Dec. 31, 1929. J. A. B. SMITH 1,741,545

TYPEWRITING MACHINE

Filed Jan. 5, 1927 4 Sheets-Sheet 1

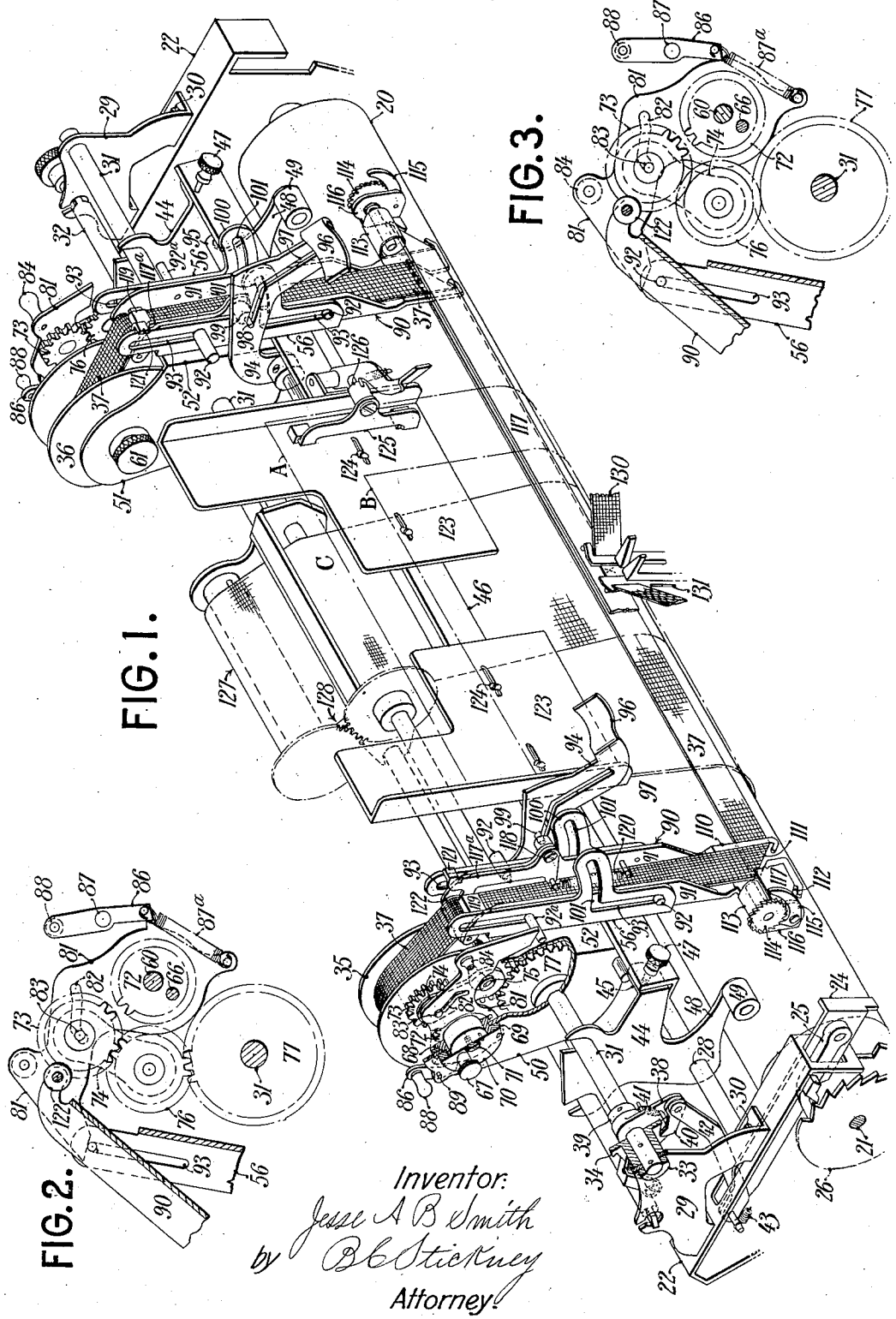


FIG. 1.

FIG. 3.

FIG. 2.

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TYPEWRITING MACHINE

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FIG. 4.

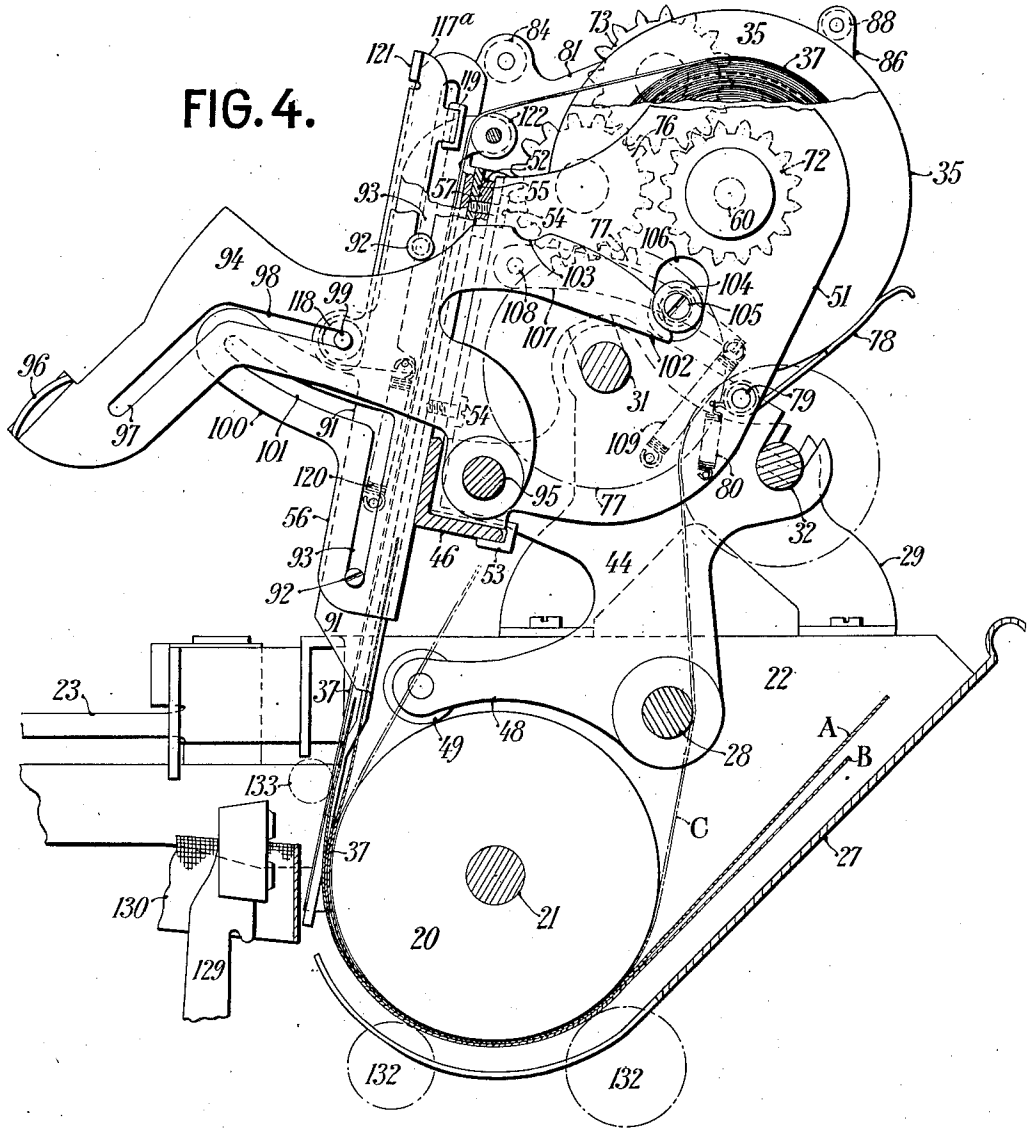
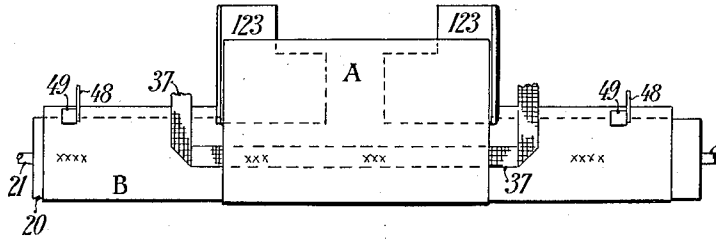


FIG. 5.



