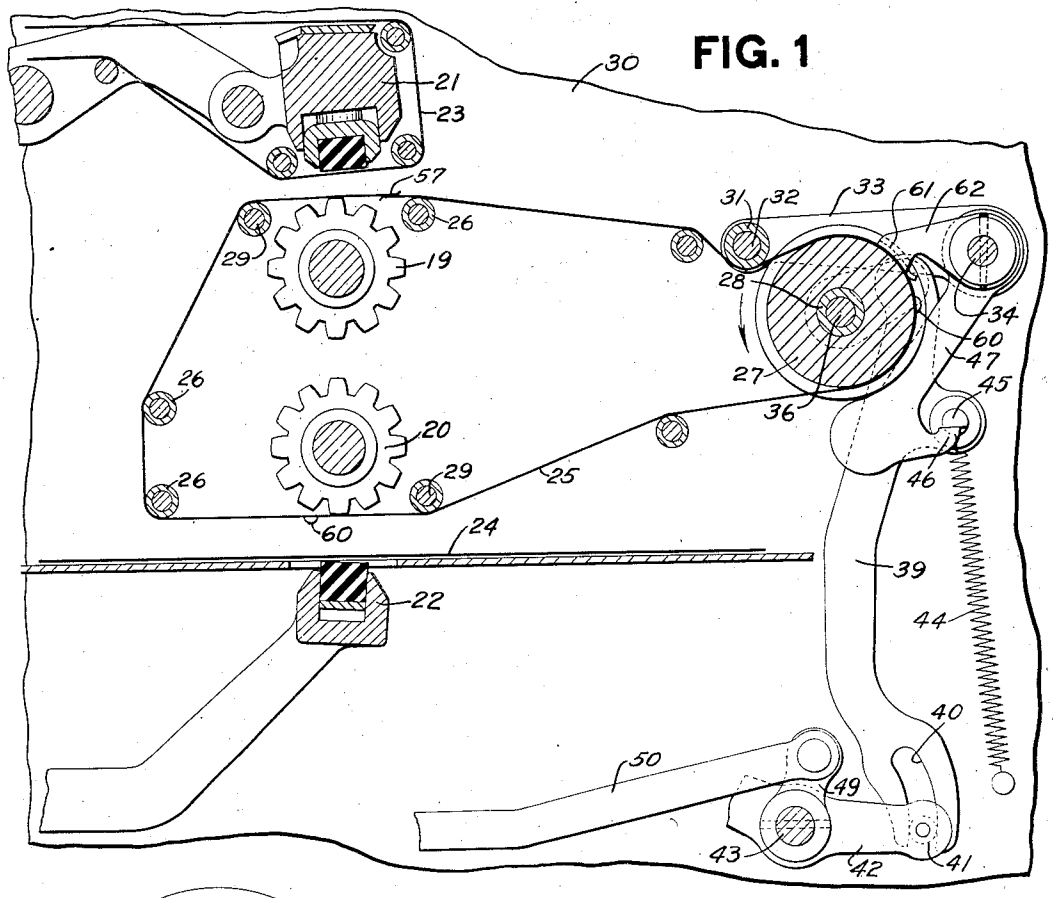
July 28, 1925. 1,547,267

B. M. SHIPLEY

CASH REGISTER

Original Filed March 11, 1921

FIG. 1



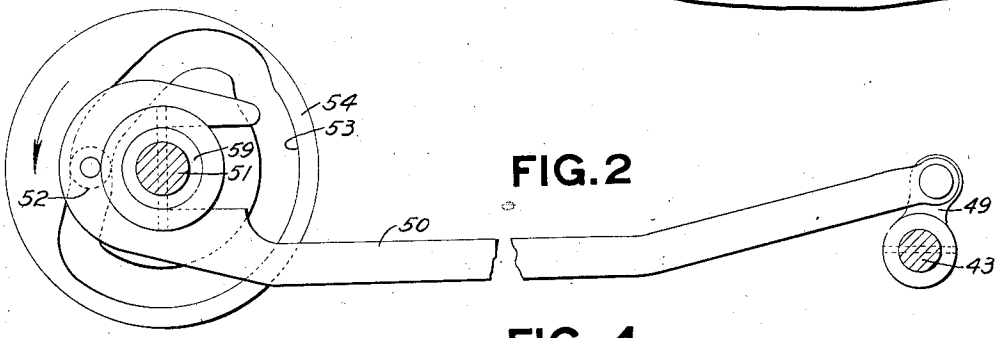


FIG. 2

FIG. 3

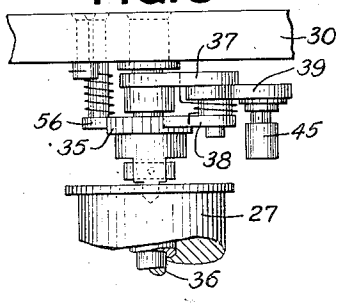
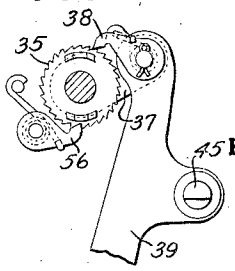


FIG. 4



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Patented July 28, 1925. 1,547,267

UNITED STATES PATENT OFFICE.

BERNIS M. SHIPLEY, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO.

CASH REGISTER.

Original application filed March 11, 1921, Serial No. 451,508. Divided and this application filed July 9, 1923. Serial No. 650,389.

To all whom it may concern:

Be it known that I, BERNIS M. SHIPLEY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash Registers, of which I declare the following to be a full, clear, and exact description.

This invention relates to ink ribbon feeding mechanism adapted for use with cash registers and like machines.

The subject matter of this application constitutes a division of co-pending application of the same inventor, numbered 451,508, and filed March 11, 1921.

The principal object of this invention is to provide means under control of the ribbon itself whereby the ribbon will be given an extra long feed at certain points in its movement.

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 side elevation of the ribbon mechanism.

Fig. 2 is a detail side elevation of the cam and pitman for operating the ribbon feed.

Fig. 3 is a detail top plan view of the ratchet and pawls for feeding the ribbon.

Fig. 4 is a detail side view of the feeding ratchet and its cooperating pawls.

