Aug. 30, 1938. G. M. SACERDOTE 2,128,267

MANIFOLDING RIBBON SUPPORT

Filed Sept. 6, 1934 5 Sheets-Sheet 1

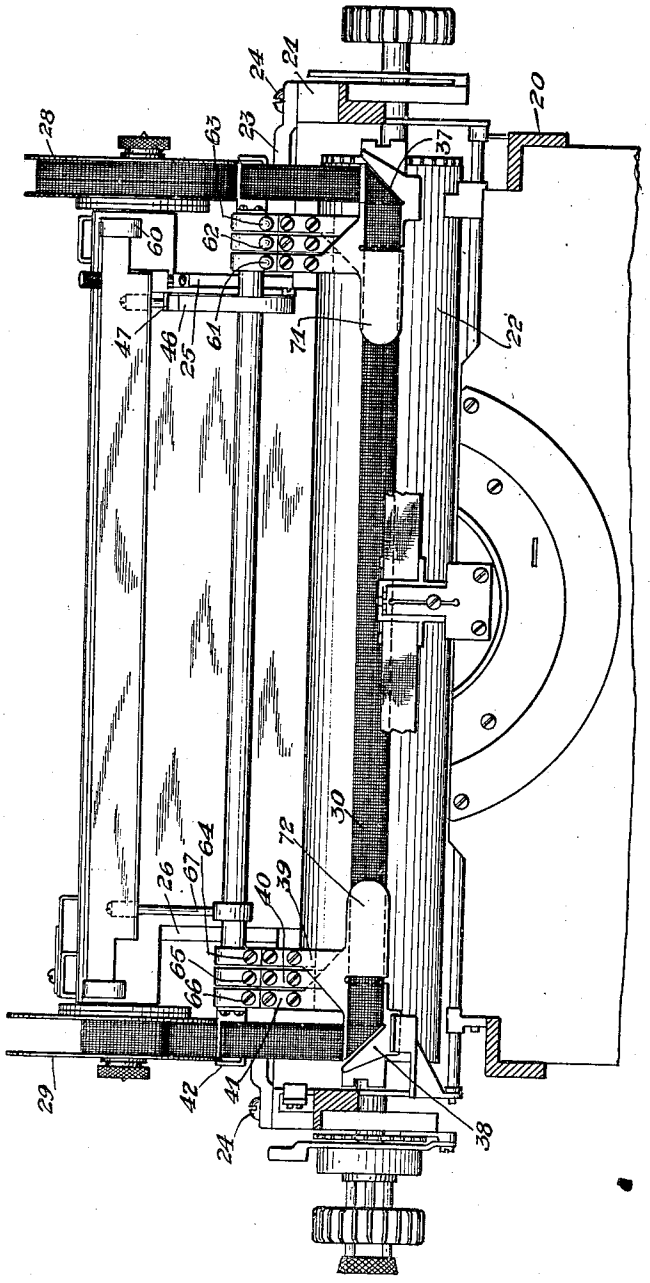


Fig. 1

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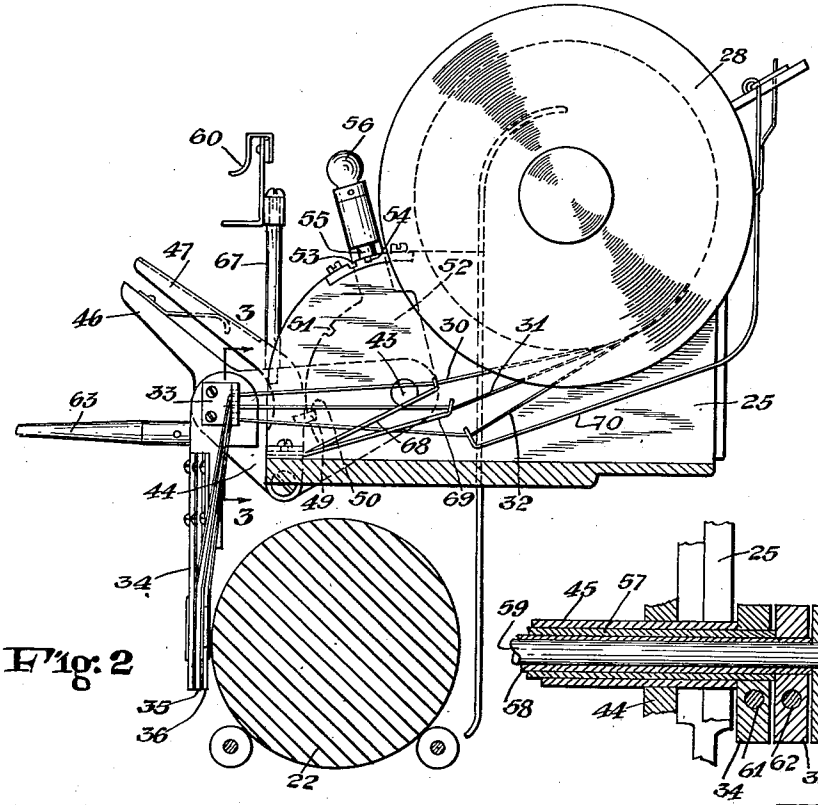


