March 19, 1929. J. A. B. SMITH 1,705,945

TYPEWRITING MACHINE

Filed Aug. 10, 1926 2 Sheets-Sheet 1

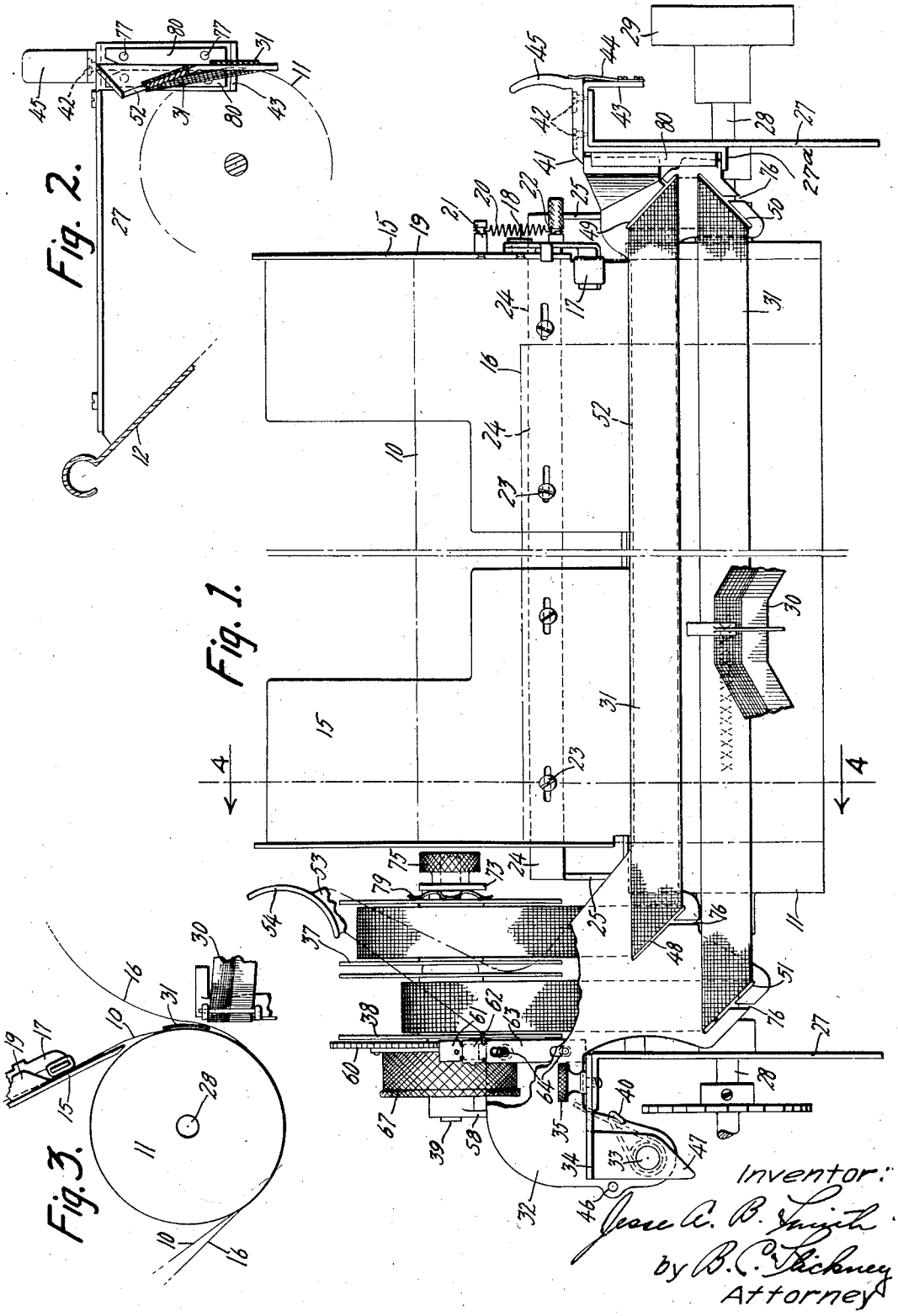

Fig. 1.

Fig. 2.

Fig. 3.

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Fig. 5.