General description.

The printing mechanism disclosed comprises two sets of printing wheels or elements 19 and 20 with which suitable impression hammers 21 and 22 cooperate to produce impressions on a detail strip 23 and a slip 24 through a ribbon 25. The ribbon is sewed so as to make it a continuous ribbon and cooperates with both sets of printing elements. It was found that when the seam in the ribbon came opposite either type line a blurred impression was made. The present invention contemplates so constructing the feeding mechanism that when the seam in the ribbon approaches either printing line an extra long feed will be given the ribbon. This feed will be sufficient to carry the seam past the printing line so that a clear impression will be made when the impression is taken.

Specifically described, the mechanism comprises an ink ribbon 25 supported by seven sleeves 26 secured to a plate (not shown), and an ink roller 27 on a sleeve 28 also carried by the above mentioned plate. The ink roller is made of felt or other suitable ink-receiving material. The sleeves 26 are supported by studs 29 projecting from a frame 30. This method of mounting is convenient in that by removing the above mentioned plate the entire ribbon and ink roll may be removed from the machine.

A tension is maintained on the ribbon 25 by a roller 31 on a rod 32 (Fig. 1) supported by parallel arms 33 (only one of which is shown), loose on a stud 34 mounted in the frame 30 and supported at its outer end by the above mentioned plate The roller is held against the ribbon by gravity.

