May 3, 1938. W. H. ROBERTSON 2,116,214

PRINTING MECHANISM FOR CASH REGISTERS

Filed Aug. 2, 1935

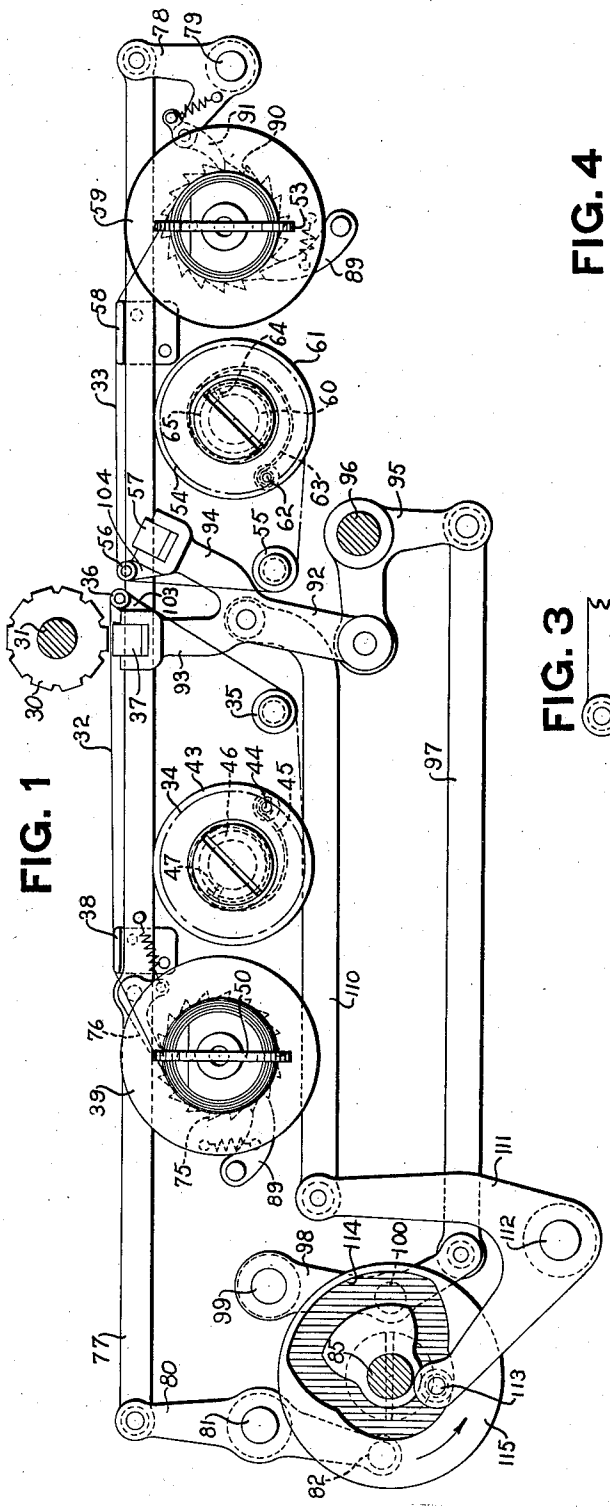


FIG. 1

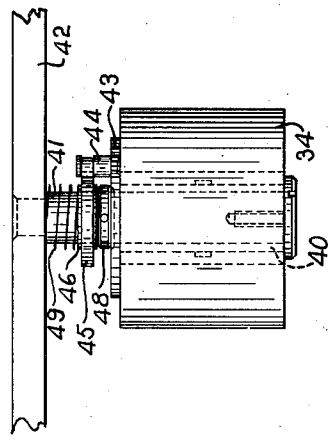


FIG. 4

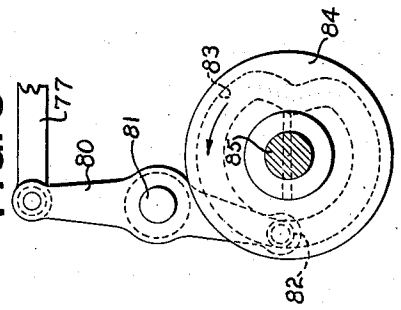


FIG. 3

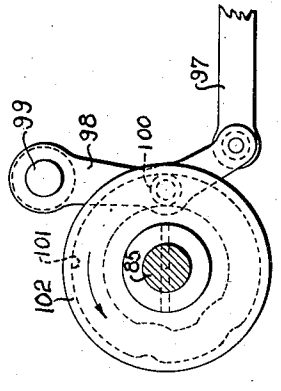


FIG. 2

Inventor
William H. Robertson
By
Earl Reust
His Attorney

Patented May 3, 1938 2,116,214

UNITED STATES PATENT OFFICE

2,116,214

PRINTING MECHANISM FOR CASH REGISTERS

William H. Robertson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio, a corporation of Maryland