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TYPEWRITING MACHINE

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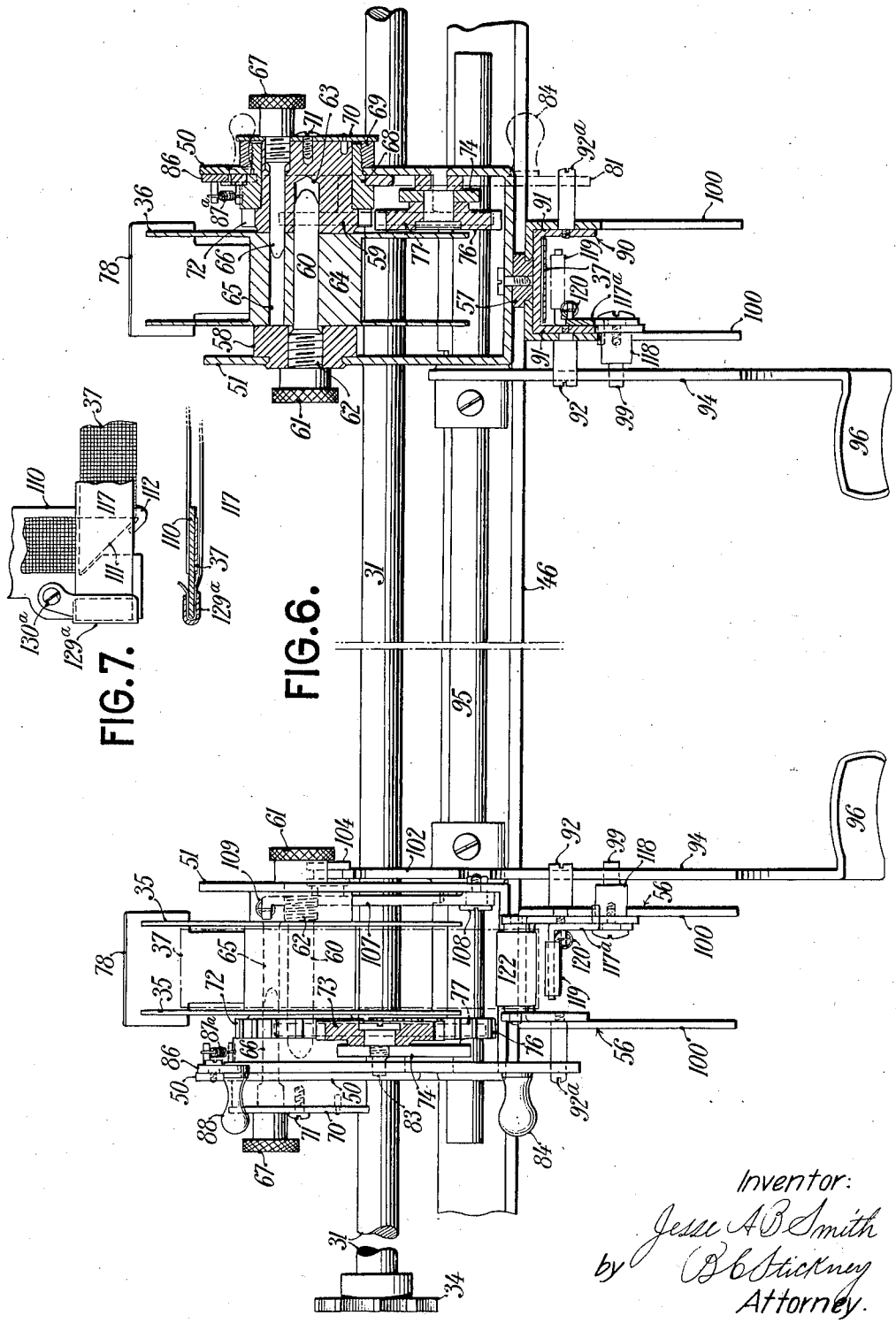


FIG. 6.

FIG. 7.

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TYPEWRITING MACHINE

Filed Jan. 5, 1927 4 Sheets-Sheet 4

FIG.9.

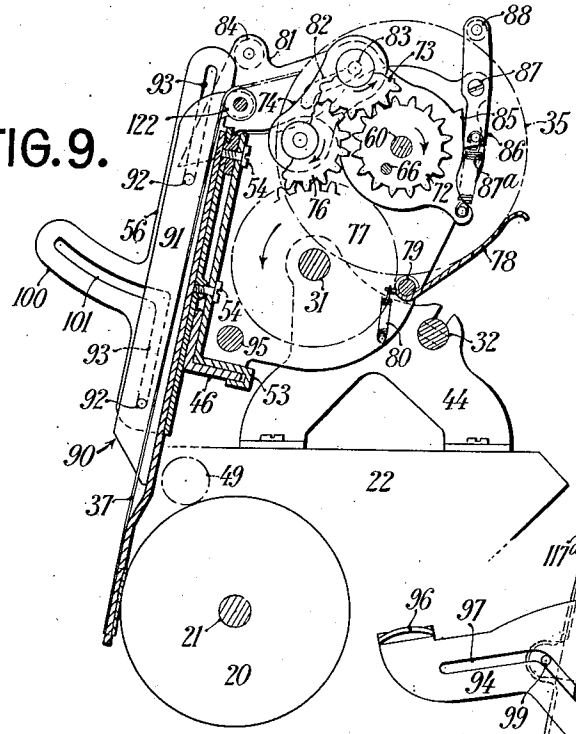


FIG.8.

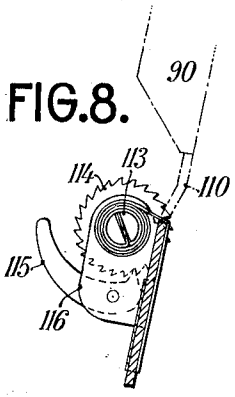


FIG.10.

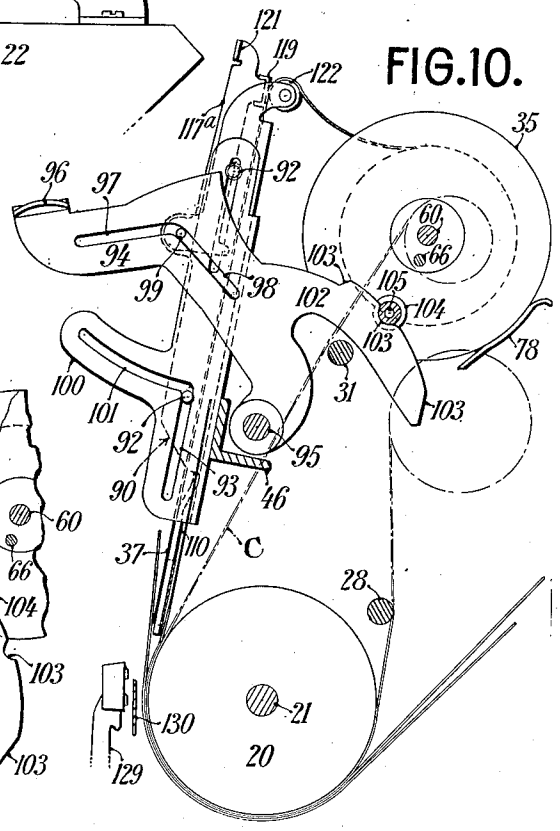
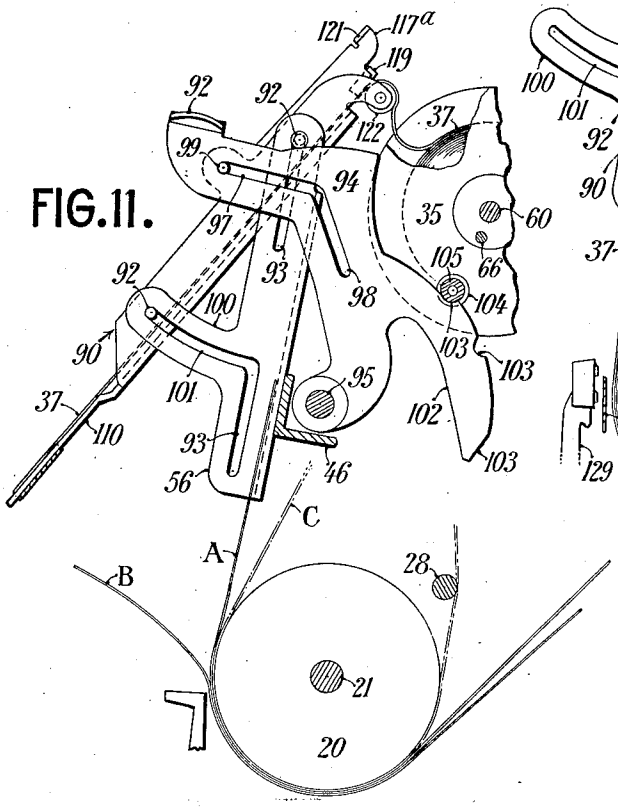


FIG.11.



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Patented Dec. 31, 1929 1,741,545

UNITED STATES PATENT OFFICE

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TYPEWRITING MACHINE

Application filed January 5, 1927. Serial No. 159,046.

This invention relates to typewriting machines of that class where an auxiliary inking ribbon interposed between the work sheets is employed to manifold a record-sheet with permanent characters.

In retail bill and charge work, or statement-sheet and ledger-work, or in recording gas, electric, and insurance records, or in typing bank checks and many other commercial forms, only a single line is typed at each insertion of a work-sheet, but there are repeated insertions of the same sheet in recording transactions over an extended period of time.

It has been customary to employ an auxiliary ribbon-carrying frame that is mounted upon the traveling carriage, and to stretch a section of ribbon along the platen so that it may be shifted, at will, to an inoperative position above the typing line. This is done when manifolding is not desired, or during an interval of adjusting new work-sheets. In employing an auxiliary inking ribbon of this character, the work-sheets are liable to become soiled through contact with the ribbon during the adjustments of the repeatedly inserted sheets around the platen, and an uninked web has been stretched over the longitudinal face of the auxiliary ribbon-section to protect the sheet, the protecting web being mounted upon the ribbon-carriers and sometimes provided with longitudinal feeding means.

