May 30, 1939. H. W. CLARK 2,160,539

PAPER EQUIPMENT FOR CASH REGISTERS

Filed July 13, 1936 4 Sheets-Sheet 1

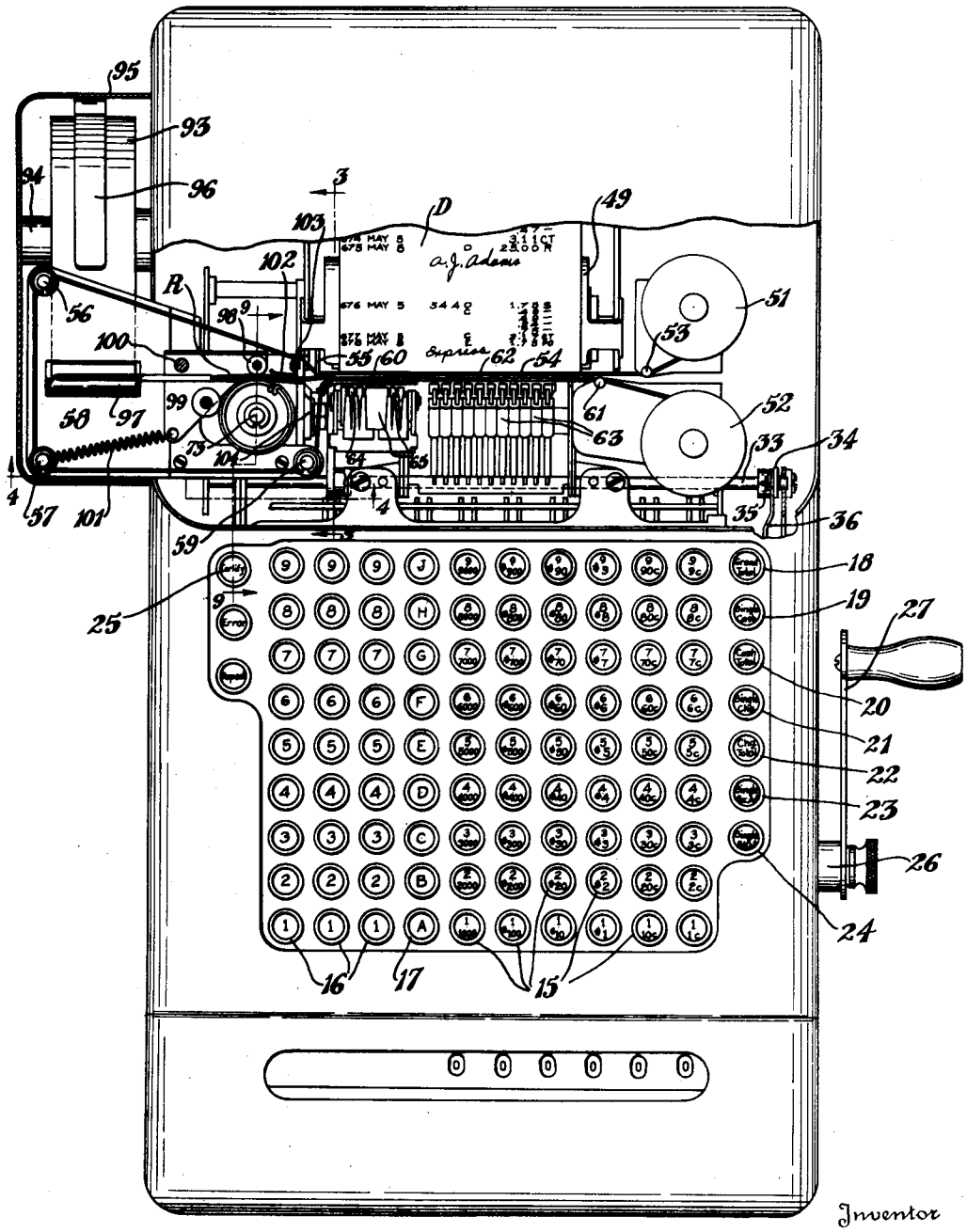


Fig. 1

