

Oct. 10, 1967

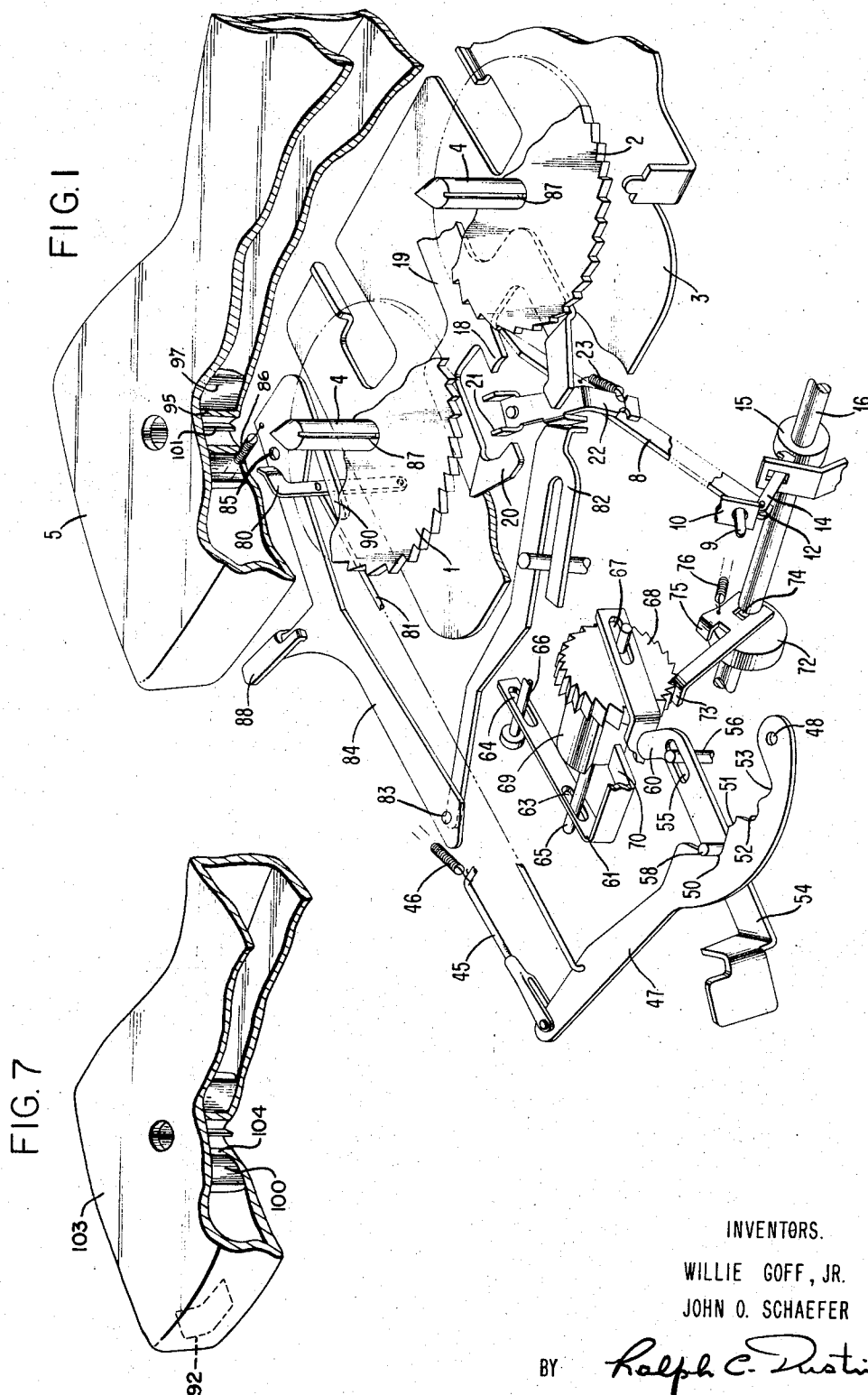
W. GOFF, JR., ET AL

3,346,090

RIBBON FEED MECHANISM

Original Filed May 31, 1963

2 Sheets-Sheet 1



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FIG. 2

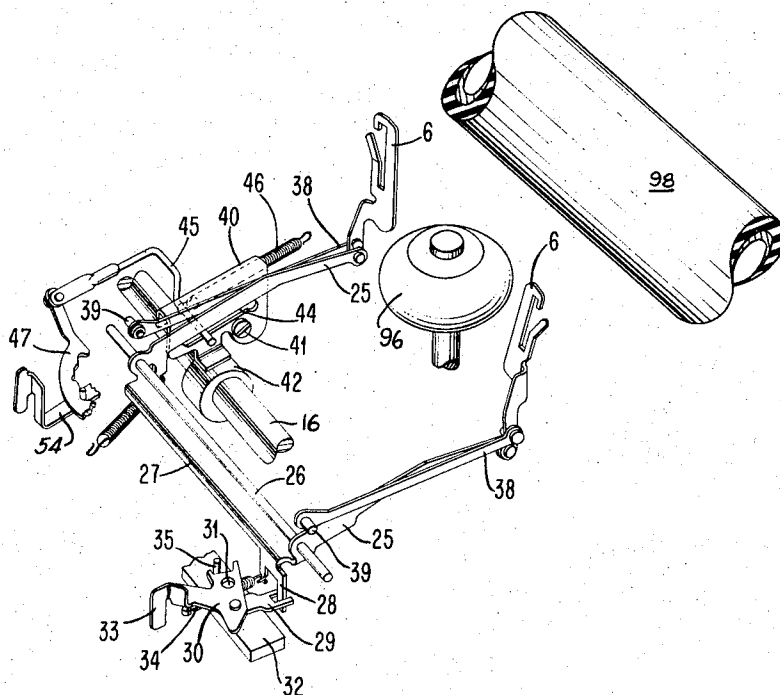


FIG. 3

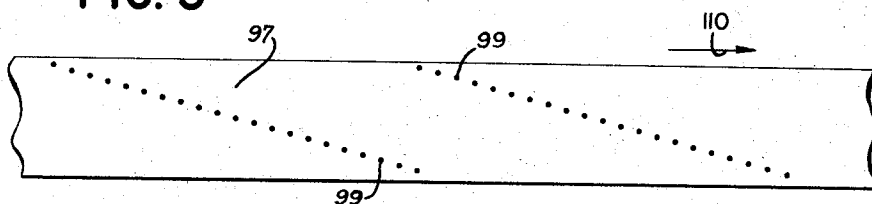


FIG. 4

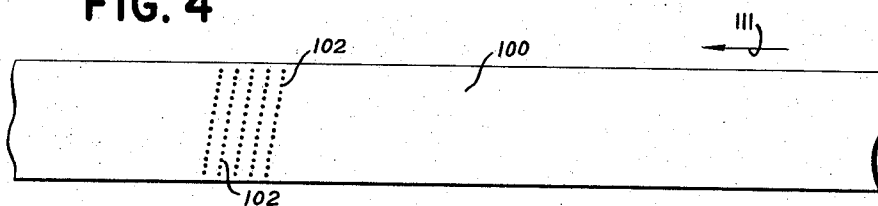


FIG. 5

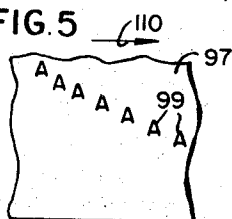
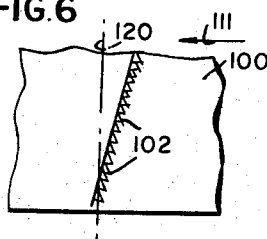


FIG. 6



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3,346,090

RIBBON FEED MECHANISM

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Continuation of application Ser. No. 448,199, Mar. 12,
1965, which is a continuation of application Ser. No.
284,520, May 31, 1963. This application Feb. 11, 1966,
Ser. No. 537,588

19 Claims. (Cl. 197-158)

ABSTRACT OF THE DISCLOSURE

A ribbon feed mechanism capable of feeding different types of ribbons and adapted for use with a typewriter or similar business machine is disclosed. The ribbon lift apparatus moves the ribbon to various vertical positions relative to the point of contact between a print element and a printing platen in a repeating ribbon lift pattern. A pair of drive mechanisms are selectively rendered effective and ineffective for advancing different measured lengths of the ribbon in the forward direction past the printing point for the same repeating ribbon lift pattern. The drive mechanism which is effective to advance the ribbon is determined and selected automatically by the configuration of the ribbon cartridge or other apparatus supporting the ribbon when it is mounted on the ribbon feed mechanism. The configuration of the ribbon cartridge is dependent on the particular type of ribbon associated with the cartridge.

Specification

The present patent application is a continuing application of our copending patent application Ser. No. 448,199, filed Mar. 12, 1965, which is now abandoned, and which was in turn a continuing application of our application Ser. No. 284,520, filed May 31, 1963, which is now abandoned.

The invention relates to ribbon feeding mechanisms for typewriters, and more particularly to a ribbon feeding mechanism which adjusts automatically when a ribbon cartridge or spool is mounted upon it to feed the ribbon in either one manner or another depending on the type of ribbon used.

A fabric or cloth ribbon is usually fed in such a manner that typing operations do not take place successively on the same area since time is needed for such area to recover after each use. The ribbon is fed longitudinally far enough to present a new area for each print operation. Since ink is delivered after a short time to a used area by capillary action, the ribbon may be fed back and forth many times before it needs to be discarded. The quality of print decreases slightly on each pass but it is left to the operator to decide when a new ribbon is needed.

