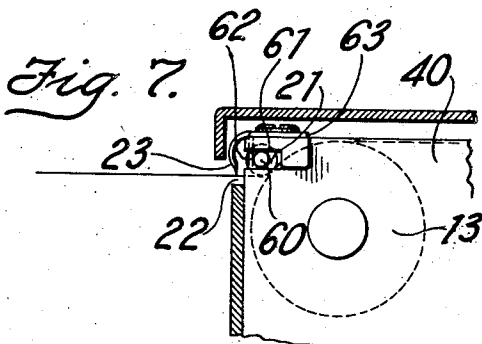
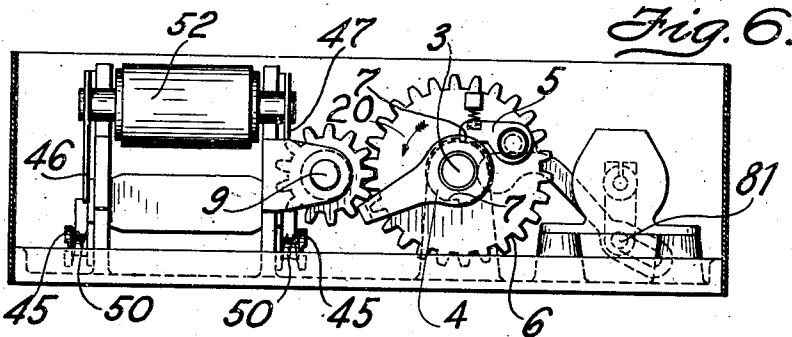
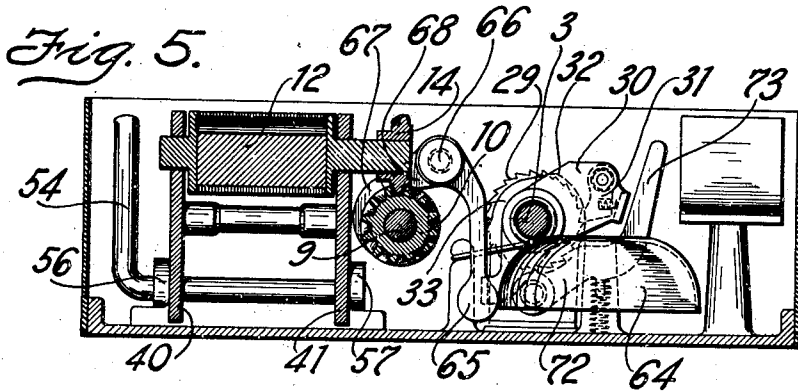


C. PALMER.
CASH REGISTER.
APPLICATION FILED APR. 1, 1910.

1,049,760.

Patented Jan. 7, 1913.

4 SHEETS—SHEET 3.



WITNESSES:

P. H. Fairchild.
Geo. S. Jorderer.

INVENTOR

Charles Palmer

BY *[Signature]*
and *[Signature]*
ATTORNEYS

C. PALMER.
CASH REGISTER.
APPLICATION FILED APR. 1, 1910.

1,049,760.

Patented Jan. 7, 1913.
4 SHEETS—SHEET 4.

Fig. 8.

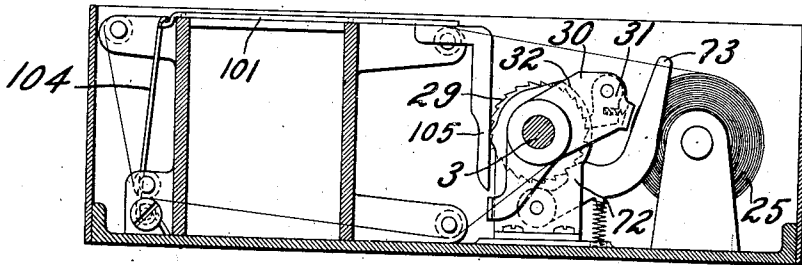
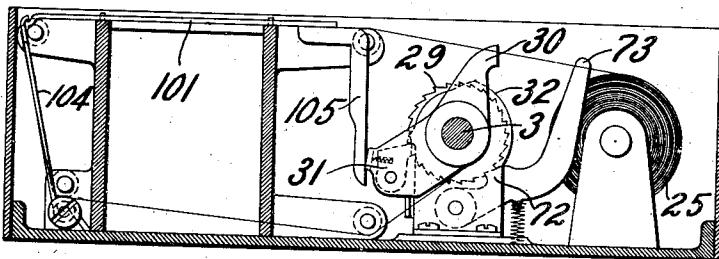


Fig. 9.