It is sought by the present invention to improve upon the method of stretching the auxiliary ribbon and the protecting web over the typing line of the platen; to improve the manner of automatically feeding the auxiliary ribbon from spool to spool; to improve the method of lifting the auxiliary ribbon-frame above the typing position; and to improve the assembling and controlling of the ribbon-protecting web.

It is proposed in the present invention to provide an auxiliary ribbon-mechanism having a pair of frames, each frame mounted upon one end of the platen-frame to support a ribbon-spool and a spool-feeding mechanism above the platen; that each spool-supporting frame may include a combined ribbon-guide and ribbon-vibrator slidably supported in front of the spool-frame for a straight up and down shifting movement of the auxiliary ribbon in the same plane as the collated work-sheets, to avoid unnecessary rubbing contact between the ribbon and said work-sheets when the ribbon is shifted to and from the typing line; that the auxiliary ribbon when raised to an inoperative typing position will create a slack in the web intermediate the stationary spools and the sliding frame, and to prevent this slack from causing a sag in the ribbon at the longitudinal stretch therein between the guide-frames, clamps are provided at each side that become automatically operative to bind the ribbon to each guide-frame and hold the longitudinal section thereof taut during the interval the ribbon is raised to its inoperative or non-manifolding position; that the auxiliary ribbon spools may be provided with connections operative by the line-spacing mechanism to feed the ribbon longitudinally from spool to spool and each spool provided with means to change the direction of the ribbon-feed at will; and that each ribbon spool may be provided with connections co-operative with the shifting ribbon guides whereby the ribbon-feeding mechanism to the winding-up spool will be automatically disconnected when the ribbon-guides are raised above the typing line, to avoid the useless feeding of the auxiliary ribbon while the ribbon is raised to non-manifolding position above the printing line of the platen.

Heretofore where a longitudinal feed has been provided for the auxiliary ribbon, the feeding of the ribbon has usually taken place at stated intervals predetermined by some operation, as, for instance, by the swinging of the ribbon-carrying frame in shifting the ribbon to or from the typing position, which operation provides a ribbon-feeding movement only for each typing interval, and as this typing interval in some instances may include two or more successive line entries it is apparent that the type-faces will pound the same longitudinal typing track in the ribbon unaccompanied by any longitudinal feeding of the ribbon. Furthermore, the ribbon-feed operated by the swinging move-

ment of the ribbon-carrying frame must necessarily result in a slow ribbon movement requiring many frame-shifting movements to effect the passage of the ribbon through the line-length distance on the platen, and the characters manifolded through the ribbon will show a marked variation of density in the typing of the same line, which is objectionable.

The present invention provides that the ribbon-feeding mechanism be operated by the line-spacing mechanism and regardless of how many successive lines are to be manifolded, the feeding of the ribbon will take place after each line of typing and in unison with the line-feeding of the platen.

In connecting the ribbon-feed to the line-spacing mechanism it is possible to increase the extent of ribbon-feed, at each line entry, to a ribbon-feeding jump of an inch or more, and, by thus increasing the feeding distance of the ribbon at each feeding operation, decrease the interval required for the ribbon to traverse the typing line, prolong the life of the inking element, and manifold typed characters that are of a more uniform density throughout the typed line. To this end each ribbon-spool is driven by a train of gearing, the ratio of which may be changed to develop any required velocity for the driven ribbon-spool, the gears being driven by a drive-shaft operably connected through ratchet-and-pawl connection to the line-spacing mechanism, and, as the line-spacing mechanism is sometimes actuated by a power-driven means that simultaneously restores the carriage, the burden of feeding the auxiliary ribbon longitudinally is transferred from a manual operation to a power-driven operation.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a perspective view of the platen and portion of the carriage illustrating the manner of assembling the auxiliary ribbon-feeding and ribbon-controlling mechanisms to the carriage-frame, and the operative relation of the ribbon to the work-sheets and to the collating table, the several parts being shown in operative relation for typing operation.

Figure 2 is a fragmentary, sectional view illustrating the position of the ribbon-spool driving gears when the ribbon-shifting frame has been raised to the work-sheet-inserting position.

Figure 3 shows the same parts as Figure 2 with the gear-shifting lever raised to a position where a latch becomes effective to hold the lever in raised position where the driving train of gears is disconnected from the paying-out spool.

Figure 4 is a cross-section through the platen-carriage showing in elevation the ribbon-spool-supporting frame and the manually-operated lever for raising the ribbon-frame and simultaneously disconnecting the ribbon-spool-feeding mechanism.

Figure 5 is a diagrammatic view of the relative positions of the ribbon to the work-sheets and the positions of the work-sheets relative to the collating table and platen.

Figure 6 is an enlarged top or plan view of the two ribbon-spools and spool-actuating mechanism, one spool being shown in section to disclose the manner of removably securing the spool to the supporting frame.

Figure 7 includes detailed views showing the modified manner of securing the ribbon-protecting web to one leg of the auxiliary ribbon-shifting frame.

Figure 8 is an enlarged view of the means for placing the protecting web under tension between two legs of the auxiliary ribbon-frame.

Figure 9 is a vertical section through the left-hand ribbon-spool frame showing the several parts in operative position where the auxiliary ribbon covers the typing line, and the gears are in operative train with the main driving shaft to feed the ribbon during line-spacing.

Figure 10 shows the ribbon-frame shifting lever for the left-hand ribbon-spool raised to detent position, where the auxiliary ribbon has been raised from the typing position of the platen and the ribbon clamped to the shifting frame to prevent any sag in the longitudinal stretch thereof over the printing line, the slack that develops in the ribbon through the shifting of the frame being shown between the frame and the ribbon-spool.

Figure 11 is a view similar to Figure 10 except that the frame-shifting lever has been fully raised to final detent position, and the ribbon-frame has been thrown forward to give greater freedom in removing or adjusting the outer work-sheet around the platen.

The platen 20 rotates with a platen-shaft 21 having bearings within carriage-ends 22, and provided with a line-spacing mechanism including a line-space lever 23, engageable to operate a slide 24, carrying a pawl 25, operative to engage with the teeth of a ratchet-wheel 26 secured to the shaft 21, to rotate the platen a line-space distance on each actuation of the lever 23.

The carriage-ends 22 are joined together at the rear of the platen 20 by a paper-table 27 that curves under the platen to serve as a paper-deflector to guide the work-sheet to the typing-line of the platen when inserted at the rear, or to guide the work-sheet under the platen toward the rear when a sheet is collated by a front insertion. The carriage-ends are further tied together by a rod 28 extending parallel to and at the rear of the platen.

Brackets 29 are secured to each carriage-

end 22 by screws 30 and provide bearings for each end of a shaft 31 and a rod 32 located parallel to the platen. To prevent endwise movement of the shaft 31 a collar 33 secured thereto bears against the outer face of the left-hand bracket 29, while the hub of a toothed ratchet-wheel 34, secured to the shaft, bears against the inner face of said bracket. The shaft 31 operates to drive a pair of ribbon-spools 35 and 36 to feed an auxiliary inking ribbon 37, by an intermittent rotary movement of the shaft 31 through connections to the line-spacing mechanism of the platen. These connections include a crank-arm 38 mounted to vibrate freely upon the shaft 31 between the ratchet 34 and a collar 39, a pawl 40 carried by the crank-arm 38 and held in operative engagement with the ratchet 34 by a spring 41 and link 42 pivotally connected to the crank-arm 38 and to the rear end of the slide 24. In this manner the swinging of the line-space lever 23 drives the slide 24 and pawl 25 to rotate the platen 20, and the link 42 conveys the movement of the slide 24 to the crank-arm 38, causing the pawl 40 to drive the ratchet 34 and rotate the shaft 31 on the forward stroke of the line-space lever. Both pawls 25 and 40 are idly restored to normal position by a spring 43 connected to the slide 24.

Supporting means for some of the parts of the auxiliary ribbon mechanism include brackets 44 secured to the rod 28 adjacent each carriage-end 22 and interlocked with the shaft 31 and the rod 32. Each bracket 44 has an ear 45 bent inwardly at right angles to provide a pad face, to which an angle-bar 46 may be removably secured at each end by thumb-screws 47. Each bracket may also include a forwardly-projecting arm 48 having a paper-feeding roll 49 at the free end thereof to bear against the face of the platen 20.

The construction of both auxiliary ribbon-spools 35 and 36 and their controlling mechanism is identical, except for the right and left hand assembly of the parts, and the description of the left-hand spool, shown in detail in several views, will also be descriptive of the right-hand spool and its connections. Each ribbon-spool may be housed within a U-shaped bracket having side walls 50 and 51, joined together by a front wall 52. The drive shaft 31 penetrates both side walls 50 and 51 and serves to locate and anchor the spool housings in relation to the platen. Each housing may further be secured in position through the engagement of bent-over ears 53 formed at the bottom of the wall 52 to hook over the edge of the horizontal section of the angle-bar 46 with the front face of the wall 52 engaging the vertical section of said bar, and the housing clamped to said vertical section by screws 54 passing through the wall 52 and threaded into the rear wall 55 of a long and narrow U-shaped support 56 for a ribbon-carrier and guide, presently to be described. The upper screw 54 has a spacing washer 57 between the two walls 52 and 55.

