Feb. 9, 1932. W. J. KREIDER 1,843,982

CASH REGISTER

Filed July 30, 1928

FIG. 1

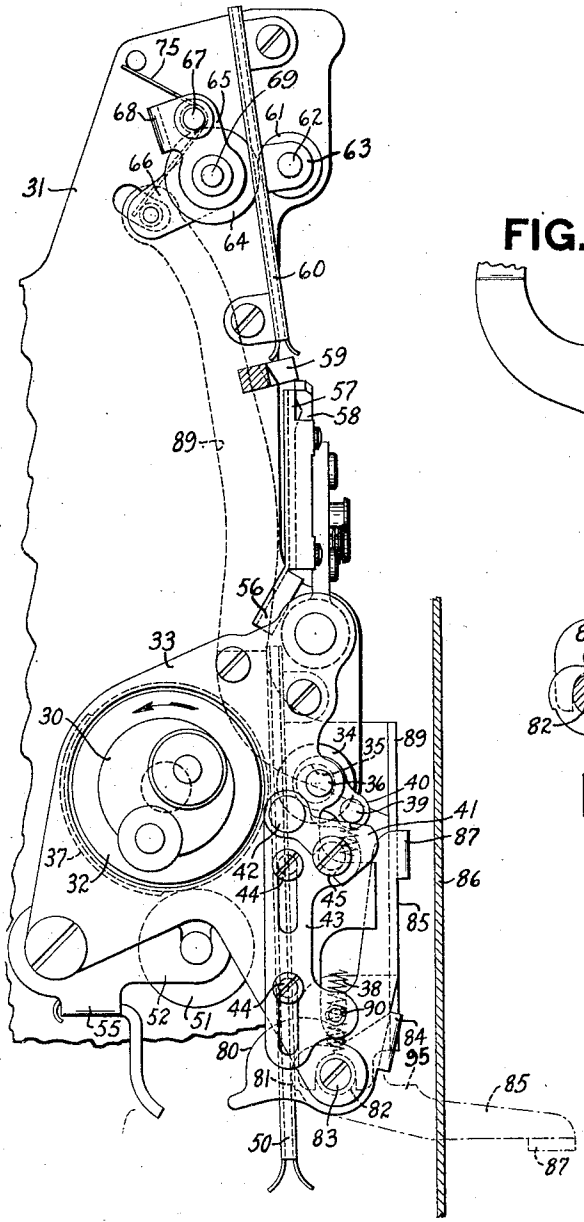


FIG. 4

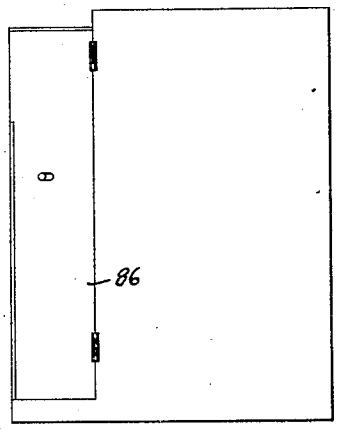


FIG. 2

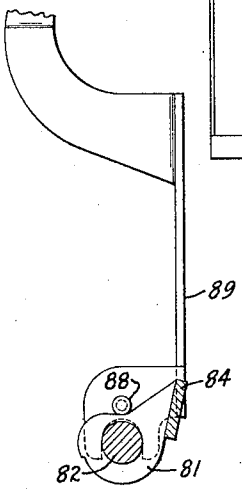


FIG. 5.

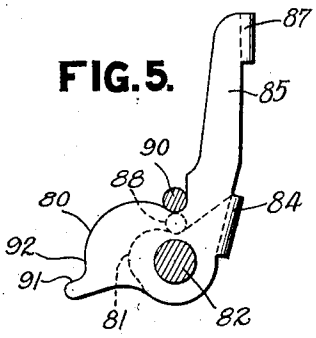
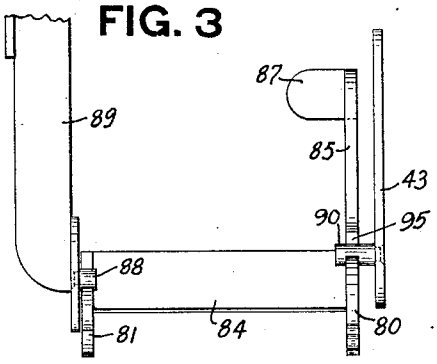


FIG. 3



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Patented Feb. 9, 1932 1,843,982

UNITED STATES PATENT OFFICE

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CASH REGISTER

Application filed July 30, 1928. Serial No. 296,121.