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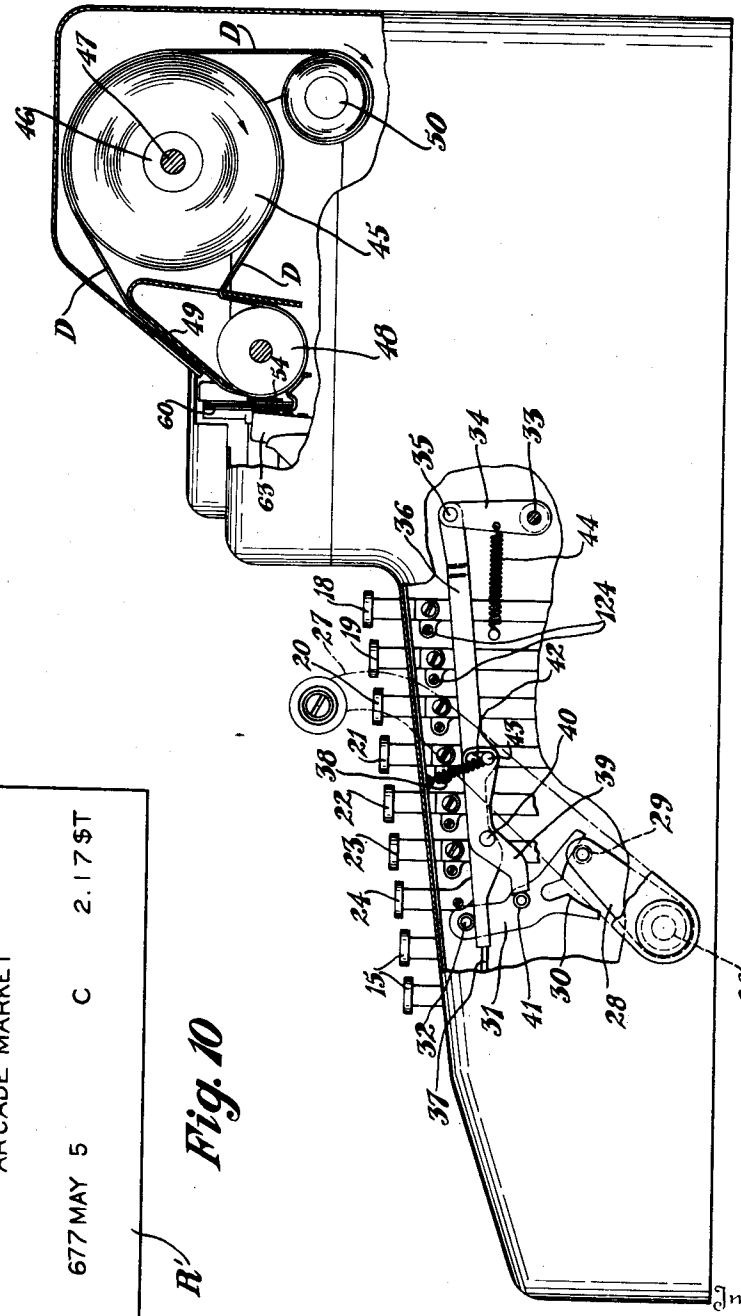


Fig. 2

Fig. 10

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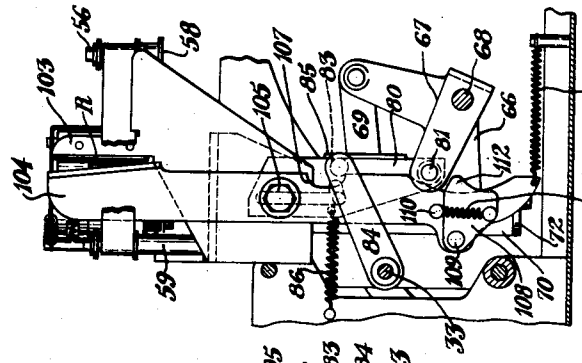