Fig. 2

Fig. 3

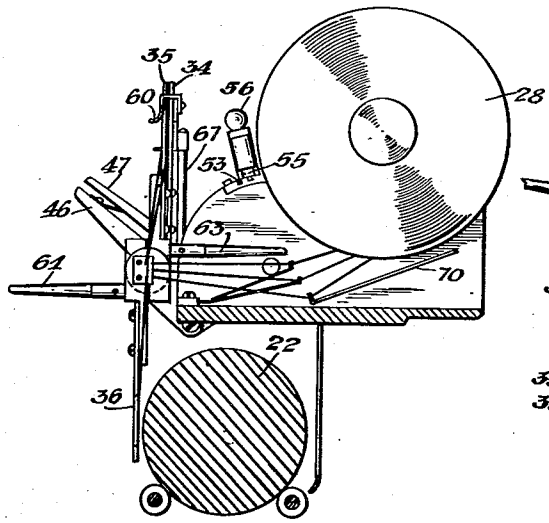


Fig. 4

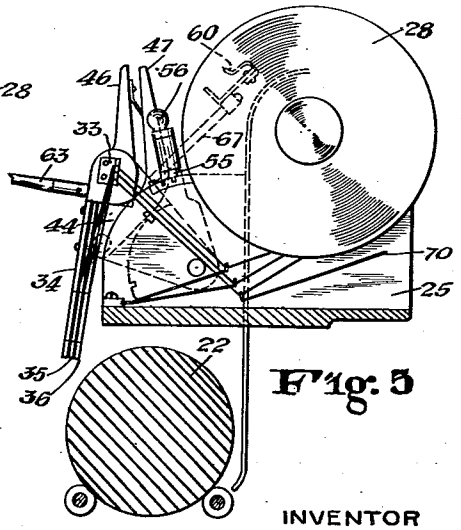


Fig. 5

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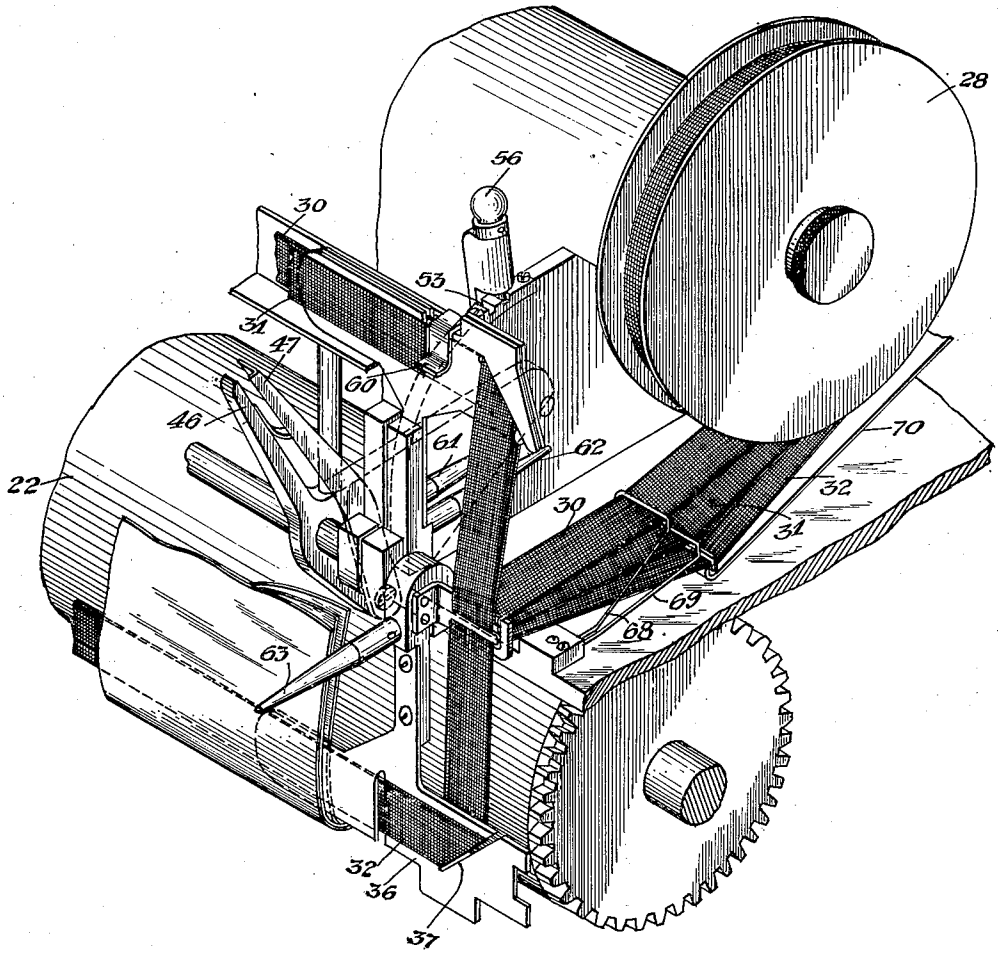