This invention relates to cash registers and like machines, and is more particularly directed to paper feeding devices for use in connection with such machines.

The invention is adapted to be used in connection with a ticket issuing machine of the type illustrated and described in application for Letters Patent of the United States, Serial No. 169,583, filed February 19, 1927, by William H. Robertson.

The machine illustrated in the above application is used on bus lines and issues fare tickets to the passengers thereon. The printing mechanism, such as is disclosed in the above application, is adapted to print on an issuing fare ticket severed from a web, fed by a revoluble feed cylinder co-acting with an impression roll. After the ticket receives the impression and is severed from the web, it passes between a pair of ejector rolls and a pair of tension rolls, only one roll of each pair being shown, which ejects it from the machine. In order to thread the web of ticket paper through the feeding mechanisms in the above-mentioned machine, it is necessary to shift the impression roll and the tension roll out of contact with the feed cylinder and ejector rolls respectively, to leave a free passage through which the leading edge of the paper may be pushed.

Heretofore, separate or individual releasing means were provided for the impression roll and for the tension rolls, respectively, and the individual releasing means had to be held in the releasing position by the operator while threading new paper through the machine. However, it was found to be an awkward and slow procedure to release these rolls due to the comparative remoteness of the impression roll and its releasing device from the tension rolls and their releasing device. Both hands of the operator were needed to maintain the releasing means in the operated position, thus making it difficult to insert the paper while holding the releasing means in operated position.

It is, therefore, an object of this invention to provide a convenient and novel means to simultaneously withdraw the impression and tension rolls from the feed cylinder and ejector rolls respectively.

Another object of this invention is to construct the impression and tension releasing means in such a manner, that, after the impression and tension rolls have been withdrawn, the withdrawing means remains in the operated position, thus allowing the operator to use both hands to thread the new paper through the machine.

Co-related with the above-named objects, it is desired to impart a greater travel to one of said tension rolls than to the other.

Another object of the present invention is to provide a cabinet door to normally conceal a tension roll release lever, of novel construction or arrangement which compels the restoration of the tension roll release lever to its normal position, wherein the tension rolls are effective, before the door can be closed.

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

In said drawings:

Fig. 1 is a view in front elevation of the check issuing device to which the invention is applied in its preferred form.

Fig. 2 is a fragmentary view of the pitman to release the ejector tension rolls, and the cam for actuating said pitman.

Fig. 3 is a fragmentary view in rear elevation of the impression roll releasing device.

Fig. 4 is a rear view of the cabinet, reduced in size, to show the closure or door through which access is had to the control lever.

Fig. 5 is a detail view of the impression and tension roll releasing device.

The fare ticket printing and issuing device to which this invention is shown applied, and which is adapted to be used in connection with a machine of the type disclosed in the above-mentioned Robertson application, includes a ticket feeding cylinder 30 revolubly supported at its opposite ends in a printer frame 31 and in a bearing 32 secured to a printer bracket 33. The feed cylinder 30 lies on one side of a paper chute 50 extending tangentially past the feed cylinder opposite which it is apertured to enable the cylinder to contact the paper. A spring-pressed impression roll 34 rotatably mounted on an eccentric supporting shaft 35 having its trunnions 36, only one of which is shown herein, journaled in the frame 31 and the bracket 33, is adapted to co-operate with an electro-plate 37 secured to the periphery of the feed cylinder 30 to advance the web of check paper (not shown) at each operation of the machine. The impression roll 34 is located on the opposite side of the paper chute 50 from the feed cylinder 30, the chute being apertured to enable the periphery of the impression roll to enter the chute and press the paper web against the electro 37 when the latter is brought opposite the impression roll. The feed cylinder 30 is turned one complete rotation in counter-clockwise direction, as viewed in Fig. 1, at each operation of the machine by any suitable means, not shown. The eccentric shaft 35 on which the impression roll 34 is mounted, carries an arm 40 having a projecting stud 39. A spring 38 holds the stud 39 in contact with the upper edge of an adjusting arm 41 pivotally supported at 42 on a slide 43 shiftably mounted on studs 44 projecting from the bracket 33.

A screw 45 clamps the adjusting arm 41 to the slide 43 in any position to which the adjusting arm is adapted to be moved, to control the contact between the peripheries of the feed cylinder and the impression roll. The spring 38 normally holds the slide 43 at one limit of its travel, against the studs 44, in which position the adjustable arm 41 through the stud 39 and arm 40, holds the impression roll 34 just clear of the feed cylinder 30, so that the periphery of the cylinder itself, as it is rotated, does not displace or feed the paper web (not shown) threaded through the chute 50 between the feed cylinder 30 and the impression roll 34.