Fig. 3

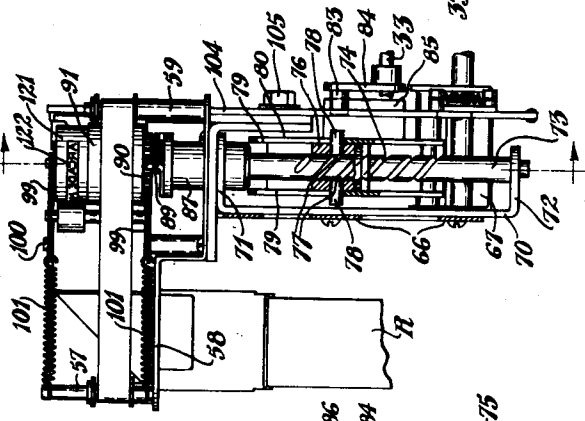


Fig. 4

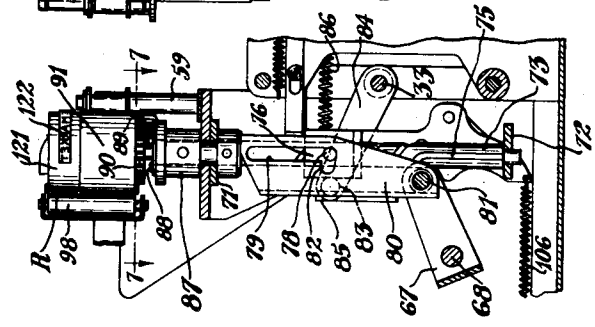


Fig. 5

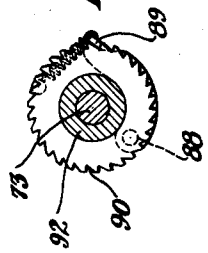


Fig. 7

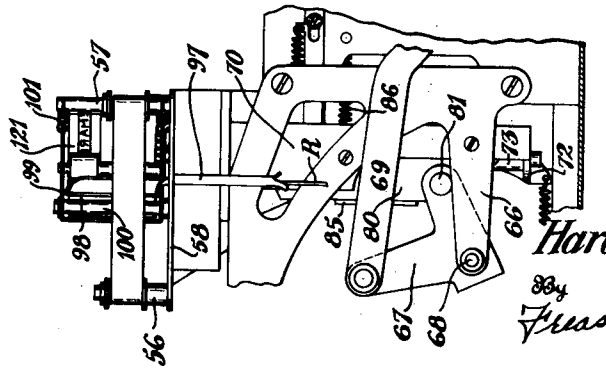


Fig. 6

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May 30, 1939. H. W. CLARK 2,160,539