When using a plastic ribbon like that disclosed in a copending application, Ser. No. 171,188, filed Feb. 5, 1962, to H. T. Findlay et al., now abandoned, and which is assigned to the assignee of the present invention, print operations may take place on areas which overlap those of preceding print operations. A small amount of ink is forced from small pockets in which it is entrapped and no time is needed for recovery after each print operation. The feed mechanism for this type of ribbon desirably operates to give maximum use of the ribbon while maintaining a high quality of print. In order to prevent a using of the ribbon beyond this point, the mechanism permits a feeding of the ribbon in only one direction. During this time, however, the ribbon is shifted slightly both transversely and longitudinally so the print areas overlap throughout the length and width of the ribbon.

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Both the fabric ribbon and the plastic ribbon are wound on spools which are rotatably supported within a container. Formed in the container are openings through which spindles may extend into driving engagement with the spools. The structure of the container for the fabric ribbon is slightly different from the container for the plastic ribbon, and the feed mechanism is responsive to this difference in structure so it operates to feed each ribbon in the desired manner without any adjustment by the operator. It is only necessary to mount the ribbon cartridge on the drive spindles and then type.

An object of this invention is to provide an improved ribbon feed mechanism for a typewriter.

Another object is to provide an improved mechanism for feeding a ribbon in one manner or another depending on the type of ribbon used.

Still another object is to provide a ribbon feed mechanism which is responsive to differences in structure of a ribbon container for feeding the ribbon in a manner corresponding to the structure.

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of a preferred embodiment of the invention, as illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a perspective view with parts broken away to facilitate illustration, of the improved ribbon feed mechanism employing a ribbon cartridge holding a reusable or fabric ribbon;

FIGURE 2 is a perspective view of a ribbon lift mechanism which is controlled by the mechanism shown in FIGURE 1;

FIGURE 3 indicates areas of a fabric ribbon from which characters are printed when the ribbon is fed from left to right;

FIGURE 4 indicates areas of a plastic ribbon from which characters are printed when the ribbon is fed from right to left;

FIGURES 5 and 6 are enlarged views of portions of the ribbons shown in FIGURES 3 and 4, respectively, showing the printing patterns on the ribbons; and

FIGURE 7 is a perspective side view with parts broken away showing the ribbon cartridge employed with a use or plastic ribbon.

The ribbon feed mechanism shown herein is adapted for use on a typewriter like that of U.S. Patent 2,919,002, issued Dec. 29, 1959, to L. E. Palmer, and assigned to the assignee of the present invention. This mechanism includes a pair of ratchet wheels 1 and 2 rotatably supported by a plate 3 and carrying spindles 4 on which ribbon spools may be mounted. The spools 95, only one of which is shown, are enclosed in a container 5 and form part of a ribbon cartridge. The plate 3 and associated mechanism is mounted on a carrier for a single element type head 96 (FIGURE 2) as shown in the Palmer patent. Fabric ribbon 97 extends from one of the spools 95 through an opening in the container 5 and passes through guide members 6 (FIGURE 2) and then extends through another opening in the container to the other spool. The type head 96 is located between the ribbon guides 6 and is rocked to engage the ribbon 97 with a paper sheet on a platen 98 during each print operation. A pawl 8 is oscillated while engaging one or the other of the ratchet wheels and causes a rotation of the spindle 4 on the driven ratchet wheel. At the lower end of the pawl 8 is a finger portion 9 extending loosely through an opening in a bracket 10 whereby a swinging of the pawl may take place about axes extending at right angles to each other. Extending below the finger 9 is a pawl portion 12 having a member 14 pivotally connected to it and riding on a cam 15 fixed to a print shaft 16.

During each print operation, the print shaft 16 turns one revolution and causes the pawl 8 to oscillate in a direction to drive one of the ratchet wheels. When the fabric ribbon 97 has been completely wound onto the spool carried by the driven ratchet wheel, a central portion 18 of a member 19 is moved into the path of the pawl 8 so it is driven rearwardly by the latter during the next oscillation. At the same time, an arm 20 on the member 19 acts on a projection 21 of a toggle member 22 and swings the latter in a clockwise direction from the position shown. Connected between the toggle member and the pawl 8 is a spring 23 which acts during a swinging of the toggle member to move the pawl from one ratchet wheel to the other. The mechanism described so far is like that which is shown and described more completely in U.S. Patent 2,986,260, issued May 30, 1961, to W. B. Whippo, and assigned to the assignee of this invention.

During the operation of the typewriter to print information, it is necessary that the ribbon be raised in front of the type element to effect printing and then be lowered so the operator can see what was printed. The mechanism shown and described herein is designed to increase the ribbon lift slightly on each print operation for a predetermined number of operations and then to decrease the lift so the next character is printed adjacent the upper edge of the ribbon. The lift is progressively increased again until the last of the predetermined number of printings take place adjacent the bottom edge of the ribbon. When fabric ribbon is used, the feeding mechanism described above also operates to advance the ribbon longitudinally in one direction or the other a distance proportional to the driving of a ratchet wheel one tooth on each printing operation. The mechanism for lifting or shifting the ribbon transversely along a first axis relative to the point of contact between the print element and the platen is shown in FIGURE 2 and is generally like that described in U.S. Patent 2,919,008, issued Dec. 29, 1959, to W. B. Whippo, and also assigned to the assignee of this invention. This mechanism comprises a pair of lower lift arms 25 loosely mounted at one end on a rod 26. Formed integral with the arms 25 is a flange 27 having a downwardly extending finger 28 received within a bifurcated end portion of an arm 29 pivoted on a plate member 30 which is, in turn, pivotally connected at 31 to a supporting member 32. A handle portion 33 permits manual actuation of the member 30 for forcing the arm 29 against the finger 28 to swing the outer ends of the lift arms 25 upwardly so the ribbon is raised to a position in which it may easily be changed. A toggle spring 34 operates to hold the member 30 in either position to which it may be moved, and a stop pin 35 limits swinging of the member 30 in either direction.

