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TYPEWRITING MACHINE.

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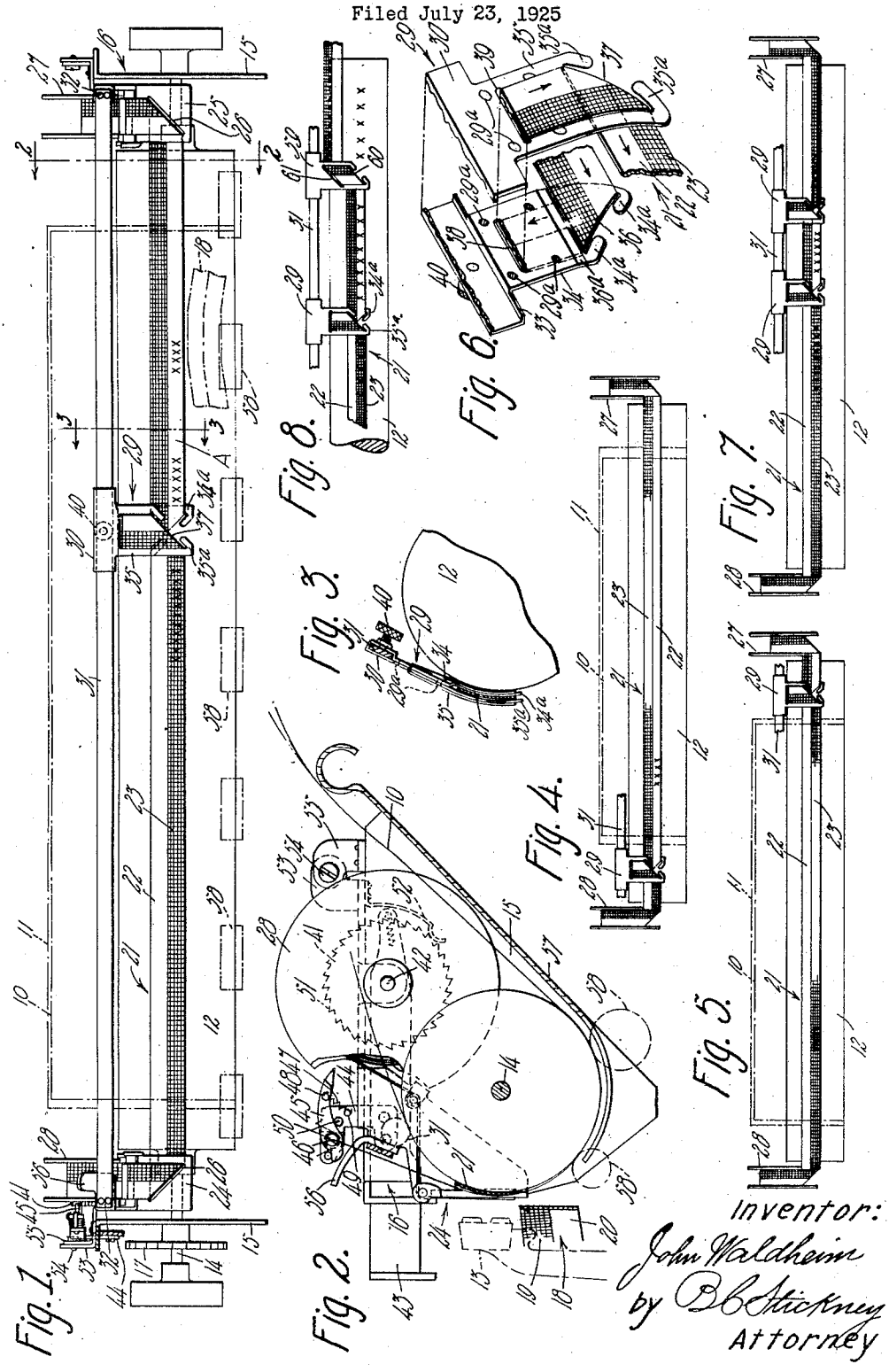


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

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TYPEWRITING MACHINE.

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This invention relates generally to typewriting machines, and is directed particularly to an auxiliary bichrome ribbon. The invention has particular application in making out work-sheets, all requiring certain portions or columns to be typed in a given color and other portions or columns to be typed in a contrasting color.