PAPER EQUIPMENT FOR CASH REGISTERS

Filed July 13, 1936 4 Sheets-Sheet 4

Fig. 8

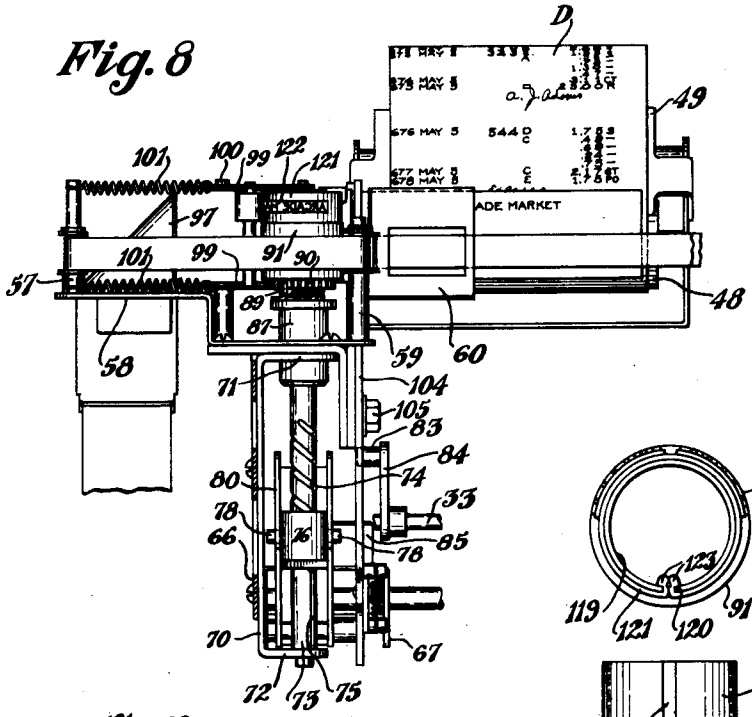


Fig. 11

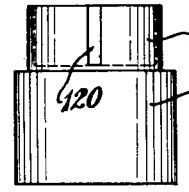


Fig. 12

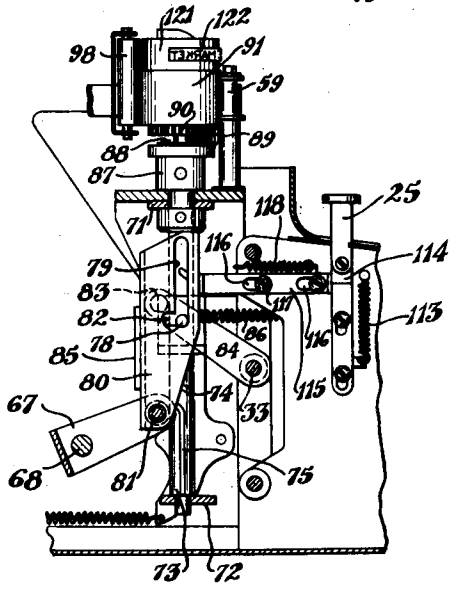


Fig. 9

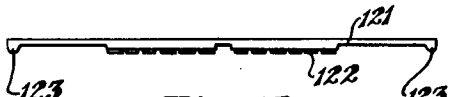


Fig. 13

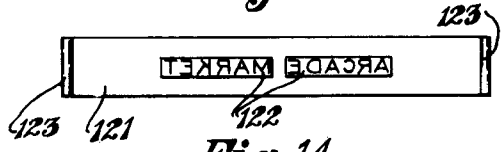


Fig. 14

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UNITED STATES PATENT OFFICE

2,160,539

PAPER EQUIPMENT FOR CASH REGISTERS

Harold W. Clark, Alliance, Ohio, assignor to The McCaskey Register Company, Alliance, Ohio, a corporation of Ohio

Application July 13, 1936, Serial No. 90,282

5 Claims. (Cl. 197—132)

The invention relates to cash registers and the like and more particularly to paper feeding mechanism for advancing a record or detail strip and a receipt or ticket strip to printing position independently of each other and in directions substantially at right angles to each other.

It is desirable that cash registers and the like as used in many lines of business be provided with two rolls or strips of paper for recording of transactions, one strip forming a record or detail strip which is automatically rewound within the machine so as to be inaccessible to the operator, the printed portion of the other strip being adapted to be torn or cut off after each transaction, forming a receipt to be presented to the customer.

It is known that attempts have been made to provide paper equipment for producing the above mentioned result by passing two superimposed strips of paper upward between the printing mechanism and the platen roll, but unless complicated mechanism is provided for feeding the receipt strip more rapidly than the record or detail strip, a considerable wastage of paper on the record or detail strip is produced. In any event, it is necessary that the printed receipt be manually torn from the receipt strip after each transaction. Furthermore, in such machines, every item of each transaction must be printed upon the receipt, thus producing receipts of considerable length in many cases.

The object of the present improvement is to provide paper equipment for cash registers and the like which overcomes the objections in the type of machines above referred to, which will print the total only of each transaction, together with the date and serial number thereof if desired, upon the receipt and automatically cut off each receipt of uniform size.

An important object of the invention is to provide such paper equipment in which the record or detail strip is fed upward between the printing mechanism and platen roll in usual and ordinary manner while the receipt strip is fed across the face of the record or detail strip in a direction at right angles to the path thereof and at the proper time to have the total of the transaction printed thereon, means being provided for automatically cutting off the printed receipt from the receipt strip so that it may be presented to the customer.

A further object is to provide a plurality of control keys for totals and single item transactions, the depression of any one of which will render operative the receipt strip feeding mechanism and the paper cut-off mechanism.