WITNESSES:

R. H. Friedrich.

Geo. S. Forderer.

INVENTOR

Charles Palmer

BY *H. H. Hays*
and *R. C. Hays*.
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES PALMER, OF LONDON, ENGLAND, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

CASH-REGISTER.

1,049,760.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed April 1, 1910. Serial No. 552,766.

To all whom it may concern:

Be it known that I, CHARLES PALMER, a subject of the King of Great Britain and Ireland, residing at London, in the county of Middlesex, England, have invented certain new and useful Improvements in Cash-Registers, of which I declare the following to be a full, clear, and exact description.

This invention relates to portable autographic registers, that is, autographic registers which may be carried by the user of the register. The register is intended for the use of drivers, conductors, clerks etc.

In machines of this type is has been customary to have a strip of paper adapted to receive written entries, said strip being fed from a supply roll to a receiving roll, both rolls being in a locked casing. In this manner a permanent record is retained of all transactions. Beneath this detail strip is a similar strip which is fed transversely to the direction of the first mentioned strip and out through an opening in the side of the casing. An ink ribbon is fed between these strips so that records which are written upon the upper strip will be transferred to the lower strip. A small electro-type is adapted to print upon the lower strip which is fed from the machine and the printed portion severed to form a voucher, the printing consisting of a small receipt form having a space for the customer's name or number, and spaces for entries of the amounts in pounds, shillings and pence, the present machine being designed for use with English currency. It has therefore been found possible in the use of this class of machines first to enter the name of the customer on the detail strip and then operate the device to an extent sufficient to bring the pounds section of the voucher beneath the shillings or pence column of the detail strip and then make an entry in one of the last mentioned columns. The result is that the name will be transferred through the medium of the ink ribbon to its appropriate space on the voucher while the amount though written in a column of small value as shillings or pence, may be transferred to spaces on the voucher appropriate to pounds, or shillings. In this manner a receipt may be given to a customer for an amount larger than the amount shown on the detail strip.

The object of the present invention is to provide means designed effectively to prevent such a fraudulent manipulation.

With these and incidental objects in view the invention consists in certain novel features of construction and combinations of parts the essential elements of which are set forth in appended claims and a preferred form of embodiment of which is hereinafter described with reference to the drawings which accompany and form part of the specification.

Figure 1 is a top plan view of an autographic register constructed according to the invention. Fig. 2 is a right side elevation with the casing shown in section. Fig. 3 is a top plan view with the lid removed. Fig. 4 is a vertical section taken on the line 4-4 of Fig. 3. Fig. 5 is a vertical section taken on the line 5-5 of Fig. 3. Fig. 6 is a vertical section taken on the line 6-6 of Fig. 3. Fig. 7 is an enlarged detail of a paper feeding device. Figs. 8 and 9 are sectional views of the machine taken on the same line and showing the shutter and its operating mechanism in normal and operated positions respectively.

The general construction and operation of the machine to which the present improvements are applied are as follows:—

The register is provided with an opening in its lid through which autographic records are made and the lid is perfectly flat thus serving as a hand support when writing and the autographic register is of such size and shape as to be held conveniently with the left hand while the records are being made. After the written records are made a lever which is located at the right of the register is operated and causes an operation of the printing mechanism and a feeding of the autographic paper.

The autographic paper is contained within the register on two rolls. One of the strips of paper, the voucher strip, is arranged to be fed out of the machine while the other, the detail strip, is arranged to be rolled upon a receiving roll which the machine contains. The strips of paper are both fed beneath the writing opening but transversely to each other and an ink ribbon is arranged between the two strips for the purpose of transferring the written records on the upper strip to the lower strip.

Referring to the drawings, the numeral 1 denotes an operating handle. This handle is carried by a crank 2 fixed to a drive shaft 3, which shaft is oscillated by giving the crank 2 one half of a rotation and then returning it to its original position.

