

June 17, 1930.

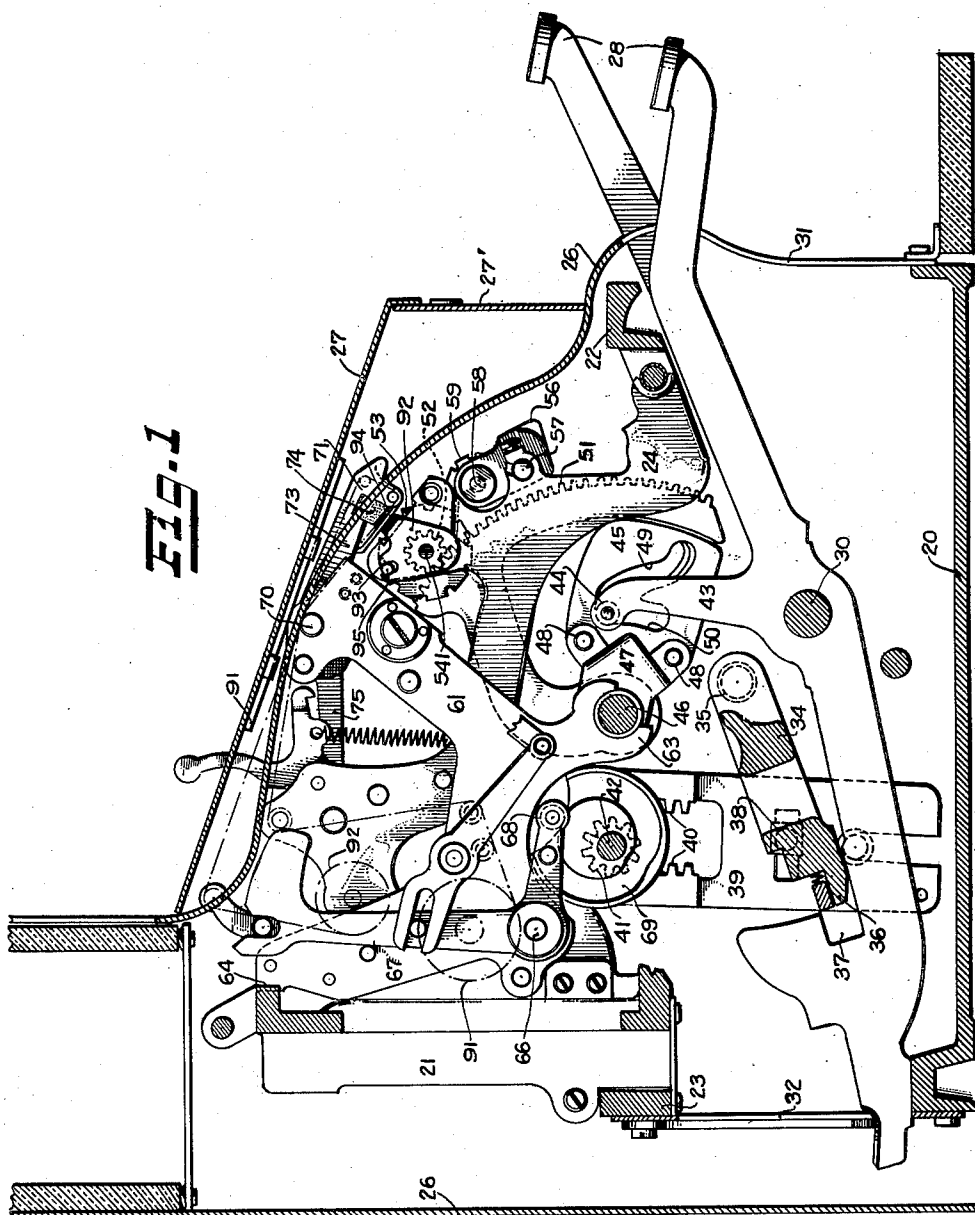
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1,763,699

