Jan. 18, 1927. 1,614,540

B. M. SHIPLEY

CASH REGISTER

Original Filed July 24, 1922

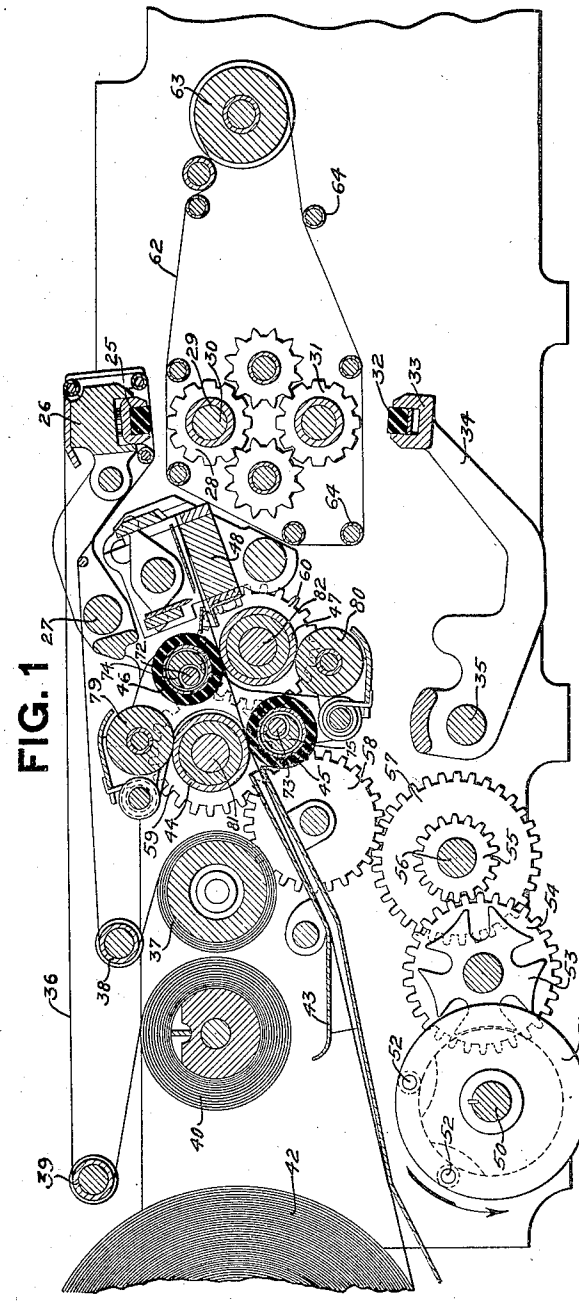

FIG. 1

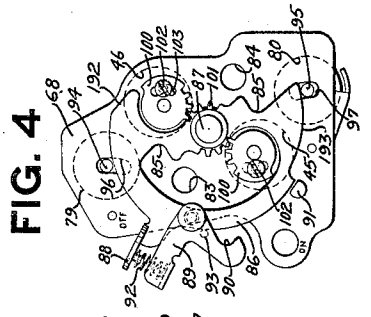

FIG. 4

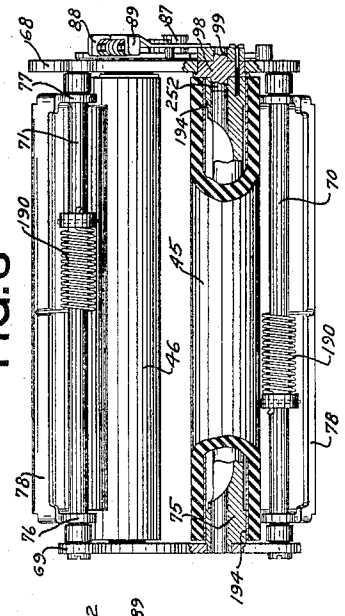

FIG. 3

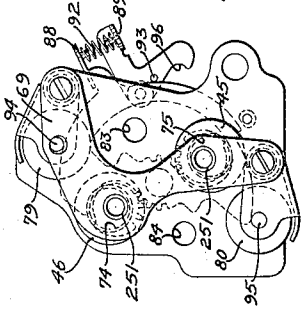

FIG. 2

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UNITED STATES PATENT OFFICE.

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CASH REGISTER.

Original application filed July 24, 1922. Serial No. 576,925. Divided and this application filed February 25, 1924. Serial No. 694,979.

This application is a division of an application numbered 576,925, filed July 24, 1922, for Letters Patent of the United States.