One of the features of the present invention consists in interleaving an auxiliary or secondary two-color ribbon between an outer or original sheet and a duplicate or proof sheet, so that the duplicate-sheet will be typed conjointly with the outer sheet. The auxiliary ribbon extends across the platen, in interleaved relation with the work-sheets, said ribbon being unwound from a supply-spool, and then progressively wound onto another spool at each line-spacing operation of the platen. In passing across the platen the ribbon is subjected to a series of folding or bending operations, whereby a portion of the length of the ribbon takes such a course that the color field of the ribbon which is uppermost on one side of the folds is lowermost on the opposite side of the folds, the two different color fields being in longitudinal alignment along the printing line of the platen from one end to the other thereof. The bichrome device is shiftable along the platen, so that the inversion or shift of the ribbon may take place at any selected point, and thereby either decrease or increase the relative length of color of either one of the different stripes. The color inversion may therefore take place at any selected point along the platen, where a shifting of the colors of the main ribbon is intended. The bichrome device may also be moved all the way across the platen, so as to occupy a position adjacent either end thereof, such movement effecting a complete reversal of the colors. For instance if the colors are black and red, and it is desired to type all in black, the ribbon-inverting or bichrome means is moved to one end of the platen, and, vice versa, if red is desired exclusively, the inverting means is moved to the opposite end of the platen. There may also be provided a second bichrome device or ribbon-inverting means for inverting the ribbon a second time, thus producing an intermediate zone of a different color than the zones adjacent both sides thereof.

Another feature of the invention is the provision of a ribbon-guiding means used in conjunction with the bichrome device, the object being to invert the ribbon to produce two different color-fields adjacent the printing line, and also to elevate a portion of the ribbon to a point above the printing-field, thus providing a clear space along a portion of the printing line, whereby only the main ribbon of the machine types upon the outer sheet, leaving a portion of the duplicate-sheet untyped.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a front elevation of the platen and the platen-frame of a typewriting machine showing the invention attached thereto.

Figure 2 is a vertical section on the line 2—2 of Figure 1.

Figure 3 is a vertical section, through the ribbon-inverting means, on the line 3—3 of Figure 1.

Figure 4 is a view, showing the ribbon-inverting means shifted to a point adjacent the extreme left of the platen.

Figure 5 is a similar view to Figure 4, showing the ribbon-inverting means shifted to the extreme right of the platen.

Figure 6 is a perspective view, broken away and extended to illustrate the construction of the ribbon-inverting means and the manner of threading the ink-ribbon therethrough.

Figure 7 is a view, showing a pair of ribbon-inverting devices for doubly inverting the ribbon.

Figure 8 is a view, showing a ribbon-inverting means and also means for elevating a portion of the ribbon above the printing-line.

Referring particularly to Figures 1 and 2 of the drawings, 10 represents a record or outer sheet and 11 a duplicate or proof sheet, both of the sheets being fed around a platen 12 and brought up to typing position to receive impressions of types 13. The platen 12 has a platen-shaft 14 mounted in end frames 15 of a platen-frame, designated generally at 16. A platen-line-space ratchet-wheel 17 co-operates with line-space mecha-

nism (not shown) to line-space the platen in the usual way.

