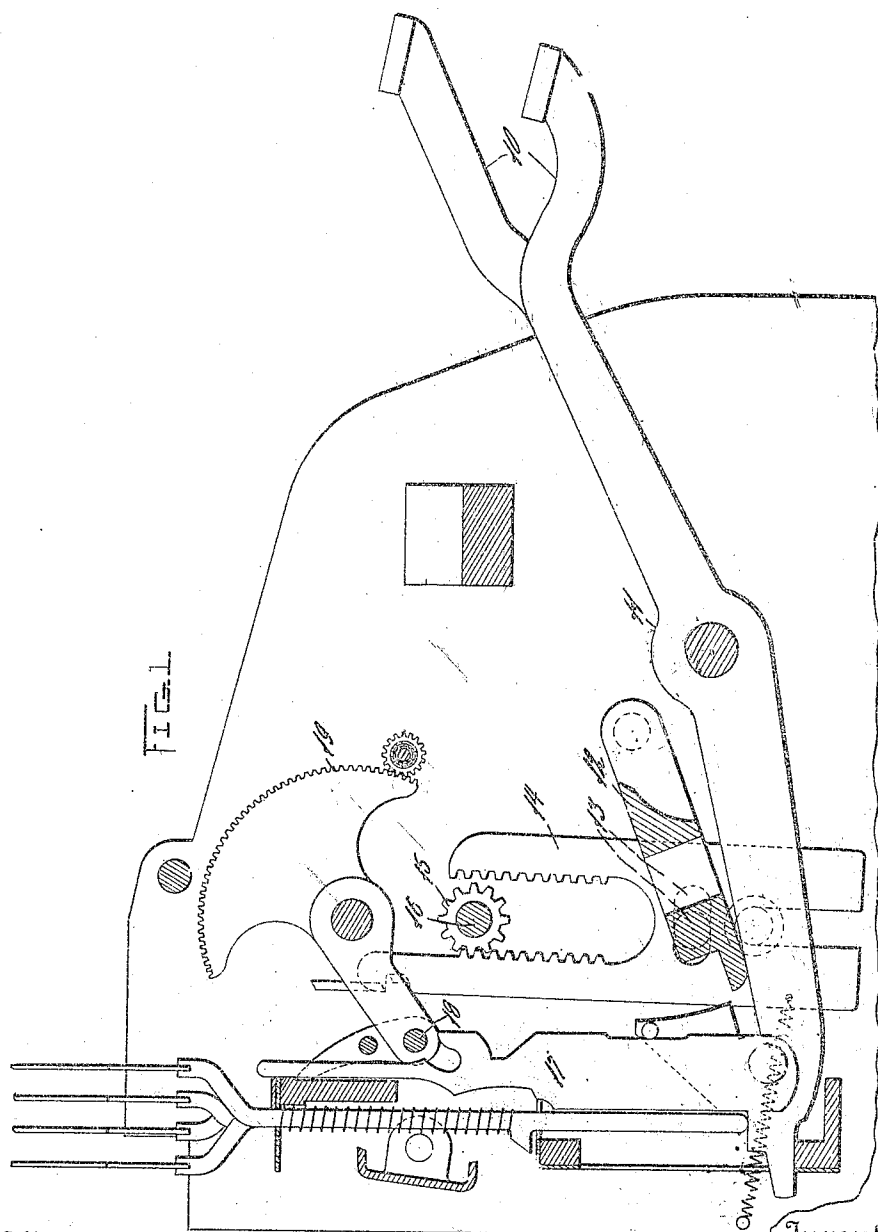


935,640

Patented Oct. 5, 1909.
2 SHEETS—SHEET 1.