Application August 2, 1935, Serial No. 34,338

5 Claims. (Cl. 101—93)

This invention relates to improvements in cash registers and accounting machines, and more particularly to the record strip printing mechanism.

An object of this invention is to provide novel means for printing items on a plurality of individual record strips from one common set of type elements.

A more specific object of the invention is to provide a single printing hammer, adapted to be shifted into a plurality of positions to print on separate record strips.

Another object is to provide means on a printing hammer to shift a plurality of record materials into printing position.

A further object is to provide a combination printing hammer and record material shifting means.

A still further object is to provide, in combination, a printing hammer having a plurality of platens and a plurality of paper shifting means.

Another object is to provide means to keep all record strips taut at all times, especially during the times they are shifted and while being printed upon.

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 drawing which accompany and form a part of this specification.

Of said drawing:

Fig. 1 is a side elevation of the printing mechanism embodying the present invention.

Fig. 2 is a side view of the cam for actuating the printing hammer.

Fig. 3 is a side view of the cam for actuating the means for feeding the record strips.

Fig. 4 is a top plan view of the left hand one of the record strip supply rolls shown in Fig. 1.

General description

Described in general terms, the present invention consists of a printing mechanism specially applicable to machines of the type shown and described in United States Patent No. 1,619,796, granted to Bernis M. Shipley, dated March 1, 1927.

A single set of type elements is provided for printing upon a plurality of individual record strips. A printing hammer having a plurality of upwardly extending arms, each of which arms carries a platen and guide roller associated with one of the record strips, is provided for alternately shifting the record strips to printing position to print thereon an item standing on the set of type elements.

Each of the record strip supply rolls has cooperating therewith a spring which serves to rewind the record strip an extent sufficient to take up any slack created in the record strip by the shifting movement imparted by the printing hammer when an impression is made on each of the record strips.

Means is also provided for feeding the record strips simultaneously after an impression has been made on each record strip.

Detail description

Described in detail the mechanism comprises a set of type wheels **30** (Fig. 1) supported on a shaft **31**. Impressions are made from the type wheels **30** upon two separate record strips **32** and **33** by an ink ribbon of any suitable form. Inasmuch as the ink ribbon forms no part of the present invention, it is not shown or described in detail here.

Left hand record strip

The record strip **32** is guided from a supply roll **34** under a guide roller **35** around a guide roller **36** over a platen **37** across a guide bar **38** onto a receiving roll **39**. The record strip **32** is held on the receiving roll **39** by a key **50**.

The supply roll **34** is secured to a sleeve **40** (Figs. 1 and 4) loosely mounted on a stud **41** projecting from a machine frame **42**. The sleeve **40** has a flange **43** upon which is mounted a stud **44**. A flat spring **45** is attached at one end to the stud **44** and wound around a friction disk **46** loosely mounted on the stud **41** and has its other end secured to the friction disk **46** by means of a stud **47**. The friction disk **46** is forced by a spring **49** against a collar **48** fast to the stud **41**. The flat spring **45** for the supply roll is normally under tension. It will thus be apparent that the spring **45** constantly tends to rewind the record strip **32** upon the supply roll **34**, thereby taking up any slack which is created in the record strip **32** when the record strips **32** and **33** are alternately shifted to be printed on.

Right hand record strip

The record strip **33** (Fig. 1) is guided from a supply roll **54** under a guide roller **55** around a guide roller **56** over a platen **57** and across a guide bar **58** onto a receiving roll **59**. The record

strip 33 is held on the receiving roll 59 by a key 53.

