(No Model.)

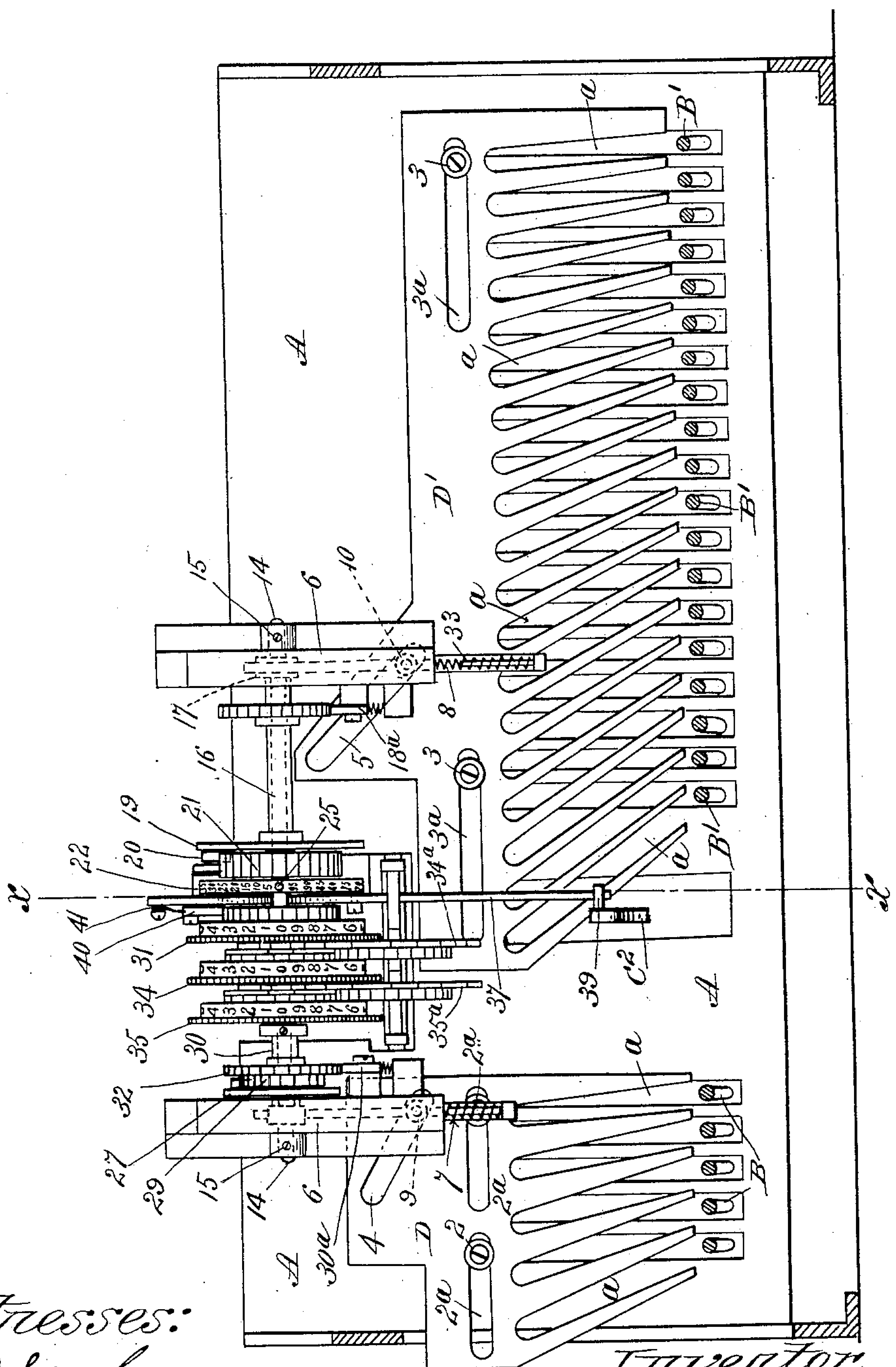
2 Sheets—Sheet 1.