Extending parallel to the lift arms 25 is a pair of upper arms 38 each carrying, at one end, a stud 39 which is pivotally supported by means not shown. The outer ends of the arms 25 and 38 are pivotally connected to the vertically extending ribbon guide members 6, as shown. The arrangement is such that a swinging of the arms 25 on the rod 26 results in a movement of the guide members 6 up or down in a vertical plane. For swinging the arms 25 during each print operation, there is provided a cam follower 40 pivotally supported at 41 and engaging a cam 42 on the shaft 16. Formed in the follower is an elongated slot 44 underlying one of the arms 25, and a control rod 45 is slidably received within the slot 44 to act as a support for the arm 25. As the follower is caused to swing about its pivot connection 41, the rod 45 is moved up and down vertically a distance which varies with the location of the rod in the slot 44. This causes the arms 25 to swing and raise or lower the guide members 6. A spring 46 acts on the rod 45 to urge it to a position adjacent the pivot point 41, in which position there is no lifting of the arms 25. For moving the rod to other positions against the action of the spring 46, there is pro-

vided a lever 47 connected at one of its ends to the rod and mounted at its other end on a pivot pin 48 (FIGURE 1). The lever 47 is of arcuate shape and has detent notches 50, 51, 52 and 53 formed along its inner edge.

A manually operated lever 54 has a slot 55 receiving a stud 56 which permits either a swinging of the lever or a bodily movement longitudinally. Mounted on the lever is a pin 58 which is receivable in any one of the notches 50 to 53 for positioning the lever 47. Formed on the right hand end of the lever 54 is a projecting portion 60 which engages the transverse portion of a U-shaped member 61 when the lever is in a position with the pin 58 engaging the notch 50. The member 61 is moved horizontally on each printing operation by mechanisms to be described and causes the lever 54 to move longitudinally and swing the lever 47 for varying the amount of ribbon lift. When the lever 54 is swung manually to engage the pin 58 with one of the notches 51, 52 or 53, the projecting portion 60 is moved clear of the U-shaped member 61 and the lever 47 is positioned to effect a predetermined lift on each print operation. With the pin in notch 51, the ribbon is always lifted the maximum distance to cause printing from the lower portion of the ribbon. When the pin is in notch 52, the ribbon is lifted only far enough to cause printing from its upper portion. With the pin in notch 53 no lifting of the ribbon takes place and the machine may then be used for cutting stencil.

Formed in one side of the member 61 are elongated slots 63 and 64, the first slidably receiving a stationary shaft 65 and the second slidably receiving a stationary pin 66. The shaft 65 also extends through a slot 67 in the opposite side of the member 61, and mounted upon the shaft between the slots 63, 67 is a ratchet wheel 68 to which a cam 69 is fixed. Formed on the transverse portion of the member 61 is a flange 70 which rides upon the surface of the cam 69. Spring 46 acting on the rod 45 operates through the levers 47 and 54 for holding the flange 70 in engagement with the cam 69 when the pin 58 is in the notch 50. Attached to the print shaft 16 beneath the ratchet wheel 68 is a cam 72 which operates to drive a pawl 73 against the teeth of the ratchet wheel for rotating the latter one tooth on each print operation. Pawl 73 has a bifurcated portion engaging an annular slot 74 in the shaft 16 and a bent portion 75 riding upon the surface of the cam 72. A spring 76 holds the pawl in operative engagement with the cam 72, and spring 76 plus the frictional engagement between the cam and the portion 75 during the rotation of the shaft 16 in a clockwise direction holds the pawl in engagement with the teeth of the ratchet wheel 68.

The cam 69 is provided with a surface which rises continuously from a low point to a high point as it makes one revolution in a clockwise direction. The surface then drops abruptly from its high point to the low point. The ratchet wheel 68 may have any desired number of teeth but satisfactory results have been obtained with twenty-four. It will be seen that each rotation of the shaft 16 results in a rotation of the ratchet wheel 68 one tooth and a turning of the cam 69 to force the member 61 slightly to the left. This transmits longitudinal motion to the lever 54 for rocking the lever 47 slightly in a counter-clockwise direction. The rod 45 is moved in the slot 44 a slightly greater distance from the pivot 41 for the follower 40 and effects a greater lifting of the guide arms 6. If the pawl 8 is operating during this time to feed the fabric ribbon 97, then the areas 99 on the ribbon from which the printing of characters takes place form a pattern like that of FIGURES 3 and 5 when the ribbon is being fed along a second axis in the forward direction from the left hand spool to the right hand spool as indicated by arrow 110. With the ribbon 97 feeding in the opposite direction along the second axis, the lines of print areas 99 are generally like those shown except that they slope in the opposite direction.