CASH REGISTER

Filed Aug. 30, 1924

3 Sheets-Sheet 1



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CASH REGISTER

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3 Sheets-Sheet 2

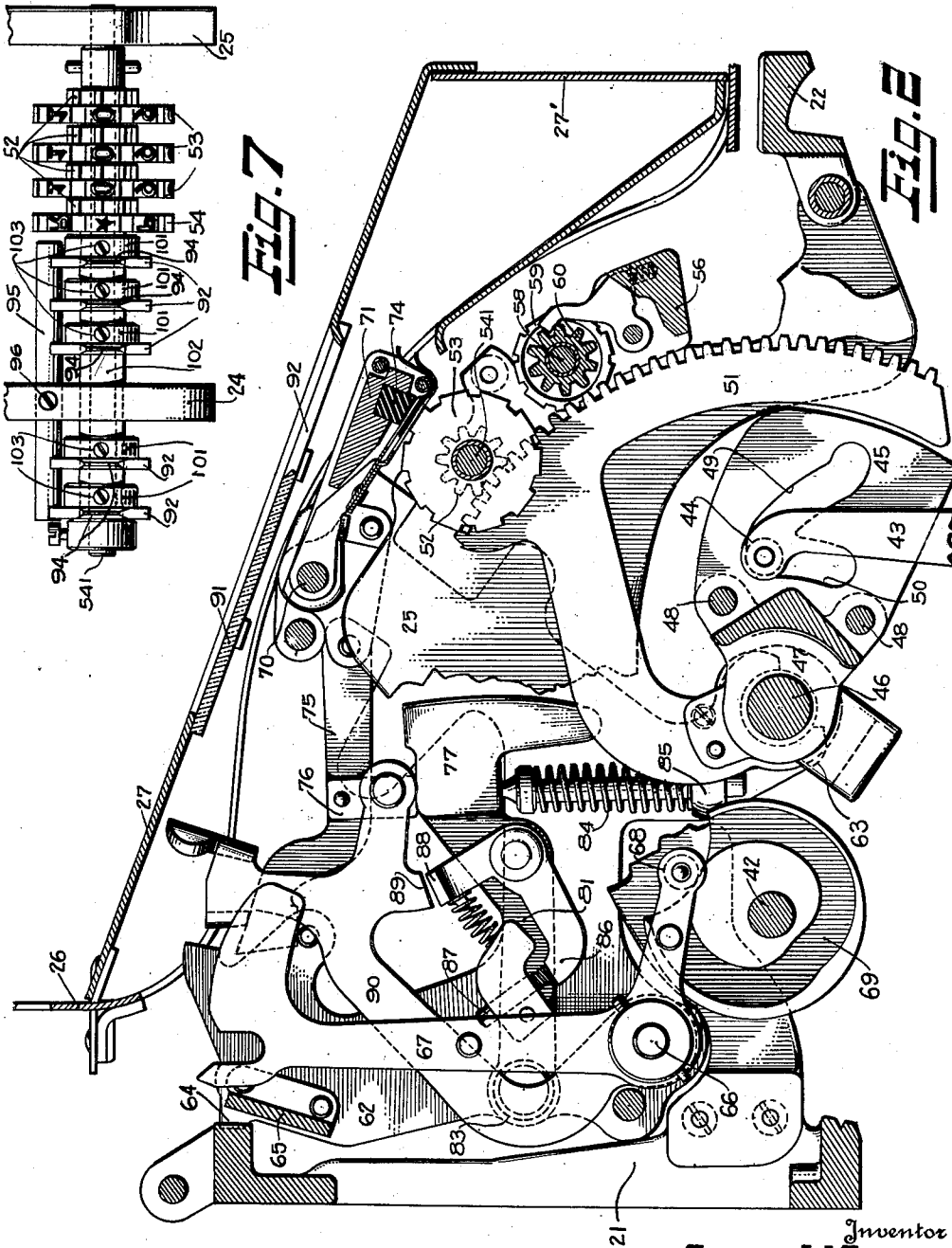


Fig. 7

Fig. 8

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CASH REGISTER

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3 Sheets-Sheet 3

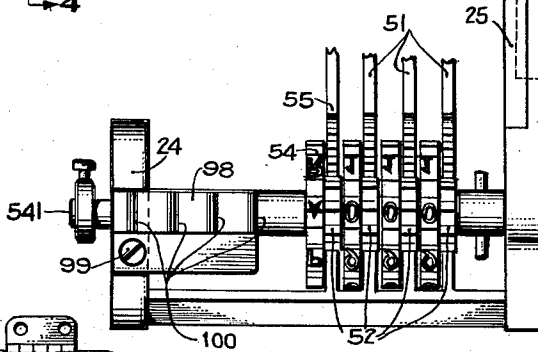
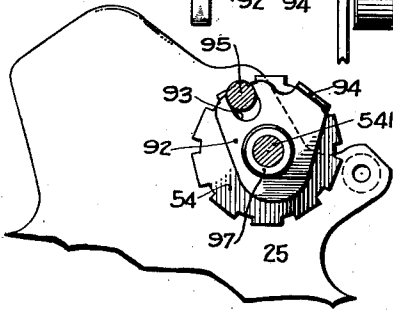
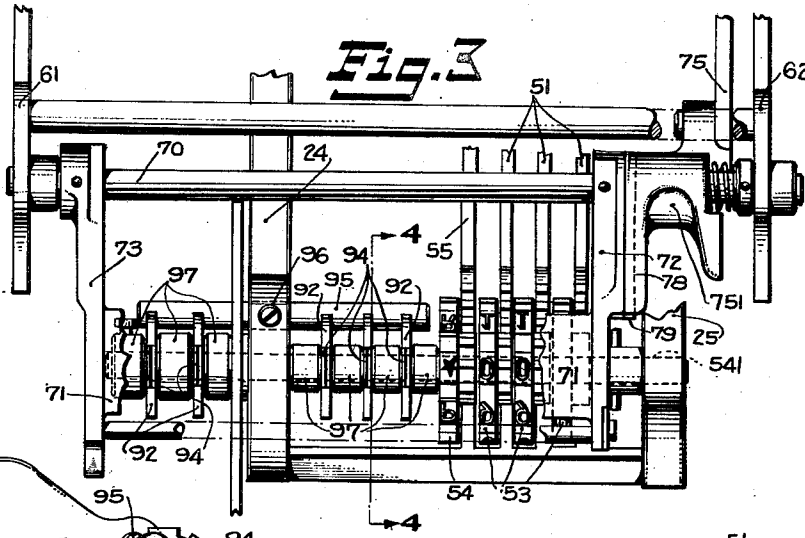


Fig. 5

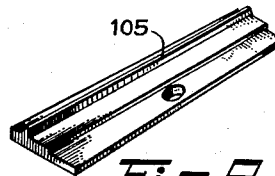


Fig. 6

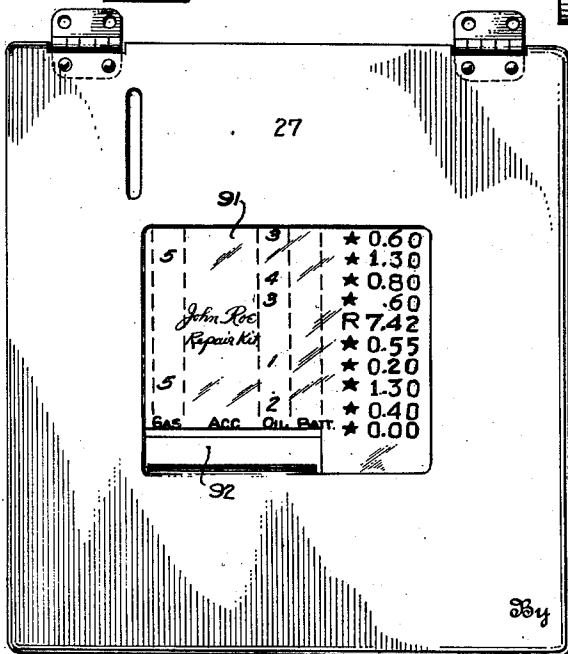


Fig. 7

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UNITED STATES PATENT OFFICE

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CASH REGISTER

Application filed August 30, 1924. Serial No. 735,148.

This invention relates to cash registers and accounting machines generally and more particularly to that class employing printing devices for printing the items upon a record strip.

A broad object of the present invention is to provide an improved autographic attachment in combination with special printing devices whereby written notations may be entered in appropriate columns formed by the special printing devices.

