Jan. 29, 1957 F. BECKER 2,779,451

PAPER FEED MEANS FOR TYPEWRITERS

Filed March 30, 1955

Fig. 1

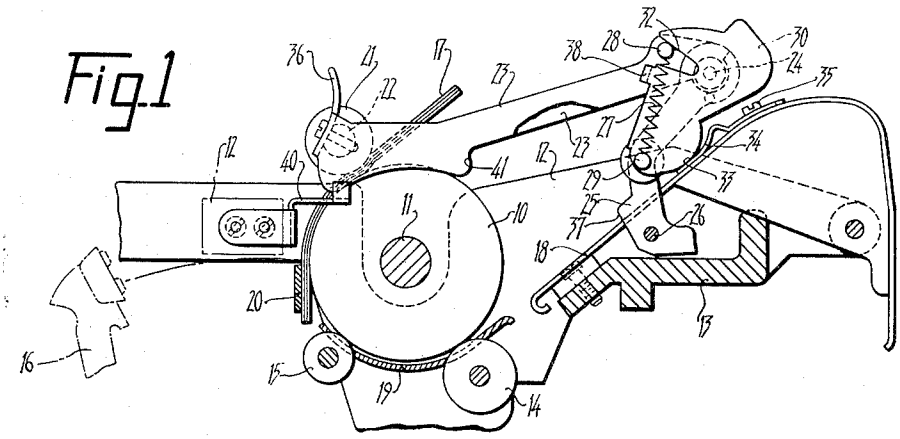


Fig. 2

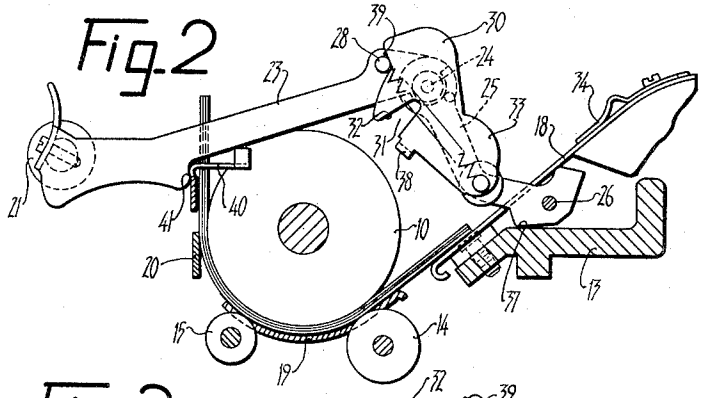


Fig. 3

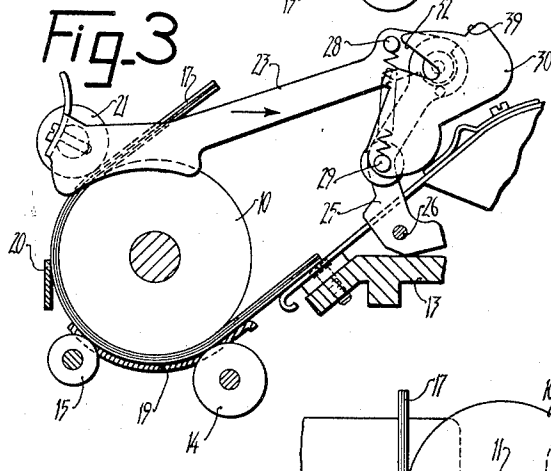
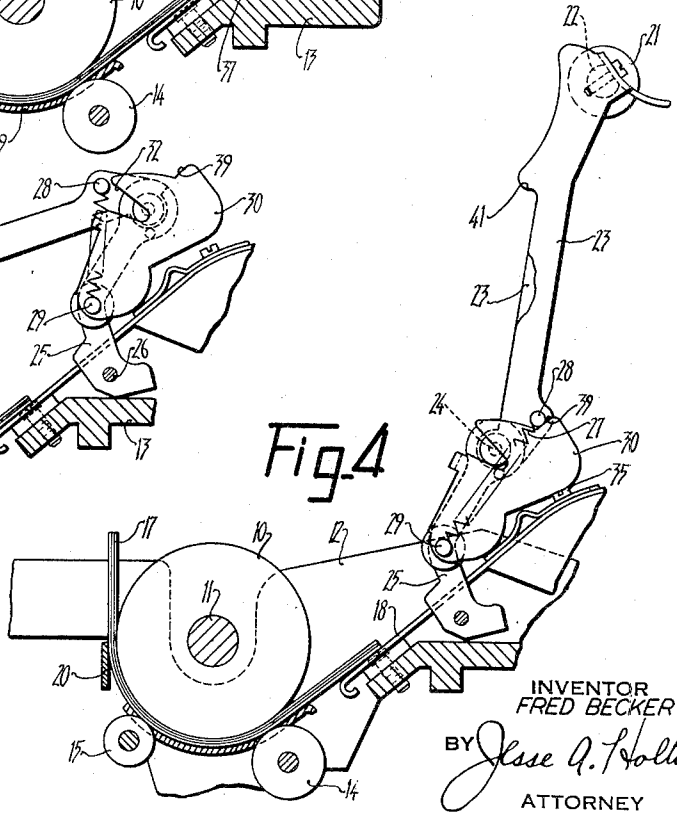