The supply roll 54 is secured to a sleeve, not shown but like the sleeve 40, Fig. 4, loosely mounted on a stud 60 in the frame 42. A flange 61 of the sleeve (not shown) carries a stud 62 to which is secured one end of a flat spring 63, the other end of which is connected to a stud 64 in a friction disk 65 loose on the stud 60. The spring 63 rotates its supply roll 54 in a direction the reverse to that in which the spring 45 rotates the supply roll 34. The spring 63 is normally in its unwound condition. When the record strip 33 is shifted to printing position it is unwound from the supply roll 54, which action tensions the spring 63 so that when the record strip 33 is shifted away from printing position the spring 63 serves to rewind the slack thus created in the record strip 33.

Record strip feeding mechanism

The means for feeding the record strips 32 and 33 (Fig. 1) will now be described. Secured to the side of the receiving roll 39 is a ratchet 75 which coacts with a spring-pressed pawl 76 pivoted on a link 77 connected at its right hand end to a bell crank 78 pivoted on a stud 79 mounted in the frame 42. The other end of the link 77 is connected to a lever 80 pivoted on a rod 81 mounted in the frame 42. The lever 80 carries a roller 82 coacting with a cam groove 83 (Fig. 3) in a cam 84 fast on a drive shaft 85. When the machine is operated the shaft 85 and the cam 84 are rotated counter-clockwise and the link 77 is shifted to the left by the lever 80, thereby causing the pawl 76 to actuate the ratchet 75 to advance the record strip 32 one step of movement.

The receiving roll 59 has secured to its side a ratchet 90 coacting with a spring-pressed pawl 91 pivoted on the bell crank 78. When the link 77 is shifted to the left in the manner above described, it also causes the pawl 91 to actuate the ratchet 90 to advance the record strip 33 one step of movement. The usual retaining pawls 99 prevent retrograde movement of the receiving rolls 39 and 59.

Impression hammer

An impression hammer 92 (Fig. 1) having arms 93 and 94 which carry the platens 37 and 57, respectively, cooperates with the set of type wheels 30 to print alternately upon the record strips 32 and 33. The impression hammer 92 is pivoted to a bell crank 95 pivoted on a stud 96 carried by the frame 42. The bell crank 95 is rocked to raise and lower the impression hammer 92 twice during each operation of the machine, first to print on the record strip 32 and then to print on the record strip 33, by a link 97 (Figs. 1 and 2) connecting the bell crank 95 and an arm 98. The arm 98 is pivoted on a rod 99 supported by the frame 42 and carries a roller 100 coacting with a cam groove 101 in a box cam 102 secured to the driving shaft 85.

From the above it is obvious that during the normal operation of the printing mechanism the roller 100 is caused to follow the cam groove 101 in the cam 102, thereby twice rocking the arm 93 in a clockwise direction and returning it home. This rocking movement of the arm 98 is transmitted to the bell crank 95 by the link 97, thus causing the impression hammer 92 to be raised and lowered twice during each operation of the machine to take an impression from the set of type wheels 30 first on the record strip 32 and then on the record strip 33.

Impression hammer shifting means

The record strip guide rollers 36 and 56 are carried by fingers 103 and 104, respectively, on the arms 93 and 94, respectively, of the impression hammer 92. It will thus be apparent that when the impression hammer 92 is shifted to alternately position the platens 37 and 57 for taking an impression from the set of type wheels 30, the record strips 32 and 33 are caused to move with their respective platens by their associated guide rollers 36 and 56. The means for shifting the impression hammer 92 to alternately print on the record strips 32 and 33 will now be described.

During each operation of the machine, the impression hammer 92 (Fig. 1) is shifted by means of a link 110 connecting the impression hammer 92 and a bell crank 111 pivotally mounted on a stud 112 carried by the frame 42. The bell crank 111 also carries a roller 113 which coacts with a cam groove 114 in a box cam 115 secured to the main drive shaft 85. When the machine is operated, the cam 115 is rotated counter-clockwise and rocks the bell crank 111 in a counter-clockwise direction which through the link 110 moves the impression hammer 92 in a like direction. The rocking movement thus given to the impression hammer 92 carries the platen 37 out of printing position and platen 57 into printing position.