More specifically it is an object of the present invention to provide means for printing parallel lines upon a record strip simultaneously with each item registering and printing operation. The present invention also contemplates etching of the glass covering the printed record strip so that the entry of the desired notation in the appropriate column will be facilitated.

Another object of the present invention is to provide a simple means whereby the printing devices for effecting the printing of the lines may be readily changed at will to meet the requirements of a particular need.

Another object of the present invention is to provide improved devices for effecting line printing upon the record strip so that the ruling device may be readily and easily detached and a new one substituted therefor.

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

Of said drawings:

Fig. 1 is a sectional view of the cash register taken near the left end of the machine showing some of the keys, a portion of the printing devices, and the differential mechanism for driving the totalizer elements and adjusting the item type carriers.

Fig. 2 is a transverse sectional view taken substantially through the center of the machine showing the devices for effecting print-

ing upon the record strip by the adjusted type carriers and ruling devices.

Fig. 3 is a partial top plan view of the printer showing the platen frame, the clutch for connecting it to the actuating member and the special type printing elements for effecting the printing of lines upon the record strip.

Fig. 4 is a partial sectional view taken on the lines 4—4 of Fig. 3.

Fig. 5 is a top plan view of the autographic lid showing a number of printed items and the manner in which the ruling block rules the record strip to permit the entries of desired notations in the proper columns.

Fig. 6 is a partial view of the item type carrier assembly, embodying a modification of the present invention which illustrates another way by which ruling upon the record strip may be accomplished.

Fig. 7 is a partial view of the item type carrier assembly embodying another modification of the present invention illustrating another means by which adjustability of the printing elements may be secured.

Fig. 8 is a view in perspective of a modification of a ruling block for printing horizontal lines upon the record strip.

Reference to the detailed description which follows and which is divided under suitable headings will give a full understanding of the various features embodied in the present invention and their intended mode of operation.

For the purposes of illustration this invention has been shown as applied to a type of machine, the general principle of which is disclosed in the United States application, Ser. No. 263,125 filed Nov. 19, 1918 by Frederick L. Fuller as well as the British patents 135,465; 157,823; 157,824 and 157,825 granted for the same invention, but it is to be understood that this invention is not limited to this type of machine, but may, with slight modifications from the present illustrative embodiment, be applied to other well known forms of accounting machines.

Framework

The various parts of the mechanism are supported by a suitable frame work compris-

ing a base casting 20 and suitable side frames neither of which are shown in the present drawings. The main side frames are connected at their upper rear ends by a frame work 21 and cross connections in the form of tie bars 22 and 23 situated toward the front and rear of the machine respectively. The present machine is also provided with two intermediate and parallel supporting frames 24 and 25 shown in Figs. 3 and 6. The mechanism is enclosed by a cabinet 26 preferably formed of one piece and may be made of any suitable material. The cabinet 26 has hinged thereto a flat lid 27 and a front cover 27' for providing access to the printing mechanism for replenishing the paper supply, printing totals and resetting the totalizer.

Keys and operating mechanism

The illustrative machine is provided with a number of groups of amount keys, several of these keys being shown in Fig. 1 and indicated by the reference characters 28.

The amount keys 28 are pivoted upon a shaft 30 extending transversely of the machine and journaled between the side frames. The keys are guided in their reciprocating movements by slots 31 formed in the front part of the cabinet 25 and are further guided at their rearward ends by a vertically slotted plate 32 attached to the tie bar 23. Resting upon the rear ends of the keys is a key coupler 34 journaled at 35 between the side frames. The key coupler has a nose 36 co-operating at times with notches 37 formed in the rear ends of the keys 28. When the outer ends of the keys are depressed the key coupler 34 is rocked clockwise (as viewed in Fig. 1) and the nose 36 thereon enters the notches 37 formed in the rear end of the keys. The purpose of such key coupler mechanism is well known in the art and need not be discussed herein.

Connected to the key coupler at 38 is a vertical reciprocating rack plate 39 provided with oppositely facing rack teeth 40 which alternately mesh with a gear 41 fast to a main operating shaft 42 journaled between the machine side frames. The arrangement of this mechanism is such that a reciprocation of the key coupler 34 by the keys will effect a complete rotation of the gear and the shaft 42 to which the gear is secured. The shaft 42 is provided with cams or other suitable devices for operating various parts of the registering and printing mechanisms.