When a ribbon container 103 enclosing spools 104 of plastic ribbon 100 (FIGURE 7) is mounted on the spindles 4, the ratchet wheel 1 is driven by a pawl 80 pivotally supported at its lower end and connected by a rod 81 to the lever 47. The pawl 80 is normally maintained in driving relation with the ratchet wheel 1 by rod 81, lever 47 and spring 46 or any other means desired, such as a spring attached to pawl 80. For each twenty-four print operations the pawl 80 is driven to rotate the ratchet wheel 1 a single tooth. During this time, the pawl 8 is operated to drive the ratchet wheel 2 and is held in such driving position by the toggle member 22 which is retained in the position shown by a member 82 pivotally connected at 83 to a lever 84 pivoted at 85. The lever is normally held by a spring 86 in a position to engage the member 82 with the toggle member 22. Spools 95 having a fabric ribbon 97 wound upon them are provided with inwardly projecting key members 101 (FIGURE 1) engaging slots 87 in the spindles 4 so they are connected for rotation with the spindles. When plastic ribbon 100 is used, however, the spool 104 associated with ratchet wheel 1 is keyed to the spindle 4 but the other spool 104 does not have a key member and only fits on spindle 4 associated with the ratchet wheel 2 with a light frictional engagement. Even though the pawl 8 operates to drive the ratchet wheel 2 in a clockwise direction, it does not act to feed the plastic ribbon 100 but merely holds it to prevent slack.

Formed on the lever 84 is a cam portion 88 which is engaged by the ribbon container 5 for swinging the lever in a clockwise direction and withdrawing the member 82 from the toggle member 22. Also, formed on the lever 84 is a finger 90 extending along the inner side of the pawl 80 and engageable with the latter for moving it clear of the ratchet wheel 1 when the lever 84 is rocked in a clockwise direction. Each container 5 enclosing spools 95 of fabric ribbon 97 is constructed so it acts on the cam portion 88 to force the lever 84 in a clockwise direction when the spools are mounted on the spindles 4. The pawl 80 is then moved clear of the ratchet wheel 1 and the member 82 is withdrawn from the toggle member 22. Both of the spools 95 are keyed to the spindles 4 and the pawl 8 operates in a normal manner to drive the ratchet wheels 1 and 2 for feeding the ribbon 97 in one direction or the other. During this time, the cam 69 is driven to shift the ribbon slightly on each print operation so printing takes place from areas 99 on the ribbon as indicated in FIGURE 5.

Each container 103 enclosing spools of plastic ribbon 100 is provided with a discontinuity, recess or opening 92 as shown in FIGURE 7 overlying the cam portion 88 on the lever 84. As the container 103 is lowered to engage the spools 104 with the spindles 4, the cam portion 88 extends through the opening 92 so the parts remain in the positions shown in FIGURE 1. The pawl 80 then operates to drive the ratchet wheel 1 and the pawl 8 is held in a position to drive the ratchet wheel 2. Ratchet wheel 1 is effective to drive the spool 104 mounted thereon since this spool is keyed to the spindle 4. Ratchet wheel 2 is ineffective to drive the spool 104 mounted on it because this spool has only a light frictional engagement with the spindle 4. The ribbon 100 is then fed longitudinally a distance proportional to the turning of the ratchet wheel 1 a single tooth during twenty-four print operations. The areas 102 on the ribbon 100 from which printing takes place are as indicated in FIGURE 6 and it will be noted in this figure of the drawings that at least portions of the areas of the ribbon brought to the point of printing successively overlie a line 120 extending transversely and perpendicularly to the direction of ribbon feed. It will be understood that this ribbon will be fed through the machine only once and always in a direction from the ratchet wheel 2 to ratchet wheel 1 as indicated by arrows 111 in FIGURES 4 and 6.

When a ribbon of one color is used, the lever 54 is

always positioned so its pin 58 engages the notch 50 in lever 47. The ribbon is then fed so printing takes place from the ribbon at points as indicated either by FIGURE 3 or by FIGURE 4 depending on whether the container encloses spools of fabric ribbon or spools of plastic ribbon. If a two color ribbon is used, then lever 54 is positioned to engage its pin 58 with either notch 51 or notch 52 on lever 47. When moved to either of these positions, the portion 60 on the lever 54 is withdrawn from the member 61 so the latter is ineffective to shift the lever 47 on each print operation. Printing then takes place from the lower portion of the ribbon if the pin is in notch 51 or from the upper portion if the pin is in notch 52. When cutting stencil, the lever 54 is positioned to engage its pin 58 with the notch 53 so no lifting of the ribbon takes place.