Fig. 6

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Fig. 7

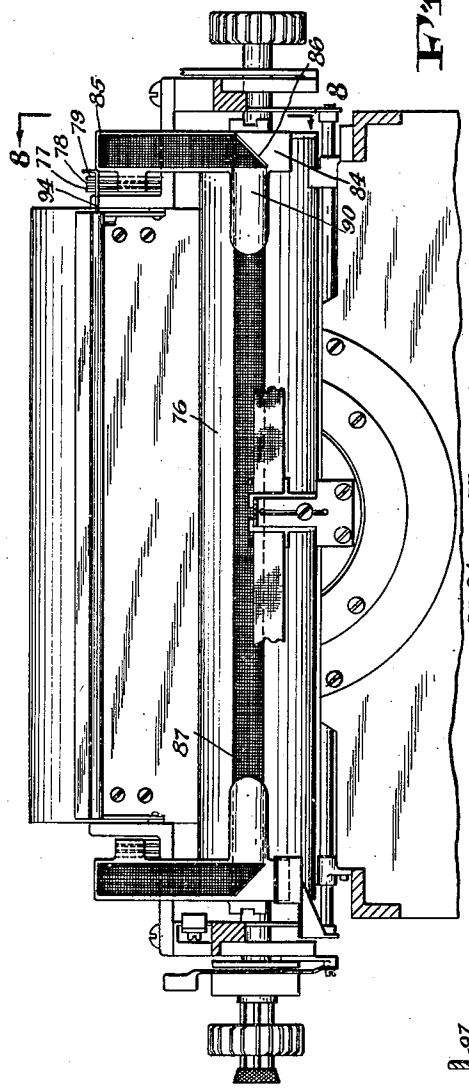


Fig. 8

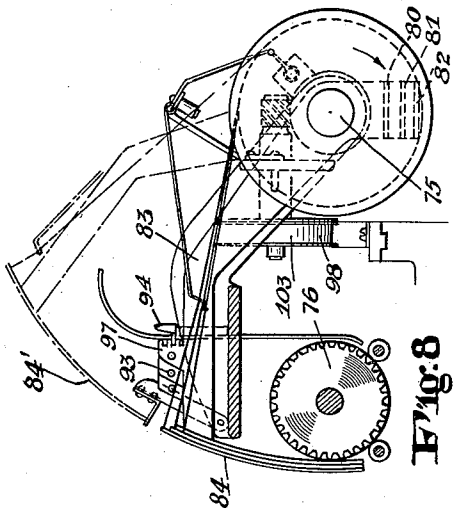


Fig. 11

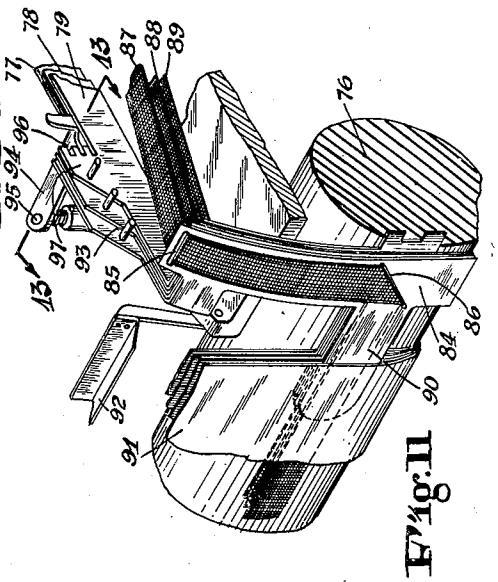
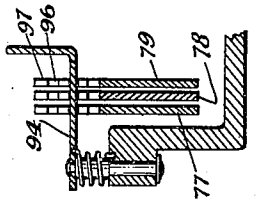