C. H. LITTLE.

CASH REGISTERING MACHINE.

No. 599,297. Patented Feb. 15, 1898.

Fig. 1.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

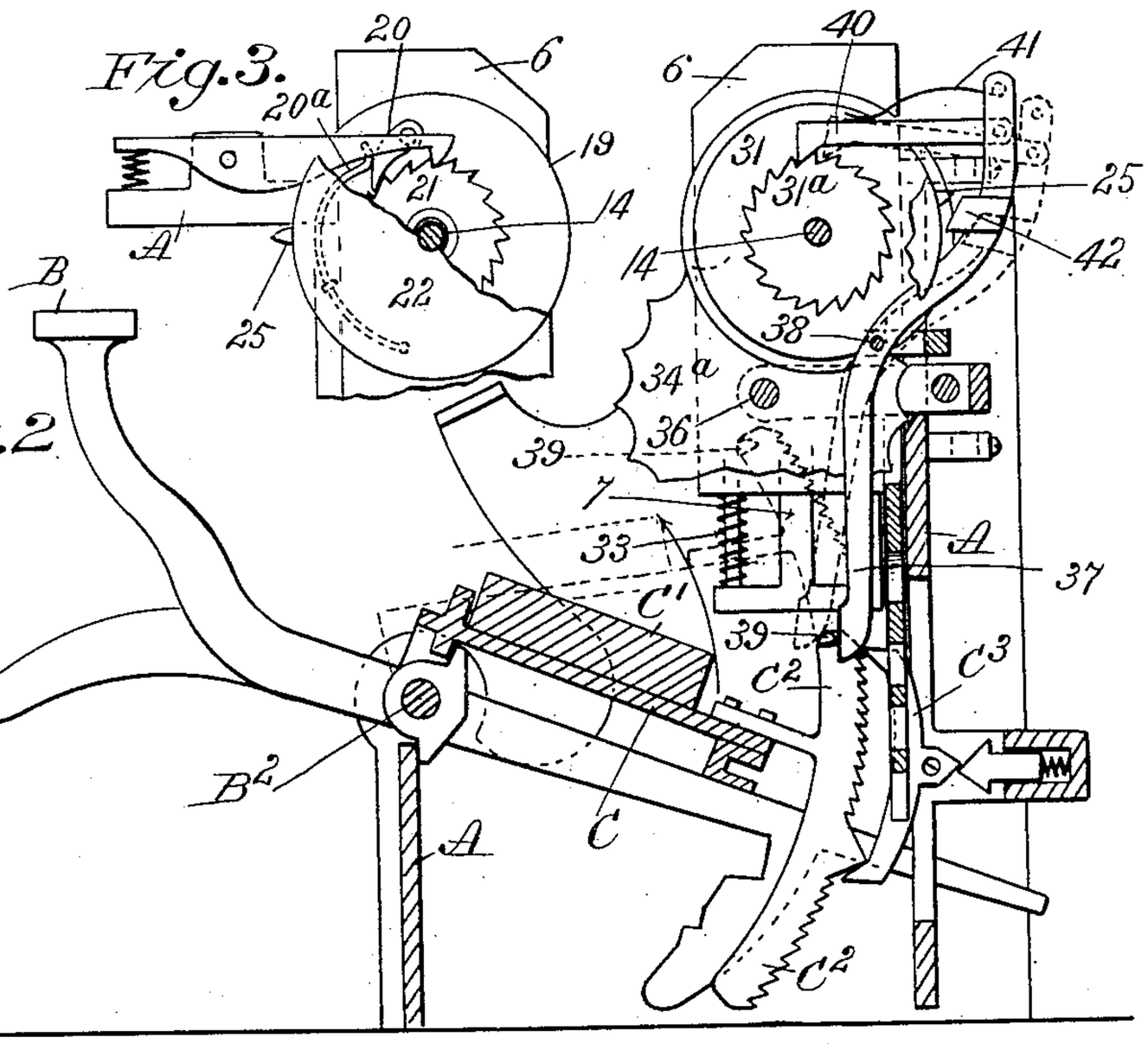


Fig. 2

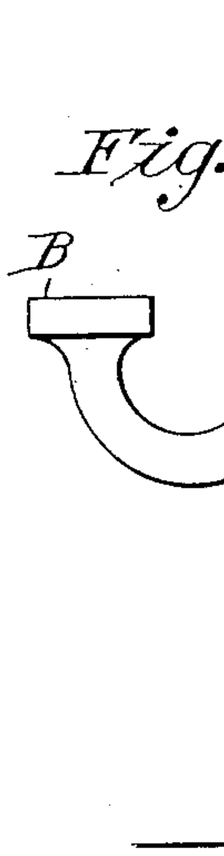
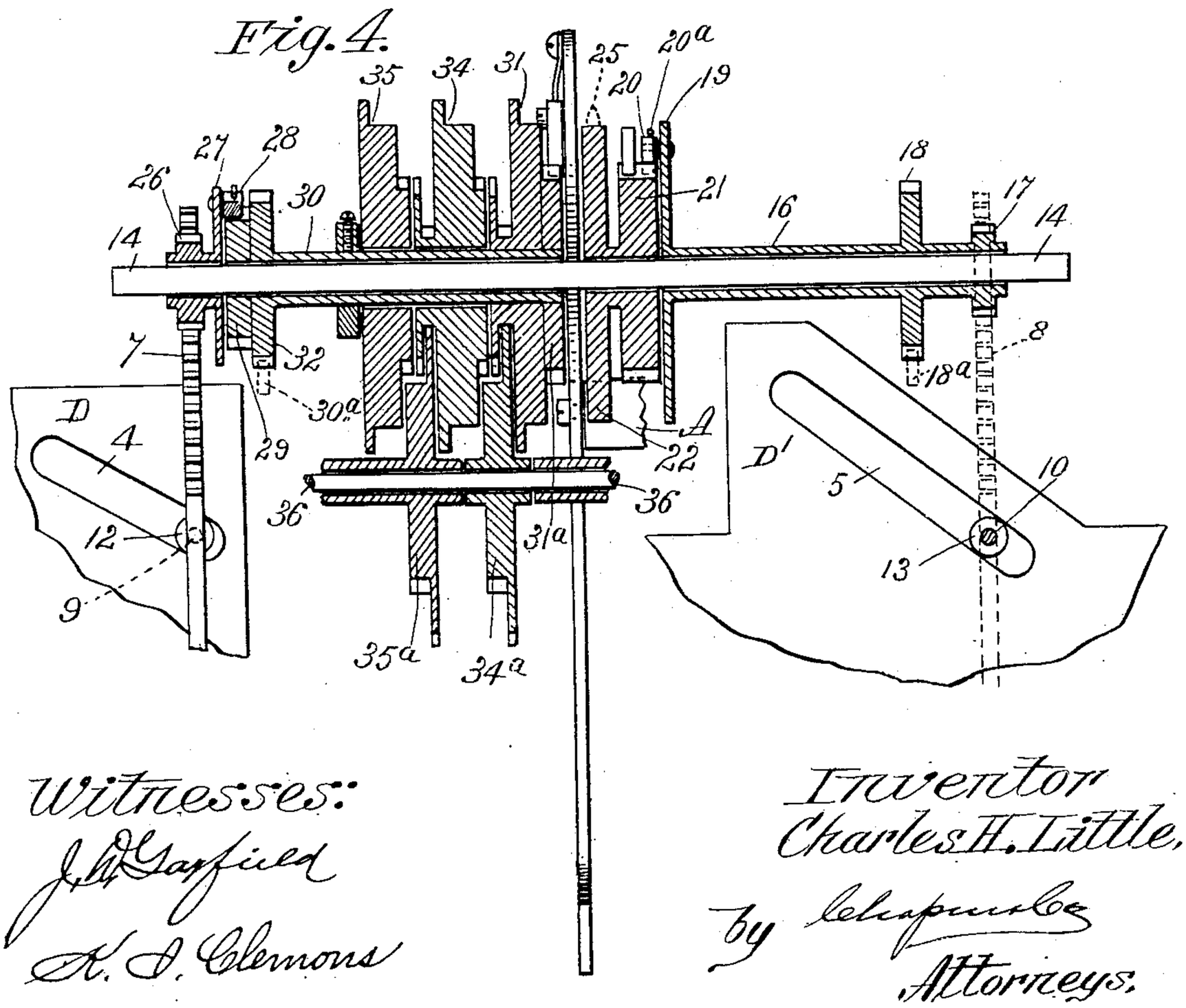