A ribbon 18 includes two fields of different characteristics, which, for the purpose of illustrating the invention, may be considered as an upper or black field 19 and a lower or red field 20, such ribbon being generally termed a bichrome ribbon. Ribbon-vibrating mechanism, including ribbon-shifting means, not shown but which is well understood in the art, is effective to raise the ribbon 18 to the printing-line A upon driving the types 13 toward the platen, and the ribbon-shifting means is effective to bring either the black field 19 or the red field 20 to the printing-line. Interleaved with the sheets 10 and 11, and extending along the printing-line of the platen, there is an auxiliary or secondary ribbon 21, including a red field 22 and a black field 23, and clips or plates 24 and 25, respectively at the left and the right ends of the platen, have diagonal slots 26, through which the ribbon 21 is threaded, the diagonal slots being effective to turn or bend the ribbon 21 at right angles, so as to be unwound from a spool 27, preferably at the right of the platen, and wound then onto a spool 28 at the left of the platen. In view of the fact that the sheet 10 usually includes an area or columns to be typed in black and also an area or columns to be typed in red, means is provided for inverting the ribbon 21 at a predetermined point along the platen so as to bring the color field which is uppermost on one side of said point to the lowermost position on the opposite side of said point. Thus all of the typed matter written on the original sheet 10 in different colors by the main ribbon 18 may be duplicated in the same colors on the proof-sheet 11. For inverting the ribbon, there is provided a clip or rider 29, which is preferably in the form of a yoke 30, arranged to embrace and straddle a rod 31, extending across the platen 12, adjacent the top thereof, the ends of the rod being secured to the platen-frame, as shown at 32. The back of the yoke 30 is bent in to form a shoulder 33 for engaging the under side of the rod 31, the shoulder 33 acting as a guide against the rod to hold the rider 29 in proper position. Extending downward from the yoke 30 there is a rear wall or leg 34 and a front wall or leg 35, the legs being preferably fastened together by any suitable means such as rivets 29^a. The bottom of the leg 34 has a diagonal edge 36 and the front leg has an oppositely directed diagonal edge 37. The ribbon 21 is fed leftward across the platen from the spool 27, thence over the diagonal edge 36 of the leg 34, the ribbon partaking of a right-angular bend, and rising upward at the rear of said leg 34, and then threaded forwardly through a slot 38. (See arrows in Figure 6.) The ribbon is then threaded through a slot 39, adjacent the upper portion of the leg 35, thence downward at the front of said leg 35, until it reaches the diagonal edge 37, where the ribbon takes a right-angular bend to the left and proceeds therefrom across the platen and to threaded engagement with the diagonal slot 26 of the plate 24. From this point the ribbon is fed upward and around the spool 28. The diagonal edge 36 is offset at 36^a sufficiently from the diagonal edge 37 to provide clearance for the overlapping portions of the ribbon 21, and ribbon-retainng ears 34^a and 35^a may be formed as parts, respectively, of the walls or legs 34 and 35. A set-screw 40, passing in threaded relation through the yoke 30 and into engagement with the rod 31, is effective to hold the ribbon-inverting rider 29 in any selected position along the rod 31. It will be seen, upon shifting the rider 29 along the platen, that the proportionate areas of different color fields to be brought to the printing-line may be varied, at will, and that said rider may be set at any position along the printing-line A where color-shifting of the main ribbon 18 is to be made. Due to the numerous number of bends or angles taken by said ribbon in proceeding from one spool to the inverting clip and then to the other spool, any ordinary ribbon-feeding mechanism would obviously be inadequate to feed the ribbon. In order to supply the driving power needed to feed the ribbon across the platen, there is provided a ratchet-and-pawl mechanism upon the spool 28. Referring to Figure 2, the reference numeral 41 indicates a ratchet-wheel attached to a shaft or pintle 42, upon which the spool 28 is mounted. A line-space slide 43 is mounted on the left end frame 15 of the platen-frame 16, and carries a standard 44, upon which a pawl 45 is pivoted at 46. A spring 47, attached to the pawl by a pin 48 and to the standard by a pin 49, is effective to hold the pawl 45 against a stop-pin 50 in such manner that said pawl is directed toward the teeth 51 of the ratchet-wheel 41. It will be seen, upon moving the line-space slide 43 inward, toward the platen, that the pawl 45 will be brought into engagement with one of the teeth 51, and thereby effect rotation of the spool 28, thus causing the ribbon to be progressively moved across the platen to bring fresh portions thereof to the printing-point of the types 13. A detent 52 may be used as a means for preventing loose motion of the spool 28, and thereby maintain the ribbon in tightened condition across the face of the platen. To aid in inserting the sheets around the platen, all of the auxiliary-ribbon-mechanism is swingable to an elevated position above the platen, thereby permitting the leading edge of the proof-sheet to be fed upward around the platen without interference with the ribbon 21. For this purpose, the spools 27 and 28, the rod 31 carrying the rider 29, and the mechanism for feeding the ribbon 21 are mounted upon a swing-frame 53, piv-

oted at 54, upon upstanding ears 55, mounted on both of the end frames 15 of the platen-frame 16. A finger-piece 56 is attached in a convenient position to the rod 31, enabling the swing-frame 53 to be easily raised. The sheets 10 and 11 may then be led downward over a rear paper-table 57, and between the usual feed-rolls 58 and the platen 12 to typing position. Attention is drawn to Figure 4, wherein the ribbon-inverting rider 29 has been shifted to the extreme left end of the platen, and it will be observed that such shifting has inverted the ribbon 21 throughout its entire length, thus bringing the red field 22 to the printing-line A, the black field being, of course, out of use. In Figure 5 the ribbon-inverting rider 29 has been moved to the extreme right of the platen, in which case the reverse condition is brought about, that is, the black field of said ribbon 21 has been brought to the printing-line across the entire printing-length of the platen. Thus, it will be seen that the present device offers an extremely simple and effective means for quickly changing the color of a bichrome ribbon.