Fig. 4



INVENTOR
FRED BECKER
BY Jesse A. Holton
ATTORNEY

United States Patent Office 2,779,451 Patented Jan. 29, 1957

2,779,451

PAPER FEED MEANS FOR TYPEWRITERS

Fred Becker, Queens Village, N. Y., assignor to Underwood Corporation, New York, N. Y., a corporation of Delaware

Application March 30, 1955, Serial No. 497,936

4 Claims. (Cl. 197—138)

This invention relates to typewriting and like machines wherein a record sheet to be typed upon is wound around a cylindrical platen and more particularly to an improved means for holding one or more record sheets against the platen and feeding same past the printing line. Specifically, the invention is concerned with the so-called paper bail which carries feed-rolls adapted to press the paper against the platen at a point above the line of typing.

Typewriters, as well as some other business machines, such as accounting machines, are generally provided with a cylindrical platen or roller which serves as a backing for the paper against which the types are adapted to be impelled. A set of feed-rolls are spring urged against the lower portion of the platen so that the paper may be passed around the platen from the rear and fed by the lower feed-rolls up into typing position. In order to maintain the paper in close contact with the platen along the typing line, some machines are provided, in addition to the lower feed-rolls, with a set of so-called overhead feed-rolls which are spring urged to engage the platen above the printing line. The overhead feed-rolls are sometimes mounted upon a bail structure whereby said feed-rolls may be moved to a position forward of the platen while the paper is being inserted into the machine and to a position rearward of the platen and completely out of the way when erasures are to be made.

Since the making of erasures is a frequently arising necessity, the overhead feed-rolls are generally held against the paper or platen under only a light spring pressure so as not to impose any substantial burden upon the operator when moving them in erasing position. Thus the overhead feed-rolls normally serve only to hold the paper sufficiently snugly against the platen that there will be no yielding of the paper toward the platen when struck by a type and the lower feed-rolls are relied upon to hold the paper in proper typing alignment. It will be evident that with such an arrangement, it is not practicable to type adjacent the lower edge of the paper, because by the time the lower edge reaches the typing line it is no longer held by the lower feed-rolls and the upper feed-rolls are not under sufficient tension to hold the paper in alignment.

The present invention has for its general object the provision of an improved overhead feed-roll mechanism for a typewriter or other business machine.

It is a more particular object of the present invention to provide overhead feed-roll mechanism for a typewriter or other business machine, which mechanism will be as easily movable from typing position to erasing and paper-inserting positions as are presently known mechanisms but which will hold the paper against the platen with sufficient force so as to maintain said paper in typing alignment even when the lower portion thereof is not engaged by the lower feed-rolls.

These and other objects, features and advantages will become readily apparent as the description of a preferred embodiment of the invention proceeds.

Referring now to the drawings:

Figure 1 is a side elevational view, partially in section, of a portion of the carriage of a typewriter and showing the overhead feed-roll mechanism of the present invention in typing position.

Figure 2 is a view similar to Figure 1, showing the overhead feed-roll mechanism in forward or paper inserting position,

Figure 3 is a view similar to Figure 1, showing the overhead feed-roll mechanism in an intermediate position just before the feed-rolls reach the typing position, and

Figure 4 is a view similar to Figure 1, showing the overhead feed-roll mechanism in its rearward or erasing position.