Differential mechanism

The differential mechanisms or devices controlled by the various groups of keys for adjusting the item type carriers and actuating the totalizers are all similar in construction and principles and a description of one will suffice for all.

As shown in Fig. 1 each of the amount keys

is provided with an upwardly extending arm 43 carrying an anti-friction roller 44 co-operating with differential slots formed in cam plates 45. Loosely mounted upon the transverse shaft 46 is a frame 47 provided with spaced slots in which are secured by pins 48, a series of cam plates 44, one for each key. The cam plates 45 are provided with L shaped slots 49 and 50, the slots 50 being concentric with respect to the shaft 46. The slots 49 are, however, graduated so that when the rollers 44 carried by the frame 47 of a depressed key operates in the differential slot of its associated cam plate 45 it will move the frame 47 differentially and to an amount commensurate with the value of the key depressed. When, however, the frame 47 is operated by the depression of a key 28 of a certain group, the rollers 44 of the undepressed keys of the same group will play in the arcuate slots 50 of their respective cam plates 45, thereby permitting the frame 47 to be raised differentially without interference with the rollers 44 of the unoperated keys.

It is to be understood that there is a differential frame for each group of amount keys. As is shown in Fig. 1 the differential frame 47 has attached thereto a segmental rack 51. In continuous mesh with the teeth of the segmental rack 51 is a pinion 52 attached to an item type wheel 53 mounted upon a shaft 54 and adapted to print upon a record strip. From the above it will be evident that since there may be nine keys in a particular group and a corresponding number of cam plates 45 the segmental rack 51 and type carrier 53 may be brought to any of nine different positions by the depression of a key 28 associated with such group of keys. In a manner similar to this the keys associated with any of the denominational groups will adjust their related type carriers so that when printing is effected the type wheel will print the character corresponding to the value of the keys depressed.

As best shown in Figs. 3 and 4 the machine is provided with three segmental racks 51 for adjusting a corresponding number of amount type carriers 53. There is also shown a special type carrier 54 for indicating the type of transaction entered in the machine. This type carrier is normally in a position to print a character indicating a cash transaction, but may be movable to other positions under the control of special keys for indicating other types of transactions, such as "received on account" and "paid out." For adjusting this type carrier 54 differentially there is provided a segment 55 which is operated by a differential frame controlled by a series of transaction keys. The present drawings do not show any transaction keys which operate in a manner similar to that which has been described in connection with the amount keys so that

the character of any special registration or transaction may be recorded in connection with the amount. For further details of construction and operation of the mechanism associated with the transaction keys reference may be had to the Fuller application, Ser. No. 263,125 hereinbefore mentioned.

Accumulating devices

10 Situated below the type carriers 53 and 54 is a pivotally mounted totalizer 56. The totalizer 56 as shown in detail in the Fuller application and generally in Fig. 1, is pivotally mounted between the side frames 24 and 25 and comprises a frame journaled as at 57 and having mounted therein a shaft 58 supporting a series of wheels 59.

In order to bring the totalizer pinions 60 which are secured to the totalizer wheels 59 in mesh with the actuating racks 51 at the desired time, any suitable mechanism may be employed to attain this end and one form which this mechanism might take is shown and described in considerable detail in the 25 Fuller application #263,125 referred to hereinbefore.

Record strip printing mechanism

It is desirable that each time an item is 30 entered in the machine that this amount be printed upon the record strip within the machine cabinet. The record strip provides the complete record of all the transactions entered in the machine, and at the end of an arbitrary period may be detached from the machine and filed away for future reference.

The printing mechanism for printing the items and totals accumulated by the totalizer 56 comprises a pivoted frame formed of two 40 side plates 61 and 62 (Figs. 1 and 2) the lower ends of which are provided with claws 63 engaging the shaft 46. Normally the printing mechanism rests by its own weight in the position shown in the drawings with lugs 64 contacting with a portion of the frame 21. The side frames 61 and 62 are connected together by a cross member 65 as shown in Fig. 2 and shafts and other members which will be referred to as the description progresses. In the position shown the printer frame is adjusted to print from the type carriers the items and other special designations upon the record strip.