Fig. 13



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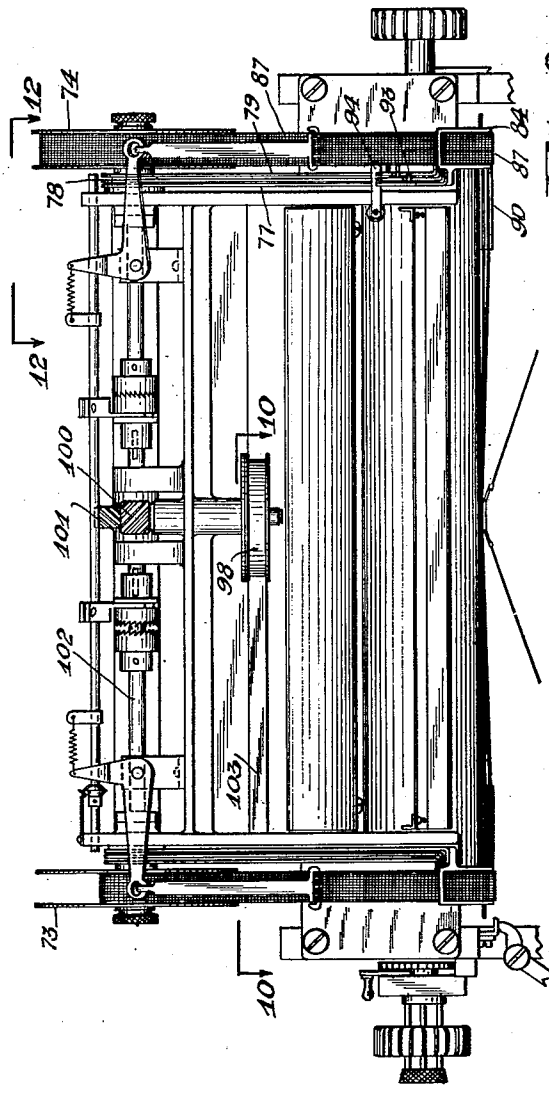


Fig. 9

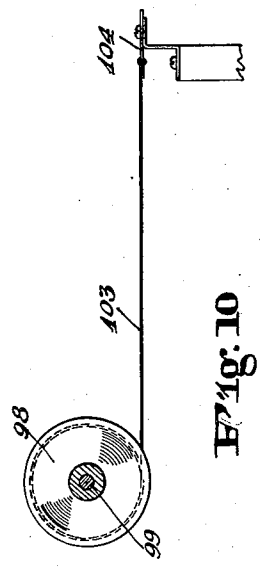


Fig. 10

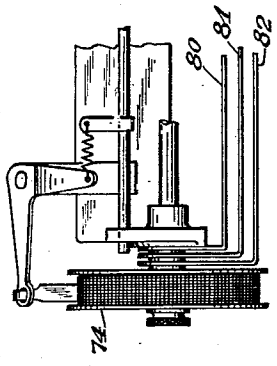


Fig. 12

INVENTOR

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Patented Aug. 30, 1938

2,128,267

UNITED STATES PATENT OFFICE

2,128,267

MANIFOLDING RIBBON SUPPORT

Guido M. Sacerdote, Bayside, N. Y.

Application September 6, 1934, Serial No. 742,977

9 Claims. (Cl. 197—153)

This invention relates to devices such as typewriters, adding machines and the like, where one or more auxiliary ribbons are employed for producing copies in addition to the ribbon for producing originals, which forms part of the standard equipment of an ordinary typewriter or adding machine. More particularly, the invention refers to improvements in means for mounting the auxiliary ribbon or ribbons and its primary object is to provide, in a device of the character specified, novel and improved arrnagements for mounting an auxiliary ribbon or ribbons, whereby the same can be easily inserted between copy sheets or withdrawn therefrom, so as to facilitate the work of the operator.

Another object is to provide, in a typewriter or like machine, equipped with a plurality of auxiliary copy producing ribbons, novel and improved means whereby said ribbons can be easily inserted between copy sheets or withdrawn therefrom independently of one another, without interfering with the normal operation of the machine.