However, as the feed cylinder 30 rotates, it brings the electro plate 37 into the chute 50, which electro plate presses the web against the impression roll 34 with sufficient force to rotate the impression roll and feed the web upwardly through the chute 50 a distance equal to the circumferential length of the electro-plate 37. As the cylinder 30 rotates, the electro-plate 37 passes over an ink roller 51 carried in two arms 52, only one of which is shown herein, suitably pivoted between the printer side frame 31 and the bracket 33. A yoke 55 connects the arms 52 which are spring-pressed in counter-clockwise direction to hold the ink roller 51 in the path of the electro-plate 37. Then as the electro-plate 37 presses the web against the impression roller 34, to feed the web, an impression is taken on the web from the electro plate.

The leading end of the web, after leaving the chute 50, impinges against an inclined guide member 56 extending downwardly from a plate 57 secured to a shiftable knife blade 58 normally lying apart from the stationary knife blade 59. The guide 56 deflects the web into a chute formed between the plate 57 and the knife blade 58, from which chute the web passes between the shiftable knife blade 58 and the stationary blade 59. Immediately above the stationary knife blade 59 is a chute 60 secured to the printer frame 31, through which the paper web extends and from the discharge end of which the severed checks are ejected by a pair of ejector rolls 61 (only one of which is shown) pinned on a shaft 62 to rotate as a unit. The shaft 62 is supported in ears 63 extending rearwardly from one side of the chute 60, and a pair of tension rolls 64 (only one of which is shown) pinned to a shaft 69 to rotate as a unit. The shaft 69 is carried between arms 65 of a yoke 68 pivoted on a rod 67 projecting from the side frame 31 on the opposite side of the chute 60. Thus, even though the rolls 61 and 64 are provided in pairs, each pair may be considered as a single roller since each pair rotates as a unit. A spring 75 normally presses the tension rolls 64 into contact with the ejector rolls 61, the chute 60 being apertured at points opposite the rolls 61 and 64 to permit the rolls to grip the record material between them.

At the beginning of an operation of the machine, the leading edge of the first section of the paper web lies just beneath the stationary knife blade 59 and in line with the receiving end of the chute 60, such first section having been advanced to its position on the last previous operation, and having had the electro impressed thereon during the second previous operation.

As the machine is operated, the feed cylinder 30, with its electro, is rotated in any convenient manner to bring the electro opposite the impression roll 34 and print upon and advance that section of the paper web,

which is, at that time, gripped between the feed cylinder and impression roll.

The first section of the paper web is simultaneously advanced past the stationary blade 59, into the chute, and between the ejecting and tension rolls 61 and 64, mechanism (not shown) being provided and operated in time with the feed cylinder 30, to automatically rock the tension rolls 64 out of the path of advance of the paper web to enable the web to pass freely between the pairs of rolls 61 and 64. As soon as the paper web completes its advance under the influence of the feed cylinder 30, the tension rolls 64 are released to the action of the spring 75, which immediately presses said rolls 64 against the rolls 61. After the amount has been printed on the ticket and the ticket has been severed from the web by the knife blades 58 and 59, the ejector rolls 61 are rotated rapidly in clockwise direction by the usual mechanism, not shown herein, to eject the check from the chute 60.

All of the above described mechanism is old, and is fully described and illustrated in the Robertson application, Serial No. 169,583, to which reference may be had for a full and complete understanding of the printing mechanism, and of the machine to which the printing mechanism is attached.

The foregoing mechanism forms a part of the present invention only insofar as it combines with the new and useful mechanism now to be set forth.

The roll or web of the ticket paper (not shown) is usually located below and convenient to the chute 50. When a new roll is placed in position in the machine, it is desirable to manually thread the web through the chute 50, then between the feed cylinder 30 and the impression roll 34, then through the passage between the movable knife blade 58 and the plate 57, then between the knife blades 58 and 59, then through the chute 60 and finally between ejector rolls 61 and tension rolls 64. To accomplish this, it is necessary to shift the impression roll 34 out of the chute 50 and to shift the tension rolls 64 out of the chute 60, in order to permit free passage of the leading edge of the web, as it is threaded through the course described above. Heretofore, these rolls, namely roll 34 and rolls 64, were rocked out of the path of the web individually. This, however, was found to be quite awkward, due to the fact that the operator required the use of both hands to withdraw the rolls 34 and 64 and hold them withdrawn, and could not readily feed the paper by hand under such conditions. A device has been provided, therefore, which is operable manually, to enable the operator to simultaneously shift the remote rolls 34 and 64 out of the path of the web with one hand. This device is so constructed that it remains in the operated position thus allowing the operator to use both hands to thread the web upwardly through the chutes enumerated above. However, should the operator forget to restore the device to its normal position an operation of the machine with the tension and feed rollers withdrawn would result. Such operations must be guarded against in fare ticket issuing machines, since the amount of the fare would be added into the totalizer but no ticket would be issued for the passenger. The operator would then have to properly adjust the ticket issuing mechanism and make another operation, and during such additional operation the amount would necessarily be again added into the totalizer. The total on the totalizer would then be incorrect and therefore useless. The device of the present invention is so constructed that the operator will be warned before an operation is made that the device is not in the normal position.