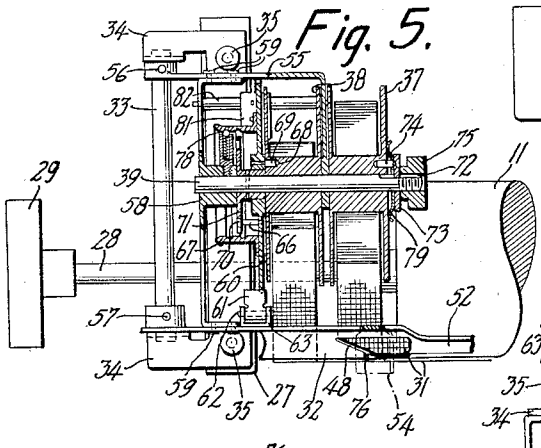
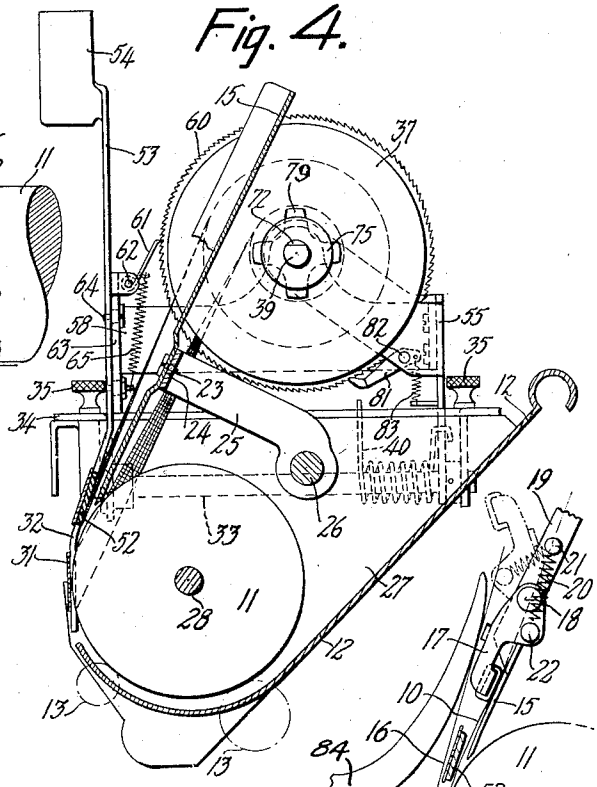


Fig. 4.



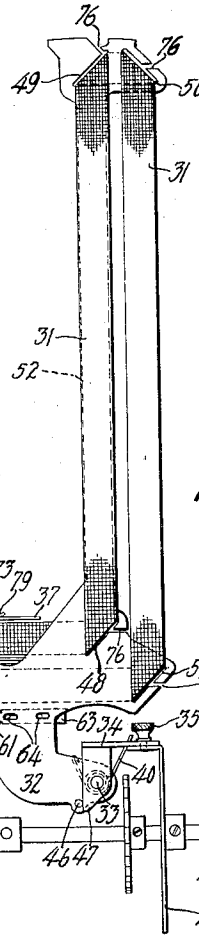


Fig. 7.

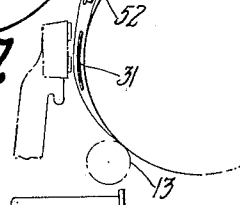
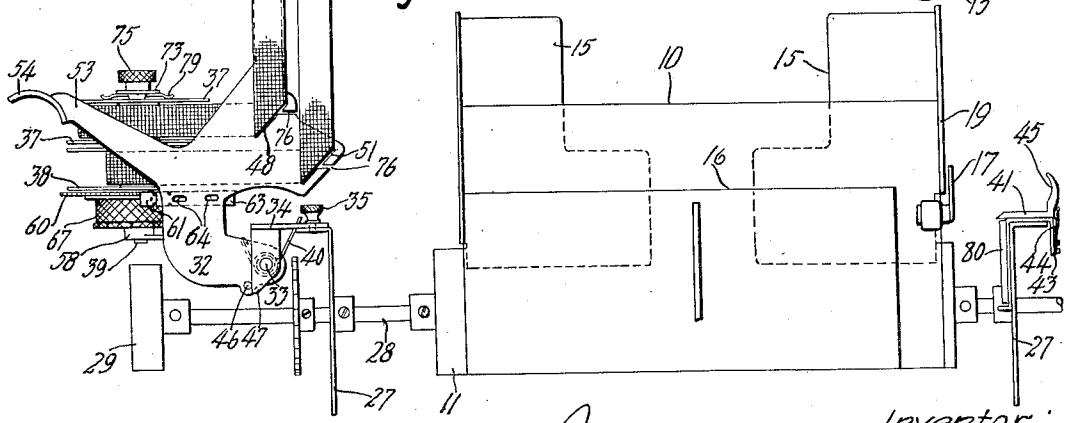


Fig. 6



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Patented Mar. 19, 1929. 1,705,945

UNITED STATES PATENT OFFICE.

