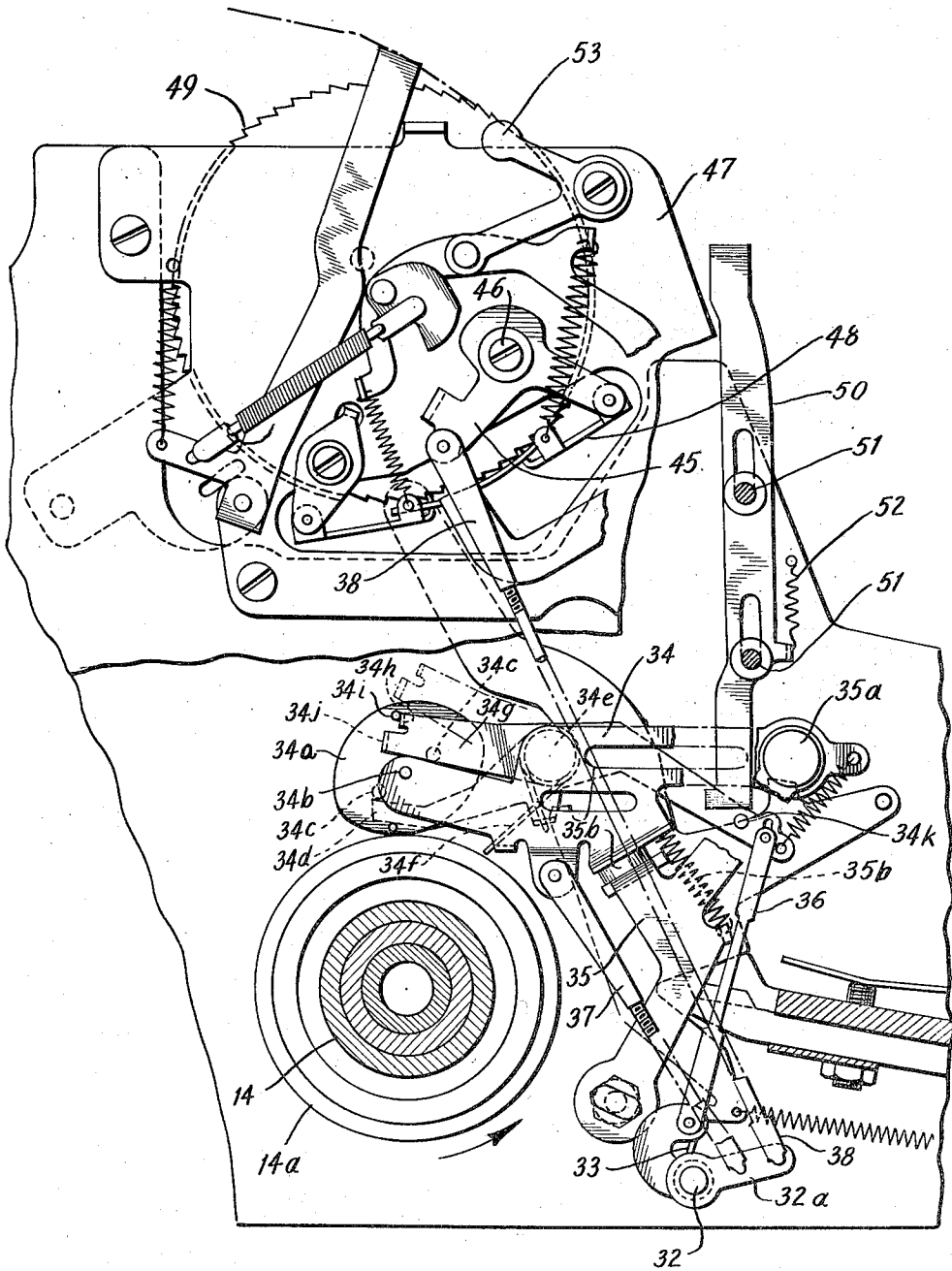


Jan. 30, 1951

W. P. HAZLETON
RIBBON FEEDING AND REWINDING MECHANISM
FOR TYPEWRITING MACHINES
Filed March 25, 1949

2,540,031



INVENTOR
W. F. HAZLETON
BY *E. W. Lifford*
ATTORNEY

UNITED STATES PATENT OFFICE

2,540,031

RIBBON FEEDING AND REWINDING MECHANISM FOR TYPEWRITING MACHINES

William P. Hazleton, Poughkeepsie, N. Y., assignor to International Business Machines Corporation, New York, N. Y., a corporation of New York

Application March 25, 1949, Serial No. 83,484

4 Claims. (Cl. 197—151)

1

This invention relates to typewriting machines.