Journalled in the printer side frames 61 and 62 is a shaft 66, the extreme left end of which has fastened to it a bell-crank 67 carrying a roller 68 co-operating with the race of a box cam 69 fast to the shaft 42. As has been mentioned hereinbefore the shaft 60 42 is given a complete rotation during each operation of the machine and the rotation of the box cam will rock the shaft 66 to actuate a platen and to feed the record strip and inking ribbon an increment.

65 Extending transversely of the printer side

frames 61 and 62 is a platen supporting shaft 70 (Fig. 3) upon which is supported the platen 71 by means of forwardly extending arms 72 and 73 secured to the shaft 70. The under face of the platen 71 is provided with a rubber impression block 74 clearly shown 70 in Figs. 1 and 2.

Extending rearwardly from and movable with the arm 72 is a platen actuating arm 75 (Fig. 2) provided with a lug 76 which is actuated by a hammer 77 to force the platen 74 against the type to take an impression. The platen 71 is not directly connected to the platen actuating arm 75, but is connected to it by a clutch member 751 (Fig. 3). The clutch member 751 is loosely mounted upon the shaft 70 and is adapted to connect or disconnect the arm 75 with the arm 72 since it is provided with a notch 78 adapted to engage with a rib 79 formed on one side of the platen supporting arm 72. A spring 80 surrounds the shaft 70 and is interposed between a collar fast to the shaft 70 and the clutch and tends to force the notch 78 into its normal or locking position with respect to the rib 79 on the platen arm 72. To disconnect the platen 71 from the actuating arm 75 so that the platen may be lifted upwardly in order to obtain access to the type wheels or the usual inking ribbon below the platen or for any other reason all that is necessary is to manually slide the clutch 751 to the right as viewed in Fig. 3 to disengage the notch from the locking rib and lift the platen frame upwardly.

For actuating the platen actuating arm 75 the hammer 77 is provided and is formed as part of an arm 81 pivoted to the inside right printer frame 62 by a stud 83. The hammer 77 is forced upwardly by a spring 84 bearing against a lug 85 carried by printer frame 62. The arm 81 is furthermore provided with a spring pressed retracting pawl 86 having a tail bearing against an adjustable stop 87 on the arm 81. The pawl 86 has a lug 88 co-operating with a nose 89 formed as part of an arm 90 secured to the printer operating shaft 66 previously mentioned.

When the arm 90 is rocked clockwise by means of the bell-crank 67 and the shaft 66 to which the bell-crank is secured the nose 89 will bear against the lug 88 of the pawl 86 and retract the hammer 77 against the tension of the spring 84. Upon further movement of the hammer 77 the nose 89 will clear the lug 88 and permit the hammer 77 to rise under the influence of the compressed spring 84 and strike the lug 76 of the platen arm 75 and through the clutch 751 will rock the platen 71 downwardly to effect a printing impression from the adjusted type carrier.

The record strip upon which are printed the items shown diagrammatically in Fig. 1, the paper extending from the supply roll 91 around suitable guide rolls under the platen 130

71 around other guide rolls carried by the platen and finally back to the storage roll 92. The details of the record strip as well as the means for advancing it during the operation of the machine are fully set forth in the
 5 aforementioned application Ser. No. 263,125 and therefore need not be described.

The machine is further equipped with an inking ribbon and a ribbon feeding mechanism which are not shown in the drawings
 10 since these do not comprise any part of the present invention. One form which this mechanism might take is clearly shown and described in the Fuller application Ser. No.
 15 263,125 to which reference may be had for further details of construction and operation. It is sufficient here to state that the inking ribbon passes between the record strip, below the rubber impression block 74, and the type
 20 wheels 53.

The lids 27 and 27' which are hinged to the cabinet 26 are provided to cover and conceal the record strip printing mechanism and printing totalizer. The lid 27 is provided for the purpose of permitting the clerk to obtain
 25 access to the paper holding mechanism in order to replenish the supply of paper when it is exhausted while the lid 27' permits access to the totalizer printing means and the resetting devices. These lids may be
 30 under control of different locks so that while the clerk may have access to the printing mechanism for replenishing the paper supply he cannot have access to the other devices
 35 which would permit him to obtain information he was not entitled to.

