

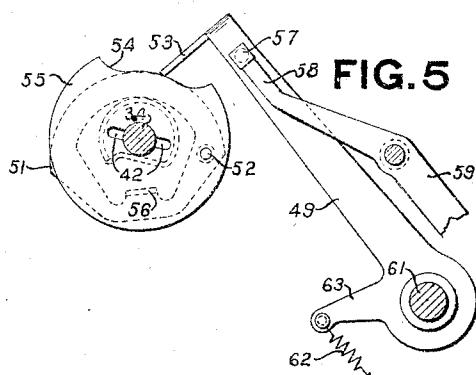
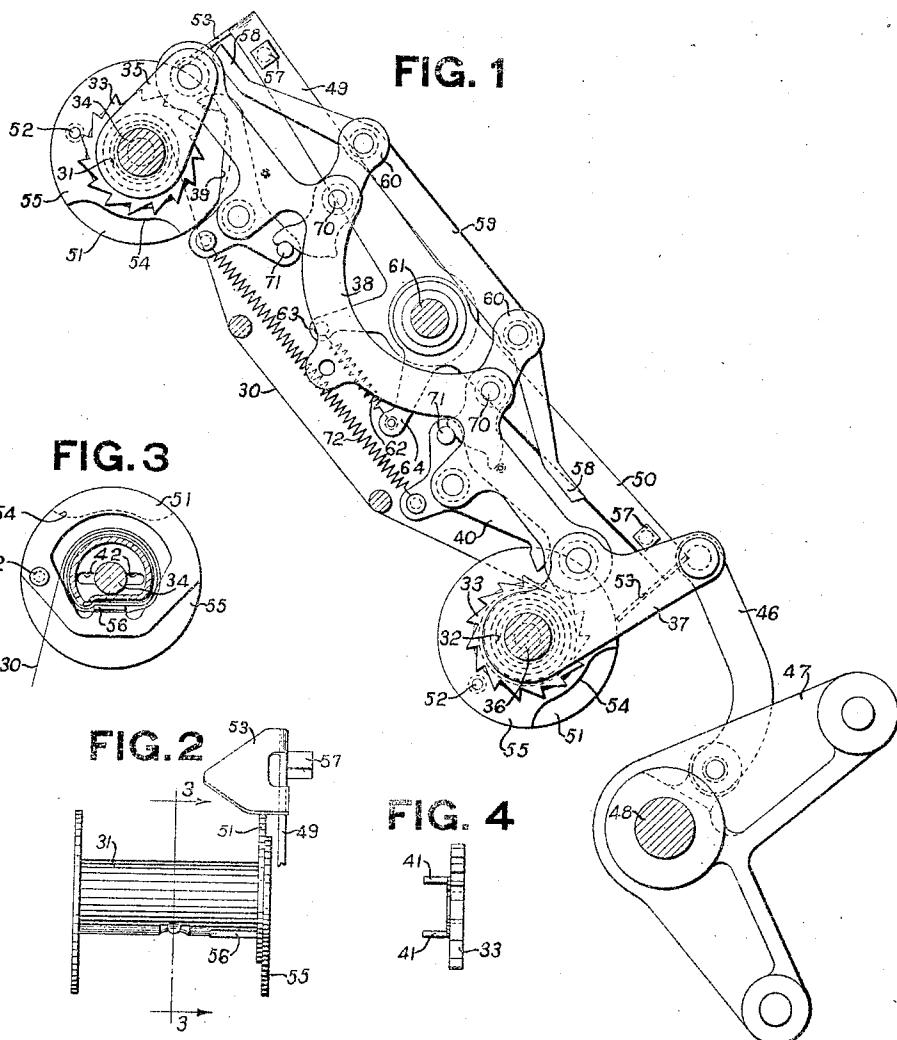
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C. F. ROSIEN

CASH REGISTER

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# UNITED STATES PATENT OFFICE.

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## CASH REGISTER.

Application filed April 2, 1924. Serial No. 703,693.

*To all whom it may concern:*

Be it known that I, CHARLES F. ROSIEN, 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 improvements in cash registers or accounting machines, and has particular reference to improvements in the printing mechanism of such machines.

An object of the invention is to provide a positive quick acting inking ribbon feed reversing mechanism.

With this 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 drawings:

Fig. 1 is a side elevation of a printing ribbon feed mechanism.

Fig. 2 is a detail of a ribbon spool.

Fig. 3 is a sectional view of the ribbon spool taken on the line 3—3 of Fig. 2.

Fig. 4 is a detail of the ribbon spool driving ratchet.

Fig. 5 is a detail of the ribbon feed reversing mechanism.

The general construction of the ribbon feed reversing mechanism disclosed is the same as that shown and described in the Kettering and Chryst Patent No. 1,137,061, issued April 27, 1915. This invention is an improvement applied to that shown in the above mentioned patent, and is described in detail as follows.