While there have been shown and described the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that it may be modified and embodied in various forms without departing from the spirit and scope of the invention.

What is claimed is:

1. A mechanism for feeding an inked ribbon both longitudinally and transversely relative to a point of contact between a printing element and a platen comprising, in combination:

a pair of spindles on which spools containing said ribbon may be mounted;

a first pawl movable selectively to positions for driving one or the other of said spindles;

means operating on each printing operation for actuating said first pawl;

means including a second pawl movable between an ineffective position and a position in which it is effective to drive a first of said spindles;

means normally holding said second pawl in its effective position and holding said first pawl in a position to drive a second of said spindles;

guiding means for said ribbon;

means acting on said guiding means for shifting said ribbon transversely to different positions on each printing operation, said means acting on said guiding means operating to increase progressively the amount of ribbon lift from a minimum to a maximum during a predetermined number of printing operations and then to repeat; and

means connecting said second pawl to said means acting on said guiding means to actuate said second pawl once during said predetermined number of printing operations.

2. The mechanism of claim 1 in which spools of ribbon are enclosed in a container having a shape which corresponds to the type of ribbon enclosed, and including:

means which is engaged by a container of one shape for moving said second pawl to its ineffective position and releasing said holding means from said first pawl when the spools enclosed in said container are mounted on said spindles.

3. The mechanism of claim 2 including:

means operatively connecting said spindles to both spools when said second pawl is moved to its ineffective position and means operatively connecting only the spindle driven by said second pawl to a spool when the latter pawl is effective.

4. The mechanism of claim 2 in which said means acting on said guiding means for shifting said ribbon includes:

a member for transmitting motion to said guiding means and movable relative to the latter for varying the amount of motion; and

cam actuated means acting on each print operation for driving said member to shift said guiding means.

5. A mechanism for selectively driving at least two pairs of spools on which first and second types of ribbons are wound for effecting a feeding of said first and second

types of ribbons relative to a point of contact between a print element and a platen comprising, in combination:

a container for each of said pair of spools;
a pair of spindles on which said pairs of spools may be selectively and interchangeably mounted while enclosed in their associated containers;

separate drive mechanisms for said spindles, one operating to drive said spindles for effecting a feeding of a first type of ribbon along an axis in the forward direction and the other operating to drive said spindles for effecting a feeding of a second type of ribbon along said axis in said forward direction;

said one drive mechanism causing a first length of said first type of ribbon to be fed along said axis in said forward direction relative to said point of contact for a predetermined number of printing operations;

said other drive mechanism causing a second length of said second type of ribbon to be fed along said axis in said forward direction relative to said point of contact for the same printing operations;

means normally rendering one of said feeding mechanisms effective and the other ineffective; and

means actuated by the container for said second type of ribbon when the container for said second type of ribbon is mounted upon said pair of spindles to render said one of said drive mechanisms ineffective and said other drive mechanism effective.

6. A mechanism for driving one or another of a pair of spools on which an inked ribbon is wound for effecting a feeding of the ribbon relative to a point of contact between a print element and a platen comprising, in combination:

a first container mounting a pair of spools having ribbon of one type wound thereon;

a pair of spindles on which said spools may be mounted while enclosed in said first container;

means including a first pawl movable selectively to positions for driving one or the other of said spindles;

means operating on each printing operation for actuating said first pawl to drive one of said spindles a predetermined distance;

means including a second pawl movable between an ineffective position and a position in which it is effective to drive a first of said pair of spindles;

means operating during a predetermined number of printing operations for actuating said second pawl to drive, when said second pawl is in its effective position, said first of said spindles a predetermined distance;

means normally holding said second pawl in its effective position to drive said first of said spindles and holding said first pawl in a position to drive a second of said spindles, said first container being shaped, when containing spools with said one type of ribbon wound thereon, to permit a mounting of the spools on said spindle without moving said first and second pawls from their effective positions with respect to said second and first spindles; and

means connecting the spools in said first containers with said spindles to cause positive rotational driving of the spool mounted on said first spindle and frictional rotational driving of the spool mounted on said second spindle.

7. The mechanism of claim 6 including:

means operable to move said pawl to its ineffective position and to release said holding means from said first pawl;

a second container mounting a pair of spools having ribbon of a second type wound thereon;

said means operable comprising a portion of said second container; and

means connecting the spools of said second container with said spindles to cause positive rotational driving of the spools.

8. The mechanism of claim 6 including:

a second container mounting a pair of spools having a ribbon of a second type wound thereon;

said means normally holding said second pawl comprising:

a lever having a cam portion underlying said containers when the spools thereof are mounted on said spindles;

a member connected to said lever and normally holding said first pawl in a position to drive the other of said spindles, said cam portion being engageable by said second container when enclosing said second type of ribbon for swinging said lever to a position removing said member from said first pawl; and

means operated with said lever for moving said second pawl to its ineffective position when said cam portion is engaged by said second container.