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TYPEWRITING MACHINE.

Application filed August 10, 1926. Serial No. 128,375.

This invention relates to auxiliary ribbons for typewriting machines which may be used in manifolding as a substitute for the usual carbons.

When making out monthly gas or electric bills it is customary to type all the data as a single-line entry and manifold the data on a ledger-sheet, and, since the records thereon are carbon records, their legibility is soon impaired by handling and the non-permanence of a carbon manifold. Moreover, a carbon must be interleaved each time a bill is made out which renders collating of the sheets difficult.

One feature of this invention proposes to insert a record-sheet at the rear of the platen and to clamp it in position while a statement-sheet is inserted and positioned to the printing line. Then the feed-rolls which have been previously released are cast on, and the statement-sheet is swung forwardly to permit the insertion of an auxiliary ribbon between the sheets. The auxiliary ribbon is arranged on a frame pivotally mounted at one end of the carriage and carries a pair of spools, one of which serves as a supply-spool from which the ribbon is drawn by the feeding of a receiving spool. Both spools are mounted side by side on a driven shaft and the frame and spools are normally held in upstanding position by means of a spring, but may be locked in their effective positions after completing the collating operation.

The ribbon is fed by the swinging of the frame from one position to another, as by a slidable pawl, mounted on the frame, and which pawl strikes a stationary stop and engages with a ratchet-wheel to drive the shaft upon which the spools are loosely mounted. Said ratchet-wheel may be manually thrown into engagement with either spool to thereby feed the ribbon in either direction.

While the preferred form of this invention provides for single-line entries upon the inserted work-sheet, provision is made for locking the auxiliary ribbon-carrier in its manifolding position, and other forms of ribbon-inked manifolding may be made where two or more consecutive line-entries are typed; the line-spacing of the platen being effective to advance the work-sheets, one under and one over the stationary auxiliary ribbon, and, if the number of successively typed line-entries tend to exhaust the ribbon-section exposed to the types, the ribbon may be fed manually a line-length distance and letters of correspondence may be manifolded in ribbon-inked characters when desired.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a front view, in elevation, of an Underwood typewriting machine carriage having a collating table and the invention applied thereto.

Figure 2 is a cross-sectional view through the center of the carriage and shows the means for guiding the free end of the auxiliary ribbon-carrier.

Figure 3 is a cross-sectional view through the platen, showing the relative position of the vibratory ribbon and the non-vibratory auxiliary ribbon at the typing line.

Figure 4 is a cross-sectional view through line 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is a horizontal sectional view through the ribbon-spools, looking from the top, and shows their driving mechanism.

Figure 6 is a front view, showing the auxiliary-ribbon frame in its position during the collating of the work-sheets.

Figure 7 is a detail view which shows the means for holding and guiding the work-sheets by means of the usual center guide on the carriage.

A record-sheet 10 is inserted at the rear of a platen 11, over a table 12, and having released feed-rolls 13, the record-sheet is positioned to the printing line, and is then laterally located by means of a front table 15.

In order to facilitate positioning of a statement-sheet 16 relatively to the record-sheet, there is provided a clamp 17 which holds the latter against the front table during the insertion of the statement-sheet. Said clamp is pivotally mounted upon a stud 18, fast to one of side gages 19 which form an integral part of the table 15, and is held in either effective or ineffective positions by means of a spring 20 mounted between spring-studs 21 and 22. The spring-stud 22 serves also as a finger-piece for operating the clamp. After positioning both sheets to the printing line, the feed-rolls 13 are cast on and the clamp is released to permit line-feeding of the sheets.

The front table 15 is made in two sections to permit adjustment thereof to the width of the record-sheet. Each section is secured, by means of screws 23, to a cross-bar 24 borne by

brackets 25 mounted on a cross-shaft 26. The cross-shaft 26 is in turn secured, at the ends thereof, to end plates 27 which serve also as the journals for an axle 28 carrying the platen. The platen is rotatable by means of a finger-wheel 29 fast to the axle.