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CASH-REGISTERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 599,297, dated February 15, 1898.

Application filed August 25, 1897. Serial No. 649,475. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. LITTLE, a citizen of the United States of America, residing at Melrose, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Cash-Registering Machines, of which the following is a specification.

This invention relates to cash-registers, and particularly to the counting and registering devices of such machines, and is in the nature of an improvement on my United States patent dated June 15, 1897, and numbered 584,745, the object of the invention being to simplify the construction of the said counting and registering devices, whereby their construction is cheapened and they are rendered less liable to disarrangement; and the invention consists in the construction of such devices, as fully set forth and claimed in the following specification.

In the drawings forming part of this specification, Figure 1 is a front elevation of such portions of a cash-registering machine with the case removed as is necessary to show my invention, which is applied thereto. Fig. 2 is a vertical cross-section of Fig. 1 on line x x, looking to the left. Fig. 3 is that part of the counting and registering devices looking to the right from said line x x, Fig. 1. Fig. 4 is a vertical longitudinal section of the counting and registering mechanism, showing portions of the cam-plates which operate the parts thereof.

Referring to the drawings, A represents a frame for supporting the various operative parts of the machine.

B represents the keys of the dollar key-bank, and B′ the keys of the cents key-bank, all pivotally hung on the shaft B^2.

C represents the rocker-plate, provided with the usual weight C′ for returning the parts operated by the depression of a key to normal position after such operation. Said rocker-plate C also has secured thereto the segment-shaped ratchet C^2, having oppositely-arranged teeth from the center to the ends thereof, and a double-ended pawl C^3, hung in the frame A, for engaging said teeth of the ratchet C^2, the purpose of the device being to prevent the return of a key to normal position until it has completed its stroke and is common to many machines of this class and therefore requires no further description, but is shown and mentioned only because it bears on its upper end a pin used to effect a certain operation of the registering mechanism, which will be described farther on.

The drawings represent a machine having two key-banks, one representing dollars and the other fractional parts thereof in multiples of five cents. The rocker-plate C is common to both banks of keys and is made in one piece and operates to effect the return to its normal position of a single key of either bank or simultaneously a key of both banks. By the depression of a key of either bank or by the depression of a key of both banks at the same time the cam-plates D D′ are moved laterally on the frame A, singly or together, as the case may be, in the usual manner by the engagement of the end of a key with the inclined slots a cut in the lower edge of said cam-plates. Said cam-plate D of the dollar key-bank is supported for a free sliding movement on the screws 2 2, passing through horizontal slots 2^a therein and screwing into the frame A. The cam-plate D′ of the cents key-bank is similarly supported on screws 3, passing through slots 3^a therein, on which said cam-plate has a free sliding movement. In the upper part of said cam-plate D is located an inclined cam-slot 4, and in the upper part of the cam-plate D′ is located an inclined cam-slot 5. Hung in suitable frames 6 (in which they have a vertical sliding movement) are two racks 7 and 8, which have studs 9 and 10, secured to their edges, which lie next to the faces of said cam-plates D and D′, and on which studs are the rolls 12 and 13, which lie within the cam-slots 4 and 5 of said cam-plates.