A further object is to provide, in a manifolding typewriter or like machine, equipped with an auxiliary ribbon or ribbons, novel and improved means for moving said ribbons in and out of printing position, said means including devices for setting different sections of the ribbon or ribbons in correspondence with the writing line, so as to fully utilize the printing capacity of said ribbon or ribbons.

A still further object is to provide in a device of the character specified, easily operable means for moving the auxiliary ribbon or ribbons in and out of printing position, so as to enable the operator to rapidly insert a new set of sheets in writing position and to thereafter insert the auxiliary ribbon or ribbons between said sheets.

Other objects and advantages of the present invention will more fully appear as the description proceeds and will be set forth and claimed in the appended claims.

The invention is illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a fragmentary front vertical section through the top of the frame of a typewriting machine, equipped with a manifolding attachment embodying a form of my invention;

Fig. 2 is a vertical cross section of the same;

Fig. 3 is a fragmentary vertical longitudinal section through line 3—3 of Fig. 2;

Fig. 4 is a view similar to that of Fig. 2, in a reduced scale, illustrating the manner in which the ribbon supporting frames can be controlled independently of one another;

Fig. 5 is a similar view illustrating a different position of the auxiliary ribbons;

Fig. 6 is a fragmentary view in perspective of the ribbon guiding arrangement, corresponding to the position of Fig. 4;

Fig. 7 is a fragmentary front vertical section similaf to that of Fig. 1, illustrating a manifolding attachment of a somewhat different construction;

Fig. 8 is a vertical cross section thereof through line 8—8 of Fig. 7;

Fig. 9 is a plan view of the same;

Fig. 10 is a detail vertical section through line 10—10 of Fig. 9;

Fig. 11 is a fragmentary view in perspective of the arrangement shown in Figs. 7 and 8;

Fig. 12 is a fragmentary rear view in elevation as indicated by line 12—12 of Fig. 9; and

Fig. 13 is a detail vertical section, in an enlarged scale, through line 13—13 of Fig. 11.

In manifolding attachments for typewriters, such as described for instance in four other patent applications filed by me, entitled, "Ribbon advancing mechanism", filed July 6, 1934, S. N. 734,016, "Reversible ribbon feed mechanism", filed July 6, 1934, Serial No. 734,015, Patent No. 2,069,277, Feb. 2, 1937, "Means for preventing smudging by interleaved printing ribbons", filed August 10, 1934, Serial No. 739,249, Patent No. 2,092,780, Sept. 14, 1937, and "Printing ribbon covering device", filed August 10, 1934, Serial No. 739,248, copending herewith, at least an auxiliary ribbon is employed besides the ribbon forming part of the standard equipment of a typewriting machine, the auxiliary ribbon, or ribbons, being caused to run in front of the platen for the entire length thereof in correspondence of the printing line. Each auxiliary ribbon is usually inserted between two copy sheets, the front sheet being transparent, so that when the keys are struck two copies are thereby simultaneously produced.

Referring to Figs. 1 to 6, 20 designates the frame of an Underwood typewriter, on which is mounted a carriage 21, carrying platen 22. On said carriage is mounted a manifolding attachment frame 23, secured onto the carriage thereof by means of screws 24. Said attachment frame is formed with two side uprights 25, 26, and a shaft (not shown) runs across said uprights and carries at each end one of the auxiliary ribbon reels, 28, 29.

A clutch mechanism (not shown), such as described for instance in my other two first above

mentioned patent applications is provided, whereby one or the other reel may be operatively connected to said shaft, so as to function as a take-up reel for an auxiliary ribbon or ribbons, while the other functions as a paying reel. The shaft is rotated always in the same direction by some suitable driving mechanism, operative during the return movement of the carriage.

In the arrangement shown, three auxiliary ribbons, **30**, **31**, **32**, are employed, said ribbons being in superimposed relation to one another and being wound upon and unwound from said two reels **28**, **29**.

As clearly shown in Figs. 1, 2, 3, the auxiliary ribbons **30**, **31**, **32**, run from one of the reels **28** through a slotted separating guide member **33**, Fig. 3, then downwardly to the guide members **34**, **35**, **36**, each having a 45° deflecting slot **37**, then horizontally along the platen in correspondence with the writing line to similar deflecting slots **38**, provided in guide members **39**, **40**, **41**, at the other end, then upwardly to another slotted separating guide member **42** and reel **29**. It is thus seen that by virtue of this arrangement, the take-up reel will pull the auxiliary ribbons along the writing line each time the ribbon feed is operative, the other reel paying the ribbons in accordance with the angular movement of the take-up reel.