One of the features of this invention is that both the record-sheet and the statement-sheet are ribbon typed. To this end, there are provided a regular vibrating ribbon 30 for typing the statement-sheet and an auxiliary ribbon 31 for manifolding the record-sheet. The auxiliary ribbon 31 is supported upon a frame 32 secured to a rock-shaft 33 supported at each end by brackets 34 mounted by means of thumb-screws 35 threaded into the end plates 27. Said auxiliary ribbon extends longitudinally of the platen to cover the printing line and is drawn from a supply-spool 37 and wound upon a receiving spool 38 driven by a spool-shaft 39 carried by the frame 32.

As shown in Figure 6, the frame 32 is normally held in upstanding position by means of a spring 40, but may be swung to an aligning stop-face 27ª, shown in Figure 1, and held in place by means of a self-closing latch or locking piece 41. The locking piece is slidably mounted on screws 42 threaded into a bracket 43 and is held in interlocking engagement with the frame 32 by means of a spring 44 secured to said bracket. In order to swing the frame 32 to its collating position, of Figure 6 the locking piece 41 may be shifted to release the frame by means of a finger-piece 45 to the action of the spring 40 and the frame will be arrested by a pin 46 fast to the frame, striking an extension 47 of one bracket 34.

The frame 32 is made of sheet-metal having suitable ribbon-deflecting slots 48, 49, 50 and 51, through which the ribbon is passed. The slots are set at angles of 45° in a well-known manner to guide the ribbon downwardly from the supply-spool 37, through the slot 48 and thence at right angles along a line above and parallel to the printing line. The ribbon then passes through the slots 49 and 50 to the longitudinal typing line of the platen and thence along the platen to the slot 51 where the ribbon is deflected upwardly to be wound upon the receiving spool 38. In order that the field of the ribbon along the printing line may not be obstructed by the frame, said frame is so constructed that only a narrow arm or bar 52 supports the free end or terminal of the frame, said bar 52 being above the printing line as shown in Figure 7 and may be slightly bent towards the rear of the platen so as to clear the work-sheets. In order to facilitate the swinging of the frame 32, there is provided a handle 53 which preferably forms an integral part of the frame, said handle terminating with a thumb-piece 54.

In order to stiffen the frame 32, there is provided a reinforcing plate 55 secured to the shaft 33 by means of a pin 56. The shaft is also secured to the frame 32 by means of a pin 57. The shaft 39 carries the ribbon-spools 37 and 38, rotatably mounted thereon, and is journaled at one end within a supporting bracket 58 which serves as a brace between the frame 32 and the plate 55, to which it is secured by means of screws 59. The plate 55 has a bent-over extension that serves as a journal for the opposite end of the shaft 39 as shown in Figure 5.

The ribbon is fed a suitable amount each time the frame is swung to its manifolding position. To this end, there is provided mechanism for operatively connecting either of the ribbon-spools to the shaft 39, which is rotated by means of a ratchet-wheel 60, mounted on the shaft. Said ratchet-wheel is engaged by a pawl 61, pivotally mounted at 62 on a sliding plate 63 mounted on studs 64 fast to the frame 32 and engaging slots in said plate. The pawl is held in engagement with the ratchet-wheel 60 by means of a spring 65 which is also effective to hold the sliding plate in its lowermost position as shown in Figure 6, and, when the frame is swung to the position of Figure 1, the sliding plate 63 will strike the bracket, and be forced upwardly, thereby rotate the ratchet a predetermined number of teeth.

In order that either ribbon-spool 37 or 38 may be rotated with the ratchet, to feed the ribbon in either direction, there is provided a knurled finger-piece 67 fast to the ratchet, which may be thrown into engagement with either of the spools. The hub of the spool 38 is provided with a hole 68 for receiving a pin 69 carried by the ratchet, and, when the ratchet is moved into engagement with said spool, the spool will be rotated with the ratchet. This condition is illustrated in Figure 5.