It will be seen from Fig. 1 that the impression hammer 92 is normally positioned to print on the record strip 32. After an impression is made from the set of type wheels 30 on the record strip 32, the hammer 92 is shifted to print on the record strip 33. This shifting of the hammer 92 carries the platen 37 and guide roller 36 toward the left, out of printing position, which movement of the parts creates a certain amount of slack in the record strip 32. The flat spring 45, previously described, which is under tension, serves at this time to rotate the supply roll 39 clockwise to take up the slack thus created in the record strip 32, thereby keeping the record strip 32 in a taut condition at all times during the movement of the parts just referred to.

When the impression hammer 92 is shifted to print on the record strip 33, it carries the platen 57 and guide roller 56, together with the record strip 33, into printing position. Inasmuch as the feed pawl 91 coacting with the ratchet 90 on the receiving roll 59 prevents counter-clockwise rotation of the receiving roll 59, this shifting movement of the hammer 92 causes the record strip 33 to be withdrawn from the supply roll 54. This withdrawing of the record strip 33 from the supply roll 54 rotates the supply roll clockwise and winds up the flat spring 63 thus putting it under heavier tension. Near the end of the operation of the machine, when the hammer 92 is returned to its home position and the platen 57 and guide roller 56 are moved toward the right out of printing position a certain amount of slack is thereby created in the record strip 33, which slack is immediately taken up by counter-clockwise rotation of the supply roll 54 caused by the flat spring 63.

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 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 of a framework for the machine; a single set of printing elements adapted to print upon a plurality of record strips arranged end to end; a supply roll and a receiving roll for each record strip carried directly by the framework; an impression platen associated with each strip, one platen and strip being normally in position to take an impression from the printing elements; a pivoted member carrying all of the platens on its free end; means to rock said member to move said one platen out of printing position and to bring another platen into printing position during a machine operation; guide means carried by the latter platen to support a portion of the record strip associated with said platen and to shift a portion of said strip into printing position upon rocking movement of said member, said portion of strip being drawn from its supply roll; and means to operate said member to effect printing on each of said strips during each operation.

2. In a machine of the class described, the combination of a single set of type elements adapted to print upon a plurality of record strips; an impression member carrying a plurality of platens, one of which is normally in printing position; a supply roll for each strip, each roll being provided with resilient means for keeping the strips taut at all times; guide means on the impression means adjacent each platen, one guide means supporting each of the record strips; means for shifting the impression member to bring the platens alternately into printing position; means to operate said impression member to effect printing from the type elements on each record strip; and common means for simultaneously advancing the record strips step by step.

3. In a machine of the class described, the combination of a single set of type wheels adapted to print upon two record strips; a supply roll and a receiving roll for each of said record strips; a printing hammer carrying means for alternately moving said strips into and out of printing position; means associated with each of said supply rolls for taking up slack produced in the record strip as it is being moved away from printing position and for giving up paper from the supply roll as the strip is being moved into printing position; feeding means associated with each of said receiving rolls; and means connecting both of said feeding means to simultaneously operate the same to advance the record strips step by step.

4. In a machine of the class described, the combination of a single set of printing elements adapted to print upon two record strips arranged end to end; a supply roll and a receiving roll for each of said strips; a single member carrying a plurality of platens, one platen being associated with each strip; guide means on said member located adjacent each platen; means to rock said member to alternately bring said platens into printing position; means to actuate the platens to make a record on each strip when it is in printing position; a resilient mounting for each of the supply rolls and adapted, when its associated platen is brought into printing position, to permit paper to be drawn from the supply roll, the resilient mounting associated with the other supply roll simultaneously taking up the slack produced in its associated record strip as its platen is moved out of printing position; feeding means cooperating with each of the receiving rolls; means connecting said feeding means; and means to operate the last-mentioned means to cause the feeding means to simultaneously feed the record strips step by step.

5. In a machine of the class described, the combination of a single set of printing elements adapted to print upon two record strips arranged end to end; a supply roll for each of said strips; a plurality of platens, one associated with each of said record strips; a rockable member carrying said platens; guide means for each strip carried by said rockable member adjacent the platens; means to rock the member to alternately bring the platens and associated strips into printing position; means to actuate said platens to take impressions from said set of printing elements; and resilient means cooperating with said supply rolls to alternately permit a portion of the strip to be unwound from the supply roll and rewind a portion of the strip on the supply roll as the platens are brought into and out of printing position respectively.

WILLIAM H. ROBERTSON.