This invention relates to cash registers and the like, and more particularly to machines of the type shown and described in Letters Patent of the United States No. 1,230,864, issued to W. A. Chryst, on June 26, 1917, and Letters Patent of the United States Nos. 1,242,170 and 1,394,256, issued to F. L. Fuller on Oct. 9, 1917 and Oct. 18, 1921, respectively.

The principal object of the present invention is to provide a device for removing the ink and impression rollers used with such a machine as shown in the above mentioned patents, as a unit from the machine.

Another object is to enable the operator simultaneously to move the inking and impression rollers away from the type carrying rollers in order to facilitate the insertion of the receipt or check strip between them, previous to an operation of the machine.

With these and incidental objects in view, the invention consists of 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 this specification.

Of said figures:

Fig. 1 is a partial sectional view taken through the printing mechanism of a cash register of the type above specified, showing the device of the present invention in its relation with various other parts of the printing mechanism.

Fig. 2 is a rear view of the removable carriage which contains the inking and impression rollers.

Fig. 3 is a left side elevation of the removable carriage.

Fig. 4 is a detail front end view of the removable carriage and shows the mechanism for moving the ink and impression rollers away from the electrorollers to permit easy passage of the check strip between them. The mechanism is shown in its moved position.

General description.

In machines of the above specified type the check strip, which is a continuous paper strip from which the receipts issued by the machine are printed and severed, passes between two pairs of electro and feeding rollers in order to receive a portion of the printed matter carried thereby. It is of course necessary in order to take an impression from these impression rollers, that the impression rollers for each of them be so situated that the check paper will be firmly pressed against the type on the electrorollers. This makes it necessary, without using the present invention, to insert the check paper at one side of the device and operate the machine several times until the paper has been fed by these rollers far enough to come to the position in which it is severed and issued. However, with the use of the present invention in connection with this mechanism, a small lever is moved, which forces the electro and impression rollers apart a sufficient distance so that the check strip can easily be passed therebetween and brought to the severing position without having to operate the machine. It is evident that this is a great convenience when it becomes necessary to place a new roll of check paper in the machine.

If at any time it was desired to change the electrorollers, or to put fresh ink on the inking rollers, it was necessary to take these rollers out one at a time in order to accomplish the above results. With the use of the present invention, however, the two impression rollers and the two inking rollers are all carried in a removable frame. This frame is normally latched in its correct position in the machine, but when it is desired to have access to the rollers above mentioned all that it is necessary to do is to release a catch on the front of the carriage, as will be hereinafter described, and withdraw all of the above mentioned rollers from the machine as a unit.

A short and very general description of some of the parts shown in Fig. 1 will now be given for the purpose of giving a correct understanding of the relation between the removable carriage and the surrounding parts of the printing mechanism.

This machine is adapted to print upon three different mediums; first, the detail strip; second, the check strip; and third, an in-

serted slip. The printing upon the first two of these mediums is done by repeated impressions of a platen 25 carried by a platen frame 26 pivoted at 27, with a series of type carriers 28 loosely mounted upon a tube 29 supported by a rod 30, as is well known in machines of this type. These type carriers 28 are differentially positioned under the control of the amount levers in this particular case, or by any other form of manipulative devices, and are differentially set in accordance with the positioning of the said devices. The inserted slip receives its impression from a similar group of type wheels 31 located directly below the type wheels 28 and set up in the same manner. The impression is taken by means of a platen 32 carried by a U-shaped member 33 supported by two arms 34 pivoted on a shaft 35. At the appropriate time this platen is given a rapid upward movement and will strike the inserted strip with sufficient force to take an impression from the lower type wheels 31.

The detail strip 36 is carried by a storage roll 37 and passes about a roller 38, then the platen member 26, back toward the left about a roller 39 and is wound upon a receiving roll 40, shown in Fig. 1. Suitable means is provided for feeding the detail strip one step or space upon each operation of the machine. This means, however, is not shown herein.

The check paper, or check strip, as it will be hereinafter called, is carried by a large storage roll 42, and from this roll passes between guides 43, between an electroroller 44 and an impression roller 45, then between the impression roller 46 and a second electroroller 47, across a block 48, where it is either perforated and then severed, or simply severed, depending on the character of the receipt to be issued, and finally beneath the upper platen 25, where it will receive its final impression from the type wheels 28.