When the ribbon is fully wound upon the receiving spool 38, the ratchet 60 is connected with the spool 37 which becomes the receiving spool. In order to do this, the ratchet is moved outwardly by pulling on the finger-piece 67, and a pin 66 is thrown into engagement with a hole 70 in a disk 71 fast to the shaft. The end of the shaft is provided with a key-way 72 for receiving a prong of a washer 73 which rotates with the shaft and carries a pin 74 fast thereto and designed to enter a hole in the hub of the spool 37. The ratchet-wheel 60 is resiliently held in engagement with either spool by means of a ball-and-spring detenting arrangement 78 which engages either of two grooves cut in the inner surface of the finger-piece 67. There may also be provided a friction-washer 79 to retard the supply-spool and control rotation thereof.

Provision is made in this invention to replace the ribbon, which may be first wound

on the spool 37. Then the spool is removed, by unscrewing a finger-piece 75 at the end of the shaft 39, and a fresh ribbon is placed on the shaft. In order to facilitate threading of the ribbon through the entrance slots 48, 49, 50 and 51, there are provided slots 76.

The free end of the frame 32 is laterally aligned by means of side plates 80 secured to one of the end plates 27 by means of screws 77, said side plates forming a channel for the entrance of the frame-end.

In order to prevent looseness or slack in the ribbon when swinging the frame 32 to its collating position, there is provided a check-pawl 81 secured to a rock-shaft 82 and held in engagement with the ratchet-wheel 60 by means of a spring 83.

In the preferred form, spring-restoring means are described for the ribbon-carrier, which, of course, require a locking means to resist the effect of the spring upon the ribbon-carrier during the line-typing interval, but it is obvious that without this spring no locking or latching means would be required for the free end of the ribbon-carrier and that the overhanging weight of the carrier would properly hold the ribbon at the typing-line position against the line-spacing movement of the work-sheets, and the operator would manually lift the carrier by the lever 53 instead of releasing the latch 45; or the spring might be tensioned to be effective to hold the carrier in its raised position but ineffective to bodily raise the carrier from its typing position, the tension of the spring tending to place the carrier in a partial state of equipoise to lighten the operation of lifting the ribbon from the typing line.

It will be noted at Figure 7 that the outer work-sheet is directed towards the collating tables 15 by the usual Underwood center guide 84 pivotally supported at the front rail of the carriage, and attention is particularly directed to the open relation of the two work-sheets to promote the free entrance of the auxiliary ribbon-carrier between the two sheets.

No claim is herein made to inventions disclosed in the applications of Walter J. Hausman, Serial No. 755,915, filed December 15, 1924 and Serial No. 118,740, filed June 26, 1926.

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 platen, a carriage therefor, a collating table for positioning a statement-sheet and a record-sheet relatively to each other, and a ribbon-holding frame pivotally mounted at one side of the platen, said frame being spring held in work-sheet collating position, but swingable to interpose the ribbon between the statement and record sheets.

2. In a tyepwriting machine, the combination of a platen, a carriage therefor, a collating table for positioning a statement-sheet and a record-sheet relatively to each other, a ribbon-holding frame pivotally mounted at one side of the platen, said frame being spring held in work-sheet collating position, but swingable to interpose the ribbon between the statement and record sheets, and means for locking the frame in its effective position in a manner to permit ribbon typing of the record-sheet.

3. In a typewriting machine, the combination of a platen, a carriage therefor, a collating table for positioning a statement-sheet and a record-sheet relatively to each other, a ribbon-holding frame pivotally mounted at one side of the platen, said frame being spring held in work-sheet collating position, but swingable to interpose the ribbon between the statement and record sheets, means for locking the frame in its effective position in a manner to permit ribbon typing of the record-sheet, and means for feeding the ribbon from a supply-spool to a receiving spool each time the frame is swung to its effective position.

4. An axuiliary-ribbon attachment for a typewriting machine having a platen and a carriage therefor, said attachment including, in combination, a frame pivotally mounted at one end of the carriage in a manner to permit swinging of the frame longitudinally of the platen to an effective or typing position, said frame carrying a supply-spool and a receiving spool and having means for wholly supporting the ribbon along the printing line substantially from end to end of the platen.

5. An auxiliary-ribbon attachment for a typewriting machine having a platen and a carriage therefor, said attachment including, in combination, a frame pivotally mounted on the carriage in a manner to permit swinging of the frame to either its effective position or its ineffective position, said frame carrying a supply-spool and a receiving spool and having means for conducting the ribbon along the printing line substantially from one end to the other end of the platen, a spring for holding the ribbon-frame in its ineffective position at one side of the platen, and means for holding the ribbon-frame in its effective position against the tension of said spring.