The ink ribbon 30 (Figs. 1 and 3) is secured at its ends to spools 31 and 32, each of which is provided with a ratchet 33, having two lugs 41 (Fig. 4) engaging openings 42 (Figs. 5) in the spools. A shaft 34, upon which the upper spool is loosely mounted, carries an arm 35; while a shaft 36, upon which the lower spool is loosely mounted, carries a lever 37. The arm 35 and lever 37 are connected together by a link 38 carrying a pair of pawls 39 and 40. The pawl 39 is arranged to operate upon the upper ratchet, and the pawl 40 on the lower

ratchet, but one or the other of these pawls is always held out of engagement, according to whether the ribbon is being wound upon the upper spool or lower spool. The position of the pawls is reversed whenever the ribbon is entirely unwound from one or the other of the spools.

The lever 37 is connected by a link 46 to a bell crank lever 47 mounted on a rod 48. The bell crank lever is oscillated during each operation of the machine which, through the link 46, will cause the lever 37 to rock upwardly and return, driving whichever of the ratchets is engaged by its pawl 39 or 40. When the ribbon is completely unwound from one of the spools, one of a pair of spring actuated levers 49 and 50 will move a plate 51 on its pivot 52, allowing a projection 53 formed on the end of each of the levers 49 and 50 to engage the cut-away portion 54 of flange 55 of the ribbon spools.

There is a plate 51 mounted on each of the ribbon spools. Each plate is held in normal position by the ribbon which bears on a projection 56 extending laterally from the plate (Figs. 2 and 3) and resting in a depressed portion of the hub of the spool. A portion of the plate 51 is circular in form and, when the plate is in its normal position, the circular portion of the plate is concentric with the flange 55 of the spool and overlaps the cut-away portion 54, so that as the spool rotates the projection 53 on the corresponding lever 49 or 50 will ride on the plate 51 when the cut-away portion 54 of the spool passes the projection 53.

When the ribbon is unwound from a spool, allowing the projection 53 to engage the cut-away portion 54 of the flange of the spool, a lug 57 on the lever 49 or 50 is brought into the path of one of the extensions 58 of a link 59 carried by a pair of parallel levers 60 which are pivoted to the link 38.

The levers 49 and 50 are pivoted on a stud 61, and are urged towards their respective spools 31 and 32 by a spring 62, which connects the ends 63 and 64 of the levers. The levers 49 and 50, with their projections 53, ride upon the peripheries of the flanges 55 and the curved portions of the plates 51 until the ribbon is unwound from either spool. This frees the projection 56 on the spool from which the ribbon is unwound and allows the plate 51 to be swung on its pivot 52 by the pressure of the projection 53.

53, which is then able to engage the cut-away portion 54 of the flange 55. As the projection 53, of lever 49 or 50, engages the cut-away portion of the flange, the lug 57  
 5 is brought into the path of the corresponding extension 58 of the link 59, so that when the link 38 is reciprocated the link 59 will engage the lug 57 and rock the lever 60, upon which it is pivoted, upon their pivots.  
 10 The levers 60 engage pins 71, on the pawls 39 and 40, and will positively rock the pawls, the pawl which operates the spool from which the ribbon has been unwound being rocked into mesh with its ratchet  
 15 while the other pawl is rocked out of mesh. The pawls are normally urged into engagement with the ratchets by a spring 72, but are controlled against the action of the spring by the levers 60.  
 20 The ribbon spools are detachable from their respective ratchets so that the spools may be removed from the machine for the convenience of replacing a ribbon without disturbing the feeding mechanism. If the  
 25 spools are removed when the feeding mechanism is in the positions shown in Fig. 1, the upper lever 49 will move counter-clockwise until arrested by the square lug 57 coming into engagement with the end 58 of the link  
 30 59. The lower lever 50 will move clockwise until arrested by the projection 53 coming into engagement with the ratchet 33. The projections 53, (Figs. 1 and 2) are formed so as to provide an angular edge to be engaged by the flange of the spool, when the  
 35 spools are returned to their respective positions, to raise the levers 49 and 50 to their normal positions with the projections resting upon the peripheries of the flanges as  
 40 shown in Fig. 1.

*Operation.*

During an operation of a machine to which the ribbon feeding mechanism is attached, the ribbon is wound on one spool and unwound from another spool. Referring to Fig. 1, the ribbon is shown as being wound on the lower spool and unwound from the upper spool by the pawl 40 engaging the ratchet wheel and moving the lower spool clockwise. The pawl is carried by a reciprocating member which is operated by the driving mechanism.

The winding of the ribbon on the lower spool will continue until the ribbon is almost entirely unwound from the upper spool or when the last wrapping of ribbon is removed from over the projection 56 (Fig. 3) of the movable plate 51. With the plate no longer retained in position by the ribbon, the spring-actuated arm 49 will move the plate on its pivot, allowing the lever to move counter-clockwise until stopped by the projection 53 engaging the depressed portion 65 of the spool flange, in which position the

square lug on the lever will be engaged by the upper end 58 of the link 59 during its reciprocating movement, and cause the lower feeding pawl to be raised out of effective position with the lower spool ratchet and simultaneously cause the upper pawl to be lowered into effective feeding position with the upper spool ratchet. Upon continued operation of the machine the ribbon will wind on the upper spool and unwind from the lower spool.