Witnesses

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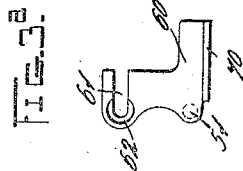
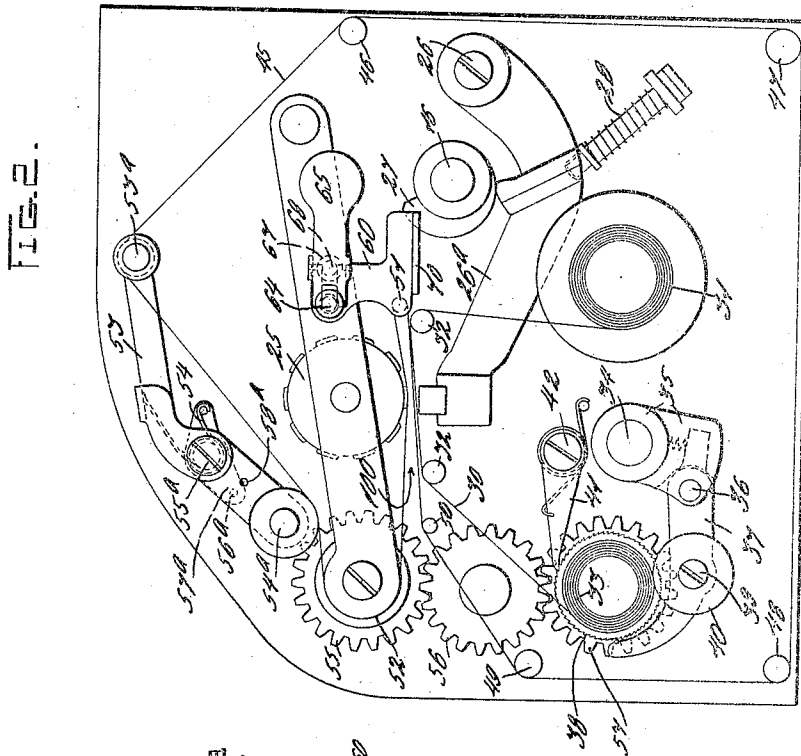
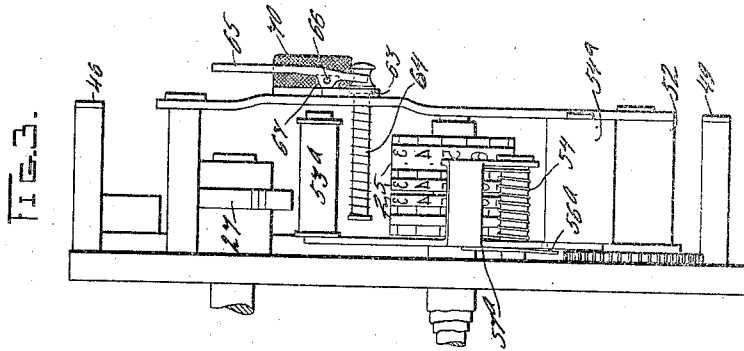
E. S. CHURCH.
CASH REGISTER.

APPLICATION FILED JUNE 11, 1906.

935,640.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDMUND S. CHURCH, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

CASH-REGISTER.

935,640.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed June 11, 1906. Serial No. 321,231.

To all whom it may concern:

Be it known that I, EDMUND S. CHURCH, 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 cash registers and more particularly to such registers as have printing mechanism operated in connection with the registering devices, and the main objects of the invention are to improve the construction of such printing mechanism and to reduce the number of parts.

The invention also provides improved means for carrying the inking ribbon used in such mechanisms, which means permit quick and easy detachment and reattachment of said ribbon to its carrying means.

As a further improvement paper feeding devices of an improved form are provided, the object of this part of the invention being to secure a uniform extent of feed. In many cash registers the detail strip so-called, is wound on a feeding roller and it is obvious that the extent of feed of the paper will in such cases gradually increase, if the roller is turned through a constant angle at each operation. To prevent this, means for gradually decreasing the angular movement of the feeding roller are provided, the said means being controlled by the diameter of the roll of paper already wound. This mechanism serves to feed the paper a nearly constant amount, and thereby prevents the amounts printed on the paper from being separated by a considerable space, when the final part of the strip is being printed on.