9. The mechanism of claim 8 in which said first container has an opening receiving said cam portion without actuating said lever.

10. A mechanism for feeding an inked ribbon in two directions relative to a point of contact between a printing element and a platen comprising, in combination:

a pair of spindles on which spools containing a ribbon may be mounted;

a first drive means for driving one or the other of said spindles to feed said ribbon in a first direction;

means operating on each printing operation for actuating said first drive means;

means including a second drive means movable between an ineffective position and a position in which it is effective to drive a first of said spindles to feed said ribbon in said first direction;

means normally holding said second drive means in its effective position and holding said first drive means in a position to drive the second of said spindles;

guiding means for said ribbon;

means acting on said guiding means for shifting said ribbon in a second direction to different positions on each printing operation, said last mentioned means operating to vary progressively the amount of ribbon movement in said second direction in a predetermined number of printing operations and then to repeat;

means connecting said second drive means to said means acting on said guiding means causing the latter to be actuated a first predetermined number of times during said predetermined number of printing operations; and

means connecting said first drive means to said means acting on said guiding means to cause the latter to be actuated a second predetermined number of times which is different from said first predetermined number of times during said predetermined number of printing operations.

11. The mechanism of claim 10 in which spools of ribbon are enclosed in a container having a shape which corresponds to the type of ribbon enclosed and including:

means engaged by a container of one shape for moving said second drive means to its ineffective position and releasing said holding means from said first drive means when the spools of said container of one shape are mounted on said spindles.

12. A mechanism for selectively driving at least two pairs of spools on which first and second types of ribbons are wound for effecting a feeding of said first and second types of ribbons relative to a point of contact between a print element and a platen comprising, in combination:

a container for each of said pairs of spools;

a pair of spindles on which said pairs of spools may be selectively and interchangeably mounted while enclosed in their associated containers;

separate drive mechanisms for said spindles, one operating to drive said spindles for effecting a feeding of a first type of ribbon along an axis in the forward direction and the other operating to drive said spindles for effecting a feeding of a second type of ribbon along said axis in said forward direction;

said one drive mechanism causing a first length of said first type of ribbon to be fed along said axis in said forward direction relative to said point of contact for a predetermined number of printing operations; said other drive mechanism causing a second length of said second type of ribbon to be fed along said axis in said forward direction relative to said point of contact for the same printing operations; and means actuated by the container for said second type of ribbon when the container for said second type of ribbon is mounted upon said pair of spindles to render said one of said drive mechanisms ineffective and said other drive mechanism effective.

13. A mechanism for feeding an inked ribbon relative to a point of contact between a print element and a platen comprising, in combination:

a pair of spools about which an inked ribbon is wound; a pair of spindles on which said spools may be mounted;

separate drive mechanisms for said spindles, one operating to drive said spindles for effecting a feeding of a ribbon in one manner in one direction between said spools and the other operating to drive said spindles for effecting a feeding of a ribbon in said one direction in a different manner;

ribbon feed controlling means associated with and carried by at least one of said pair of spools;

means actuated by said ribbon feed controlling means when said pair of spools are mounted upon said spindles to render one of said drive mechanisms ineffective and the other of said drive mechanisms effective;

guiding means for said ribbon;

means acting on said guiding means for shifting said ribbon transversely with respect to said point of contact between said print element and said platen in accordance with a predetermined pattern and then to repeat;

one of said drive mechanisms causing feeding of said ribbon longitudinally past said point of contact by a first predetermined distance for each predetermined pattern of shifting of said ribbon transversely; and

the other of said drive mechanisms causing feeding of said ribbon longitudinally past said point of contact by a second predetermined distance which is greater than said first predetermined distance for each predetermined pattern of shifting of said ribbon transversely.

14. A mechanism for interchangeably feeding inked ribbons along two axes relative to a point of contact between a print element and a platen comprising, in combination:

guiding means for a ribbon;

means acting on said guiding means for moving said ribbon along a first axis relative to said point of contact between said print element and said platen in accordance with a predetermined pattern to bring at least two areas of said ribbon which are at least partially spaced relative to each other along said first axis to said point of contact and then repeat said predetermined pattern;

separate drive means for feeding said ribbon, one operating to feed a first length of a first type of ribbon along a second axis in the forward direction and the other operating to feed a second length of a second type of ribbon along said second axis in said forward direction relative to said point of contact during each

movement of either ribbon along said first axis in accordance with said predetermined pattern; said second axis being generally transverse to said first axis;

5 means to select said separate drive means to feed one of said lengths along said second axis in said forward direction during the movement of said ribbon along said first axis in said predetermined pattern; and

10 at least one of said drive means comprising moving means causing at least portions of the areas of said ribbon brought to said point of contact successively during said predetermined pattern to overlie a line at said point of contact extending transversely and perpendicularly to said second axis.