In the arrangement shown each set of two oppositely located ribbon guiding members, **34—39**, **35—40**, **36—41**, forms part of a pivotally mounted ribbon guiding frame, said frames being movable independently of one another and collectively forming part of an articulated ribbon guiding structure, which makes it possible to easily move the ribbons in and out of their operative position in order to facilitate their insertion between and withdrawal from the copy sheets.

Referring more particularly to Figs. 2 and 3, it is seen that a rod **43**, acting as a stationary shaft, runs across the manifolding attachment frame through uprights **25**, **26**, providing a pivotal support for two arms, such as shown at **44**, one at each side of the frame, the front ends of said arms being rigidly connected to each other by a tubular member **45**, forming therewith a rigid frame structure, swingable about rod **43** from the normal operative position shown in Figs. 2 and 4 to the inoperative position shown in Fig. 5. Said frame may be operated by means of an extension **46**, integral with one of the arms **44**, said extension being so shaped that by applying the thumb thereagainst and pressing the first finger against the spring pressed lever **47**, pivoted at **48** to the lower extension of arm **44**, a tooth **49** carried by said lever **47**, can be disengaged from a notch **50**, in order to make it possible to swing the frame formed by said two arms **44** and tubular member **45**, to the position shown in Fig. 5 where tooth **49** can engage another notch **51**.

The notches **50**, **51**, are preferably provided in a segment **52**, which is capable of a limited rocking motion about pivot **43** and which may be set at two different angular positions close to one another, as defined by notches **53**, **54**, which may be engaged by a spring actuated pin **55**, controlled by a knob **56**.

The purpose of notches **53**, **54** is to set segment **52** at one of two angular positions, so as to cause the upper or the lower portion of the auxiliary ribbons to remain opposite the writing line on the platen. If desired, three notches can be provided instead of two, so as to cause the upper, lower, or middle portions of the auxiliary ribbons to be used, this being obviously done in order to fully utilize the width of the ribbons for writing purposes.

Tubular member **45** forms a housing for two tubular shafts **57**, **58**, nested within one another and for a third shaft, **59**, nested within shaft **58**. Said shafts respectively connect ribbon guide members **34—39**, **35——40**, **36—41**, forming therewith ribbon guiding frames which may be separately rotated about a common axis from the lower or operative position shown in Fig. 6 in connection with ribbon guide member **36** to a raised position, such as shown in the same figure in connection with ribbon guide members **34**, **35**. When said ribbon guide members are in their raised position they are engaged by a retaining spring clip, such as shown at **60**, frictionally acting upon the same.

The frame consisting of the two arms **44** and tubular member **45** and the ribbon guiding frames consisting of shafts **57**, **58**, **59**, and the guide members carried at each end thereof, together form a knee joint structure, which permits swinging movement of said ribbon guiding frames about the axis of shafts **57**, **58**, **59** and about the axis of rod **43**. The ribbon guiding frames can be individually operated by means of fingers, such as **61**, **62**, **63** ,**64**, **65**, **66**, forwardly extending from each of the ribbon guide members, so that the arrangement makes it possible to insert in or withdraw each auxiliary ribbon from between the two copy sheets served thereby independently of the others. The arrangement also makes it possible to use only one, or two, or three ribbons as required, the ribbons which are inoperative being held by clips **60**, as shown in Fig. 4, said clips **60** being mounted at the upper end of a rod **67**, extending from its corresponding arm **44**.

In order to maintain the ribbons taut in all positions, I cause their transverse portions running between the reels and guide members **33** to be engaged by leaf springs, such as **68**, **69**, **70**, adapted to take up whatever slack might occur when the ribbons are moved from their raised position shown in Fig. 5 to their lowered position shown in Fig. 2.

The ribbon guide members are shown in the various figures, especially Figs. 1 and 6, as being provided with inward extensions, such as **71**, **72**, covering the marginal portions of the part of each ribbon running in front of the platen.

Such extensions, which should be extremely thin, have the object of preventing smudging of the copy sheets between which the ribbons are interleaved and have been described and claimed in my other co-pending application above referred to, entitled, "Means for preventing smudging by interleaved printing ribbons".

From the foregoing description it will be seen that the structure illustrated in Figs. 1 to 6 permits of inserting each auxiliary ribbon in position and removing it therefrom independently of the others, so that a maximum of flexibility is attained in the operation of the device.