It is seen from the above description that the lateral movement which either of the cam-plates D D′ has imparted to it by the depression of a key will cause a vertical movement of one or both of the racks 7 and 8, the extent of which movement is determined by the extent of the lateral motion of the cam-plates D or D′ and the inclination of the cam-slots 4 and 5, located in said cam-plates.

A shaft 14 is hung in suitable supports 15 on the rack-frame 6 and secured therein. On

said shaft 14 is located the counting and registering mechanism, which consists of two groups separately actuated by the lateral movement above described by the cam-plates. The first of said groups (see Fig. 4) is that actuated by the cam-plate D′ and registers only parts of a dollar in multiples of five. Said group consists of the long sleeve 16, turning freely on said shaft 14, having the pinion 17 on the outer end thereof, a toothed wheel 18, and the disk 19 on the inner end thereof. The said sleeve 16 is rotated by the vertical movement of the rack 8, which takes place upon the depression of a key of the cents-bank. The toothed wheel 18 has engaging therewith a spring-pawl 18ª, whose sole function is to prevent the rotational momentum of the said sleeve 16 to carry it beyond the proper point if a key is struck violently. On the side of the disk 19 near its periphery is hung the pawl 20, a suitable spring 20ª, secured to said disk and bearing on said pawl, serving to keep the point thereof in engagement with the teeth of a ratchet-wheel 21, forming part of the register-wheel 22. The latter and its said ratchet-wheel are preferably made in one piece and turn freely on the said shaft 14 in close proximity to the face of the disk 19, as shown in the drawings. Thus the depression of a key of the cents-bank rotates the register-wheel 22 according to the value of said key, and upon the return of said key to normal position the sleeve is rotated back in reverse direction, the spring-pawl sliding over the teeth of the ratchet-wheel 21, and to prevent the frictional contact of the said disk 19 or the pawl 20 on its backward movement from moving the register-wheel 22 a hook-lever 23, engaging with the teeth of the ratchet-wheel 21 and spring-held thereagainst, is provided. Said hook-lever is pivotally secured to the frame A, and a spring 24 under the rear end thereof holds the hook end in operative relation to said ratchet-wheel 21, the latter being wide enough to accommodate both the pawl 20 and said hook-lever.

On the periphery of the register-wheel 22 and projecting therefrom at right angles to the axis of said wheel is a pin 25, which is located thereon at the position occupied by zero in the series of figures arranged in five-cent amounts around the periphery of the said register-wheel, as described. This pin effects the transfer once to each revolution of the wheel 22 of one-dollar amounts from the first group, above described, of the counting and registering mechanism to the primary registering-wheel of the second group or dollar-registering group, all as hereinafter described.

The second group of counting and registering mechanism on said shaft 14 consists of a pinion 26, having a disk 27 secured thereto and rotating freely on said shaft. On said disk 27 is a pivotally-secured pawl 28, engaging with the ratchet-wheel 29, fixed on the end of a long sleeve 30, on the inner end of which is secured the primary registering-wheel 31 of the dollar-registering group of mechanism. Said sleeve 30 turns freely on said shaft 14 and is restrained from being carried by its proper place by a toothed wheel 32, against the edge of which a spring-pawl 30ª bears and which holds said sleeve 30 in the exact position to which it may have been moved by the depression of a key of the dollar key-bank.

Referring to Fig. 4, it will be seen that the rack 7 engages with the back side of the pinion 26 and that the rack 8 engages with the forward side of the pinion 17, and therefore that the two sleeves 16 and 30 are revolved in opposite directions by the upward movement of the said rack, either simultaneously or independently. The rotation of the sleeve 16 of the cents-registering group revolves the register-wheel 22 such a part of one revolution as the value of the depressed key calls for by the engagement of the pawl 20 with the teeth of the ratchet-wheel 21, each tooth representing a five-cent division on the face of the said register-wheel. The key then begins its return movement to normal position, which is effected partly by the weight C′ on the rocker-plate C and partly by the spring 33 under the rack 8, which spring is compressed by the upward movement of said rack. The dollar group of mechanism on said shaft 14 is actuated by the downward movement of a key of the dollar-bank by the direct rotation of the primary registering-wheel 31 of that group secured on the end of the sleeve 30, which is rotated by the engagement of the pawl 28 on the disk 27, as described. Next to the primary registering-wheel 31 of the dollar group are the wheels 34 and 35 for registering tens and hundreds, respectively, as transferred thereto from the primary wheel in the usual manner by the transfer-wheels 34ª and 35ª, supported for free rotation on the shaft 36, below the shaft 14. The method of this transferring operation being common to all of this class of mechanisms, it is not thought necessary to describe it in detail.