Secured to the under side of the lid 27 there is a glass 91 (Figs. 2 and 5) to permit the visibility of a number of items which
 40 have previously been entered in the machine. The glass is, furthermore, cut away at 92 to permit written entries to be made in juxtaposition to the printed items in the manner shown in Fig. 5. As previously described the
 45 record strip passes over the upper surface of the platen 71 and this surface provides a suitable writing table.

Ruling device

50 Coming now more particularly to the present invention the illustrative machine is provided with a special printing device for printing lines upon the record strip simultaneously with each item printing operation.

55 As is well known the autographic attachment for cash registers is provided for the purpose of permitting more extended entries in the form of written notations to be made along with the printed item. If, for ex-
 60 ample, the transaction should be one involving a "paid out" transaction, the clerk would write alongside of the printed number the reason the amount was paid out and in case a person paid a certain sum on account the
 65 clerk would write the name of the party

alongside of the printed item so that the bookkeeping or auditing department could readily credit the person with the amount paid. By this means the proprietor or manager can have full information regard-
 70 ing each transaction and by perusing the record strip at the end of the day he can note what has taken place and be able to check up at any time any transaction entered in the machine.

In some mercantile establishments goods
 75 are sold in quantities and it is desirable for the purpose of check or inventorying that the total of the quantities sold during a period be known. The autographic attachment provides a satisfactory means for the attain-
 80 ment of this end and permits the entering of quantities on the record strip so that at the termination of an arbitrary period these may be summed up to determine the total sold during this time. When notes, such as
 85 this, are placed upon the record strip it is found difficult to keep the written notations of the different articles separated and divided. In order to facilitate the summing up of the written amounts it is the purpose of
 90 the present invention to provide a ruling attachment so that parallel lines may be printed upon the record strip simultaneously with each printing operation so that the notation
 95 may be entered in the proper column.

The mechanism for effecting the above is shown in Figs. 3 and 4. It will be noted that the shaft 541 upon which are mounted the printing wheels 53 and 54 passes through the side frame 24 and projects out some distance. Loosely mounted upon the shaft 541 are a plurality of printing members 92 provided with slots 93 and printing edges 94 adapted to co-operate with the rubber impression block 74. A rod 95 which passes through the frame 24 and is rigidly held by the screw 96 so as to prevent any lateral movement, co-operates with the slots 93 and holds the printing members 92 against movement. In order to suitably space the printing members 92 at the proper distance there is provided a series of sleeves 97 also mounted on the shaft 541.

The operation of the above described device is as follows: When the machine is operated by an operation of any of the keys the platen 74 is forced downwardly against the type carriers 53 and 54 and also against the ruling members 92 so that the printing edges 94 will print in a horizontal line a series of parallel lines shown in Fig. 5. As is shown in this figure, the glass 91 is marked by etching or otherwise to indicate the proper columns on the strip for each particular class of goods sold so that the clerk may make the desired notation in the proper column. The embodiment shown illustrates how this system can be used in a gasoline station and shows a number of sales of gasoline and lubri-
 130

cating oil. At the end of the day the number of gallons of gasoline entered in the column may be readily summed up and checked against that which remains in the gasoline tank. In this manner a running inventory of the proprietor's stock may be kept and any attempt to defraud the proprietor may be readily ascertained or prevented.

As shown in the drawings there is provided five printing members which will print a corresponding number of lines upon the record strip, but the number of printed lines will, of course, depend upon the number of articles which it is desired to segregate as well as the system in vogue. In order that the number of lines printed may be changed at will, the sleeves 97 can be made of various widths so that when it is desired to make a change all that is necessary is to insert sleeves 97 of the necessary width so as to separate the printing members 92 the desired distance. This, of course, is merely one means by which the printed lines may be changed and any other means may be used without departing from the spirit of the invention.

If so desired the modification shown in Fig. 7 may be employed where it will be seen that the printing elements 92 are slotted so as to co-operate with the rod 95 but are rigidly secured to sleeves or hubs 101. The hubs are secured to a long sleeve 102 by set screws 103, the sleeve 102 in turn being loosely mounted upon the type wheel supporting shaft 541. Adjustability is secured by sliding the printing members to the desired places and securing them at these positions by the set screws 103. It is also apparent that the printing block can be formed so as to print any number of lines horizontally, vertically, or in any other way desired, depending upon the requirements of the business.