In Figs. 7 to 13 I illustrate another arrangement, in which the same result may be obtained by moving the ribbon guiding frames about only one instead of two centers, so that the general construction of the device will be somewhat simplified.

In said figures, the reels **73**, **74**, carrying the auxiliary ribbons, are rotatably mounted at **75** somewhat at the rear of the platen **76** on about

the same horizontal plane, as clearly shown in Fig. 8.

The auxiliary ribbon carrying frames, indicated at 77, 78, 79, are nested within one another, and are pivoted on the same axis as the reels 73, 74, each frame consisting of a horizontal tract 80, 81, 82, and two side arms, such as indicated at 83 in Fig. 8, each side arm having a downwardly directed curved extension, such as shown at 84, each extension having a transverse slot 85 at its upper end and an inclined slot 86 at its lower end, guiding the ribbons 87, 88, 89.

Each downward extension is also preferably provided with an inwardly directed horizontal extension, such as 90, protecting the marginal portion of the copy sheets 91 against smudging.

Said ribbon guiding frames 77, 78, 79, can be raised independently of one another to the position shown in dot and dash lines at 84' in Fig. 8, being held in said position by a light spring ledge 92. They can be operated by means of laterally extending pins, such as 93, and furthermore, they can be held in different operative positions by means of a lever 94, pivoted at 95, adapted to engage any one of two or three slots 96, formed in a lug 97, upwardly extending from the front portion of each arm 83. In this manner it becomes possible to set one portion or another of the horizontal tract of the auxiliary ribbons in correspondence with the writing line.

The ribbon feed may be effected by means of a drum, such as 98, mounted on a horizontal shaft 99, running from front to rear, said shaft carrying a pinion 100, in mesh with a gear wheel 101 mounted on longitudinal shaft 102, carrying reels 73, 74. The operation of drum 98 takes place each time the carriage is returned to the line starting position, the rotation of said drum being caused by a tape 103, wound upon said drum, having its free end anchored to the typewriter frame at 104.

For a better understanding of the ribbon feeding mechanism reference is made to my other co-pending applications above referred to, entitled "Ribbon advancing mechanism" and "Reversible ribbon feed mechanism".

It will be observed that a maximum of flexibility can be obtained in the operation of my device, due to the fact that the auxiliary ribbons are guided and operated by means of independent frames movable from operative to inoperative position and preferably adapted to be set at different operative positions.

The structural details of my invention may vary from those shown, the drawings being intended for illustrative purposes only and not in a limiting sense; I, therefore, reserve the right to carry my invention into practice in all those ways and manners which may enter, fairly, into the scope of the appended claims.

I claim:

1. In a front strike machine of the character described, a platen, a copy ribbon, rotatably mounted reels therefor, a ribbon guiding frame comprising two side arms upwardly extending from a point in proximity to and directly in front of said platen at each end thereof, said arms having means for guiding said ribbon to extend from one end to the other of the writing line in front of said platen, and then from each end to one of said reels, said frame being swingable to move said ribbon from its operative position in front of said platen to a position entirely detached therefrom, so as to facilitate insertion of said ribbon between copy sheets, and its removal therefrom, and tensioning means for said ribbon, adapted to take up the slack due to the swinging of said frame from one of its positions to another.

2. In a front strike machine of the character described, a platen, a copy ribbon, rotatably mounted reels therefor, a ribbon supporting frame comprising two side arms pivotally mounted on a longitudinal axis above said platen, a ribbon guiding frame pivotally mounted on a longitudinal axis on said ribbon supporting frame eccentrically of the pivotal support thereof, said ribbon guiding frame having a depending ribbon guiding arm at each end thereof, for guiding said ribbon to extend from one end to the other of the writing line in front of said platen, upwardly, and then rearwardly from each arm to one of said reels, said ribbon guiding frame forming with said ribbon supporting frame a knee joint structure adapted to hold the horizontal tract of said copy ribbon directly in front of the writing line of said platen, or to move said copy ribbon away from said platen, means for retaining said ribbon supporting frame in either one of two extreme angular positions, and means for adjusting the angular position of said retaining means.

