash and character keys, an indicator geared to the segment, and a register actuated by the segment during only a part of its stroke in one direction, substantially as and for the purpose described.

4. In an indicating and registering machine, the combination of a driving mechanism, an oscillatory segment, a latch for intermittently connecting them, a single bank of keys co-operating with such latch to control the extent of movement imparted to the segment, said single bank containing both cash and character keys, an indicator geared to the segment, a driving pinion also geared to the segment, a pawl-carrier actuated by such pinion with lost motion between them, a pawl carried by the pawl-carrier, and a registering ratchet actuated by the pawl during its stroke in one direction, substantially as and for the purpose described.

5. In an indicating and registering machine, the combination of a rock-shaft, a segment loose thereon, means for intermittently connecting them, a single bank of keys co-operating with such means to control the extent of movement imparted to the segment, said single bank containing both cash and char-

acter keys, an indicator geared to the segment, a driving pinion also geared to the segment, a pawl-carrier loose upon the hub of the pinion and provided with a lug fitting in
5 a recess or cut-away space therein, a pawl carried by the pawl-carrier, and a registering ratchet actuated by the pawl during its move-

ment in one direction, substantially as and for the purpose described.

HUGO COOK.

Witnesses:

THOMAS CORWIN,
CHARLES R. GILLIES.