To this end the device is so arranged that access thereto is had only through a door which must be opened, and when the device is adjusted it is rocked out through the door. The door cannot be closed until after the device is again restored to its normal position. The operator is not likely to forget to close the door, and the door is, therefore, an indicator to warn the operator that the releasing device is not in its normal position.

This device will now be described, it being borne in mind, that the impression roll 34 (Fig. 1), being eccentrically mounted on shaft 35, requires a greater angular movement to withdraw it from the chute 50, than is necessary to rock the tension rolls 64 out of the chute 60.

In carrying out the invention in accordance with the form selected for illustration, two cams 80 and 81 (Fig. 5) are pivoted on a stud 82 projecting laterally from the frame 31, to the bracket 33, which latter is secured to the outer end of the stud by means of a screw 83. The cam 80 has a much longer radius than the cam 81. A connecting bar 84 rigidly joins the cams 80 and 81, and with the cams, forms a yoke which is rocked by a finger lever 85 normally projecting upwardly from the cam 80, to impart the same angular movement to both cams. Normally a door of the usual construction, represented in cross-section at 86, conceals the manually operable finger lever 85 lying parallel therewith, and adjacent thereto, so that before the arm 85 can be rotated clockwise to actuate the cams 80 and 81, it is necessary to open the door 86 in the machine cabinet.

The finger lever 85, when rocked to the position shown by the dot and dash line in Fig. 1, turns the cams 80 and 81 clockwise, as viewed in Figs. 1 and 5, until it is arrested by a toe 90 thereon striking the stud 88. The cam 81 co-acts with the stud 88 (Fig. 2) on a pitman 89 bifurcated at its lower end to embrace the stud 82, and having its upper end

pivoted to an arm 66 projecting from one of the arms 65, which supports the tension rolls 64, to raise the pitman and thereby rock arm 66, the yoke 68, and the arms 65 clockwise against the tension of the spring 75, to withdraw the tension rolls 64 from contact with the ejector rolls 61 and out of the plane of the chute 60. The cam 80 terminates in the concentric edge 92 adapted to move beneath the stud 90 to hold the finger lever 85, and the pitman 89, in their operated positions even after the operator lets go of the finger lever 85.

At the same time, the cam 80, wiping against a stud 90 on the slide 43, raises the slide and the adjusting arm 41, against the stud 39, projecting from the arm 40, to rock the arm 40 and the eccentric shaft 35 counter-clockwise to shift the impression roll 34 out of the chute 50, thus providing free passage for the web throughout its course of travel, as it is threaded into the machine. Because the impression roll 34 is eccentrically mounted, it requires a greater angular movement to withdraw it from the path of the web to effect which, the cam 80 which operates the slide 43, will impart a throw approximately twice as great to the arm 40 as that imparted by the cam 81 to the arm 66. The slide 43 is held in its shifted position by the concentric edge 92 of the cam 80, which holds the finger lever 85 and cam 81 in moved position.

When the finger lever 85 is rocked counter-clockwise to restore the parts to their normal positions shown by full lines in Fig. 1, the cams 80 and 81, rocking also counter-clockwise, release the studs 90 and 88 on the slide 43 and the pitman 89, respectively, whereupon the spring 38 draws the slide 43 downwardly until it is arrested by the guide studs 44, at the same time rocking the arm 40, eccentric shaft 35 and impression roll 34 clockwise to normal or effective position. Likewise, the spring 75, at this time, lowers the pitman 89 and rocks the arms 65 and 66 counter-clockwise to restore the tension rolls 64 into contact with the ejection rolls 61.

It will be noted that the door 86 cannot be closed as long as the finger lever 85 lies in its actuated position with the pressure rolls cast away from their co-acting feed rolls.

The operator is more likely to forget to return the finger lever to its normal position than to forget to close the door. Hence an attempt to close the door before restoring the finger lever to normal, will immediately notify the operator that the lever is in actuated position, so that he can restore it to normal.