6. An auxiliary-ribbon attachment for a typewriting machine having a platen and a carriage therefor, said attachment including, in combination, a frame pivotally mounted on the carriage in a manner to permit swinging of the frame to either its effective position or its ineffective position, said frame carrying a supply-spool and a receiving spool and having means for conducting the ribbon

along the printing line substantially from one end to the other end of the platen, a spring for holding the ribbon-frame in its ineffective position at one side of the platen, means for holding the ribbon-frame in its effective position against the tension of said spring, and means for feeding a small length of ribbon from the supply-spool to the receiving spool upon swinging the frame from one position to another.

7. An auxiliary-ribbon attachment for a typewriting machine having a platen and a carriage therefor, said attachment including, in combination, a frame pivotally mounted on the carriage in a manner to permit swinging of the frame to either its effective position or its ineffective position, said frame carrying a supply-spool and a receiving spool and having means for conducting the ribbon along the printing line substantially from one end to the other end of the platen, a spring for holding the ribbon-frame in its ineffective position at one side of the platen, means for holding the ribbon-frame in its effective position against the tension of said spring, and means for feeding a small length of ribbon from one spool to the other each time the frame is swung to its effective position.

8. An auxiliary-ribbon attachment for a typewriting machine having a platen and a carriage therefor, said attachment including, in combination, a frame pivotally mounted on the carriage in a manner to permit swinging of the frame to either its effective position or its ineffective position, said frame carrying a supply-spool and a receiving spool and having means for conducting the ribbon along the printing line substantially from one end to the other end of the platen, a spring for holding the ribbon-frame in its ineffective position at one side of the platen, means for holding the ribbon-frame in its effective position against the tension of said spring, means for feeding a small length of ribbon from one spool to the other each time the frame is swung to its effective position, and manually-controllable means for reversing the direction of feed of the ribbon.

9. In a typewriting machine, the combination of a platen, a carriage therefor, a vibrating ribbon, an auxiliary ribbon extending substantially the full width of the platen, and a frame for said auxiliary ribbon, said frame being pivotally mounted upon the carriage at one side of the platen.

10. In a typewriting machine, the combination of a platen, a carriage therefor, a vibrating ribbon, an auxiliary ribbon extending substantially the full width of the platen, a frame for said auxiliary ribbon, said frame being pivotally mounted upon the carriage at one side of the platen, and means for feeding the auxiliary ribbon each time the ribbon-frame is swung.

11. In a typewriting machine, the combination of a platen, a carriage therefor, a vibrating ribbon, an auxiliary ribbon extending substantially the full width of the platen, a frame for said auxiliary ribbon, said frame being pivotally mounted upon the carriage at one side of the platen, and means for feeding the auxiliary ribbon each time the ribbon-frame is swung, said means including a pair of ribbon-spools, carried by the ribbon-frame, said spools being mounted side by side, one spool serving as a supply-spool and the other spool serving as a receiving spool, and means for rotating the receiving spool a small amount each time the ribbon-frame is swung.

12. In a typwriting machine, the combination of a platen, a carriage therefor, a vibrating ribbon, an auxiliary ribbon extending substantially the full width of the platen, a frame for said auxiliary ribbon, said frame being pivotally mounted upon the carriage at one side of the platen, and means for feeding the auxiliary ribbon each time the ribbon-frame is swung, said means including a pair of ribbon-spools, carried by the ribbon-frame, said spools being mounted side by side, one spool serving as a supply-spool and the other spool serving as a receiving spool, and means for rotating the receiving spool a small amount each time the ribbon-frame is swung, said last-mentioned means including a pawl slidably mounted on the ribbon-frame, and a ratchet-wheel operatively connected to the receiving spool, the pawl being operatively connected with the ratchet-wheel in a manner to feed it when the pawl is slid upon striking a stationary stop on the carriage.

13. In a typwriting machine, in combination, a revoluble platen, a carriage therefor, a collating table at the delivery side of said platen for positioning a statement-sheet relatively to a record-sheet, a ribbon for typing upon the statement-sheet, an auxiliary ribbon for typing upon the record-sheet, and a frame for the auxiliary ribbon, said frame being pivotally mounted at one side of the platen, in a manner to permit swinging of the auxiliary ribbon away from the platen to sheet-collating position to thereby permit collating of the sheets.