Clutched to the roller 27 by any suitable means (Figs. 3 and 4) is a ratchet 35. Loose on the stud 36 which supports the ink roller is an arm 37 carrying a spring-pressed driving pawl 38 engaging the ratchet 35. Pivoted to the arm 37 is a link 39 having a slot 40 engaging a pin 41 on a lever 42 fast on a shaft 43 projecting from frame 30. A spring 44 stretched between a stud on the frame and a flat-sided stud 45 on the link 39 holds the pin in engagement with a toe 46 of an arm 47 loose on a stud 34 thereby limiting the downward movement of the link 39.

The lever 42 is rocked first counter-clockwise and then clockwise (Fig. 1) by means of the following mechanism. Fast on the shaft 43 is an arm 49 (Figs. 1 and 2) to which is pivoted one end of a pitman 50. This pitman at its other end is slotted to surround a hub 59 of a cam 54 fast on a shaft 51, which receives one complete counter-clockwise revolution upon each operation of the machine. The pitman 50 carries an anti-friction roller 52 cooperating with a cam groove 53 in the cam 54. The shape of the cam groove 53 is such that the pitman is moved first to the left and then towards the right back to home position, thereby rocking arm 49, shaft 43 and lever 42 coun-

ter-clockwise and then clockwise. Near the end of the counter-clockwise movement of said lever the pin 41 engages the end of the slot 40 and moves the link 39 upward, thereby rocking the arm 37 counter-clockwise, whereupon the pawl 38 turns the ratchet 35, and consequently the ink roll 27, counter-clockwise to feed the ribbon so that two successive impressions are not made in the same place on the ribbon. As the lever 42 is rocked clockwise to normal position, the spring 44 lowers the link 39 and returns the arm 37 and pawl 38 to the position shown in Fig. 4. A spring-pressed retaining pawl 56 prevents clockwise or retrograde movement of the ratchet 35.

The ribbon has a transversely extending seam 57 (Fig. 1) and, as an impression through said seam would not be clear, a mechanism is provided for feeding the ribbon a greater distance as the seam approaches the printing lines so that it never stops at these lines.

Secured to the ribbon 25 are two metal buttons 60 cooperating with a flange 61 of an arm 62 rigid with the arm 47. When one of the buttons 60 engages the flange 61 during the movement of the ribbon, it rocks the arms 62 and 47 clockwise and disengages the toe 46 from the stud 45 thereby allowing the spring 44 to move the link 39 downward, whereby the end of the slot 40 is moved close to the pin 41. Downward movement of the link 39 also rocks the arm 37 a greater distance than previously described.

With the parts in the positions just mentioned, the pin 41 engages the upper end of the slot 40 during the first part of the counter-clockwise movement of the lever 42 and moves the link 39 upward, whereupon the arm 37 is rocked counter-clockwise. As this movement of the link 39 and arm 37 is much greater than that previously described, it is clear that the ribbon is fed a greater distance than when the button 60 does not rock the arms 62 and 47 to disengage the toe 46 from the pin 45. During this movement of the ribbon the button 60 which caused the long feed is moved past the flange 61 on arm 62 so that the arm 47 by its own weight is rocked counter-clockwise after the pin 45 has been moved to its highest position, and when the lever 42 is rocked clockwise to its normal position the spring 44 pulls the link 39 downward until the stud 45 again engages the toe 46 on the arm 47. The lower edge of the toe 46 is shaped so that the upper surface of the stud 45 can cam the arm 47 clockwise to permit the link 39 to complete its upward movement in case the button leaves the flange 61 during the first part of the upward movement of the link 39. These two buttons 60 are so positioned on the ribbon that the seam 57 is always fed past the printing lines and therefore no impression is ever taken on said seam.

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 machine of the class described, the combination of an inking ribbon, a seam therein, type carriers, means for feeding said ribbon over said type carriers, and automatic means operable as the seam approaches said carriers for controlling said feeding means to feed said seam from one side of said type carriers to the other.

2. In a machine of the class described, the combination of an inking ribbon, a seam therein, type carriers, means for feeding said ribbon over said type carriers, and means under control of said ribbon and operable as the seam approaches said carriers for controlling said feeding means to feed said seam from one side of said type carriers to the other.