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

Of said drawings: Figure 1. is a vertical sectional view through a machine to which these improvements may be applied. Fig. 2. is a side elevation of the printing mechanism. Fig. 3. is a top plan view of Fig. 2. Fig. 3^A. is a detail view of the removable ribbon pin.

The machine to which these improvements are shown as applied is now well known in the art, being of the key operated type of machine shown and described in Letters Patent of the United States to Thomas Carney No. 497,860 issued May 23, 1903 to which reference may be had for a more complete and detailed description. It is to be understood that this invention may be equally as well applied to any of the other types of cash registers and therefore is not to be restricted to the type shown in the drawings.

Some of the parts have been omitted from the drawings for the sake of clearness.

Briefly describing the machine proper it may be stated that the amount keys (10) are pivoted on a shaft (11) and operate a key coupler (12) which through the pin and slot connection (13) reciprocates the rack (14). This rack engages a pinion (15) fast to the shaft (16) and rotates said shaft one complete rotation at each operation of the machine in a manner now well known in the art. Pivoted to the rear end of the keys are lifting bars (17) which engage the rod (18) and rock the rack segment (19) to set the printing wheels (25). Pivoted at (26) is a printing hammer (26^A) which is operated upon by a cam (27) fast to the main rotation shaft (16). When this printing hammer is forced downward by the cam (27) the spring (28) is compressed and when said hammer is released forces it up against the type (25) to take an impression therefrom.

From the above described mechanism it will be plainly seen that each operation of the machine the reciprocating rack (14) rotates the shaft (16) one complete rotation thereby actuating the printing hammer and that the printing wheels (25) will be set to a position corresponding to the keys depressed through the medium of the lifting bars (17), the rod (18) and the segment (19). A paper strip (30) is drawn from a supply roll (31) over two guide pins (32) and stored upon a receiving roll (33). The shaft (34) extends into the machine and is fixed to and forms a bearing for the key coupler (12) (see Fig. 1), and fast to this shaft is a collar (35) to which is pivoted at (36) a spring pressed pawl (37) so arranged as to engage the teeth of a ratchet (38) mounted on the shaft of the receiving roll (33). Mounted on the

pawl (37) is a roller (40) which bears against the paper upon the receiving roll. From this arrangement it will be understood that as the amount of paper wound on the receiving roll increases the size of said roll, the pawl (37) will be lowered so as to make it engage a less number of teeth of the ratchet (38) and thereby equalize the lineal amount of paper feed at each operation of the machine. A spring pawl (41) is pivoted at (42) and engages the teeth of the ratchet (38) to prevent any backward movement of the receiving roll.

The inking ribbon (45) is fed over the guide pins 46, 47, 48, 49, and 50 between the type wheels and the printing hammer, over a removable pin (51), back between the type wheels and printing hammer, over the feed roller (52), and under and over the two rollers of a spring tension means which comprises a bell crank lever (53) carrying at each end a roller. These rollers (53^A) (54^A) are yieldingly held by a spring (54) in their normal position as shown in Fig. 2. The tension device is shown in Fig. 2. in its normal position; when it is desired to loosen the ribbon the lever (53) is rotated slightly about its pivot (55^A) until a boss (56^A) on a leaf spring (57^A) shown in dotted lines can spring into a hole (58^A) in the lever (53). This spring will hold the lever in its new position until it is positively returned to the position shown in the figure. A train of gears (55, 56 and 57) transmits the movement of the receiving roll (33) to the feed roll (52).

A removable pin (51) is mounted on a bell crank arm (60) (see Fig. 3^A) which has a slot (61) in its upper end and also has a circular recess (62) adapted to receive a shoulder (63) or a spring plunger (64) which is operated by a lever (65), this lever (65) is pivoted at (66) to a collar (67) which forms part of pin (68). The recess (62) being engaged by the shoulder (63) prevents any lateral displacement of the arm (60) and the end of the slot (61) engaging the pin (68) (as shown in Fig. 2) prevents it from swinging about the plunger (64) as a pivot. From the above description it will be seen that by pressing in on the enlarged end of the lever (65) and grasping the arm (60) by the knurled lateral projection (70) the pin (51) can be removed with ease.