When the ribbon is unwound from the lower spool, the lower spring-actuated lever 50 will move clockwise, placing the square lug 57 in the path of the lower end 58 of the link 59 and cause the feeding mechanism to again shift to effective position with the lower spool.

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 ribbon reverse mechanism, the combination of two spools, said spools having a circular disk on one end with a portion of its periphery cut away, a plate pivotally mounted on said disk, said plate having a circular portion of the same radius as said disk, a projection on said plate cooperating with a ribbon to hold said plate with its circular portion concentric with said disk in position to cover said cut-away portion, means for driving said spools in opposite directions, and spring-actuated means 100 engaging the periphery of said disks and circular portions of said plate whereby when the ribbon is unwound from either of said spools the plate associated with that spool will be moved out of concentric position 110 with respect to said disk to allow said spring actuated means to enter the cut-away place on said disk and cause said driving means to become effective with respect to said spool.

2. In a ribbon reverse mechanism, the combination of two spools, said spools having a circular disk on one end with a portion of its periphery cut away, a plate pivotally mounted on said disk, said plate having a circular portion of the same radius as said disk, a projection on said plate cooperating with a ribbon to hold said plate with its circular portion concentric with said disk in position to cover said cut-away portion, means for driving said spools, and means engaging the periphery of said disk and circular portion of said plate whereby when the ribbon is unwound from either of said spools the plate associated with that 130

spool will be moved out of concentric position with respect to said disk to allow said means engaging the periphery of said disk to enter the cut-away place on said disk and cause said driving means to become effective with respect to said spool.

3. In a ribbon reverse mechanism, the combination of two spools, said spools having a circular disk on one end with a portion 10 of its periphery cut away, a plate pivotally mounted on said disk, said plate having a circular portion of the same radius as said disk, means whereby said plate is held in a position by a ribbon so that the circular portion 15 of the plate is concentric with said disk and overlapping the cut-away portion of said disk, means for driving said spools, and means engaging the periphery of said disk and circular portion of said plate whereby 20 when the ribbon is unwound from either of said spools the plate associated with that spool will be moved out of concentric position with respect to said disk to allow the means engaging the periphery of said disk 25 to enter the cut-away place on said disk and cause said driving means to become effective with respect to said spool.

4. In a ribbon reverse mechanism, the combination of two spools, means for driving said spools in opposite directions, means for maintaining said driving means in effective relation with one spool and in ineffective relation with the other spool, a circular disk attached to one end of each spool 30 and having a portion of its periphery cut away, a plate pivotally mounted on said disk, said plate having a circular portion of the same radius as said disk, a projection on 35 said plate cooperating with a ribbon to hold said plate with its circular portion concentric with said disk, spring-actuated arms normally engaging the peripheries of said disks and circular portions of said plates whereby when the ribbon is unwound from 40 one spool the plate associated with that spool will be moved out of concentric position with respect to its disk allowing the spring actuated arm associated with said disk to enter the cut-away place on said disk and cause 45 said driving means to become effective with this spool and ineffective with the other spool.

5. In a ribbon reverse mechanism, the combination of two spools, means for driving said spools in opposite directions, means for maintaining said driving means in effective relation with one spool and in ineffective 50 relation with the other spool, a circular disk attached to one end of each spool and hav-

ing a portion of its periphery cut away, 60 adjustable means having a circular portion of the same radius as said disk which normally is held concentric with said disk by a ribbon attached to said spools, spring actuated arms normally engaging the periphery of said disks and circular portions of said plates whereby when the ribbon is unwound from one spool the plate associated with that spool will be moved out of concentric position with respect to its disk allowing the spring-actuated arm associated with said disk to enter the cut-away place on said disk and cause said driving means to become effective with this spool and ineffective 65 with the other spool.

6. In a ribbon reverse mechanism, the combination of two spools, means for driving said spools in opposite directions, means for maintaining said driving means in effective relation with respect to one spool and in ineffective relation with respect to the other spool, a circular disk attached to one end of each spool and having a portion of its periphery cut away, a plate pivotally mounted on said disk, said plate having a circular portion of the same radius as said disk, a projection on said plate cooperating with a ribbon to hold said plate with its circular portion concentric with said disk, and means 80 cooperating with said disk and said plate to affect said driving means and cause a reverse movement of said spools.

7. In a ribbon reversing mechanism, a spool having a flange with a portion cut away, a plate movably mounted and adapted to overlap the cut-away portion and provided with an opening loosely receiving said spool, and a projection on said plate extending in the direction of the length of the spool and located diametrically opposite 100 from said cut-away portion.

8. In a ribbon reversing mechanism, a spool having a flange the periphery of which comprises a fixed portion and a movable portion, and means for holding the movable portion in position until a predetermined amount of ribbon has been unwound from 105 said spool.

9. In a ribbon reversing mechanism, a spool, a plate mounted on said spool and having a movable portion, arranged concentrically with the spool, and means adapted to press on said portion to move it toward the axis of the spool when a predetermined amount of ribbon has been unwound from 110 said spool.

In testimony whereof I affix my signature.  
CHARLES F. ROSIEN.