The electrorollers 44 and 47 are rotated in opposite directions and cooperate with their respective impression rollers 45 and 46 in order to feed the strip across the knife block and under the upper platen. This feeding movement is given the electrorollers in the following manner. A shaft 50, which is the main drive shaft of the printing mechanism and which receives one complete counter-clockwise revolution on each operation of the machine, carries thereon a disk 51 which supports two pins 52. These pins cooperate with notches formed in a Geneva plate 53 and are so positioned that they will rotate said plate two-fifths of a revolution upon every operation of the shaft 50. Rigidly connected to the Geneva plate 53 is a gear 54 which meshes with a pinion 55 loosely mounted on a shaft 56. Fast to the pinion 55 is a gear 57, which in turn meshes with a gear 58 engaging with a gear 59 fast to the electroroller 44. The gear 59 also meshes with a gear 60 fast to the electroroller 47. It can be seen from the above that when the shaft 50, and therefore the disk 51, are given one complete counter-clockwise revolution, the Geneva plate 53 and gear 54 will be moved in a clockwise direction. This movement of the gear 54 will move the pinion 55 and the gear 57 in a counter-clockwise direction, and this counter-clockwise movement of the gear 57 will be transmitted by the gear 58 to the gear 59, which is fast to the electroroller 44, thereby rotating this roller in a counter-clockwise direction and the other electroroller 47, due to the engagement of the gear 60 with the gear 49, will be moved in a clockwise direction. The movement of these two electrorollers, in combination with their impression rollers, will feed the check strip toward the right a sufficient distance to bring it to its correct position for printing and severance.

An inking ribbon 62 extends from an inking roller 63 about a plurality of anti-friction rollers 64 in such a manner as to bring it to position to ink the type carriers 28 and 31 in order that an impression may be taken by the upper and lower platens, as above described.

Impression and ink roll carriage.

A more detailed description will now be given of the carriage which carries the impression and ink rolls and which is removable as a unit from the machine.

A plate 68 and a plate 69, best shown in Figs. 2, 3 and 4, are secured together by rods 70 and 71. These plates are supported by long studs 72 and 73 (Fig. 1) mounted in the printer frame and projecting into tubes 74 and 75 which carry the impression rolls 45 and 46. Loose on each rod 70 and 71 is a pair of arms 76 and 77 which are made integral by a yoke 78. Rotatably mounted on rods 94 and 95 supported in the arms 76 and 77 are ink rollers 79 and 80 adapted to ink the electrorollers 44 and 47, which are carried by long studs 81 and 82 projecting from the printer frame. The ink rollers are maintained in contact with the electrorollers by means of coiled springs 190 surrounding the rods 70 and 71. These studs 81 and 82 have grooves cut near their ends and project through holes 83 and 84 respectively in plate 68, and are adapted to be engaged by semi-circular portions 85 of a plate 86 pivoted at 87 to the plate 68, thereby locking said impression roll carriage in its position on the machine, as shown in section in Fig. 1. The carriage is adapted to be removed from the machine for the purpose of cleaning and inking the ink rolls 79 and 80. It is shown detached from the machine in Figs. 2, 3 and 4.

When it is desired to remove the carriage it is necessary to rock the plate 86 clockwise

to the position shown in Fig. 4 by means of a pinch lever comprising an ear 88 formed on the plate 86 and a pivoted arm 89 carried by plate 86 and having a hooked portion 90 adapted to latch over a pin 91 carried by plate 68 and hold the plate 86 in its "on" position. The hooked portion 90 is held in engagement with the pin 91 by a spring 92 compressed between the ear 88 and arm 89. A pin 93 in the arm 89 engages the periphery of plate 86 and limits the clockwise movement (Fig. 4) of arm 89.

It can be seen from Fig. 1 that each electroroller 44 and 47 normally has in contact therewith its inking and impression rollers. Before the carriage carrying these rollers can be removed it is necessary to remove the inking and impression rollers away from their respective electrorollers. In order to remove the ink rollers the plate 86 has two cam surfaces 192 and 193 cooperating with the ends of the ink roller supporting rods 94 and 95, which project through elongated slots 96 and 97 cut in the plate 68. It can be seen, therefore, that when the plate 86 is moved from its "on" to its "off" position the cam surfaces 192 and 193 move the ink rollers 79 and 80 respectively away from their corresponding electrorollers against the tension of the springs 190.