The voucher strip is printed and fed as follows: The shaft 3 carries a notched disk or two-toothed ratchet wheel 4 cooperating with a pawl 5 carried by a gear 6 journaled on the shaft 3. The notches in the disk 4 are indicated at 7 in Fig. 6 and it will be seen that there are two of these notches and that each notch is adapted to engage the pawl 5 in one direction only of its movement and one or the other of these notches thus engage the pawl 5 during the return stroke of the operating handle 1 and for this reason cause the gear 6 to make one-half of a rotation. The gear 6 meshes with a gear 8 carried by a shaft 9 said gear 8 being one-half the size of the gear 6. It follows that shaft 9 is caused to make one rotation upon each operation of the machine. This shaft 9 carries two helicoidal gears 10 and 11 for respectively rotating a type-carrying cylinder 12 and a feed roll 13. The type-carrying cylinder 12 is rigid with a helicoidal gear 14 meshing with the gear 10 and the feed roll 13 is rigid with a helicoidal gear 15 meshing with the gear 11. The gears 10, 14, 11 and 15 have equal diameters, therefore the type-carrying roll 12 and the feed roll 13 will make one rotation upon each operation of the machine. The rotation of these two members causes the feeding and printing of the strip of voucher or receipt paper 16 led from a supply roll 17 between the type-carrier 12 and an impression roll 18, and over the impression roll to a writing support 19. It passes over the writing support between the feed roll 13 (Fig. 7) and coating rolls 21, and then out of the autographic device through an opening 22 and beneath a knife edge 23.

It may be seen from Fig. 6 that a full half rotation of shaft 3 in the direction of the arrow 20 is required in order to bring the lower notch 7 of ratchet wheel 4 into coacting relation with pawl 5 so that rotation of the gear 6 will occur upon the return of the operating crank or lever 2. Under these circumstances it follows that no operation of the printing and feeding mechanism for the strip of voucher paper will occur if the operating lever is given less than its full forward stroke. However, a less than normal stroke of the operating lever does not prevent a proportional feed of the strip of detail record paper as will be apparent from the following paragraphs:

A second strip of autographic paper or detail record strip 24 leads from a supply roll 25 (Fig. 2) over the writing platform

19 above the strip 16. From the writing platform it passes around a roll 26 and from this roll around a guide 27 to a receiving roll 28 loosely mounted on shaft 3. The shaft 3 carries an arm 30 to which is pivoted a pawl 31 in position to engage the ratchet 29. The pawl 31 idly wipes over the ratchet 29 upon the forward stroke of the crank 2 but engages the ratchet upon the return of the crank and therefore feeds the strip of paper 24 at the time the strip 16 is being fed. The extent of feed of the strip 24 is determined by a camming edge 32 of a support 33 for the shaft 3. This camming edge projects into the path of the pawl 31 and causes the pawl to be cammed out of engagement with its ratchet before the shaft 3 reaches its home position. Because of the number of teeth of the ratchet wheel 29 the record strip is fed some distance even if the operating lever is not given its full stroke. This construction which permits independent feeding of one strip of record paper by a drive for the plurality of strips has no distinctive function in the present embodiment of the invention, but it readily may be seen that with this construction a device may be arranged to receive memoranda or notations upon the detail strip which do not appear upon the voucher strip.

An endless ink ribbon 34 passes between the strips of autographic paper at the writing platform, and around rollers 35, 26, 36 and 37. The ink ribbon is fed through contact with the strip of autographic paper 24 at the rolls 35 and 26. In order to provide for easily renewing the ink ribbon, part 84 of the side of the casing which is at the right (Fig. 3) is hinged to the base as indicated by the broken lines in this figure.

The type-carrier 12 serves as one feed roll for the strip 16 and the distance between the type-carrier and the serrated tearing edge 23 is equal to the length of two of the printed vouchers which are issued by the device and also to twice the circumference of the type-carrier. It is necessary to have the type-carrier in the correct angular position so that the strip 16 will come to rest with the knife edge between the printed part of the strip, which is issued upon an operation, and the printed part of the strip, which is to be issued upon the next succeeding operation. In replacing the roll of paper 17 it is necessary to separate the type-carrier 12 from the impression roll 18 to permit the threading of the strip 16 of the roll 17. By means of the helicoidal gears it is possible to roll the type-carrier 12 away from the impression roll 18 with no possibility of accidental rotation of the type-carrier when it is in its moved position. This is permitted by the following arrangement:

Trunnions 38 of the type-carrying roll are journaled in L shaped openings 39 in

fixed frames 40 and 41 but also rest in forks 42 and 43 of a frame 44 which is pivoted to the frames 40 and 41 by screws 45. A pair of arms 46 and 47 are pivoted to the frame 44 by pins 48 and 49 and are normally engaged by springs 50 (Fig. 6) which are wound around the pivotal supports for the frame 44 and bear between the arms 46 and 47 and lugs 51. These springs serve normally to hold the arms 46 and 47 and also the frame 44 in the positions in which they are shown in the drawings.