A still further object is to provide a certifying key which will render the receipt strip feeding mechanism inoperative during the recording of any total or single item transaction whereby a receipt slip or ticket may be manually placed in the machine for the purpose of certifying such transaction thereon.

Another object is to provide a novel paper feeding mechanism for feeding the receipt strip across the record or detail strip substantially at right angles to the path thereof.

Still another object of the improvement is to provide a novel printing roll operated by the receipt strip feeding mechanism for printing the name of the merchant or other desired matter upon each receipt.

The above and other objects will be apparent from the following description and the accompanying drawings disclosing an embodiment of the invention, in which

Figure 1 is a plan sectional view of a cash register constructed in accordance with the invention;

Fig. 2, a side elevation of the register with parts broken away to show the connection between the control keys and the feeding mechanism for the receipt strip;

Fig. 3, a fragmentary section of the receipt strip feeding and cut-off mechanism, taken substantially on the line 3—3, Fig. 1;

Fig. 4, a fragmentary section of the mechanism shown in Fig. 3, taken substantially on the line 4—4, Fig. 1;

Fig. 5, a section taken substantially on the line 5—5, Fig. 4;

Fig. 6, a fragmentary elevation of the receipt strip feeding mechanism showing the opposite side thereof from that shown in Fig. 3;

Fig. 7, a detail sectional view taken as on the line 7—7, Fig. 5;

Fig. 8, a fragmentary sectional front elevation of the receipt strip feeding mechanism and the carriage;

Fig. 9, a section taken substantially on the line 9—9, Fig. 1, showing the certifying key and associated mechanism for holding the receipt strip feeding mechanism inoperative;

Fig. 10, an elevation of a receipt as printed in the machine;

Fig. 11, a top plan view of the novel printing roller operated by the receipt strip feeding mechanism;

Fig. 12, a side elevation of the same with the type band removed;

Fig. 13, an edge elevation of the rubber type band used upon the novel printing roller; and

Fig. 14, a front elevation of the same.

Similar numerals refer to similar parts throughout the drawings.

The invention is shown as applied to a "McCaskey" register of the general type disclosed in Johantgen Patents No. 1,306,112 and No. 1,336,840, therefore the general adding machine structure will be described only briefly, reference being made to said Johantgen patents for further disclosure thereof.

The invention is illustrated upon a machine of the hand operated type although it should be understood that it is equally applicable to the usual motor driven type in which a motor key is substituted for the hand lever.

The machine illustrated is adapted to be controlled in customary manner by the usual depressible amount keys **15** and may be provided with several banks of code number keys **16** and a bank of code letter keys **17** which may be used in combination with the code number keys to indicate various code designations of goods sold or which may designate the clerk or department handling the transaction.

A bank of control keys is provided which may include the usual grand total key **18**, single cash key **19**, cash total key **20**, single charge key **21**, charge total key **22**, received on account key **23** and paid out key **24**.

A certifying key **25** is one of the novel features of this machine as it operates means whereby any receipt or ticket may be manually inserted into the machine to certify a total.

As in usual practice, the main shaft **26** may be operated either by the hand lever **27** as illustrated, or by the usual motor key. The main shaft has fixed thereon the main crank **28** having a roller or pin **29** thereon adapted to engage the forked lower end **30** of the crankshaft **31** to swing the same upon its pivot **32**.

A rocker shaft **33** is journaled transversely through the lower portion of the machine and has fixed thereon a rocker arm **34** pivotally connected at its upper end as at **35** to the rear end of a link **36**, the forward end of which is normally held upward in contact with a fixed stop **37** as by the spring **38**.

A lever **39** is pivoted intermediate its ends as at **40** upon the forward portion of the link **36**, the forward end of said lever normally engaging a stop roller or stud **41** upon the crankshaft **31** while the rear end portion of the lever is provided with the arcuate slot **42** which receives the pin **43** fixed upon the link **36**. The rocker arm **34** is normally urged to the left, as viewed in Fig. 2, carrying with it the link **36**, as by means of the spring **44**.