The usual cylindrical typewriter platen 10 is fixed to a shaft 11 rotatably mounted in a pair of carriage end plates 12, only one of which is shown in the drawing. Extending between the carriage end plates and tying same together are a number of cross members, one of which is illustrated at 13. Mounted upon the carriage and spring urged against the lower portion of the platen is a pair of feed-rolls 14 and 15 which may be moved to a position free of the platen by any suitable well known means, not shown and not involved in the present invention. Type bars 16 strike against the front portion of the platen, as illustrated in Figure 1.

The paper or other material to be typed upon, here illustrated in the form of a fairly thick pack of papers 17, is generally fed into the machine from the rear of the platen and to facilitate this a sloping paper table 18 extends across the length of the carriage in the rear of the platen and a floating trough 19 is mounted beneath the platen to guide the leading edge of the paper between the feed-rolls and the platen. Spring pressed lightly against the platen just below the printing line and serving to direct the leading edge of the paper upward after it passes the forward lower feed-roll 15 is a guide member 20, usually mounted upon the main frame of the machine.

The overhead feed-rolls 21, only one of which is shown but of which there will usually be two, are rotatably mounted upon a bar 22 extending parallel to the platen and somewhat longer than the platen. The bar 22 forms part of a bail structure generally similar to that illustrated in the patent to Dowd, No. 1,547,305, and is secured at its opposite ends to the forward ends of a pair of arms 23. At their rearward ends the arms 23 are pivotally connected at 24 to the upper ends of bent links 25, only one of which is shown, the lower ends of which are secured to a cross-shaft 26 pivotally mounted in the side plates 12 of the carriage. A relatively weak spring 27 extends between a pin 28 provided on the arm 23 and a pin 29 provided on the bent link 25. It will be understood that the two arms 23 and links 25 are each provided with pins 28 and 29 and that there is a spring 27 extending between those pins, but it is not believed necessary to illustrate the opposite side of the machine since the arrangement there is the same as that shown in the drawing.

Loosely mounted upon the pins 29 is a pair of members 30. The members 30 are mirror images of each other and only the one on the right hand side of the machine has been shown. The illustrated member 30 is provided with a slot 31, the upper edge of which forms a cam surface 32 adapted to engage the pin 28, as will presently be described, and has an arcuate edge 33 adapted to engage an abutment 34 adjustably mounted upon the paper table 18 by means of a screw 35 extending through an elongated slot in said abutment.

A finger piece 36 is provided upon the forward end of each arm 23 and by pulling forward on either of said

finger pieces the operator may move the upper feed-rolls 21 from the Figure 1 position to the Figure 2 position, which latter position may be referred to as the paper inserting position. This forward movement of the upper feed-rolls swings the links 25 in a counterclockwise direction until a shoulder 37 provided on each link strikes the cross member 13 and prevents further movement thereof.

The member 30 is provided with a bent over ear 38 extending into the path of movement of the link 25 and as said link swings counterclockwise it strikes the ear 38 and swings the loosely pivoted member 30 in a counterclockwise direction. As the upper feed-rolls approach their forward or Figure 2 position the center of gravity of the member 30 is shifted to the left of its pivot 29 and said member then swings under its own weight until a shoulder portion 39 thereof strikes the pin 28.

Mounted upon one of the end plates 12 is a guide member 40 and the arm 23 is provided with a shoulder 41 adapted to latch over the member 40 to retain the upper feed-rolls in the paper inserting position of Figure 2. After the paper has been inserted, the operator need merely raise the bar 22 high enough to free the shoulder 41 from the member 40 and the springs 27 are thereupon effective to restore the parts to the Figure 1 position. The springs 27 are tending to close the angle between the arms 23 and links 25 but since the forward end of one of the arms 23 is held up by the guide member 40, the effect of the springs is to swing the whole feed-roll bail structure rearwardly, the forward end of the arm 23 sliding freely over the top of said guide member.

Slightly before the arms 23 reach the Figure 1 position, the arcuate portions 33 of members 30 strike the abutments 34 and the pins 28 enter the slots 31, as shown in Figure 3. As the feed-rolls continue to move to the Figure 1 position, the members 30 are swung counterclockwise due to the action of the arcuate portions 33 against the abutments 34 and the cam surfaces 32 press down on the pins 28 to swing the feed-rolls 21 into tight contact with the paper and to lock said feed-rolls against upward movement.