Sometimes it becomes desirable to write upon a certain portion of a sheet in one color, then to continue in another color for a certain distance, and then revert to the original color. For accomplishing this result, two ribbon-inverting riders such as already described are used, it being obvious that use of two clips will effect a double inversion of the ribbon, and thus provide the desired intermediate portion of a different color than the two outer adjacent portions of the ribbon. It will be readily understood upon a consideration of Figure 7 that the further the riders 29 are moved apart, the greater will be the intermediate color-zone disposed at the printing-line. It will also be apparent that said intermediate color-zone may be disposed at any selected point along the platen.

Referring to Figure 8 of the drawings, there is illustrated a ribbon-inverting rider 29, effective in the described way to dispose two different color-zones at the printing-line and in alignment with one another. There is also slidably mounted upon the rod 31 another clip 59, differing somewhat from the clip 29. The clip 59 has a diagonal lower edge 60, against which the ribbon 21 is bent to turn the same at right angles, said ribbon then rising upward along the clip 59. A diagonal slot 61 in the clip 59 redirects the ribbon at right angles and thence directly to the right, so that the ribbon is disposed sufficiently above the printing-line that the types 13 are effective only to cause typing to appear in the regular way on the outer sheet 10, leaving the proof-sheet 11 untyped at said portion remaining uncovered by reason of the elevated position of the auxiliary ribbon 21.

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 with a carriage, a platen, a main bichrome ribbon and ribbon-shifting means therefor, of an auxiliary bichrome ribbon mounted upon the carriage to be interposed between a record-sheet and a proof-sheet, and auxiliary ribbon-shifting means adjustable longitudinally of the platen for inverting the color-fields of said auxiliary ribbon at any point along the line of print, said auxiliary ribbon-shifting means being mounted on the carriage and the auxiliary ribbon being threaded therethrough, whereby all typed matter appearing in the two colors of the main bichrome ribbon will be duplicated on the proof-sheet by the auxiliary bichrome ribbon.

2. In a typewriting machine, the combination with a carriage, a platen and a primary bichrome ribbon-mechanism, including means for shifting said ribbon, of a secondary bichrome ribbon mounted upon the carriage and covering the line of print between a record-sheet and a proof-sheet therebeneath, means for feeding said secondary ribbon longitudinally, and a ribbon-guide movable with the carriage and adjustable along the platen for inverting said secondary ribbon, the ribbon being threaded through said guide and transposed thereby, whereby the field which is lowermost on one side of the guide will be uppermost at the opposite side of said guide.

3. In a typewriting machine, the combination with a carriage, a platen and a primary bichrome ribbon-field-shifting mechanism, of a secondary ribbon mounted upon the carriage to cover the longitudinal printing-line and in interleaved relation with a record-sheet and a proof-sheet brought to typing position around the platen, and a ribbon-field-shifting guide for the secondary ribbon, said guide being slidably mounted upon the carriage and effective to invert said secondary ribbon at any selected point along the line of print, so as to co-operate with the primary ribbon in typing the same colors upon the proof-sheet as said primary ribbon types upon the record-sheet.

4. In a typewriting machine, the combination with a carriage, a platen and a main ribbon-inking mechanism, of an auxiliary inking ribbon mounted upon the carriage to be interleaved between work-sheets to cover the longitudinal printing-line of the platen, said auxiliary ribbon having longitudinal fields of different characteristics, and ribbon-folding means movable with the carriage and adjustable along the platen to reverse the longitudinal fields of the auxiliary ribbon at will, whereby typing in colors upon one

work-sheet by the main ribbon will be duplicated upon another work-sheet by the auxiliary ribbon.

5. In a typewriting machine, the combination with a platen, of an auxiliary ink-ribbon to be interleaved with work-sheets brought to typing position around the platen, said ribbon having longitudinally-extending fields of different characteristics, guide-means for inverting the ribbon to bring opposite fields thereof in horizontal alignment along the printing-line, and a second guide-means for reinverting the ribbon, to provide an intermediate length of ribbon between the guides, of a different characteristic than the ribbon on the outer sides of said guides.