3. In a front strike machine of the character described the combination, with a platen, a copy ribbon, and rotatably mounted reels therefor, of a ribbon supporting frame comprising two side arms pivotally mounted on a longitudinal axis above said platen, a ribbon guiding frame pivotally mounted on a longitudinal axis on said ribbon supporting frame eccentrically of the pivotal support thereof, said ribbon guiding frame having a depending ribbon guiding arm at each end thereof, and forming with said ribbon supporting frame a knee joint structure adapted to hold a horizontal tract of said copy ribbon directly in front of the writing line of said platen, or to move said copy ribbon away from said platen, means for retaining said ribbon supporting frame in either one of two extreme angular positions, means for adjusting the angular position of said retaining means, and means for retaining said ribbon guiding frame in its inoperative position.

4. In a front strike machine of the character described, a platen, a plurality of copy ribbons, rotatably mounted reels therefor, an individual ribbon guiding frame for each ribbon, comprising two side arms upwardly extending from a point in proximity to and directly in front of said platen at each end thereof, said arms having means for guiding said ribbon to extend in front of the writing line across said platen, from one end to the other, upwardly, and then rearwardly from each arm to one of said reels, each frame being swingable to move its respective ribbon from its operative position in front of said platen to a position entirely detached therefrom, so as to facilitate insertion of said ribbon between copy sheets, and its removal therefrom, and means for adjusting the operative position of said frames, so as to cause different longitudinal portions of said ribbons to register with the printing line.

5. In a front strike machine of the character described, a platen, a plurality of copy ribbons, rotatably mounted reels therefor, an individual ribbon guiding frame for each ribbon, comprising two side arms upwardly extending from a point in proximity to and directly in front of said platen at each end thereof, said arms having means for guiding said ribbon to extend in

front of the writing line across said platen from one end to the other, upwardly, and then rearwardly from each end to one of said reels, each frame being swingable to move its respective ribbon from its operative position in front of said platen, to a position entirely detached therefrom, so as to facilitate insertion of said ribbon between copy sheets, and its removal therefrom.

6. In a front strike machine of the character described, a platen, a plurality of copy ribbons, rotatably mounted reels therefor, an individual ribbon guiding frame for each ribbon, comprising two side arms upwardly extending from a point in proximity to and directly in front of said platen at each end thereof, said arms having means for guiding said ribbon to extend in front of the writing line across said platen, from one end to the other, upwardly, and then rearwardly from each arm to one of said reels, each frame being swingable to move its respective ribbon from its operative position in front of said platen, to a position entirely detached therefrom, so as to facilitate insertion of said ribbon between copy sheets, and its removal therefrom, and tensioning means for each ribbon, adapted to take up the slack due to the swinging of its guiding frame from one of its positions to another.

7. In a front strike machine of the character described, a platen, a plurality of copy ribbons, rotatably mounted reels therefor, a ribbon supporting frame comprising two side arms pivotally mounted on a longitudinal axis above said platen, a plurality of ribbon guiding frames, one for each ribbon, pivotally mounted on a common longitudinal axis on said ribbon supporting frame eccentrically of the pivotal support thereof, each ribbon guiding frame having a depending ribbon guiding arm at each end thereof, and forming with said ribbon supporting frame a knee joint structure adapted to hold a horizontal tract of a copy ribbon directly in front of the writing line on said platen, or to move said copy ribbon away from said platen, and means for operating each ribbon guiding frame independently of the others.

8. In a front strike machine of the character described, a platen, a plurality of copy ribbons, rotatably mounted reels therefor, a ribbon supporting frame comprising two side arms pivotally mounted on a longitudinal axis above said platen, a plurality of ribbon guiding frames, one for each ribbon, pivotally mounted on a common longitudinal axis on said ribbon supporting frame eccentrically of the pivotal support thereof, each ribbon guiding frame having a depending ribbon guiding arm at each end thereof, and forming with said ribbon supporting frame a knee joint structure adapted to hold a horizontal tract of copy ribbon directly in front of the writing line on said platen, or to move said copy ribbon away from said platen, means for operating each ribbon guiding frame independently of the others, and means for adjusting the angular positions of said ribbon supporting frame.

9. In a front strike machine of the character described, a platen, a plurality of copy ribbons, rotatably mounted reels therefor, an individual ribbon guiding frame for each ribbon, each frame having means for guiding said ribbon to extend in front of the writing line across said platen from one end to the other, each frame being swingable to move its respective ribbon from its operative position in front of said platen, to a position entirely detached therefrom, so as to facilitate insertion of said ribbon between copy sheets, and its removal therefrom, said frames being mounted on a common pivotal support, and means for selectively setting said frames at various operative positions, so as to cause different longitudinal portions of said ribbons to register with the printing line.

GUIDO M. SACERDOTE.