The record or detail strip D is operated in usual and well known manner and may be withdrawn from the stock roll **45** carried upon the usual spool **46** journaled upon a spindle **47** and passed down below and around the platen roll **48** as shown in Fig. 2 and then upward over the front of the platen plate **49**, then over the top of the stock roll **45** and downward to the spool **50** which may be connected by a belt or the like with the platen roll **48** in usual manner so as to automatically guide said detail strip upon the spool **50** as the machine is operated.

In order to provide a double ribbon for printing both the detail strip and receipt strip with one operation of the printing mechanism, a spaced pair of ribbon spools **51** and **52** may be located at one side of the carriage and arranged to be operated in usual and ordinary manner.

The ribbon passes from the spool **51** around a post **53** and across in front of the platen roll as indicated at **54**, then over the edge of a guide plate **55**, around posts **56** and **57** upon the bracket plate **58**, then over the post **59** and over the guide plate **60** to the post **61**, being spaced as at **62** from the strand **54** and substantially parallel therewith, the ribbon passing from the post **61** around the spool **52**.

The type bars **63** correspond in number and relative position to the banks of keys **16**, **17**, **15** and **24** for printing the code numbers and letters, the amount numbers and the insignia upon the control keys respectively, in usual and ordinary manner. In order to print the serial number of each transaction as well as the date, type mechanism **64** and **65** respectively may be provided to operate in usual and ordinary manner.

It has been found that the mechanism forming a part of the invention for feeding the receipt strip and cutting off the same so balances the operation of the machine that the usual dashpot is not necessary. For this reason, this mechanism is located in the space ordinarily occupied by the dashpot and is mounted upon the usual dashpot bracket indicated generally at **66**. The bell crank yoke **67** is pivoted as at **68** upon said bracket in usual and ordinary manner and adapted to be oscillated as by the link **69** operatively connected to the main shaft, all as in usual and ordinary practice.

A bearing bracket **70** is fixed to the bracket **66** provided at its upper and lower ends with the angular flanges **71** and **72** respectively, through which is journaled the vertical shaft **73** having throughout a portion of its length a double thread **74** terminating at its lower end in vertical grooves **75**. The nut **76** is mounted upon the shaft **73** and preferably provided with studs **77** received in the double thread **74** of the shaft.

The nut **76** has diametrically opposed trunnions **78** located in the vertical slots **79** of the channel-shaped link **80**, the lower end of which is pivotally connected as at **81** to one arm of the bell crank yoke **67**. The lower end of each of the vertical slots **79** terminates in an angular, slightly upwardly disposed notch **82**. The trunnions **78** are normally held out of engagement with said notches **82** by means of the stud **83** upon the rocker arm **84** carried upon the rocker shaft **33**, engaging the flange **85**. The spring **86** urges the channel-shaped link **80** toward said stud.

A collar **87** is fixed upon the upper portion of the shaft **73** and has pivoted thereon as at **88** a spring pulled pawl **89** adapted to engage the ratchet **90** upon the underside of the roller **91** which may be formed of rubber or the like and fixed upon a hub **92** rotatably mounted upon the reduced upper end of the shaft **73**.

The receipt strip may be withdrawn from a stock roll **93** which may be mounted upon a spindle **94** located within a housing **95** at one side of the machine, a spring **96** being preferably provided for preventing the stock roll from unwinding too rapidly. The receipt strip, as it is withdrawn from the roll **93**, passes upward through a guide **97** which changes the direction of the strip and passes it between the roller **91** and the small roller **98**. The roller **98** is journaled at its ends upon the spaced triangular plates **99** which are pivotally mounted as at **100** upon a stationary portion of the machine, the

springs 101 normally urging the small roller 98 toward the larger roller 91 so as to grip the receipt strip R therebetween.

The receipt strip passes from these rollers through the guide 102 and then between the stationary and movable blades 103 and 104 respectively and then between the strands 54 and 62 of the ribbon.

The movable blade 104 is pivoted intermediate its ends as at 105 to a stationary portion of the frame of the machine, a spring 106 being connected to the lower end of the blade for normally holding the same in open position as best shown in Fig. 3. A notch 107 is formed in the edge of the blade 104 at a point slightly below the pivotal point 105 in order to permit the stud or roller 83 to be received therein without operating the blade.