An ink roll is indicated at 52 and to remove this roll it is necessary to rock the arms 47 away from trunnions 53 of the ink roll. The roll may then be drawn outwardly from its supports.

If it is desired to separate the type-carrying roll 12 from the impression roll 18 the frame 44 is rocked to carry the type roll away from the impression roll by means of a handle 54. This handle is L shaped and is journaled at 55 in the frames 40 and 41 and carries two cams 56 and 57 which are located in proper position for engaging parts 58 of the frame 44. By rocking the handle 54 upwardly the cams 57 cause the frame 44 to be rocked rearwardly thus shifting the type-carrying roll 12 so that its trunnions 38 come in line with the upright parts of the L shaped opening 39. The type-carrying roll may then be removed from the autographic device if desired but if the type-carrying roll is merely separated from the impression roll for the purpose of permitting threading of autographic paper through the device, the type-carrying roll is not removed and its gear is permitted to remain in mesh with the gear 10 and thus when the handle 54 is returned to its original position the type-carrier 12 will also return to the exact angular position it has before it was shifted away from the impression roll 18.

As the voucher which is issued by this device is quite short and it is desired not to obstruct the writing surface, it is necessary to make the feed roll 21 extremely small and to locate it below the writing plane. Fig. 7 illustrates the manner of mounting the roll 21. The roll is carried by a rod 60 which is supported in notches 61 of the frames 40 and 41 and is pressed toward the feed roll 13 to cause sufficient pressure between the roll 21 and the roll 13 by spring clips 62 which are bent downwardly from a plate 63 by means of which is also formed the serrated edge 23.

Registrations are audibly announced by a bell 64, which is struck by a hammer 65 pivoted to the frame of the machine by a pin 66 and is actuated by a coil spring which surrounds the pin 66. The spring is tensioned by a cam 67 carried by the shaft 9 which engages an arm 68 of the bell hammer

upon the rotation of the shaft 9. At the completion of the rotation, the cam 67 clears the arm 68 and permits the spring to act.

In order equally to distribute the work performed by the crank 2 upon its forward and return stroke a spring 69 (Fig. 3) is provided, which spring is tensioned upon the forward stroke of the crank 2 and aids in returning the crank 2 upon the return stroke. It has previously been stated that the paper feeding devices are operated upon the return stroke of the crank 2.

When it is desired to remove the strip of autographic paper 24, which contains the detail records, it is necessary to unlock lid 70 and rock the same upwardly around its hinges 71 and then remove the strip 24 by unrolling it from the receiving roll 28. If the strip is not entirely unwound from the roll 25 it may be torn between the roll 25 and the writing support and then withdrawn from the register, at which time the roll 28 must be permitted to rotate backwardly. For this reason retaining pawl 72 for the ratchet 29 is provided with a handle 73 so that it may be easily rocked away from the ratchet 29.

The lock for the lid 70 is indicated at 74 (Fig. 1) and a bolt 75 for the lock is supported in the lid at the lock 74 and by a support 76 and is adapted to extend through a cut in the body part of the casing of the autographic device.

The actuations of the lid 70 are counted by a counter or cyclometer 82. This counter is actuated upon the closing of the lid by a lug which is carried by the lid and which engages an arm 83 of the operating shaft of the counter.

The operations of the machine are counted by a cyclometer 77 (Figs. 1 and 3). The cyclometer is actuated by a pitman 78 which is pivoted to an arm 79 of the oscillatory shaft 3 and at its outer end is connected to an arm 80 of an actuating shaft 81 of the cyclometer. The arm 80 carries a pin 85 which extends through a slot in the pitman 78 which provides sufficient lost motion to prevent the actuation of the cyclometer except when the handle 1 is operated its full stroke.

To operate the device it is merely necessary to write a customer's name and the amount of the particular transaction, or other desired matter, through the writing opening and then to operate crank 2 upon which operation the strips 16 and 24 are fed the required distance and the printed part of the slip then extends out of the casing and may be torn from the remainder of the strip. It will readily be seen however that the construction as thus far described is open to manipulation in the following manner: Referring to Fig. 1 it will be noted that the record strip 24 is adapted to receive