14. An auxiliary ribbon for making ribbon-copies on a typewriting machine having a platen and a carriage therefor, the auxiliary ribbon including, in combination, a frame borne by the carriage and pivotally mounted at one end thereof, the ribbon extending substantially the full length of the platen, and being supported by the frame at the ends thereof, a pair of spools for receiving and delivering a small length of ribbon each time the frame is swung, and means for feeding the spool which receives the ribbon.

15. An auxiliary ribbon for making ribbon-copies on a typewriting machine having a platen and a carriage therefor, the auxiliary

ribbon including, in combination, a frame borne by the carriage and pivotally mounted at one end thereof, the ribbon extending substantially the full length of the platen, a supply-spool from which the ribbon is drawn, a receiving spool, mounted at the side of the supply-spool, into which the ribbon is wound, means for rotating the receiving spool, and manually-controlled means for reversing the direction of feed of the ribbon.

16. An auxiliary ribbon for making ribbon-copies on a typewriting machine having a platen and a carriage therefor; the auxiliary ribbon including, in combination, a frame borne by the carriage and pivotally mounted at one end thereof, the ribbon extending substantially the full length of the platen, a supply-spool from which the ribbon is drawn, a receiving spool, mounted at the side of the supply-spool, into which the ribbon is wound, means for rotating the receiving spool, and manually-controlled means for reversing the direction of feed of the ribbon, said last-mentioned means including a driving shaft upon which the two spools are mounted and means for operatively connecting said driving shaft with either of the two spools.

17. In a typewriting machine, the combination of a platen, a carriage therefor, an auxiliary ribbon for interposing a record-sheet and a statement-sheet at the printing line, a frame for the ribbon, said frame being pivotally mounted at one end of the platen, a spring for resiliently holding the ribbon-frame in its elevated or ineffective position, and self-locking means on the carriage for locking the frame in its effective typing position against the tension of the spring.

18. In a typewriting machine, the combination of a platen, a carriage therefor, an auxiliary ribbon for interposing a record-sheet and a statement-sheet at the printing line, a frame for the ribbon, said frame being pivotally mounted at one end of the platen, a spring for resiliently holding the ribbon-frame in its elevated or ineffective position, and means for locking the frame in its effective typing position against the tension of the spring, said means including a self-locking latch carried by the carriage at one end of the platen, having a finger-piece for releasing the latch.

19. An auxiliary-ribbon mechanism for interleaving work-sheets in a typewriting machine at the printing line in front of a platen mounted on a carriage, said mechanism including in addition to said ribbon a frame therefor, a supply-spool and a receiving spool carried by said frame, both spools being mounted side by side at one end of the platen, the frame being pivotally mounted at the same end, and borne by the carriage, and means for reversing and conducting the ribbon in a line parallel to the platen and above the printing line.

20. In a typewriting machine, the combination with a carriage having a platen, a main ribbon and an auxiliary ribbon interposible between a statement-sheet and a record-sheet for manifolding, of mechanism pivotally mounted upon one end of the carriage and operative to wholly support the auxiliary ribbon between the work-sheets during the typing of the sheets.

21. In a typewriting machine, the combination with a carriage having a platen, a main ribbon and an auxiliary ribbon interposible between a statement-sheet and a record-sheet for manifolding, of mechanism pivotally mounted upon one end of the carriage and operative to wholly support the auxiliary ribbon between the work-sheets during the typing of the sheets, said mechanism being swingable as a unit to and from the typing position of the platen and between the work-sheets.

22. In a typewriting machine, the combination with a carriage having a platen, a main ribbon and an auxiliary ribbon interposible between a statement-sheet and a record-sheet for manifolding, of mechanism pivotally mounted upon one end of the carriage and operative to wholly support the auxiliary ribbon between the work-sheets during the typing of the sheets, said mechanism including a frame arranged to support a pair of ribbon-spools and provide a ribbon-supporting arm insertible between the work-sheets at will.

23. In a typewriting machine, the combination with a carriage having a platen, a main ribbon and an auxiliary ribbon interposible between a statement-sheet and a record-sheet for manifolding, of mechanism pivotally mounted upon one end of the carriage and operative to wholly support the auxiliary ribbon between the work-sheets during the typing of the sheets, said mechanism including a frame arranged to support a pair of ribbon-spools and formed with a ribbon-supporting and ribbon-directing arm insertible, at will, between the work-sheets to present a longitudinal typing ribbon-field co-extensive with the typing line of the platen.

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