A shoulder 95 on the finger lever 85 strikes the stud 90 on the slide 43 to arrest the finger lever in its normal position when restored thereto, and to hold the lever in convenient position so that an ear 87 thereof may be grasped by the operator when the door 86 is opened.

While the forms of mechanisms herein shown and described are admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the forms or embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:—

1. In a machine of the class described; the combination with a plurality of separate sets of normally effective rolls for feeding and issuing checks, one roll of each set being supported to shift towards and from the co-acting roll of its respective set; of a separate member to shift each of the shiftable rolls; a plurality of cams, one for each of said members, to operate said members to withdraw the shiftable rolls; and a single manually operable lever fast with one of the cams to operate said cams.

2. In a machine of the class described; the combination with a plurality of separate sets of normally effective rolls for feeding and issuing checks, one roll of each set being supported to shift towards and from the co-acting roll of its respective set; of a separate member to shift each of the shiftable rolls; a plurality of cams, one for each of said members, to operate said members to withdraw the shiftable rolls; one cam being larger than the other to impart a greater travel to its member; and a single manually operable lever fast with one of the cams to operate said cams.

3. In a machine of the class described; the combination with a set of feeding rolls; and a set of ejecting rolls, one member of each set of rolls being shiftable towards and from its co-acting member; of a pitman to operate the shiftable member of the ejector set of rolls; a slide to operate the shiftable member of the set of feeding rolls; separate cams to operate the pitman and the slide, respectively; a connecting bar between said cams; and a single means to manually operate both of the cams to simultaneously operate the shiftable members of both sets of rolls.

4. In a machine of the class described; the combination with a feed cylinder; an impression roll cooperating therewith to advance a record web, said impression roll being mounted on an eccentric shaft; an ejector roll; and a tension roll cooperating therewith and shiftable towards and from the ejector roll, the ejector roll and its tension roll being located farther along the path of the record material than the feed cylinder and impression roll; of a slide to retract the impression roll; a pitman to retract the tension roll; a pair of cams, operable as a unit, to actuate said link and said pitman, and a

lever fixed to the cams to manually operate said cams.

5. In a machine of the class described; the combination with an impression roll; a feed cylinder roll with which the impression roll co-acts; an eccentric shaft on which the impression roll is mounted; an ejector tension roll; an ejector roll with which the tension roll co-acts; yoked arms to support the tension roll to shift towards and from the ejector roll; a slide to rock the eccentric shaft; and a pitman to rock the yoked arms; of a cam yoke, the arms of which form cams operable as a unit to act upon the slide and the pitman to retract the impression roll and the ejector tension roll; a lever to operate the cam yoke, and a closure in the path of travel of the lever to normally conceal the latter.

6. In a machine of the class described; the combination with feed rolls to feed a strip; means to normally maintain the feed rolls in position to grip and feed the strip; and means to release the feed rolls for manually threading the strip through the machine; of a concealing means to enclose the releasing means, said releasing means adapted to prevent restoration of the concealing means when the releasing means is in its releasing position.

7. In a machine of the class described; the combination with feed rolls to feed a strip; means to normally maintain the feed rolls in position to grip and feed the strip; and means to release the feed rolls for manually threading the strip through the machine; of a door to normally enclose said releasing means, and adapted to be opened to render the releasing means operable to release the feed rolls, said releasing means adapted to prevent closing the door when the releasing means is in its releasing position.

8. In a machine of the class described; the combination with feed rolls to feed a strip; means to normally maintain the feed rolls in position to grip and feed the strip; and means to release the feed rolls for manually threading the strip into the machine; of a door normally closed and adapted to be opened to obtain access to the releasing means, said releasing means adapted to be rocked out through the door opening to release the feed rolls and to prevent closing the door until the releasing means is again moved back through the door opening.

9. In a machine of the class described, the combination with strip feed rolls; means to normally maintain the feed rolls in positions to grip and feed a strip; of means to normally conceal the feed rolls and adapted to be shifted to expose said rolls; and means to move certain of the rolls relatively to other of the rolls when the rolls are exposed, and simultaneously prevent the rolls from being concealed after the relative movement thereof.

10. In a machine of the class described, the combination with strip feed rolls; means to normally maintain the feed rolls in positions to grip and feed a strip; of a device to normally prevent access to the feed rolls, said device being movable in one direction to give access to the rolls and in another direction to prevent such access to the rolls; and manipulative means to move a certain roll relatively to the other when the rolls have been made accessible, and to prevent said device from being moved to render the rolls inaccessible so long as said one roll is in its moved position.

In testimony whereof I affix my signature.

WALTER J. KREIDER.