Each ribbon-spool 35 and 36 may be housed within this casing between a boss 58 secured to the side wall 51 and a sleeve 59 rotatable within the side wall 50, said spools being arranged to rotate upon a spindle 60 forming a part of thumb-screws 61 having a threaded section 62 to thread into boss 58, the free end of the spindle projecting through the spool and entering a hole 63 in the sleeve 59. The core 64 of the ribbon-spool is provided with a hole 65 to receive the end of a dowel-pin 66 forming a part of a thumb-screw 67 threaded into the sleeve 59 and furnishing a means to drive the spool when the sleeve is rotated. To remove a spool both thumb-screws 61 and 67 may be unscrewed and removed from the casing. The sleeve 59 rotates within a bushing 68 threaded exterior of the side wall 50 to receive a check-nut 69 to bind the bushing, between the nut and a suitable shoulder thereon, to the side wall 50. To prevent endwise movement of the sleeve 59 within the bushing 68, a suitable shoulder may be formed on the sleeve to bear against the inner face of the bushing, and a cap 70 secured by a screw 71 to the outer face of the sleeve to overlap and bear against the face of the nut 69. In this manner the sleeve may be rotated, and through the dowel-pin 66 the sleeve will drive and control the rotary movement of the ribbon-spool. To provide a rotary movement for the sleeve 59, said sleeve may include a spool-gear 72 between the inner face of the bushing 68 and the adjoining face of the ribbon-spool.

It is a desirable feature in the ribbon-mechanism to prolong the usefulness of the inking ribbon by providing each ribbon-spool with individual driving or ribbon-feeding means that may be shifted, at will, to change the direction of ribbon-feed or to silence the ribbon-feeding mechanism for both spools when the use of an auxiliary ribbon is not required. To this end, the spool-gear 72 may be driven by a gear 73, pivotally mounted on the free end of a link 74 swingable about a pivot-stud 75 secured to the inner face of the side wall 50 to vibrate the gear 73 into and out of train with said spool-gear 72, the gear 73 being in constant mesh with an idler gear 76 rotatable on the stud 75, and which in turn is in constant mesh with a drive-gear 77 secured to the drive shaft 31. When the shaft 31 is rotated by a line-spacing movement, the gear 77 positively drives the two gears 76 and 73, and should the gear 73 be in train with the spool-gear 72, the ribbon-spool will be rotated, and a corresponding amount of ribbon-surface will be drawn through the typing line in a manner presently to appear.

As one of the ribbon-spools must be out of train with the gear-driving means when the

opposite spool becomes the ribbon-feeding spool, each spool may be provided with suitable means to serve as a drag on the paying-out spool to prevent looseness in the ribbon. In the present instance this drag takes the form of a wing-lever 78, pivotally mounted at 79 between the two side walls 50 and 51, and provided with a spring 80 tensioned to hold said lever in rubbing contact with the edges of the ribbon-spool disks.

To manually shift the gear 73 into and out of mesh with the ribbon-spool gear 72, a cam-lever 81 is assembled upon the bushing 68 against the inner face of the side wall 50 for a free swinging movement, and formed with an irregular camming slot 82 to receive a pin 83, projecting from the face of the adjoining link 74. The effect of slot 82 upon the pin 83 when the lever 81 is raised from the position shown at the left-hand spool 35, to the position shown at the right-hand spool 36 in Figure 1, is to swing the link 74 forwardly about the stud 75 and withdraw the gear 73 from its operative mesh with the ribbon-spool gear 72, and thus disconnect the spool from the driving gears rotated by the shaft 31. The lever 81 may have a finger-piece 84 to assist in operating the lever, and the lever may further be provided with detenting means to hold it at its raised position while the gear 73 is inoperative to drive the ribbon-spool gear 72, by a tooth 85, Figure 9, formed in the edge of the lever to be engaged by a pawl 86 fulcrumed at 87 to the side wall 50. A spring 87^a connected at one end to a stud at the end of the pawl 86 and with the other end connected to a stud on the lever 81 tends to throw said pawl into locking engagement with the tooth 85 of the lever. The up-and-down swing of the lever 81 is limited by the pin 83 engaging the two ends of the cam-slot 82, and when the parts are positioned, as at Figure 9, the spring 87^a is under tension to hold the lever and the two gears 72 and 73 in their operative positions, as shown. To release the pawl 86 from its locking position in Figure 3, the upper end of the pawl may be provided with a finger-piece 88 to vibrate the pawl between limits established by a pin-and-slot construction 89 between said pawl and the side wall 50.

It will be remembered that the forward part of each ribbon-spool supporting frame includes a long narrow U-shaped support 56 secured to the front thereof. This support hangs substantially vertical from the spool-frame and provides a housing for a U-shaped ribbon-guide and vibrator or ribbon-carrier 90 that nests therein for an up-and-down sliding movement, each side wall 91 of the vibrator 90 having a pair of outwardly-projecting studs or screws 92 that enter slots 93 in the side walls of the housing 56 to provide for this sliding movement of the vibrator. To raise and lower the vibrator 90 within its housing, there may be provided an actuating lever as 94 for each ribbon-vibrator, said lever being secured to a rock-shaft 95 extending between the two ribbon-spool frames, so that the actuation of one lever 94 at one ribbon-spool will also actuate the other lever at the opposite spool. This construction is provided to enable the operator to actuate the ribbon-vibrator at either end of the carriage or by either hand. Each lever 94 may be formed with a finger-piece 96 and a slot having two angular sections 97 and 98, said slots serving as cams upon a stud 99 carried by one of the side walls of the ribbon-vibrator 90. An upward swing of the lever 94 from the position of Figure 4 to that of Figure 10 forces the stud 99 to ride up the slot section 98, and the ribbon-vibrator 90 to slide upwardly within the housing 56 in a straight line parallel to the plane of the housing 56. A continued upward movement of the lever 94 from the position in Figure 10 forces the stud 99 to pass from the cam-slot section 98 into the slot section 97. The upper pair of studs 92 in the side walls of the ribbon-vibrator 90, having reached the upper ends of the upper slots 93 in both side walls of the housing 56, further upward movement of the vibrator is arrested and the movement of the lever 94 from this point tends to swing the lower end of the vibrator forwardly, the upper studs becoming fulcrums for the swinging movement. To accommodate this forward swing of the lower end of the vibrator without losing the guiding control of the side walls of the housing 56, each of said side walls is formed with an elongated ear 100. having slots 101 therein radial to the shifted position of the upper studs 92 and merging with the lower slots 93, and hence when the vibrator 90 swings forwardly to the position of Figure 11, the lower studs 92 will pass from the lower slots 93 into the radial slots 101 until the forward swing of the vibrator is arrested. Thus, either lever 94 is operative to jointly raise both ribbon-vibrators 90 in a straight line to the position of Figure 10, and then swing the vibrators forwardly to the position of Figure 11, each movement being operative for two distinct uses, as will presently appear. To hold the levers 94 at the down, up and forward positions of the vibrators 90, said levers may be formed with a tongue 102 having three depressions 103 formed in one edge thereof to engage with a flange-roller 104 mounted upon the end of a stud 105 that projects through a clearance hole 106 in the side wall 51, from a lever 107 fulcrumed at 108 to the inside of said wall and spring-pressed into engagement with the tongue 102 by a spring 109 connected to the free end of the lever 107. In swinging the lever 94, the roller 104 will ride over the edge of the

tongue that is radial to the axis of the lever and register with any depression 103.

Each vibrator 90 may be formed with a lower extension or section 110 without side walls to drop to the position of the printing line and provided with an angular ribbon-turning edge 111 to change the direction of the ribbon from the vertical plane of the vibrator to a horizontal plane extending longitudinally of the platen.

Each vibrator section 110 may provide a second web-turning section 112 to guide a protective non-inking web 117 over the longitudinal stretch of inking ribbon 37, and then turn vertically to a drum 113 where the free ends are wound up by the manual turning of a toothed disk 114 secured to the outer end of said drum and provided with a locking pawl 115, both pawl and drum being suitably mounted upon an ear 116 forming part of the vibrator section 110. In this manner the horizontal stretch of the auxiliary ribbon 37 may be provided with a protective web to prevent offsetting of the ribbon and with a means for feeding the web longitudinally to replace a soiled section thereof with a clean section drawn from one of the drums 113.

Means have been described for raising the ribbon vibrators 90 to inoperative positions, and it is obvious in so raising the vibrators a slack must develop in the ribbon between the spools and the horizontal section that may cause a sag in the latter to interfere with the proper adjustment of the ribbon between work-sheets. It is desirable therefore to clamp the ribbon to each vibrator during the interval the vibrators are raised for any purpose, and any slack formed in the ribbon will appear between the upper ends of the vibrators and the spools, as shown at Figures 10 and 11. To this end, a lever 117[a] is secured to the inner face of one side wall of each vibrator 90 by a fulcrum-screw 118, said lever extending upwardly where the free end is provided with a pad 119 to grip the ribbon between the pad and the face of the vibrator by the tension of a spring 120 flexed between a pin on the lever and a pin on the vibrator wall. The upper free end of each lever 117[a] is formed with a turned-over ear 121 that normally rests upon the edge of the upper rounded edge of the adjacent side wall of the housing 56, to hold the pad 119 from contact with the ribbon, as shown at Figure 4. The initial upward movement of the vibrator, however, causes the ear 121 to ride off the edge of the side wall, and, urged by the spring 120, to grip the ribbon between the pad 119 and a roller 122 carried by the vibrator 90.