3. In a machine of the class described, the combination of an inking ribbon, a seam therein, type carriers, means for feeding said ribbon over said type carriers, and means on said ribbon operable as the seam approaches said carriers for controlling said feeding means to feed said seam from one side of said type carriers to the other.

4. In a machine of the class described, the combination of an inking ribbon, a seam therein, type carriers, means for feeding said ribbon over said type carriers, and means on the surface of said ribbon operable as the seam approaches said carriers for controlling said feeding means to feed said seam from one side of said type carriers to the other.

5. In a machine of the class described, the combination of an inking ribbon, a seam therein, type carriers, means for feeding said ribbon over said type carriers, and means projecting from said ribbon operable as the seam approaches said carriers for controlling said feeding means to feed said seam from one side of said type carriers to the other.

6. In a machine of the class described, the combination of an inking ribbon, a seam therein, a plurality of sets of type carriers, means for feeding said ribbon over said sets of type carriers, and automatic means for controlling said feeding means to move said seam from one side of each of said sets of carriers to the other as the seam approaches said carriers.

7. In a machine of the class described, the

combination of an inking ribbon, a seam therein, a plurality of sets of type carriers, means for feeding said ribbon over said sets of type carriers, and means under control of said ribbon for controlling said feeding means to move said seam from one side of each of said sets of carriers to the other as the seam approaches said carriers.

8. In a machine of the class described, the combination of an inking ribbon, a seam therein, a plurality of sets of type carriers, means for feeding said ribbon over said sets of type carriers, and means on said ribbon for controlling said feeding means to move said seam from one side of each of said sets of carriers to the other as the seam approaches said carriers.

9. In a machine of the class described, the combination of an inking ribbon, a seam therein, a plurality of sets of type carriers, means for feeding said ribbon over said sets of type carriers, and on the surface of said ribbon means for controlling said feeding means to move said seam from one side of each of said sets of carriers to the other as the seam approaches said carriers.

10. In a machine of the class described, the combination of an inking ribbon, a seam therein, a plurality of sets of type carriers, means for feeding said ribbon over said sets of type carriers, and means projecting from said ribbon for controlling said feeding means to move said seam from one side of each of said sets of carriers to the other as the seam approaches said carriers.

11. In a machine of the class described, the combination of an inking ribbon, a seam therein, a plurality of sets of type carriers, means for feeding said ribbon over said sets of type carriers, and a plurality of means on said ribbon for controlling said feeding means to carry said seam from one side of each of said sets of carriers to the other as the seam approaches said carriers.

12. In a machine of the class described, the combination of an inking ribbon, a seam therein, a plurality of sets of type carriers, means for feeding said ribbon over said sets of type carriers, and a plurality of projections on said ribbon, each projection controlling said feeding means to move the seam from one side to the other of one of said sets of type carriers.

13. In a machine of the class described, the combination of type carriers, an inking ribbon provided with a seam, variable feeding means, and means carried by the ribbon near one of its edges for controlling said feeding means as the seam approaches said type carriers.

14. In a machine of the class described, the combination of a plurality of sets of type carriers, an inking ribbon provided with a seam, means for feeding said ribbon short distances and longer distances, and means carried near the edge of the ribbon for controlling said feeding means to feed the ribbon a longer distance as the seam approaches each set of type carriers.

15. In a machine of the class described, the combination of a plurality of sets of type carriers, an inking ribbon provided with a seam, means for feeding said ribbon short distances and longer distances, and a plurality of means carried near the edge of the ribbon for controlling said feeding means to feed the ribbon a longer distance as the seam approaches each set of type carriers.

16. In a machine of the class described, the combination of type carriers, an inking ribbon provided with a seam, means for normally feeding said ribbon a short distance but adapted to be controlled to feed the ribbon a greater distance, and an arm for controlling said feeding means to feed the ribbon the greater distance as the seam approaches the type carriers.