A cam plate 108 is pivoted as at 109 upon the lower portion of the blade 104 and normally held against the post 110, as shown in Fig. 3, as by means of the spring 111, thus holding the cam lug 112 in the path of the pivot shaft 81 by means of which the bell crank yoke 67 is pivotally connected to the channel-shaped slotted link 80.

For the purpose of preventing operation of the receipt strip feed roller in the event that it may be desired to place any receipt or ticket in the machine to certify the total thereon, the certifying key 25 and associated mechanism are provided. This key is normally held in raised position as by the spring 113 with the offset portion 114 thereof above and out of the path of the link 115 provided with the elongated slots 116 mounted upon the posts 117 and normally held in contact with the channel-shaped slotted link 80 as by the spring 118 which is considerably weaker than the spring 86.

When it is desired to certify a receipt or ticket by inserting the same between the ribbon strands 54 and 62, the certifying key 25 is depressed as shown in Fig. 9, preventing the channel-shaped link 80 from being pulled forward by the spring 86 so as to engage the trunnions 78 of the nut in the notches 82 of the slots 79 when the machine is operated after any one of the control keys 18 to 24 inclusive has been depressed.

For the purpose of printing the name of the merchant or other information upon each receipt, a printing roller may be attached to the upper end of the receipt strip feed roller 91. This printing roller, as shown in detail in Figs. 11 to 14 inclusive, may be formed of sheet metal as indicated at 119 and is provided with a vertical slot 120 extending throughout its height.

A resilient or flexible strip of rubber or the like, as indicated at 121, may be provided with type 122 upon one face thereof to print the name of the merchant or other information desired and is provided at each end with a rib 123. This provides means for easily and quickly attaching the type band to the sheet metal roller 119.

One end of the strip 121 may be inserted in the slot 120 of the roller and the strip wound around the roller, as best shown in Fig. 11, with the other end of the strip inserted through the slot, the two ribs 123 preventing the ends of the strip from being withdrawn through the slot while the resilience of the rubber type strip will cause the same to be stretched tightly around the roller 119.

In operating the machine it may be assumed that the transaction No. 677, as indicated on the detail strip in Figs. 1 and 8, is to be made by clerk C. This is a cash transaction and the several items may be entered and the machine operated in usual and well known manner.

As each item is printed upon the detail strip, the platen roll will be automatically operated in usual and well known manner to advance the detail strip one space. To obtain the total the cash total key 20 is depressed in usual manner before the operation of the operating handle or the motor key as the case may be.

The depression of this cash total key 20, or any of the other control keys 18 to 24, inclusive, will bring the stud 124 thereof into contact with the upper edge of the link 36, swinging said link downwardly upon its pivot 35 so that the forward end of the link is moved out of engagement with the stop 37, permitting the spring 44 to rock the rocker arm 34 forward, sliding the link 36 in the same direction, with its forward end below the stop 37.

This rocking of the rocker arm 34 will, through the rocker shaft 33, oscillate the rocker arm 84 upward sufficiently to move the stud or roller 83 thereon out of contact with the flange 85 upon the channel-shaped slotted link 80, permitting the spring 86 to oscillate said slotted link sufficiently to receive the trunnions 78 of the nut 76 within the notches 82 at the lower ends of the slots 79.

As the main shaft is operated, the crank 28 will swing the crank 31 forward, moving the stud or roller 41 out of contact with the forward end of the lever 39 and gravity will cause the rear heavier end of this lever to drop down to the position limited by the slot 42 therein and the pin 43 on the link 36 positioning the forward end of the lever 39, in this lowered position of the link 36, so that the same will be contacted by the roller or stud 41 upon the return movement of the crank 31.