Next to the primary registering-wheel 31 and secured to or forming a part thereof is the ratchet-wheel 31ª, which is engaged and operated by a suitable pawl, to be described, and which operation causes the registration of one-dollar amounts from the cents group of mechanism.

The transfer of the dollar amounts from the cents group of registering mechanism once during each revolution of the register-wheel 22 is effected as follows: A curved lever 37 is pivotally supported on a pin 38 on the frame of the machine, the lower end of which lever lies in proximity to the upper end of the segmental ratchet C^2 when the rocker-plate C is in normal position, as shown in Fig. 2, near the upper end of which ratchet is located a pin 39, projecting from the side of said ratchet C^2, which pin is in contact with the said lower end of the lever 37. The normal position of the lever 37 is that shown in full lines in said Fig. 2, and contact with said pin 39 is not

necessary to hold it in that position. The upper end of said lever 37 is curved outwardly and projects up on the rear side of the counting and registering mechanism and opposite the space between the register-wheel 22 and the ratchet-wheel 31^a, forming part of the primary registering-wheel 31. On the upper extremity of said lever 37 is the pawl 40, pivoted by one end on said lever and having a tooth on the opposite end thereof engaging with the teeth of said ratchet-wheel 31^a. A suitable spring 41 keeps said pawl in contact with said ratchet-wheel.

At a point about opposite the shaft 14 a block 42 is secured to the lever 37, said block having an inclined edge lying in close proximity to the periphery of the register-wheel 22 of the cents-registering group. As hereinbefore described, a pin 25 is located at the zero-point of said registering-wheel 22. One complete revolution of the register-wheel 22 indicates that keys of the cents-bank representing a total value of one dollar have been operated.

Whenever the pin 25 on the periphery of the register-wheel 22 arrives at a position opposite the projecting block 42, it actuates the lever 37 by the contact between said pin 25 and said block 42, the extent of movement of said lever being sufficient to move the pawl 40 far enough to pick up one tooth, which represents one unit indicated on the face of the wheel. It will be observed that this actuation of the lever 37 occurs on the upstroke of the rocker-plate C, to which the ratchet-arm C^2 is secured, and therefore the pin 39 is moved away from the line of movement of the lower end of the lever 37, the position which this lever assumes when actuated by the pin 25 being shown in dotted lines, and as the ratchet-wheel 31^a turns under more or less resistance by the engagement of the spring-pawl 30^a with the toothed wheel 32 on the sleeve 30 said lever 37 remains in the position shown in dotted lines in Fig. 2 until the return of the rocker-plate C, bearing the ratchet-arm C^2, arrives at a position which brings the pin 39 on said ratchet in contact with the lower end of said lever, swinging it back again to the position shown in full lines in said figure and rotating the primary registering-wheel 31 of the dollar group to the extent of one tooth or unit. The block 42 may be made to serve as a stop for the pulley by making said block long enough to come in contact with said pulley when the lever 37 is actuated by the pin 39. Therefore it will be observed that the lever 37 remains stationary, except when actuated by the pin 25 of the register-wheel 22, and that this actuation, whereby an amount is transferred from the cents-registering group of mechanism on the shaft 14 to the dollar-registering group, takes place after the actuation of the said groups separately, which occurs on the upstroke of the rocker-plate and at a time when the mechanism of both of these groups is inoperative, and therefore at a time when there can be no interference with said operations, whereby it might be falsely made.