From the arrangement of the inking ribbon (45) as shown in Fig. 2, it will be seen that by inserting a paper check between the ribbon at (100) an impression will be taken upon both the check and the paper strip (30) at one operation of the machine.

From this description it will be seen that the construction provides for a looped ink ribbon having a holding device forming the loop, on one side of the platen or impression

means; while on the opposite side of the platen, means, herein shown as a pin 50 and a roller 52, one above and one below the printing plane, cause the ribbon to separate so as to leave space for the insertion of a check or other record material between the sides of the loop or ribbon, and in the direction of travel thereof. This construction is very simple but efficiently provides for the operation stated. Inking ribbons are extremely flexible and bend readily, so that it is not possible easily to insert a record material from the side of a ribbon and nearly in the plane of the ribbon, but in cases where a check is to be used, easy insertion of the check is necessary. For this reason the parts of the ribbon are separated and led in opposite directions away from the printing plane whereby the check may be easily inserted.

The operation of the device will, it is thought be apparent from the above description, and need not be given in detail.

While the form of mechanism here shown and described is admirably adapted to fulfil 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 as follows:

1. In a machine of the class described, the combination with a paper carrying roller having a ratchet, of a pivoted pawl engaging said ratchet, and a roller mounted on said pawl and adapted to engage the paper.
2. In a machine of the class described, the combination with a paper carrying roller having a ratchet, of a spring pressed pawl engaging said ratchet, means for reciprocating the pawl, and a roller mounted on said pawl and adapted to engage the paper.
3. In a machine of the class described, the combination with a paper carrying means having a ratchet, of a pawl for engaging said ratchet, and means abutting the paper for holding said pawl from engagement with said ratchet for part of the pawl stroke.
4. In a machine of the class described, the combination with a paper carrying roller, of means for feeding the paper, and means for equalizing the feed, comprising a roller carried by said feeding means and positioned to engage the paper and hold the feeding means out of action for part of its stroke.
5. In a machine of the class described, the combination with a plurality of stationary pins for carrying an ink ribbon, of a movable pin for also carrying said ribbon, a plate on which said pin is mounted having a depression, a spring plunger entering the depression and means for moving the plunger.
6. In a machine of the class described, the

combination with a pin for supporting a ribbon, a plate on which said pin is mounted having a depression, a spring plunger for entering the depression and a pivoted tension device for the ribbon.

7. In a machine of the class described, the combination with a printing mechanism, of a platen for taking impressions from same, means for supporting a doubled ribbon between said platen and printing mechanism, said means including a releasable pin, and spring controlled means for holding said pin.

8. In a cash register, the combination with a printing mechanism, and means for taking impressions therefrom, of a pin on one side of said impression means around which an inking ribbon may be wound, two spaced means on the opposite side of said impression means, one positioned above and one below the printing plane, around which said ribbon may be led in opposite directions whereby a record material may be inserted between the branches of the ribbon in the direction of the travel thereof, and means for feeding said ribbon.

9. In a machine of the class described, the combination with a printing mechanism, of a platen for taking impressions therefrom, means for supporting a record strip and means for carrying a doubled ink ribbon and

supporting an inserted check, whereby an impression may be simultaneously taken on said strip and check.

10. In a machine of the class described, the combination with a printing mechanism including impression means, of a continuous ink ribbon looped backward upon itself across the impression means for securing a multiple impression therefrom, and means for guiding the separate parts of the ribbon beyond the loop, one part being guided in an upward direction, and the other part in a downward direction, whereby to permit the insertion of a record material between the parts of the loop.

11. In a machine of the class described, the combination with a printing mechanism including impression means, of a looped ink ribbon, a holder positioned to form a loop in the ribbon, and means spaced above and below said printing plane to guide said ribbon in opposite directions from said printing plane, and thereby permit the insertion of a check between the parts of the loop.

In testimony whereof I affix my signature in the presence of two witnesses.

EDMUND S. CHURCH.

Witnesses:

ROY C. GLASS,
CARL W. BEUST.