15 15. A mechanism for interchangeably feeding inked ribbons along two axes relative to a point of contact between a print element and a platen comprising, in combination:

guiding means for a ribbon;

20 means acting on said guiding means for moving said ribbon along a first axis relative to said point of contact between said print element and said platen in accordance with a predetermined pattern to bring at least two areas of said ribbon which are at least partially spaced relative to each other along said first axis to said point of contact and then repeat said predetermined pattern;

30 separate drive means for feeding said ribbon, one operating to feed a first length of a first type of ribbon along a second axis in the forward direction and the other operating to feed a second length of a second type of ribbon along said second axis in said forward direction relative to said point of contact during each movement of either ribbon along said first axis in accordance with said predetermined pattern;

35 said second axis being generally transverse to said first axis;

at least one spool about which said second type of ribbon is wound;

40 means for rotatably mounting said spool;

ribbon feed controlling means associated with and carried by said spool; and

45 means actuated by said ribbon feed controlling means when said spool is mounted upon said means for rotatably mounting to render said one of said drive means ineffective and said other of said drive means effective to feed said second type of ribbon along said second axis in said forward direction during each shifting of said second type of ribbon along said first axis in accordance with said predetermined pattern.

50 16. A mechanism for selectively feeding first and second types of ribbons relative to a point of contact between a print element and a platen comprising, in combination:

55 at least one spool for each of said first and second types of ribbons;

at least one spindle on which said spools may be selectively and interchangeably mounted;

60 separate drive mechanisms for said spindle, one operating to drive said spindle for effecting a feeding of a first type of ribbon along an axis in the forward direction and the other operating to drive said spindle for effecting a feeding of a second type of ribbon along said axis in said forward direction;

65 said one drive mechanism causing a first length of said first type of ribbon to be fed along said axis in said forward direction relative to said point of contact for a predetermined number of printing operations;

said other drive mechanism causing a second length of said second type of ribbon to be fed along said axis in said forward direction relative to said point of contact for the same printing operations;

70 ribbon feed controlling means associated with and carried by said spool for said second type of ribbon; and means actuated by said ribbon feed controlling means

when said spool for said second type of ribbon is mounted upon said spindle to render said one drive mechanism ineffective and the said other drive mechanism effective.

17. A mechanism for selectively feeding first and second types of ribbons relative to a point of contact between a print element and a platen comprising, in combination:

- a pair of spools for each of said first and second types of ribbons;
- a container for each of said pair of spools;
- means for interchangeably mounting each of said containers relative to said point of contact;
- separate drive mechanisms for said ribbons, one operating for effecting a feeding of a first type of ribbon along an axis in the forward direction and the other operating for effecting a feeding of a second type of ribbon along said axis in said forward direction;
- said one drive mechanism causing a first length of said first type of ribbon to be fed along said axis in said forward direction relative to said point of contact for a predetermined number of printing operations;
- said other drive mechanism causing a second length of said second type of ribbon to be fed along said axis in said forward direction relative to said point of contact for the same printing operations; and
- means actuated by the container for said second type of ribbon when the container for said second type of ribbon is received on said means for mounting to render said one drive mechanism ineffective and said other drive mechanism effective.

18. A mechanism for selectively feeding first and second ribbons relative to a point of contact between a print element and a platen comprising, in combination:

- at least one spool for each of said first and second types of ribbons;
- means for interchangeably mounting each of said spools relative to said point of contact;
- separate drive mechanisms for said ribbons, one operating for effecting a feeding of a first type of ribbon along an axis in the forward direction and the other operating for effecting a feeding of a second type of ribbon along said axis in said forward direction;
- said one drive mechanism causing a first length of said first type of ribbon to be fed along said axis in said forward direction relative to said point of contact for a predetermined number of printing operations;
- said other drive mechanism causing a second length of said second type of ribbon to be fed along said axis in said forward direction relative to said point of contact for the same printing operations;
- ribbon feed controlling means associated with and carried by said spool for said second type of ribbon; and
- means actuated by said ribbon feed controlling means when said spool for said second type of ribbon is

received on said means for mounting to render said one drive mechanism ineffective and said other drive mechanism effective.

19. A mechanism for selectively feeding first and second ribbons relative to a point of contact between a print element and a platen comprising, in combination:

- at least one spool for each of said first and second types of ribbons;
- means for interchangeably mounting each of said spools relative to said point of contact;
- drive means for said ribbon, operating in one mode effecting a feeding of a first type of ribbon along an axis in the forward direction and operating in another mode effecting a feeding of a second type of ribbon along said axis in said forward direction;
- said drive mechanism in said one mode causing a first length of said first type of ribbon to be fed along said axis in said forward direction relative to said point of contact for a predetermined number of printing operations;
- said drive mechanism in said other mode causing a second length of said second type of ribbon to be fed along said axis in said forward direction relative to said point of contact for the same printing operations;
- ribbon feed controlling means associated with and carried by said spool for said second type of ribbon; and
- means actuated by said ribbon feed controlling means when said spool for said second type of ribbon is received on said means for mounting to change the mode of operation of said drive means from said one mode to said another mode.

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