6. In a typewriting machine, the combination with a platen, of an auxiliary ink-ribbon having longitudinally-extending fields of different characteristics, guide-means for directing the ribbon so as to bring opposite fields thereof in horizontal alignment along a portion of the platen at the printing-line, and means for redirecting the ribbon, whereby to dispose the same above the printing-line along another portion of the platen.

7. In a typewriting machine, the combination with a platen, of an auxiliary ink-ribbon having longitudinally-extending fields of different characteristics, a support extending along the platen, and a device slidingly adjustable along said support, said device including means for directing the ribbon, whereby to effect an inversion of the opposite fields thereof, at any selected point along the platen, and means for clamping said device in any position along the support.

8. In a typewriting machine, the combination with a carriage and a platen, of an inking ribbon having longitudinal fields of different characteristics, a cross-bar movable with the carriage, and guiding means for the ribbon, said guiding means including an adjustable device movable along the cross-bar and having a series of diagonal edges, whereby the ribbon changes in folding around said edges is thereby inverted, so that the lowermost field on one side of the device is uppermost on the opposite side of said device.

9. In a typewriting machine, the combination with a platen, of an inking ribbon having longitudinal fields of different characteristics, a cross-bar movable with the carriage, ribbon-spools adjacent the opposite ends of the platen, guides adjacent said spools for directing the ribbon from spool to spool to cover the longitudinal printing line, and means adjustable along said cross-bar and between said ribbon-spools for reversing the ribbon fields at any point along the line of print, so that the field which is lowermost on one side of said ribbon-reversing means is uppermost on the opposite side of said means.

10. In a typewriting machine, the combination with a platen and line-spacing mechanism therefor, of an inking ribbon having longitudinal fields of different characteristics, ribbon-spools adjacent the opposite ends of the platen, guides adjacent said spools for directing the ribbon from spool to spool in a straight line over the typing position, whereby the lower field of the ribbon covers the printing line, and means mounted upon the carriage and adjustable between said ribbon-spools for reversing the ribbon-fields without changing the plane of the ribbon between the spools, so that the field which is lowermost on one side of said means is uppermost on the opposite side of said means.

11. In a typewriting machine, the combination with a carriage, a platen and line-spacing mechanism therefor, of an inking ribbon having longitudinal fields of different characteristics, ribbon-spools adjacent each end of the platen, guiding means for the ribbon including diagonal edges over which the ribbon is folded and then stretched longitudinally of the platen to travel therewith, the lower field thereof to cover the printing line, and ribbon-field-changing means movable throughout the entire length of said platen, said field-changing means effecting a reversal of the ribbon-fields, whereby the lowermost field on one side of said ribbon-field-changing means is the uppermost field on the opposite side thereof.

12. In a typewriting machine, the combination with a carriage and a platen, of an inking ribbon having longitudinal fields of different characteristics, means for directing the ribbon so as to bring either ribbon-field thereof into horizontal alignment to cover the printing line of the platen, said means including a rod mounted upon the carriage parallel with the platen, and a yoke-shaped ribbon-field changing guide including a pair of downwardly-extending legs, said legs terminating in oppositely-directed diagonal edges, each leg having a horizontal slot over the diagonal edge thereof, the ribbon being folded around the diagonal edge of one leg, and through the horizontal slot thereof, thence through the horizontal slot of the other leg, and folded around the diagonal edge thereof, the folding of the ribbon over said guide reversing both longitudinal fields of the inking ribbon, said guide being adjustable along said rod.

13. In a typewriting machine, the combination with a carriage and a platen, of a non-vibratory inking ribbon having two color-fields and mounted upon the carriage to extend longitudinally of the platen with one field normally in alignment with the printing line thereof and the other field out of such alignment, and means mounted upon the carriage and operative upon the ribbon to relatively reverse the ribbon-fields at the printing line, said ribbon being threaded through said reversing means and folded over the same, and the latter being shiftable along the platen to effect such reversal of the ribbon.

14. In a typewriting machine, the combination with a platen, of an auxiliary ink-ribbon having longitudinally-extending fields of different characteristics, a rod extending along the platen, and a ribbon-guide slidingly adjustable along said rod, the guide including a yoke fitting around the rod and downwardly-extending legs, said legs being curved to conform to the curvature of the platen, and said legs including means for directing the ribbon, whereby the lowermost field on one side of said legs is the uppermost field on the opposite side of said legs.