Thus, even though the springs 27 are not strong enough to hold the feed-rolls 21 against the paper with sufficient force to maintain typing alignment of the paper after said paper has passed beyond the lower feed-rolls, the locking action of the cam surfaces 32 on the pins 28 will cause the upper feed-rolls to press against the paper hard enough to maintain said typing alignment.

The abutments 34 may be adjusted so that the feed-roll carrying bar 22 will be exactly parallel to the platen when the feed-rolls are in active position and the pressure of the feed-rolls 21 will be equal.

When erasures are to be made, the operator pulls forward on the bar 22 or one of the finger pieces 36 until the pins 28 are free of the notches 31 and then swings the bail structure upward and rearward to the position shown in Figure 4, the pins 28 then resting against the shoulder portions 39 of the members 30. From Figure 4 it will be observed that when the feed-rolls are moved to erasing position, the spring 27 moves over the center of the pivot 24 and thereupon becomes effective to hold the parts in the position shown.

Having thus described a preferred embodiment of the invention, what is claimed is:

1. In a typewriting machine having a carriage and a platen rotatably mounted therein, links pivoted at their lower ends to the carriage, a feed-roll carrying bail pivoted to the free ends of said links and having a fore-and-aft movement, feed-rolls rotatable on said bail, relatively weak spring means extending between said links and said bail and normally tending to move the feed-rolls to platen engaging position, members loosely pivoted on said links, and cooperating means on said members and said bail, said cooperating means interengaging when said bail is in position to engage the feed-rolls with the platen to thereby hold the feed-rolls firmly in engagement with said platen, and said cooperating means moving out of interengaging relation when said bail is moved to free the feed-rolls from the platen.

2. In a typewriting machine having a carriage and a platen rotatably mounted therein, links pivoted at their lower ends to the carriage, a feed-roll carrying bail pivoted to the free ends of said links and having a fore-and-aft movement, feed-rolls rotatable on said bail, relatively weak spring means extending between said links and said bail and normally tending to move the feed-rolls to platen engaging position, members loosely pivoted on said links, and cooperating means on said members and said bail, said cooperating means comprising pins on said bail and cam portions on said members, said cooperating means interengaging when said bail is in position to engage the feed-rolls with the platen to thereby hold the feed-rolls firmly in engagement with said platen, and said cooperating means moving out of interengaging relation when said bail is moved to free the feed-rolls from the platen.

3. In a typewriting machine having a carriage and a platen rotatably mounted therein, links pivoted at their lower ends to the carriage, a feed-roll carrying bail pivoted to the free ends of said links and having a fore-and-aft movement, feed-rolls rotatable on said bail, spring means urging said bail and the free ends of said links rearward to a position to engage said feed-rolls with said platen, a pin on said bail near the point of pivotal connection of said bail with one of said links, a member loosely pivoted on said one of said links, said member having a cam portion adapted to engage said pin, and means for swinging said member forward when said bail and said links swing rearward, whereby said cam portion engages said pin and moves said bail downward about its pivotal connection with said links to hold said feed-rolls in tight contact with said platen.

4. In a typewriting machine having a carriage and a platen rotatably mounted therein, links pivoted at their lower ends to the carriage, a feed-roll carrying bail pivoted to the free end of said links and having a fore-and-aft movement, feed-rolls rotatable on said bail, spring means extending between said bail and one of said links and urging said bail and the free ends of said links rearward to a position to engage said feed-rolls with said platen, means for latching said bail in a forward position with said feed-rolls free of the platen, a pin on said bail near the point of pivotal connection of said bail with one of said links, a cam member loosely pivoted on said one of said links, said cam member having a cam portion adapted to engage said pin, and means for swinging said member forward when said bail and said links swing rearward, whereby said cam portion engages said pin and moves said bail downward about its pivotal connection with said links to hold said feed-rolls in tight contact with said platen.

References Cited in the file of this patent

UNITED STATES PATENTS

1,547,305	Dowd	July 28, 1925
1,881,462	Gabrielson et al.	Oct. 11, 1932
2,134,097	Avery et al.	Oct. 25, 1938
2,142,245	Helmond	Jan. 3, 1939
2,152,858	Becker	Apr. 4, 1939