entries representing amount of money in pounds, shillings and pence. For convenience the strip may be provided with lines dividing it in columns and the strip is adapted to be advanced in the direction of the arrow applied thereto. The printed voucher receipt 16 is fed from the machine in a direction at right angles to the direction of advancement of the record strip 24. As will be seen in Fig. 1 this printed voucher is provided with spaces allotted to pounds, shillings and pence, such spaces being of a width equal to the width of the columns of the record strip. In the normal condition of the machine one of such printed voucher receipts is located immediately below the record strip with its spaces in exact alinement with the columns on the strip. In this condition if an entry be made in the column of the strip allotted to pounds such entry will be transferred to the pounds space on the voucher receipt through the medium of the ink ribbon above described. An entry however may be delayed until the handle 2 has been operated to feed the voucher to an extent sufficient to bring the pounds space beneath either the shillings or pence column of the strip. If an entry is then made in the selected one of said columns the amount will be transferred to the pounds column and a receipt thus issued showing an entry of an amount larger than the amount appearing on the record strip. In order to prevent such manipulation a shutter 100 is provided. This shutter is interposed between the record strip and the ink ribbon and is adapted upon the beginning of an operation of the machine to assume a position directly above the spaces on the voucher receipt 16 which are allotted to pounds, shillings and pence and maintain such position throughout the operation of the machine and feeding of the voucher strip thereby preventing an entry being made on such voucher after its feeding movement has been commenced. The shutter 100 is carried by a frame 101 which frame is constructed to slide upon the main frame of the machine, said sliding connection consisting of the slots 102 and pins 103. The shutter is normally held out of covering position by the spring 104 which bears against one end of the sliding frame 101. At the opposite end of said frame there is provided a downwardly extending arm 105 normally projecting into the path of movement of the record strip feeding arm 30. Upon an operation of the operating handle and the consequent movement of said arm 30 the arm 105 will be engaged and moved to the position shown in Fig. 9, in which position the shutter 100 will cover the spaces of the voucher allotted to the amount of the transaction. As before stated such position is maintained throughout the operation of

the machine and the operator is thus unable partially to operate the machine to feed a voucher receipt to a position in which the pounds space of the voucher will be beneath a column of the record strip which is allotted the amounts of lesser value. As is usual in this type of machine when an entry is made on the record strip when the machine is in normal condition the record strip will receive an indelible mark on its rear side in consequence of its direct contact with the ink ribbon. As the shutter is interposed between the ink ribbon and record strip any attempted manipulation of the machine while the shutter is in a position to cover the voucher may easily be detected as no such indelible impression will be made. This mechanism will thus prevent the issuing of a voucher receipt for an amount greater than the amount appearing on the record strip without the possibility of detection.

While the form of mechanism herein shown and described is admirably adapted to fulfil the objects primarily stated it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described as it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. In an autographic device, the combination with means for moving a record strip and a voucher receipt strip in directions transverse to each other, transferring material interposed between said strips for transferring to one of said strips entries made on the other of said strips and means operated at each operation of the machine to prevent such transfer of entries during such operating movement.

2. In a machine of the class described, the combination with means for moving a record strip and a voucher receipt strip in directions transverse to each other, transferring material interposed between said strips for transferring to one of said strips entries made on the other of said strips and a movable frame and shutter carried thereby and adapted at each operation of the machine, to be moved to a position to prevent such transfer of entries during the movement of said strips.

3. In a machine of the class described, the combination with means for moving a record strip and voucher receipt strip in directions transverse to each other, transferring material interposed between said strips for transferring to said voucher strip the entries made on the record strip and causing a marking on the reverse side of said latter strip in a form reverse to that of the entry on the proper side of said strip, and a movable frame and shutter carried thereby and

adapted to be positioned at each operation of the machine to prevent such transferring and marking operations during the movement of said strips.

5 4. In an autographic device, the combination with means for moving a record strip and a voucher receipt strip in directions transverse to each other, transferring material interposed between said strips for transferring to one of said strips entries made on the other of said strips and means operated at each operation of the machine to prevent such transfer of entries during such operating movement; said means comprising a sliding frame, a shutter carried thereby, spring means for normally holding the shutter out of such preventing position and an arm carried by said frame and positioned to be engaged on the operation of the machine to move said shutter to such preventing position.

20 5. In an autographic device, the combination with means for moving a record strip

and a voucher receipt strip, transferring material interposed between said strips for transferring to one of said strips entries made on the other of said strips and means operated at each operation of the machine to prevent such transfer of entries during such operating movement.

30 6. In an autographic device, the combination with means for moving an autographic record strip, and a main operating device, for actuating said means, of a concealing slide, connections from said main operating device for moving said slide in one direction to a position preventing access to the record strip, and a spring for moving said slide in the opposite direction.

In testimony whereof I affix my signature 40 in the presence of two witnesses.

CHARLES PALMER.

Witnesses:

R. WESTACOTT,
W. R. SCOTT.