15. In a typewriting machine, the combination with a platen, of an auxiliary ink-ribbon having longitudinally-extending fields of different characteristics disposed along the printing-line, and a pair of ribbon-guides movable along the platen, the guides effecting a double inversion of the ribbon, whereby an intermediate field of a different characteristic from that on either side thereof is brought to the printing-line, said ribbon-guides being movable along the platen independently of one another, whereby to locate the position of and vary the length of said intermediate field.

16. In a typewriting machine, the combination with a platen, of an auxiliary ink-ribbon having longitudinally-extending fields of different characteristics, a ribbon-guide movable along the platen, said ribbon-guide effective to direct the ribbon, whereby the field which is lowermost on one side of the guide is uppermost on the opposite side of the guide, the lower portion of the ribbon covering the printing-line of the platen, and a second guide for disposing a length of said ribbon above the printing-line, said guides being movable along the platen independently of one another, whereby the lengths of the oppositely-disposed fields may be varied and the extent of the printing-line uncovered by reason of the second guide also varied.

17. In a typewriting machine, the combination with a carriage and a platen, of a bichrome inking ribbon movable with the carriage and having one field thereof normally in longitudinal alignment with the printing-line of the platen, and a ribbon-field reverser including ribbon-deflecting faces operative to turn the ribbon and reverse the relative positions of the ribbon-fields without changing the longitudinal alignment of the ribbon to the printing-line.

18. In a typewriting machine, the combination with a carriage and a platen, of a bicrome inking ribbon movable with the carriage and having one field thereof normally in longitudinal alignment with the printing-line of the platen, and a ribbon-field reverser including ribbon-deflecting faces operative to turn the ribbon and reverse the relative positions of the ribbon-fields without changing the longitudinal alignment of the ribbon to the printing-line, said ribbon-field reverser being movable along the carriage to determine the operative length of the ribbon-field presented to the printing-line.

19. In a typewriting machine, the combination with a carriage and a platen, of ribbon-spools on the carriage, a non-vibratory ribbon having two color-fields and stretched between said spools in a straight line to cover the longitudinal printing-line on the platen with one color-field thereof, and a plurality of ribbon-field changing devices mounted upon the carriage, through each of which the ribbon is threaded and folded, each of said devices being settable independently of the other to reverse the previous setting of the color-field of the ribbon, whereby sections of the printing line may be typed alternately in different colors without the attention of the operator.

20. In a typewriting machine, the combination with a carriage and a platen for holding a record-sheet having a succession of column-areas in each line to receive typed records alternately in distinctive colors, of a ribbon on the carriage and having two color-fields and a fixed longitudinal feeding path, with one ribbon-field normally covering the whole typing-line of a record-sheet, and a plurality of ribbon-field-changing devices independently settable along the platen on the carriage, the ribbon being threaded through and folding over both devices, and each device operative to reverse the ribbon-fields and present a color-section for each column-area of the record-sheet that is distinctive for the character of the record printed in each column.

21. In a typewriting machine, the combination with a carriage and a platen, of a ribbon having two color-fields and a fixed longitudinal feeding path, with one ribbon-field normally covering the whole printing-line of a record-sheet, and a pair of ribbon-field changing devices independently settable along the platen on the carriage, one device operative to reverse the normal fields of the ribbon at the printing-line, and the other device operative to reverse the fields set by the first device to restore the ribbon-fields to their normal positions.

22. In a typewriting machine, the combination with a carriage and a platen, of a two-color ribbon carried by spools on the carriage and guided for a single stretch over the entire printing-line of the platen, and means mounted upon the carriage between the ends of the platen and operative upon the ribbon to divide the ribbon-stretch between the spools into two separate stretches, the stretch on one side of said means presenting to the printing-line ribbon-fields that are reverse to the ribbon-fields of the stretch upon the other side of said means.

23. In a typewriting machine, the combi-

nation with a carriage, typing elements, and ribbon-fields of different characteristics, of a ribbon-field reverser movable with the carriage and movable independently along the carriage to predetermine the point when the reversal of the ribbon-fields shall take place, said ribbon-field reverses being operative to present in longitudinal alignment different fields of the ribbon, whereby two different colors may be typed upon the same line of print within typing areas predetermined by the setting of the ribbon-field reverser.

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