The placing of the pin 39 on the segmental ratchet C^2 is a matter of convenience only, as it may be applied to any part of the mechanism which will permit of its engagement with the end of the lever 37.

Illustrating the above statement and assuming that the primary registering-wheel 31 and the register-wheel 22 stand as having a registered total of one dollar and ninety cents and it is desired to register one dollar and twenty-five cents and that the keys of the dollar and cents banks are simultaneously depressed, the primary registering-wheel 31 will be moved one tooth and the register-wheel 22 will be moved five teeth, each of the latter representing five cents, and both of these movements will take place as the rocker-plate C moves upward, and during the actuation of the wheel 22 the pin 25 will have been carried past the projecting block 42 on the lever 47, moving the upper end of the latter back far enough for the pawl 40 to pick up one tooth; but the lever 37 will not be returned to its normal position and the wheel 31 thereby moved forward one tooth until the rocker-plate C returns to its normal position and the pin 39 on the upper end of the ratchet C^2 strikes the lower end of the lever 37 to give it the necessary movement. Thus, while the actual registration of the separate values of two keys simultaneously depressed takes place on the upstroke of the rocker-plate on the separated cents group and dollar group of registering mechanisms, the transfer of a one-dollar amount from the first-named group to the second does not take place until after the said separate registering movements of the wheels 31 and 22 have been completed.

From the above description it is evident that the chances of erroneous transfer are practically eliminated and the transfer mechanism much simplified and the cost of construction of the machine reduced.

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

1. In a cash-registering machine having two or more banks of keys, a counting and registering mechanism therefor consisting of two independent groups, one for each of said key-banks, and mounted for independent rotation on a common shaft, mechanism for actuating the primary registering-wheels of either of said groups, singly or together, by the depression of a single key of either bank, or by the simultaneous depression of a key of both banks, means on one of said groups for moving transfer mechanism into proper position for being actuated by the return of the said key to normal position whereby movement is imparted to the primary wheel of the other

of said groups, for registering thereon the amount to be transferred thereto, substantially as described.

2. In a cash-registering machine having two or more banks of keys, a counting and registering mechanism therefor consisting of two independent groups, one for each of said key-banks, and mounted for independent rotation on a common shaft, mechanism for actuating the primary registering-wheels of either of said groups, singly or together, by the depression of a single key of either bank, or by the simultaneous depression of a key of both banks, a vertically-swinging lever moved by the rotational movements of one of said groups into a position to be acted upon by the return to normal position of a depressed key of one of said banks for imparting movement to the other of said groups, whereby the amount to be registered on said last-named, from said first-named group, is transferred thereto, substantially as described.

3. In a cash-registering machine, in combination, a "dollar" bank of keys, a "cents" bank of keys, a rocker-plate common to both of said key-banks, a counting and registering mechanism consisting of two independent groups, one for each of said key-banks, and having independent connections with said rocker-plate, a transfer-lever engaging the group of registering mechanism connected to said dollar key-bank, and moved into proper position to impart movement thereto by the rotational movement of the group of mechanism connected to the "cents" key-bank, on the upstroke of said rocker-plate, and means on the latter for imparting movement to said lever on the downstroke of said rocker-plate whereby said first-named group is actuated and the amount to be registered thereon from said last-named group is transferred thereto, after the completion of the separate registering movements of said two groups, substantially as described.

4. In a cash-registering machine having a "dollar" bank of keys and a "cents" bank of keys, a rocker-plate common to both of said key-banks, a counting and registering mechanism consisting of an independently-registering group for each of said key-banks and actuated thereby, a transfer-lever located in proximity to the primary registering-wheels of each of said groups and having an engagement with the primary registering-wheel of the said dollar-registering group, and being engaged periodically by the primary registering-wheel of said cents-registering group, during the operative rotation of the latter, and moved thereby to proper position to transfer an amount from the cents group to the dollar group of registering mechanism, and which transfer is effected by the downstroke of the rocker-plate after the completion of the registering movements of one or both of said independently-registering groups, substantially as described.

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