The broad object of the present invention is to provide an improved ribbon mechanism.

An object of the invention is to provide a ribbon mechanism in which provisions are made for the operator to automatically rewind the ribbon on one or the other of the spools when it is desired to change the ribbon.

An object is to provide a ribbon mechanism in which provisions are made for saving the operator the work of having to rewind the ribbon by hand when it becomes necessary to replace a worn-out ribbon with a new one.

An object is to provide a power operating ribbon mechanism with means to enable the ribbon feeding mechanism to be operated continually until all of the ribbon is wound on one or the other of the ribbon spools.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

The single figure discloses power mechanism for operating the ribbon mechanism and one of the ribbon spool units.

Ordinarily in a typewriting machine the ribbon mechanism and the ribbon vibrator are actuated by universal bars which are either driven directly by the power units or are actuated by the keys or certain parts of the trains of connections from the type bars to the keys. In the present case, the ribbon mechanism is actuated by a separate power unit which is merely tripped and thereby rendered effective by the operation of the type bar power units through a universal bar actuated by the power units.

Pivotally mounted in the framework of the machine is a cross shaft 32 on which is pivotally mounted a universal bar 33 in the form of a vane. This universal bar is rocked counterclockwise, as described in application Serial No. 756,174, filed June 21, 1947, by R. D. Dodge, each time a power unit is operated. This movement of the universal bar 33 is utilized to trip a ribbon feed power unit generally designated 34.

This power unit 34 includes a suitable frame pivoted at 35a to a fixed frame piece 35 suitably supported in the machine framework. An elliptical cam 34a is pivoted at 34b in the frame of the power unit 34 and this cam is provided with two pins 34c located on diametrically opposite sides of the pivot 34b and normally one or the other of the pins is engaged by an arm 34d piv-

2

oted at 34e in the frame of the power unit 34. This arm 34d is urged in a clockwise direction by a torsion spring 34f partly coiled around the pivot 34e and hooked to lugs formed in the arm 34d and in the frame of the power unit 34, respectively.

Also pivoted at 34e is a trip lever 34g having an off-set lug 34h coacting with one of two pins 34i formed in the cam 34a on diametrically opposite sides of the pivot 34b. The spring actuated lever 34d pressing on one of the pins 34c, tends to rock the cam 34a in a clockwise direction, thereby holding the pin 34i in engagement with the lug 34h, and in this position of the parts there is a small clearance between the tread of the cam 34a and an enlarged portion 14a formed in or suitably secured to the power roller 14.

The universal bar 33 is connected by a link 36 to the trip lever 34g whereby a counterclockwise motion imparted to the universal bar 33 by the power units will actuate the trip lever 34g in a clockwise direction and disengage the lug 34h from the pin 34i. At the same time, a lug 34j formed in the trip lever 34g is positioned in the path of movement of the second pin 34i. The shaft 32 is provided at its ends with the arms 32a, one of which is connected by a link 37 to a lug formed in the frame of the power unit 34. When the elliptical cam 34a is released in the manner just described, its tread is brought into engagement with the portion 14a of the power roller 14 which thereupon rotates the cam 34a in a clockwise direction. Due to the eccentricity of the lobes of the cam 34a, a clockwise rocking motion is imparted to the frame of the power unit 34, thereby drawing the link 37 upwardly and rocking the shaft 32 in a counterclockwise direction.

The power unit 34 is restored by a spring 35b anchored to the frame of the power unit and to a lug carried by frame 35. This restoring movement is limited by a resilient bumper 35b on which the frame of the power unit rests and which is carried by frame 35.

Attached to each of the arms 32a is a link 38, one for each ribbon spool, and these links actuate two separate ribbon feeding mechanisms, each associated with a ribbon spool, as described in application Serial No. 756,174. The drawing shows the ribbon feeding mechanism which is located on the left-hand side of the machine but it will be understood that the two mechanisms are similar in construction.

It is apparent that each time a type bar is operated by its power unit, the universal bar 33 also will be operated and will cause the power

unit 34 to be rendered operative in the manner described above to impart an oscillation to the shaft 32, thus thrusting both links 38 upwardly and to the left and operating one or the other of the ribbon feeding units.