In some classes of work the vibrators may be raised to the positions of Figure 10 where the auxiliary ribbon is temporarily raised above the typing line during a line interval, when typing is to be accomplished without manifolding. It is desirable under these circumstances to prevent any feeding of the ribbon, and while the manual manipulation of the lever 81 might be employed to disconnect the two gears 72 and 73, it is desirable to automatically effect this disconnection of the gears without any thought or attention on the part of the operator. Referring to Figure 1, the upper left-hand stud 92[a] is elongated, as shown, to engage with the free forward end of the lever 81, so that, when a ribbon-vibrator is lifted by a lever 94, said stud will rise with the vibrator, pick up the lever 81 at the winding-up spool, and, in vibrating the lever, the cam-slot 82 therein will effect the swinging of the gear 73 out of operative mesh with the spool-gear 72. During this upward movement of the stud 92[a] the parts will be positioned as shown at Figure 2, where the two gears 72 and 73 are shown out of engagement, but the lever 81 has not been raised sufficiently to cause the pawl 86 to interlock with the tooth 85, so that when the vibrators are again restored to their manifolding typing positions the lever 81 will be restored by the spring 87[a] and said gear 73 will re-engage with the winding-up ribbon-spool gear 72.

Sometimes a wide condensed record-sheet is adjusted around the platen from the rear to pass under the auxiliary ribbon and under rolls 49 at each end of the platen. The outer sheet may be adjusted around the platen from the front and collated upon a suitable table, as shown at Figure 5. The collating means may include two tables 123 of the well-known form and adjustably secured to the angle-bar 46 by screws 124. The right-hand table may include a paper-clamp 125 pivotally hung upon a carrier 126 swingably mounted at the side of the table and operative to clamp a work-sheet to the table under tension. Other forms may include a tally-web drawn around the platen by a winding-up spool 127 having a geared connection 128 to the driving shaft 31.

Figure 1 shows a ledger-sheet A, a statement-sheet B and a tally-web C, all in operative positions for receiving impressions from the type-bars 129 through the usual ribbon 130 vibrated by a carrier 131 to cover the printing point of the types, the types printing upon the sheet B through the ribbon 130 and manifolding the sheet A through the auxiliary ribbon 37, and, if required, manifolding the tally-web in the usual Underwood manner. To collate the sheets A and B to the positions shown, the auxiliary ribbon shifting mechanism is shifted to positions in Figure 11. Ledger-sheet A may be inserted at the rear of the platen and fed around under the feed-rollers 132 previously thrown off, the leading-in end of the sheet drawn up through the typing position to the collating table 123, and the sheet aligned to the typing line for the first line entry and squared by aligning the right-hand edge of

the sheet to the right-hand edge of the table, when the paper-holding clamp 125 is swung to the position shown, to bind the ledger-sheet to the face of the collating table. The statement-sheet B is usually adjusted to the platen by a front insertion of one lower corner between the platen and deflector and forced rearwardly under the platen and the sheet then straightened and aligned to the typing position and squared against the left-hand wall of the collating table, when the feed-rollers 132 are restored to bind both sheets A and B to the platen, and the clamp 125 is swung sidewise to a raised inoperative position. The end of the sheet B may be bent forwardly, as shown at Figure 11, and while held in this position a lever 94 is depressed to first swing the auxiliary ribbon-vibrators 90 from the positions in Figure 11 to those in Figure 10, and then from the positions of Figure 10 to those of Figure 9, where the auxiliary ribbon and its protecting web is positioned to cover the typing line. The sheet B may now be forced rearwardly against the collating table and both sheets A and B held in operative position thereto by swinging the usual center roll 133 to bear against the outer face of the sheet B. In typing a single-line entry upon the statement-sheet a manifold entry is recorded in ink upon the ledger-sheet and at the conclusion of this single-line entry, the line-spacing mechanism advances both sheets A and B a line-space distance, and, through the connections to the shaft 31, the winding-up spool is correspondingly rotated to jump the auxiliary ribbon along the typing line from the paying-out spool, and when the tally-sheet is employed the shaft 31 will also rotate the winding-up spool therefor to draw the web around the platen a line-space distance. If the operation includes only a single-line entry on the statement-sheet, said sheet is removed and replaced by another. If, however, a second line-entry should be required upon the sheet B, and without manifolding the entry upon the sheet A, the lever 94 is raised from a position in Figure 4 to the position of Figure 10 to raise the auxiliary ribbon above the typing position and no transfer will be made upon the sheet A during the second or more subsequent line-entries upon the sheet B. The mechanism for raising the auxiliary ribbon operates to render the ribbon-clamps 119 effective, and throws the gear 73 out of mesh with the winding-up spool gear 72 to prevent feeding of the auxiliary ribbon by the second or more line-spacing movement of the sheet B.

While the operation described provides for the withdrawal of the auxiliary ribbon after a single-line entry the ribbon control is such that the stretch of ribbon between the two lower extensions 110 of the vibrators is at all times taut and without any sag at the middle of the ribbon, and hence should the character of the typing require it the auxiliary ribbon may be restored from the position of Figure 10 to the operative position of Figure 1, and in this manner skip manifolding certain full-line entries or parts of a single-line entry during successive line-entries upon the outer sheet B, the mechanism providing an auxiliary ribbon control that may be operated to present said ribbon to the typing line, at will, for either a full or a partial manifolding of the line typed.

Instead of winding up the opposite ends of the protective web 117, a modified arrangement is shown at Figure 7, where the ends of the web are clamped to each vibrator extension 110 by a U-shaped clip 129ª pivoted at 130ª to the extension and arranged to be forced over the edge of the extension with the web in between. In this form the webs may be cut to length and a soiled web may be removed and replaced by a new length, instead of winding up either end of the web.

It will be apparent that, where checks are being typed, the name of the payee and the amount will be manifolded in a single line on the ledger or record sheet, but the second line, consisting of the amount of the check written out in full, is not, in general, so manifolded, and the auxiliary ribbon will therefore be raised to the non-manifolding position of Figure 10. When the ribbon is in this position, new checks may be inserted from the front and collated with the ledger-sheet, which, it is assumed, is to be used with a number of checks, and the ribbon is then lowered to operative position. Where a continuous strip of connected checks or statement-forms is employed, and where a single ledger-sheet is to be used with a number of such forms, relative shifting and collation of the next form to be typed and the ledger-sheet may be accomplished while the ribbon is in the Figure 10 position after clamping the ledger-sheet to the table and throwing off the feed-rolls 132.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage and stationary with respect thereto to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool and between the latter and the platen, and a ribbon-vibrator slidably mounted upon each guide and operative to direct the ribbon from each spool to the typing line and then deflect the path of the ribbon along the typing line.

2. In a typewriting machine, the combination of a carriage having a platen, a pair of

ribbon-spools, a frame at each end of the carriage and stationary with respect thereto to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool and between the latter and the platen, a ribbon-vibrator slidably mounted upon each guide and operative to direct the ribbon from each spool to the typing line and then deflect the path of the ribbon along the typing line, and manual means operable to actuate each ribbon-vibrator.

3. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage and stationary with respect thereto to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool and between the latter and the platen, a ribbon-vibrator slidably mounted upon each guide and operative to direct the ribbon from each spool to the typing line and then deflect the path of the ribbon along the typing line, manual means operable to actuate each ribbon-vibrator, and means for connecting the manual means together for a unitary actuation of both ribbon-vibrators.

4. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage and stationary with respect thereto to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool and between the latter and the platen, a ribbon-vibrator slidable within each guide and operative to guide the ribbon from each spool to the typing line, and means operative to retain each ribbon-vibrator within its guide and limit the up-and-down movement thereof.

5. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool, and between the latter and the platen a ribbon-vibrator slidable within each guide and operative to guide the ribbon from each spool to the typing line, and pin-and-slot connections between each ribbon-vibrator and guide operative to retain each ribbon-vibrator within its guide and limit the up-and-down movement thereof.

6. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool, and between the latter and the platen a ribbon-vibrator slidable within each guide and operative to guide the ribbon from each spool to the typing line, means operative to retain each ribbon-vibrator within its guide and limit the up-and-down movement thereof, and operating means including a control-lever connected to each ribbon-vibrator and means for rendering either lever operative to jointly actuate both vibrators to shift the ribbon to or from the typing line.

7. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool and between the latter and the platen, a ribbon-vibrator slidable within each guide and operative to guide the ribbon from each spool to the typing line, means operative to retain each ribbon-vibrator within its guide and limit the up-and-down movement thereof, means including a control-lever for each ribbon-vibrator having a camming connection thereto, and connections between said levers whereby either lever is operative to jointly actuate both vibrators to shift the ribbon to or from the typing line.

8. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool, a ribbon-vibrator slidable within each guide and operative to guide the ribbon from each spool to the typing line, means operative to retain each ribbon-vibrator within its guide and limit the up-and-down movement thereof, and means operable to control each ribbon-vibrator, including a lever having means engageable with the vibrator, whereby a continuous upward throw of said lever will first effect a straight upward sliding movement of the ribbon-vibrator between the typing line and a predetermined point, and then effect a forward swinging movement of the ribbon-carrying end of the vibrator.

9. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools, a frame at each end of the carriage to support a ribbon-spool over the platen, a vertically-disposed guide in front of each ribbon-spool, a ribbon-vibrator slidable within each guide and operative to guide the ribbon from each spool to the typing line, means operative to retain each ribbon-vibrator within its guide and limit the up-and-down movement thereof, means operable to control each ribbon-vibrator, including a lever having means engageable with the vibrator, whereby a continuous upward throw of said lever will first effect a straight upward sliding movement of the ribbon-vibrator between the typing line and a predetermined point, and then effect a forward swinging movement of the ribbon-carrying end of the vibrator, and a detent operative to detain the control-lever at each predetermined stop-position.

10. In a sheet-collating typewriting machine, the combination of a carriage, a platen

therefor, means for advancing a pair of superposed work-sheets around the platen, a main ribbon cooperative with one of said work-sheets, an auxiliary ribbon, spools therefor, and means for facilitating the collation of work-sheets interleaved with the ribbons, including a vertically-disposed slidable ribbon-carrier at each end of the carriage, having means to direct a vertically-disposed ribbon to the longitudinal typing line, each carrier having connections manually operable to vibrate both carriers in unison, to raise and lower the auxiliary ribbon relatively to the typing line and between the two work-sheets, and then forwardly away from said sheets, said spools being stationarily mounted relatively to said ribbon-carriers.

11. In a typewriting machine, the combination with a carriage having a platen around which a pair of superposed work-sheets are adjusted, and having a main ribbon automatically shiftable to cover and uncover the printing point on one work-sheet, of an auxiliary ribbon-mechanism operable to shift a manifolding ribbon to cover and uncover the whole typing line of the other work-sheet, said mechanism including a ribbon-spool-frame at each end of the carriage and above the platen, ribbon-spools mounted therein, a ribbon-carrier slidably mounted upon each spool-frame and operative to guide the ribbon from the spools toward the printing line and to jointly direct the ribbon longitudinally of the platen, and manual means operative to shift said ribbon-carriers and vibrate the auxiliary ribbon to or from the typing line and toward and away from the work-sheets.

12. In a typewriting machine, the combination with a carriage having a platen around which a pair of superposed work-sheets are adjusted, and having a main ribbon automatically shiftable to cover and uncover the printing point on one work-sheet, of an auxiliary ribbon-mechanism operable to shift a manifolding ribbon to cover and uncover the whole typing line of the other work-sheet, said mechanism including a ribbon-spool-frame at each end of the carriage, a ribbon-carrier slidably mounted upon each spool-frame and operative to jointly direct the ribbon longitudinally of the platen, and manual means to vibrate said carriers to or from the typing line, said means including a rock-shaft, a lever at each spool-frame secured to said shaft, and means co-operative with each lever to vibrate both carriers in unison.

13. In a typewriting machine, the combination of a carriage, a platen therefor, means for advancing a pair of superposed work-sheets around the platen, a main ribbon co-operative with one of said work-sheets, a ribbon-spool at each end of the carriage, an auxiliary ribbon feedable from spool to spool, a slide at each spool movable relatively thereto and between the spool and the platen and operative to direct the auxiliary ribbon to the typing line and thence longitudinally of the platen between the work-sheets, and hand-actuated means operatively connected to individually raise and lower each slide to jointly effect a shifting movement for the auxiliary ribbon to and from the typing line and toward and away from the work-sheets.

14. In a typewriting machine, the combination with a carriage having a platen around which a pair of superposed work-sheets may be adjusted to the typing line, of a line-spacing mechanism for the platen, a ribbon interposable between the two-work-sheets longitudinally of the typing line, ribbon-spools on the carriage, means operated directly by the line-spacing mechanism and independent of the platen and connectible to rotate one spool to feed the ribbon, a pair of slides operative to change the vertical paths of the ribbon from both spools to a horizontal typing path between the slides, means to vibrate the slides to interpose the horizontal ribbon between the two work-sheets at the typing line, and means operable by the ribbon-interposing movement of the slides to render the connections to the line-spacing mechanism operative to rotate the ribbon-spool.

15. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, and manual means operative to vibrate the guides rectilinearly to render the ribbon operative or inoperative to print, and also operative to swing the guides forwardly to sheet-collating position to remove the ribbon from the platen.

16. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, and manual means operative when in one position to move the guides in either of two opposite directions to render the ribbon operative or inoperative to the typing line, and when in another position to move the guides forwardly to sheet-collating position to remove the ribbon from the platen.

17. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, and manual means to vibrate the guides, said means being operative to shift the guides and ribbon in a straight line from operative to non-manifolding position, or swing the guides and ribbon radially to sheet-collating position to

facilitate insertion and collation of the work-sheets.

18. In a typewriting machine, the combination of a carriage having a platen around which a pair of superposed work-sheets are adjusted, a main ribbon for typing upon one work-sheet, an auxiliary ribbon feedable from spools mounted over the platen and at each end of the carriage, a ribbon-guide for each spool to direct the auxiliary ribbon to the typing line and between the work-sheets, and manual means operative at one time to slide the auxiliary ribbon rectilinearly between the two work-sheets to render the ribbon operative or inoperative to print, and at another time operative to swing the auxiliary ribbon away from the platen to sheet-collating position to permit the insertion and adjustment of the work-sheets.

19. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, each ribbon-guide slidable relatively to its spool and mounted upon the carriage and operative to carry the ribbon to and from the typing line, spool-feeding mechanism normally disconnected from the spools when said ribbon is in inoperative position, and means actuated by the movement of the guides in presenting the ribbon to the typing line to automatically connect either spool to the spool-feeding mechanism.

20. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, each ribbon-guide slidable relatively to the spool and mounted upon the carriage and operative to carry the ribbon to and from the typing line, spool-feeding mechanism normally disconnected from the spools when said ribbon is in inoperative position, and means actuated by the movement of the guides in presenting the ribbon to the typing line to automatically connect either spool to the spool-feeding mechanism, said means also manually operable, at will, to prevent the automatic connection of either spool to the spool-feeding mechanism.

21. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, each ribbon-guide slidable relatively to the spool and mounted upon the carriage and operative to carry the ribbon to and from the typing line, spool-feeding mechanism normally disconnected from the spools when said ribbon is in inoperative position, and means operable by the sliding movement of the ribbon-guides to automatically render the spool-feeding mechanism operative or inoperative to rotate a ribbon-spool.

22. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, each guide slidable relatively to the spool and mounted upon the carriage and operative to carry the ribbon to and from the typing line, spool-feeding mechanism including a train of gears normally disconnected from the spools when said ribbon is in inoperative position, and means operable by the movement of the ribbon-guides in presenting the ribbon to the typing line to automatically connect the train of gears to one of the ribbon-spools.

23. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a pair of ribbon-guides operative to direct the ribbon from the spools to the typing line, each guide slidable relatively to the spool mounted upon the carriage and operative to carry the ribbon to and from the typing line, spool-feeding mechanism including a train of gears normally disconnected from the spools when said ribbon is in inoperative position, and means operable by the movement of the ribbon-guides in presenting the ribbon to the typing line to automatically connect the train of gears to either ribbon-spool, said means also manually operable to prevent either spool from being rotated by the spool-driving gears.

24. In a typewriting machine, the combination of a carriage having a platen and a line-space mechanism to feed the platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a guide to direct the ribbon from each spool to the typing line, a shaft connected to be rotated by the line-space mechanism, a train of gears for each ribbon-spool driven by said shaft, a gear carried by each spool, and means for connecting or disconnecting either spool-gear to the driving train of gears by manually shifting one of the latter gears into and out of train with the associated spool-gear.

25. In a typewriting machine, the combination of a carriage having a platen and a line-space mechanism to feed the platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a guide to direct the ribbon from each spool to the typing line, a shaft connected to be rotated by the line-space mechanism, a train of gears for each ribbon-spool driven by said shaft, a gear carried by each spool, and a cam-lever for each spool operative to cam one of the

gears of the driving train to engage a spool-gear, to rotate the spool and effect the feeding of the ribbon.

26. In a typewriting machine, the combination of a carriage having a platen and a line-space mechanism to feed the platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a guide to direct the ribbon from each spool to the typing line, a shaft connected to be rotated by the line-space mechanism, a train of gears for each ribbon-spool driven by said shaft, a gear carried by each spool, and a ribbon-feed control-lever for each ribbon-spool having a two-way camming slot operative upon one gear of the driving train of gears to positively vibrate said gear into and out of operative engagement with the spool-gear at will.

27. In a typewriting machine, the combination of a carriage having a platen and a line-spacing mechanism to feed the platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a guide to direct the ribbon from each spool to the typing line, a horizontally-disposed shaft having bearings at the carriage-ends, shaft-driving mechanism including a pawl vibrated by a part of the line-space mechanism to actuate a ratchet-wheel, fixed to said shaft, at each line-spacing movement, a train of gears for each spool and positively rotated by the shaft, a gear rotatable with each spool, and a ribbon-feed control-lever for each spool, having a slot therein operatively connected to one gear of the train to swing said gear into and out of toothed engagement with a spool-gear according to the desired direction of the ribbon-feed.