As further modifications of the present invention Fig. 6 shows a block 98 which is screwed at 99 to the frame 24 and provided with printing elements 100 which are adapted to print four vertical lines upon the record strip while Fig. 8 shows a ruling block 105 adapted to print a horizontal line with each item printing operation. These ruling blocks may be made up and kept in stock so that when it is desired to change the style or number of lines or their spacing all that is necessary is to detach the old printing block and substitute a new one therefor.

It is to be understood that while an example has been given of one use of the machine as disclosed it is not intended to limit its application to the line of business for which it has been described herein.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment here shown since it may be embodied in vari-

ous forms all coming within the scope of the claims which follow.

What is claimed is:

1. In a cash register, the combination with a record strip, of a plurality of axially adjustable printing members formed with edges capable of printing lines upon the record strip, a platen common to the printing members, and means for actuating the platen.

2. In a cash register, the combination with a plurality of type carriers, of keys for adjusting the type carriers, a record strip for receiving impressions from the adjusted type carriers, and a plurality of axially adjustable printing members for printing a series of parallel lines upon the record strip in alignment with the data printed by the type carriers.

3. In a cash register, the combination of a shaft, a plurality of adjustable type carriers mounted upon the shaft, a plurality of line printing elements mounted upon the shaft, and means for preventing said elements from rotating about said shaft.

4. In a cash register, the combination of a shaft, a plurality of adjustable type carriers mounted upon the shaft, a plurality of line printing elements mounted upon the shaft, and means whereby said elements may be separated variable distances on said shaft.

5. In a cash register, the combination of a shaft, a plurality of line printing elements mounted upon the said shaft and provided with slots, means for spacing said elements desired distances on said shaft, and a fixed rod co-operating with said slots.

6. In a cash register, the combination of a plurality of adjustable item type carriers, a plurality of line printing elements, a platen for effecting printing impressions upon a record material from the printing elements and item type carriers, a glass covering the record strip and having a cut-away portion to permit written entries to be made adjacent to the printed items and in the desired columns formed on the record strip by the line printing elements.

7. In a machine of the class described, a shaft, a plurality of adjustable printing wheels mounted on said shaft, means adapted to print a series of lines also mounted on said shaft, means preventing said line printing means from rotating about said shaft, and means adapted to take an impression from all said printing means on a record strip.

8. In a cash register, the combination of a shaft, a plurality of adjustable type carriers mounted upon the shaft, a sleeve mounted upon the shaft, a plurality of line printing elements mounted upon the sleeve and devices for securing the line printing elements to the sleeve at the desired places.

9. In a machine of the class described a shaft, an axially adjustable line forming printing element mounted thereon, means for

holding said element in a desired position of axial adjustment, and means for preventing rotation of said element upon the shaft.

10. In a machine of the class described a shaft, an axially adjustable printing element adapted to print a line, means for holding said element in a desired axial position, a fixed rod, and a slot formed in said element to cooperate with said rod and prevent rotary movement of said element about said shaft.

11. A printing member comprising a line printing surface, a cylindrical supporting surface adapted for mounting upon a shaft and a slot having sides substantially radial to said supporting surface adapted to cooperate with a fixed rod to prevent rotation of said member.

12. In a cash register, the combination of a plurality of item type carriers for printing on a record sheet, and means comprising a plurality of separately adjustable elements for demarcating a plurality of columns on a portion of said record sheet adjacent to that printed upon by said type carriers.

13. In a cash register, the combination of type carriers for printing items on a record sheet, means comprising a plurality of axially adjustable elements for printing a plurality of column demarcations on said record sheet for receiving entries identifying said items, and a common impression means for said type carriers and said column demarcating elements.

14. In a cash register, the combination of a plurality of adjustable item type carriers, means comprising a series of individually adjustable elements positioned laterally of said type carriers for printing column demarcations, a platen for effecting printing impressions upon record material from said type carriers and said elements, and a cover for the record material and having a cut away portion to permit written entries to be made adjacent to the printed items and in the desired column formed on the record material by said column demarcating elements.

In witness whereof I have signed my name this 26th day of August, 1924.

CHARLES W. GREEN.