The links 38 actuate identical ribbon spool assemblies which are mounted on the sides of the frame and are provided with means for automatically effecting a reversal of the direction of feed of the ribbon when either spool becomes exhausted. Since this reversing means forms no part of the present invention, it will not be described in detail.

Each link is connected to a lever 45 which is pivoted at 46 to the plate 47 forming part of the ribbon spool unit. The lever 45 is provided with a feed pawl 48 which is moved clockwise each time the lever 45 is actuated in the same direction by the link 38. It is thus seen that if the shaft 32 is oscillated, the ribbon will be fed under control of one of the levers 45 depending upon the status of the ribbon reversing mechanism.

Ordinarily when the ribbon becomes worn and it is necessary to replace it with a new ribbon, it is necessary that the operator manually rotate the ribbon spool 49 which has the most ribbon wound thereon until the remaining spool is exhausted. This is tedious and very apt to soil the hands of the operator and the present invention contemplates the provision of means enabling the operator to quickly rewind the ribbon by power.

This means comprises a member 50 which is vertically slidably mounted on studs 51 carried by the one frame plate adjacent the cam unit 34. Ordinarily this slide is held in the position of the drawing by a spring 52 in which the lower end of the slide is clear of a pin 34k carried by the lever 34g which it will be recalled, is rocked clockwise whenever the universal bar is operated in consequence of the actuation of a type bar by the power unit therefor.

The operator observes which of the spools has the most ribbon wound thereon and, if necessary, operates the reversing lever 53 to cause the ribbon to be wound on the spool having the most ribbon thereon. The operator then presses down on the upper end of the member 50, thus causing the release lever 34g to be rocked clockwise to render the cam effective.

When the release lever is actuated in this fashion it is raised to the dotted line position in the drawing in which both lugs thereon are clear of the pins 34i thus permitting the cam 34a to turn continually. The oscillation of the cam unit 34 is communicated to the shaft 32 by the link 37 and through the links 38, the ribbon feeding mechanisms are operated to cause the ribbon to be wound on the spool which has the greatest amount of ribbon wound thereon. Thus, in any case, to rewind the ribbon, the operator merely has to hold the member 50 depressed until all of the ribbon has been wound on one or the other of the spools. The full spool may then be removed from the machine and replaced with a new spool, this requiring a minimum amount of handling of the ribbon and making it unnecessary that the operator turn a spool by hand in order to rewind the ribbon thereon.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various omissions and substitutions and changes in the form

and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In combination with a reversible ribbon feeding mechanism for typewriting machines, a power actuator, a power device actuated by said actuator and having an operating connection to said feeding mechanism; means for rendering said power device operative each time a character is printed including a universal bar having a connection to said power device to render said device operative, to thereby effect automatic advance of the ribbon each time a character is printed, and a supplemental manual controlling device for said power device for rendering said device continually operable by said actuator when it is desired to rewind the ribbon for purposes of replacement.

2. In combination with a ribbon feeding mechanism for typewriters and other office machines, a power roller; a power device having an operating connection to said mechanism and including a cam, means to engage the cam with said roller for rotation by the latter to actuate said power device, and a release lever for controlling said cam and having means to prevent repeated operation of said cam by said roller, said lever being movable to a position to disable the repeat preventing means to enable said power device to be continually operated by said power roller; means to actuate said lever each time a character is printed including a universal bar having an operating connection to said lever, and a manual device for moving said lever to said position.

3. In combination with a ribbon feeding mechanism for typewriting and other office machines, power means for operating said ribbon mechanism including a control lever movable from a non-operate position to a release and non-repeat position and to a release and repeat position, means to actuate said lever to release and non-repeat position each time a character is printed including a universal bar connected to said lever, and a manual device for moving said lever to its release and repeat position to enable continuous operation of the power means to wind said ribbon.

4. In combination with a ribbon feeding mechanism for typewriters and other office machines, a power actuator, a power unit connected to said ribbon feeding mechanism and having a coupling element for operatively coupling said unit to said actuator and including a device for preventing repeated operation of said power unit, means including a universal bar for activating the coupling element once for each character printed, and manual means to activate said coupling element and disable said repeat preventing device.

WILLIAM P. HAZLETON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,455,110	Crawley	May 15, 1923
1,722,937	Myers	July 30, 1929