28. In a typewriting machine, the combination of a carriage having a platen and a line-space mechanism to feed the platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a guide to direct the ribbon from each spool to the typing line, a horizontally-disposed shaft having bearings at the carriage-ends, shaft-driving mechanism including a pawl vibrated by a part of the line-space mechanism to actuate a ratchet-wheel, fixed to said shaft, at each line-spacing movement, a train of gears for each spool and positively rotated by the shaft, a gear rotatable with each spool, a ribbon-feed control-lever for each spool operative to cam one gear of each train into and out of toothed engagement with each spool-gear, a spring for each lever operative to shift and hold said gear in engagement with each spool-gear, and detenting means whereby each lever and associated gear may be held inoperative to prevent the feeding of one or both spools, at will.

29. In a sheet-collating machine, the combination of a carriage having a collating table and also having a platen around which a pair of superposed work-sheets are adjusted to the collating table, the latter being mounted at the front of the platen, a pair of ribbon-spools mounted on the carriage at the ends of the platen, and above said platen, a ribbon-carrier for each spool to direct the ribbon from the spool to the typing line, said ribbon-carriers mounted upon the carriage below the spools, and means to slide the ribbon-carriers up and down between the spools and the typing line to cast off the ribbon from the typing line to facilitate the insertion of a fresh work-sheet downwardly and rearwardly around the platen.

30. In a sheet-collating typewriting machine, the combination of a carriage having a collating table and also having a platen around which a pair of superposed work-sheets are adjusted to the collating table, the latter being mounted at the front of the platen, a pair of ribbon-spools mounted on the carriage at the ends of the platen, and above the platen, a ribbon-carrier for each spool to direct the ribbon from the spool to the typing line, said ribbon-carriers mounted upon the carriage below the spools, means to slide the ribbon-carriers up and down between the spools and the typing line to vibrate the ribbon between the typing line and the lower end of the collating table, and manually-operated means to actuate both ribbon-carriers in unison.

31. In a typewriting machine, the combination of a carriage having a platen around which a pair of superposed work-sheets are adjusted to a collating table at the front of the platen, a pair of ribbon-spools mounted on the carriage at the ends of the platen, a ribbon-carrier for each spool to direct the ribbon to the typing line, said ribbon-carriers mounted upon the carriage to slide between the spools and the typing line to vibrate the ribbon between the two work-sheets and in the same plane as the collated sheets, and manually-operable means to vibrate both ribbon-carriers in unison, said means including a lever for each carrier, a cam-slot in each lever to engage a stud upon the carrier, and a rock-shaft to which both levers are secured.

32. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, ribbon-guides at each spool to direct the ribbon from the spools to the typing line, ribbon-spool-feeding mechanism operative to feed the ribbon from spool to spool and to hold the ribbon taut along the typing line, means operative to shift the ribbon-guides to raise the ribbon to an inoperative position above the typing line, and means carried by each guide and releasable when the guides are raised to clamp the ribbon to both guide and thereby to prevent slack forming in the ribbon between the two guides.

33. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, ribbon-guides at each spool to direct the ribbon from the spool to the typing line, ribbon-spool-feeding mechanism operative to feed the ribbon from spool to spool and to hold the ribbon taut along the typing line, means operative to shift the ribbon-guides to raise the ribbon to an inoperative position above the typing line, and means movable with each guide and automatically operative at the initial upward shifting movement of the guides to clamp the ribbon to both guides and confine the slack formed in the ribbon to points between the guides and the ribbon-spools.

34. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, mechanism for feeding a ribbon from spool to spool, a pair of ribbon-guides slidably mounted upon the carriage between the spools and the typing line and operative to direct the ribbon from the spools to the typing line, and means automatically operative during the sliding movement of the guides to clamp the ribbon to each guide to prevent a sag in the stretch of ribbon between the two guides when the guides are moved towards the ribbon-spools.

35. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, mechanism for feeding a ribbon from spool to spool, a pair of ribbon-guides slidably mounted upon the carriage between the spools and the typing line and operative to direct the ribbon from the spools to the typing line, and ribbon-clamping means for each guide operative to hold taut the ribbon-section stretched between the two guides when said guides and ribbon are raised above the typing line to develop a looseness in the ribbon at the ribbon-spools, said clamping means including a spring-pressed pad mounted upon each guide and co-operative with means on the frame to raise or lower the pad by the sliding movement of the guide.

36. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, mechanism for feeding a ribbon from spool to spool, a pair of ribbon-guides slidably mounted upon the carriage between the spools and the typing line and operative to direct the ribbon from the spools to the typing line, and ribbon-clamping means for each guide operative to hold taut the ribbon-section stretched between the two guides when said guides and ribbon are raised above the typing line to develop a looseness in the ribbon at the ribbon-spools, said clamping means including a lever fulcrumed upon the guide, a pad at one end of the lever, a spring pressing the pad to clamp the ribbon to the guide, and a cam on the frame operative to vibrate the lever and raise the pad when the guide is operative to present the ribbon to the typing line.

37. In a typewriting machine, the combination with a platen, means for feeding a ledger and a statement sheet around said platen, a collating table at the delivery side of the platen, and a vibrating ribbon in front of said platen, of an auxiliary ribbon for producing a ribbon copy on said ledger-sheet of all or part of the matter typed on said statement-sheet, a guide at each side of the printing point for directing said auxiliary ribbon in a horizontal run in front of the platen and between the sheets, means for moving said auxiliary ribbon to the printing line to produce manifolding on said ledger-sheet and for moving said auxiliary ribbon to non-manifolding position above the printing line to avoid manifolding or to permit insertion of a new statement-sheet while the ledger-sheet is held against said collating table, and means for moving said ribbon to sheet-collating position away from the platen to facilitate the insertion of the record and statement sheets around the platen and collation thereof upon said collating table.

38. In a typewriting machine, the combination with a platen, means for feeding a ledger and a statement sheet around said platen, a collating table at the delivery side of the platen, and a vibrating ribbon in front of said platen, of an auxiliary ribbon for producing a ribbon copy on said ledger-sheet of all or part of the matter typed on said statement-sheet, a guide at each side of the printing point for directing said auxiliary ribbon in a horizontal run in front of the platen and between the sheets, means for moving said auxiliary ribbon to the printing line to produce manifolding on said ledger-sheet and for moving said auxiliary ribbon to non-manifolding position above the printing line to avoid manifolding or to permit insertion of a new statement-sheet while the ledger-sheet is held against said collating table, means for moving said ribbon to sheet-collating position away from the platen to facilitate the insertion of the record and statement-sheets around the platen and collation thereof upon said collating table, ribbon-spools upon which said auxiliary ribbon is wound, driving means for said spools, means for selectively connecting either one of said spools to said driving means, and means operated upon the movement of the ribbon to either its non-manifolding or sheet-collating positions for disconnecting the driven spool from the driving means.

39. In a typewriting machine, the combination with a platen, means for feeding a ledger and a statement sheet around said

platen, a collating table at the delivery side of the platen, and a vibrating ribbon in front of said platen, of an auxiliary ribbon for producing a ribbon copy on said ledger-sheet of all or part of the matter typed on said statement-sheet, a guide at each side of the printing point for directing said auxiliary ribbon in a horizontal run in front of the platen and between the sheets, means for moving said auxiliary ribbon to the printing line to produce manifolding on said ledger-sheet and for moving said auxiliary ribbon to non-manifolding position above the printing line to avoid manifolding or to permit insertion of a new statement-sheet while the ledger-sheet is held against said collating table, means for moving said auxiliary ribbon to sheet-collating position away from the platen to facilitate the insertion of the record and statement sheets around the platen and collation thereof upon said collating table, ribbon-spools upon which said auxiliary ribbon is wound, driving means for said spools, means for selectively connecting either one of said spools to said driving means, means operated upon the movement of the ribbon to either its non-manifolding or sheet-collating positions for disconnecting the driven spool from the driving means, and means for automatically connecting said spool to said driving means when the ribbon is moved to operative position at the printing line.

40. In a typewriting machine, the combination of a carriage having a platen, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a ribbon-vibrator mounted in front of each spool for rectilinear movement between the spool and the platen, said vibrators guiding a ribbon from the spools to form a horizontal stretch in front of the printing line, means for vibrating said vibrators to move the horizontal stretch of the ribbon to and from the printing line, and means for preventing slack in said horizontal stretch as the latter is raised to inoperative position, said last-mentioned means including clamps mounted on said vibrators and operable to clamp the ribbon against the same.

41. In a typewriting machine, the combination of carriage having a platen and line-space mechanism therefor, a main ribbon, a pair of spools mounted above the platen, an auxiliary ribbon running from spool to spool, means for guiding the auxiliary ribbon so as to present a horizontal run thereof at the printing line, and means for driving either spool selectively to wind the auxiliary ribbon thereon, said last-mentioned means including a shaft, connections between said shaft and said line-space mechanism to rotate the shaft intermittently upon operation of said mechanism, driving trains between the shaft and said spools, and clutch-arms operable to connect or disconnect at will either spool and said driving trains.