17. In a machine of the class described, the combination of type carriers, an inking ribbon provided with a seam, means for normally feeding said ribbon a short distance but adapted to be controlled to feed the ribbon a greater distance, and an arm under control of said ribbon for controlling said feeding means to feed the ribbon the greater distance as the seam approaches the type carriers.

18. In a machine of the class described, the combination of type carriers, an inking ribbon provided with a seam, means for normally feeding said ribbon constant distances but adapted to be controlled to feed the ribbon a greater distance, an arm for controlling said feeding means to feed the ribbon the greater distance as the seam approaches the type carriers, and projections on said ribbon for operating said arm.

19. In a machine of the class described, an inking ribbon, feeding means therefor comprising a reciprocating actuating member and means for driving said member, and automatic means for controlling the period of effectivity of said driving means for controlling the length of feed of said inking ribbon.

20. In a machine of the class described, the combination of an inking ribbon, a feeding roller, a reciprocating member for driving said roller, means for actuating said reciprocating member, a lost motion connection between said reciprocating member and actuating means, and means cooperating with said member for controlling the amount of movement transmitted from said actuating means to said reciprocating member.

21. In a machine of the class described, the combination of an inking ribbon, a feeding roller, a reciprocating member for driving said roller, means for actuating said reciprocating member, a lost motion

connection between said reciprocating member and actuating means, and means cooperating with said member and said ribbon for controlling the amount of movement transmitted from said actuating means to said reciprocating member.

22. In a machine of the class described, the combination of an inking ribbon, a feeding roller, a reciprocating member for driving said roller, means for actuating said reciprocating member, a lost motion connection between said reciprocating member and actuating means, and lever means cooperating with said member and said ribbon for controlling the amount of movement transmitted from said actuating means to said reciprocating member.

23. In a machine of the class described, the combination of printing elements, impression means, an inking ribbon sewed so as to form a continuous ribbon, ribbon-feeding mechanism, means for limiting the movement of said feeding mechanism, and means for crippling said limiting means so that said feeding mechanism is given a greater movement.

24. In a machine of the class described, the combination of printing elements, impression means, an inking ribbon sewed so as to form a continuous ribbon, ribbon feeding mechanism, means engaging the feeding mechanism and thereby limiting the movement of said feeding mechanism, and means carried by the ribbon for disengaging the last mentioned means from the feeding mechanism whereby said mechanism is given a greater movement.

25. In a machine of the class described, the combination of printing elements, impression means, an inking ribbon sewed so as to form a continuous ribbon, ribbon-feeding mechanism, means normally engaging said feeding mechanism to limit the movement of the feeding mechanism, and means carried by the ribbon for disengaging the last mentioned means from the feeding mechanism whereby said mechanism is given a greater movement.

26. In a machine of the class described, the combination of printing elements, impression means, an inking ribbon sewed so as to form a continuous ribbon, ribbon-feeding mechanism, means normally engaging said feeding mechanism to limit the movement of the feeding mechanism, and means secured to the ribbon for engaging the limiting means and moving said limiting means out of engagement with the feeding mechanism whereby said feeding mechanism is given a greater movement.

27. In a machine of the class described, the combination of an inking ribbon, a feeding roller, an actuating pawl, a driving link connected to said pawl, positive means for moving said link in one direction, spring means for moving said link in the opposite direc ion, a lost motion connection between said positive means and link, and means controlled by said ribbon for controlling the distance through which the link may be moved by said spring means.

28. In a machine of the class described, the combination of an inking ribbon, a feeding roller, an actuating pawl, a driving link connected to said pawl, positive means for moving said link in one direction, spring means for moving said link in the opposite direction, a lost motion connection between said positive means and link, an abutment on said link, a lever cooperating therewith to limit the distance through which the link may be moved under the influence of the spring, and means on the ribbon for moving said lever to render it ineffective.

In testimony whereof I affix my signature.

BERNIS M. SHIPLEY.