Each of the impression rollers 45 and 46 is rotatably mounted on enlarged bearing portions 194 (Fig. 3) provided at each end of the tubes 74 and 75. These members are hollowed out between the bearing portions (Figs. 1 and 3) in order to permit the long studs 72 and 73 which support the carriage to pass through them. At its left hand end each tube carries a hollow stud 251 mounted eccentrically, which is supported in the plate 69. At its right hand end each tube has a hole drilled eccentrically therein into which projects a stud 252 carried by a disk 98 rotatably mounted in the plate 68. The disk 98 also has a stud 99 on which is mounted a partial gear 100, the teeth of which engage teeth 101 formed in the plate 86. The partial gears 100 are secured to the tubes 74 and 75 by set screws 102 which pass through radial slots 103 in the partial gears. It is clear that by loosening the set screws 102 the impression rollers can be adjusted eccentrically. When the plate 86 is moved from its "on" position to its "off" position (Fig. 4) the teeth 101 on said plate will rotate the partial gears 100 counter-clockwise and therefore, due to the eccentric mounting of the impression rollers, move said rollers away from their corresponding electrorollers far enough to permit the easy removal of said carriage.

When it is desired to feed the check strip through the printer, all that it is necessary to do is to rock the plate 86 from its "on" to its "off" position. This movement simultaneously moves the impression and ink rollers away from their electrorollers, leaving sufficient space for the paper to easily pass between. When the plate 86 is again moved to its normal, or "on," position, the paper is gripped between the electrorollers and impression rollers in position to be fed.

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 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 cash register printing mechanism, a plurality of groups of rollers for feeding a record strip, each of said groups comprising a type carrying roller, an inking roller and an impression roller, a support for said rollers, an eccentric mounting carried by said support for said impression roller, and means for rotating said eccentric mounting to move said impression roller out of cooperative relation with said type carrying roller.

2. In a cash register printing mechanism, a plurality of groups of rollers for feeding a record strip, each of said groups comprising a type carrying roller, an inking roller and an impression roller, a support for said rollers, an eccentric mounting carried by said support for said impression roller, and manually operated means for rotating said eccentric mounting to move said impression rollers out of cooperative relation with said type carrying rollers.

3. In a cash register printing mechanism, a plurality of groups of rollers for printing and feeding a record strip, each group comprising a type carrying roller, an impression roller and an inking roller, a removable frame for carrying said impression rollers and said inking rollers, and means for locking said removable frame in the machine.

4. In a cash register printing mechanism, a group of rollers adapted to cooperate with a record strip, said group comprising a type carrying roller, an impression roller and an inking roller, rotatable supports for said rollers, a frame comprising two plates joined by rods for holding said supports, and means for rotating said supports to move said inking and impression rollers out of contact with said type carrying roller.

5. In a cash register printing mechanism, a plurality of groups of rollers for feeding a record strip, each group comprising a type carrying roller and an impression roller, eccentric hubs for said impression rollers, a removable frame, comprising front and back plates, for supporting said hubs, a rotatable plate carried by said frame, and means whereby the rotation of said plate rotates the eccentric hubs of said impression rollers

and thereby simultaneously moves said impression rollers of all groups away from said type carrying rollers.

6. In a cash register printing mechanism, a plurality of groups of rollers for feeding a record strip, each group comprising a type carrying roller and an impression roller, eccentric hubs for said impression rollers, a removable frame for supporting said hubs, a rotatable plate carried by said frame and having gear teeth formed on its hub, partial gears meshing with the teeth on said hub, said partial gears being fast to said impression rollers so that the rotation of said rotatable plate will rotate the eccentric hubs of said impression rollers and move said rollers out of contact with said type carrying roller.

7. In a cash register printing mechanism, a type carrying roller for printing on a record strip, a roller for inking said type carrying roller, a rod supporting said inking roller, a yoke supporting said rod, a second rod supporting said yoke, a spring surrounding said last mentioned rod and tending to keep said inking roller in contact with said type carrying roller, and means for removing said inking roller from contact with said type carrying roller.

8. In a cash register printing mechanism, a type carrying roller for printing on a record strip, a roller for inking said type carrying roller, a rod supporting said inking roller, a yoke supporting said rod, a second rod supporting said yoke, a spring surrounding said last mentioned rod and tending to keep said inking roller in contact with said type carrying roller, and manually operated means for removing said inking roller from contact with said type carrying roller.

9. In a cash register printing mechanism, a type carrying roller for printing on a record strip, a roller for inking said type carrying roller, a rod supporting said inking roller, a yoke carrying said rod, a second rod supporting said yoke, a frame carrying said last mentioned rod, a rotatable plate mounted on said frame, and means carried by said plate for removing said inking roller from contact with said type carrying roller.