As the main shaft is thus operated, the link 69 will be pulled forward in usual and well known manner, rocking the bell crank yoke 67 and through the channel-shape link 80, the nut 76 will be pulled downward upon the shaft 73, rotating the shaft and feeding the receipt strip between the feed rollers 91 and 98 and between the ribbon strands 54 and 62 to a position substantially entirely across the face of the detail strip, as best shown in Fig. 8, at the same time printing the name or other information as indicated at 125 upon the receipt strip by means of the type 122 upon the printing roller. As the receipt strip reaches this position, the studs 77 in the nut will have reached the dwell 75 in the threads of the shaft 73, stopping further rotation of the shaft and thus stopping the feeding of the receipt strip. At this time the printing mechanism will be operated in usual and well known manner.

The clerk may have depressed the code letter key C before operation of the machine to record the total if it is desired that the clerk's code letter appear on the receipt. With this printing operation, the serial number and date of the transaction will be printed as in usual and ordinary practice, as well as the clerk's code letter if desired and the total of the transaction, these items being printed upon the receipt indicated at R' in Fig. 10, as well as upon the detail strip.

During this operation, the pivot shaft 81 of the bell crank yoke 67 will have moved downward, contacting the cam lug 112 of the cam plate 108, swinging said cam plate backward

upon its pivot as the shaft 81 rides over the same and down to the lower end of the arcuate edge 126 of the lower portion of the movable blade 104.

Upon the return movement of the main shaft 26, the pivot shaft 81 of the bell crank yoke will engage the cam lug 112 of the cam plate 108 and through the pin 110 the lower end of the blade 104 will be swung rearwardly upon its pivot, moving the upper cutting edge thereof forward so as to cut off the receipt strip at this point between the stationary and movable blades. The receipt R' as shown in Fig. 10 may then be removed from the machine and presented to the customer.

Upon the upward movement of the bell crank yoke 67 the shaft 73 will be rotated in reverse direction but the paper feed roller 91 will remain stationary as the pawl 89 rides around the ratchet 90 so as not to cause any reverse feeding of the receipt strip during this operation.

It is to be understood that the construction shown is for purposes of illustration only and that variations may be made in it without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In a machine of the class described having a main shaft, depressible control keys, a platen and type bars, a feed roller for feeding a receipt strip between the platen and type bars in a direction parallel to the platen, screw means responsive to the operation of said control keys and operated by the forward movement of the main shaft for operating said feed roller, and means operated by the return movement of the main shaft for cutting the receipt strip.

2. In a machine of the class described having a main shaft, depressible control keys, a platen and type bars, a feed roller for feeding a receipt strip between the platen and type bars in a direction parallel to the platen, screw means responsive to the operation of said control keys and operated by the forward movement of the main shaft for operating said feed roller, and means operated by the return movement of the main shaft for cutting the receipt strip, and certifying means for selectively rendering the receipt strip feeding means inoperative.

3. In a machine of the class described having a main shaft, depressible control keys, a platen and type bars, a feed roller for feeding a receipt strip between the platen and type bars in a direction parallel to the platen, a screw shaft upon which said feed roller is fixed, a nut upon said screw shaft and means responsive to operation of said control keys and operated by the forward movement of the main shaft for translating said nut to rotate the screw shaft.

4. In a machine of the class described having a main shaft, depressible control keys, a platen and type bars, a feed roller for feeding a receipt strip between the platen and type bars in a direction parallel to the platen, a screw shaft, a nut upon said screw shaft, a channel-shape link surrounding said nut and having vertical slots terminating at their lower ends in angular notches, trunnions upon the nut normally engaged in said vertical slots, means responsive to the operation of said control keys for engaging said trunnions in said angular notches, and means operated by the forward movement of the main shaft for translating said channel-shape link and said nut therewith to rotate the screw shaft.

5. In a machine of the class described having a main shaft, depressible control keys, a platen and type bars, a feed roller for feeding a receipt strip between the platen and type bars in a direction parallel to the platen, a screw shaft, a nut upon said screw shaft, a channel-shape link surrounding said nut and having vertical slots terminating at their lower ends in angular notches, trunnions upon the nut normally engaged in said vertical slots, means responsive to the operation of said control keys for engaging said trunnions in said angular notches, means operated by the forward movement of the main shaft for translating said channel-shape link and said nut therewith to rotate the screw shaft, and means operated by the return movement of the main shaft for cutting the receipt strip.

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