42. In a typewriting machine, the combination of a carriage having a platen and line-space mechanism therefor, a main ribbon, a pair of spools mounted above the platen, an auxiliary ribbon running from spool to spool, means for guiding the auxiliary ribbon so as to present a horizontal run thereof at the printing line, and means for driving either spool selectively to wind the auxiliary ribbon thereon, said last-mentioned means including a shaft, connections between said shaft and said line-space mechanism to rotate the shaft intermittently upon operation of said mechanism, driving trains between the shaft and said spools, clutch-arms operable to connect or disconnect at will either spool and said driving trains, and manual means for vibrating said ribbon-guiding means toward and away from the platen, the clutch-arm associated with the driven spool extending into the path of the guiding means to be moved thereby to break the driving train when the ribbon is raised to inoperative position.

43. In a typewriting machine, the combination of a carriage having a platen and line-space mechanism therefor, a main ribbon, a pair of spools mounted above the platen, an auxiliary ribbon running from spool to spool, means for guiding the auxiliary ribbon so as to present a horizontal run thereof at the printing line, and means for driving either spool selectively to wind the auxiliary ribbon thereon, said last-mentioned means including a shaft, connections between said shaft and said line-space mechanism to rotate the shaft intermittently upon operation of said mechanism, driving trains between the shaft and said spools, clutch-arms operable to connect or disconnect at will either spool and said driving trains, manual means for vibrating said ribbon-guiding means toward and away from the platen, the clutch-arm associated with the driven spool extending into the path of the guiding means to be moved thereby to break the driving train when the ribbon is raised to inoperative position, and means for automatically swinging said arm to effect coupling between the spool and shaft when the ribbon is lowered to operative position at the printing line.

44. In a typewriting machine, the combination with a platen, of a collating table at the delivery side of the platen, releasable means to hold a sheet against the table, a main ribbon, a spool-fed auxiliary ribbon between the main ribbon and the platen, means for casting off said auxiliary ribbon from its printing position far enough to afford access to the table and work-sheets for manipulation thereof, and for then inserting the auxiliary ribbon to printing position between the collated sheets, while the front collated sheet is flexed forwardly, releasable means

for holding the collated sheets against the platen, and means for releasably holding the auxiliary ribbon at spool-fed tension during the ribbon-inserting operation.

45. In a typewriting machine, the combination with a platen, of a collating table at the delivery side of the platen, releasable means to hold a sheet against the table, a main ribbon, a spool-fed auxiliary ribbon between the main ribbon and the platen, means for casting off said auxiliary ribbon from its printing position far enough to afford access to the table and work-sheets for manipulation thereof, and for then inserting the auxiliary ribbon to printing position between the collated sheets, while the front collated sheet is flexed forwardly, releasable means for holding the collated sheets against the platen, and means for releasably holding the auxiliary ribbon at spool-fed tension during the operations of inserting and casting off the ribbon.

46. In a typewriting machine, the combination with a platen, of a collating table at the delivery side of the platen, releasable means to hold a sheet against the table, a main ribbon, a spool-fed auxiliary ribbon between the main ribbon and the platen, means for casting off said auxiliary ribbon from its printing position far enough to afford access to the table and work-sheets for manipulation thereof, and for then inserting the auxiliary ribbon to printing position between the collated sheets, while the front collated sheet is flexed forwardly, releasable means for holding the collated sheets against the platen, and means for releasably holding the auxiliary ribbon at spool-fed tension during the ribbon-inserting operation, said last-named means operable to release the auxiliary ribbon when the same is restored to printing position.

47. In a typewriting machine, the combination with a platen, of a collating table at the delivery side of the platen, releasable means to hold a sheet against the table, a main ribbon, a spool-fed auxiliary ribbon between the main ribbon and the platen, means for casting off said auxiliary ribbon from its printing position far enough to afford access to the table and work-sheets for manipulation thereof, and for then inserting the auxiliary ribbon to printing position between the collated sheets, while the front collated sheet is flexed forwardly, releasable means for holding the collated sheets against the platen, and means for releasably holding the auxiliary ribbon at spool-fed tension during the operations of inserting and casting off the ribbon, said last-named means operable to release the auxiliary ribbon when the same is restored to printing position.

48. In a typewriting machine, the combination of a carriage having a platen around which a pair of superposed work-sheets are collated, a pair of ribbon-spools mounted over the platen at opposite ends of the carriage, a ribbon-carrier for each spool to direct the ribbon from the spool to the typing line and slidably mounted upon the carriage to present a longitudinal stretch of ribbon to the typing line and between the collated work-sheets, spools mounted upon the slidable ribbon-carriers, a ribbon-shielding web secured at its ends to the last-mentioned spools to cover one face of the longitudinal ribbon, and detent means co-operative with each of said web-spools to hold the web taut intermediate the two ribbon-carriers.

49. In a front-strike typewriting machine, the combination with a carriage having a platen operable to feed a pair of superposed work-sheets, and a ribbon to cover the typing line of the platen and feedable between the work-sheets, of a ribbon-vibrator suspended from the carriage to support the ribbon at each side of the work-sheets and cover the typing line, manually-operable means mounted upon the carriage and including an operating lever connected to the vibrator to shift the latter to non-manifolding position, and guides effective upon the vibrator at said non-manifolding position and co-operating with the lever to shift the vibrator and ribbon from non-manifolding position to a sheet-inserting position during a continuous movement of the operating lever.

50. In a typewriting machine, the combination with a carriage having a platen, a spool-fed ribbon and a ribbon-vibrator mounted upon the carriage ends and operable to shift a line-length section of the ribbon between the spools with an interrupted vibratory movement to cover and uncover the typing line of the platen, of means mounted upon each end of the vibrator and operative to hold the line-length section of the ribbon under a spool-fed non-sagging tension throughout the movement of the ribbon-vibrator, said means effective only while the ribbon is covering the typing line to release the ribbon to be fed by the ribbon-feeding spool.

51. In a type-writing machine, the combination with a platen, of a collating table at the delivery side of the platen, releasable means to hold a sheet against the table, a main ribbon, a spool-fed auxiliary ribbon between the main ribbon and the platen, means for casting off said auxiliary ribbon from its printing position far enough to afford access to the table and work-sheets for manipulation thereof, and for then inserting the auxiliary ribbon to printing position between the collated sheets, while the front collated sheet is flexed forwardly, releasable means for holding the collated sheets against the platen, and manually-operable means controllable by said casting-off means for line-feeding the auxiliary ribbon while the latter is in printing position between the sheets.

52. In a typewriting machine, the combination with a carriage having a platen operable to feed a pair of superposed work-sheets, and a ribbon to cover the typing line and feedable between the work-sheets, of a ribbon-carrier suspended from the carriage and manually operable to raise the same to sheet-collating position above the printing line, and means for rocking said carrier forwardly and away from the platen to sheet-inserting position upon continued rising movement to facilitate insertion of work-sheets around the platen.

53. In a typewriting machine, the combination with a carriage having a platen operable to feed a pair of superposed work-sheets, and a ribbon to cover the typing line and feedable between the work-sheets, of a ribbon-carrier swingably suspended from the carriage, and means stationary with the carriage and co-operative with the swinging movement of the carrier, to raise the ribbon from the printing line to sheet-collating position above the platen and, upon continued swinging of said carrier, to deflect the ribbon forwardly and away from the platen to sheet-inserting position to facilitate insertion of work-sheets around the platen.

54. In a typewriting machine, the combination with a carriage having a platen operable to feed a pair of superposed work-sheets, and a ribbon to cover the typing line and feedable between the work-sheets, of a ribbon-carrier swingably suspended from the carriage, and guides stationary with the carriage and operatively connected to the carrier, to divert the swinging path of the ribbon first to raise the ribbon from the printing line to sheet-collating position above the platen, and upon continued swinging of said carrier, to deflect the ribbon forwardly and away from the platen to sheet-inserting position to facilitate insertion of work-sheets around the platen.

55. In a front-strike typewriting machine, the combination with a carriage having a platen operable to feed a pair of superposed work-sheets, and a ribbon to cover the typing line on the platen and feedable between the work-sheets, of a ribbon-carrier suspended from the carriage to support the ribon at each side of the work-sheets and cover the typing line, and manually-operable means mounted upon the carriage and including an operating lever having connections with the ribbon-carrier operative to convey an interrupted swinging movement effective to first swing the ribbon above the typing line and then swing the ribbon away from the platen to a sheet-inserting position.

56. In a front-strike typewriting machine, the combination with a carriage having a platen operable to feed a pair of superposed work-sheets, and a ribbon to cover the typing line on the platen and feedable between the work-sheets, of a ribbon-carrier suspended from the carriage to support the ribbon at each side of the work-sheets and cover the typing line, and manually-operable means mounted upon the carriage and including an operating lever, connections to the ribbon-carrier to shift the carrier to a non-manifolding position, and guides effective upon the carrier at said non-manifolding position to shift the carrier and ribbon from a non-manifolding position to a sheet-insertable position during a continuous movement of the operating lever.

57. In a typewriting machine, the combination with a carriage having a platen, a spool-fed ribbon, and a ribbon-carrier swingably mounted upon the carriage and manually operable to shift a line-length of the ribbon to cover and uncover the typing line of the platen, of ribbon-clamping means on each side of the carrier operative to maintain a spool-fed tension throughout the line-length section of the ribbon at any shift position of the ribbon-carrier.

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