10. In a cash register printing mechanism, a type carrying roller for printing on a record strip, a roller for inking said type carrying roller, a rod supporting said inking roller, a yoke carrying said rod, a second rod supporting said yoke, a frame carrying said last mentioned rod, a rotatable plate mounted on said frame, and a cam surface integral with said plate which cooperates with said first mentioned rod to move said inking roller out of contact with said type carrying roller.

11. In a cash register printing mechanism, a plurality of type carrying rollers for printing on a record strip, a plurality of rollers for inking said type carrying rollers, a pivotally mounted yoke for carrying each of said inking rollers, a frame supporting said yokes, and a rotatable plate mounted on said frame which when rotated will cooperate with each of said inking rollers to move them simultaneously out of contact with said type carrying rollers.

12. In a cash register printing mechanism, a plurality of type carrying rollers for printing on a record strip, a plurality of impression rollers, one for each type carrying roller, a plurality of inking rollers one for each type carrying rollers, a frame carrying all of said impression and inking rollers, a rotatable plate supported by said frame, and means which upon the rotation of said plate move said impression and inking rollers out of contact with their type carrying rollers.

13. In a cash register printing mechanism, a plurality of type carrying rollers for printing on a record strip, a plurality of impression rollers, one for each type carrying roller, a plurality of inking rollers one for each of said type carrying rollers, a frame carrying all of said impression and inking rollers, a rotatable plate supported by said frame, and means for latching said plate in its normal position.

14. In a cash register printing mechanism, a plurality of type carrying rollers for printing on a record strip, a plurality of impression rollers, one for each type carrying roller, a plurality of inking rollers one for each of said type carrying rollers, a frame carrying all of said impression and inking rollers, a rotatable plate supported by said frame, means for latching said plate in its normal position, and means for disabling said latching means.

15. A cash register attachment comprising front and rear frames, rods for rigidly connecting said frames, a plurality of rollers eccentrically mounted in said frames, yokes mounted on said rods, and a plurality of rollers mounted in said yokes.

16. A cash register attachment comprising front and rear frames, rods for rigidly connecting said frames, a plurality of rollers eccentrically mounted in said frames, yokes carried by said rods, a plurality of rods mounted in said yokes, a roller supported by each of said rods, and a tension means tending to rock said yokes about said rods.

17. A cash register attachment comprising front and rear frames, rods for rigidly connecting said frames, a plurality of rollers eccentrically mounted in said frames, yokes carried by said rods, a plurality of rods carried by said yokes, a roller supported by each of said last mentioned rods, a tension means tending to rock said second mentioned rods continuously about said first mentioned rods, and means for limiting the rocking movement of said second mentioned rods.

18. In a cash register attachment, the combination of front and back frames, rods for rigidly connecting said frames, yoke members pivoted on said rods, rollers carried by said yoke members, and a manipulative means for rocking all of said rollers and their supporting yokes about said rods.

19. In a cash register attachment, the combination of front and back frames, rods for rigidly connecting said frames, yoke members pivoted on said rods, rollers carried by said yoke members, a manipulative means for rocking all of said rollers and their supporting yokes about said rods, and means for limiting the said rocking movement.

20. In a cash register attachment, the combination of front and back frames, rods for rigidly connecting said frames, yoke members pivoted on said rods, rollers carried by said yoke members, a manipulative means for rocking all of said rollers and their supporting yokes about said rods, and means for returning the said yokes and rollers to their normal positions.

21. In a cash register attachment, the combination of front and back frames, rods for rigidly connecting said frames, yoke members pivoted on said rods, rollers carried by said yoke members, a manually operated plate pivoted on said front frame, and cam portions on said plate for rocking said rollers and their supporting yokes about said rods.

22. In a cash register attachment, the combination of a front and back frame, rods rigidly connecting said frames, rollers supported between said frames, eccentric mountings for said rollers, partial gears rigid with said eccentric mountings, a plate pivoted on said front frame, teeth formed on said plate which cooperate with said partial gears, and manipulative means for rotating said plate to move said rollers eccentrically through said partial gears.

23. In a cash register attachment, the combination of a front and back frame, rods rigidly connecting said frames, rollers supported between said frames, eccentric mountings for said rollers, partial gears rigid with said eccentric mountings, a plate pivoted to said front frame, teeth formed on said plate which cooperate with said partial gears, and means for latching said manipulative means in its normal position.

In testimony whereof I affix my signature.

BERNIS M. SHIPLEY.