

Dec. 31, 1929.

H. A. AVERY ET AL

1,741,673

TYPEWRITING MACHINE

Filed Nov. 13, 1926

3 Sheets-Sheet 1

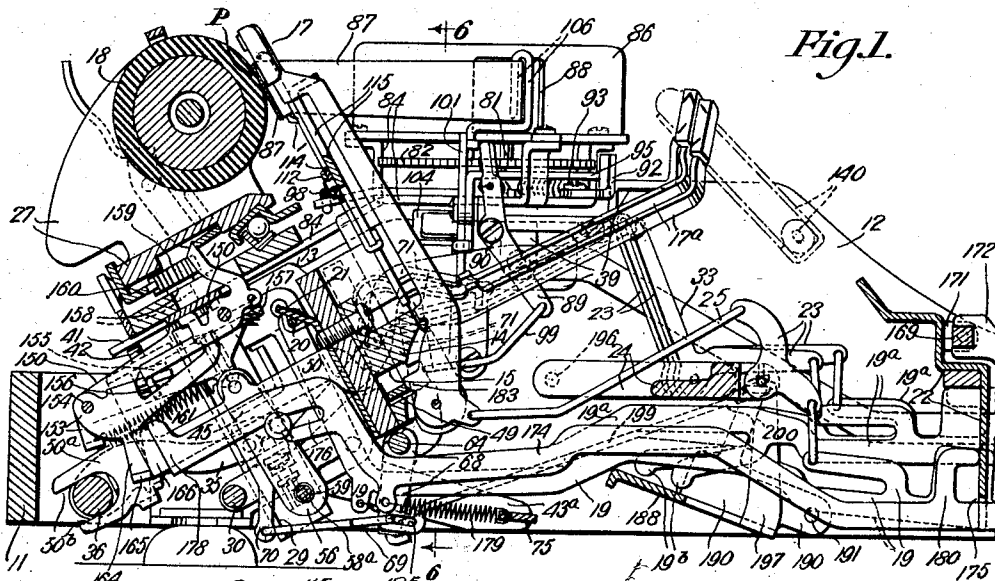


Fig. 1.

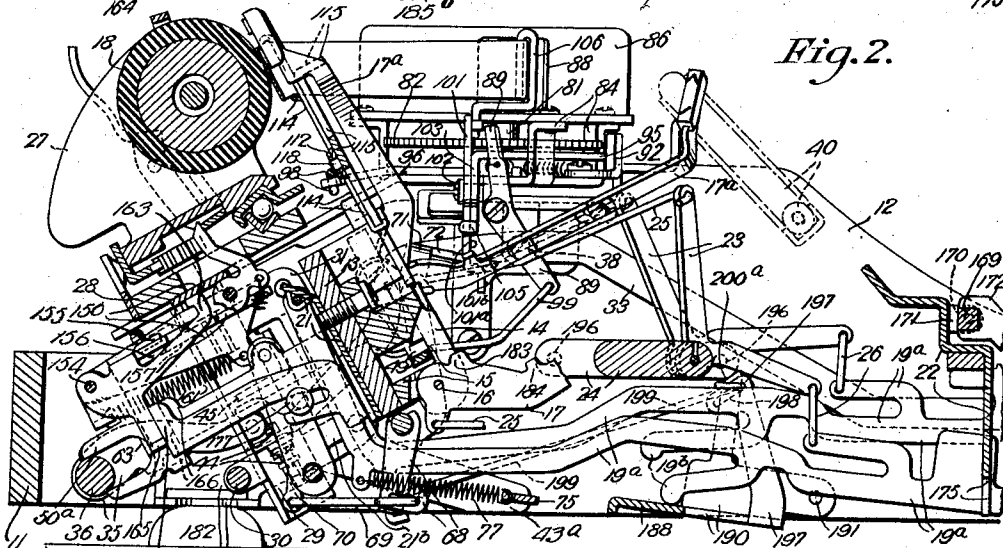
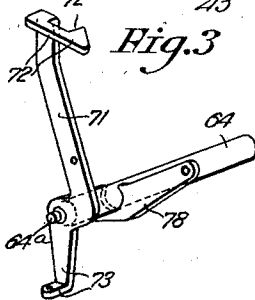


Fig. 2.



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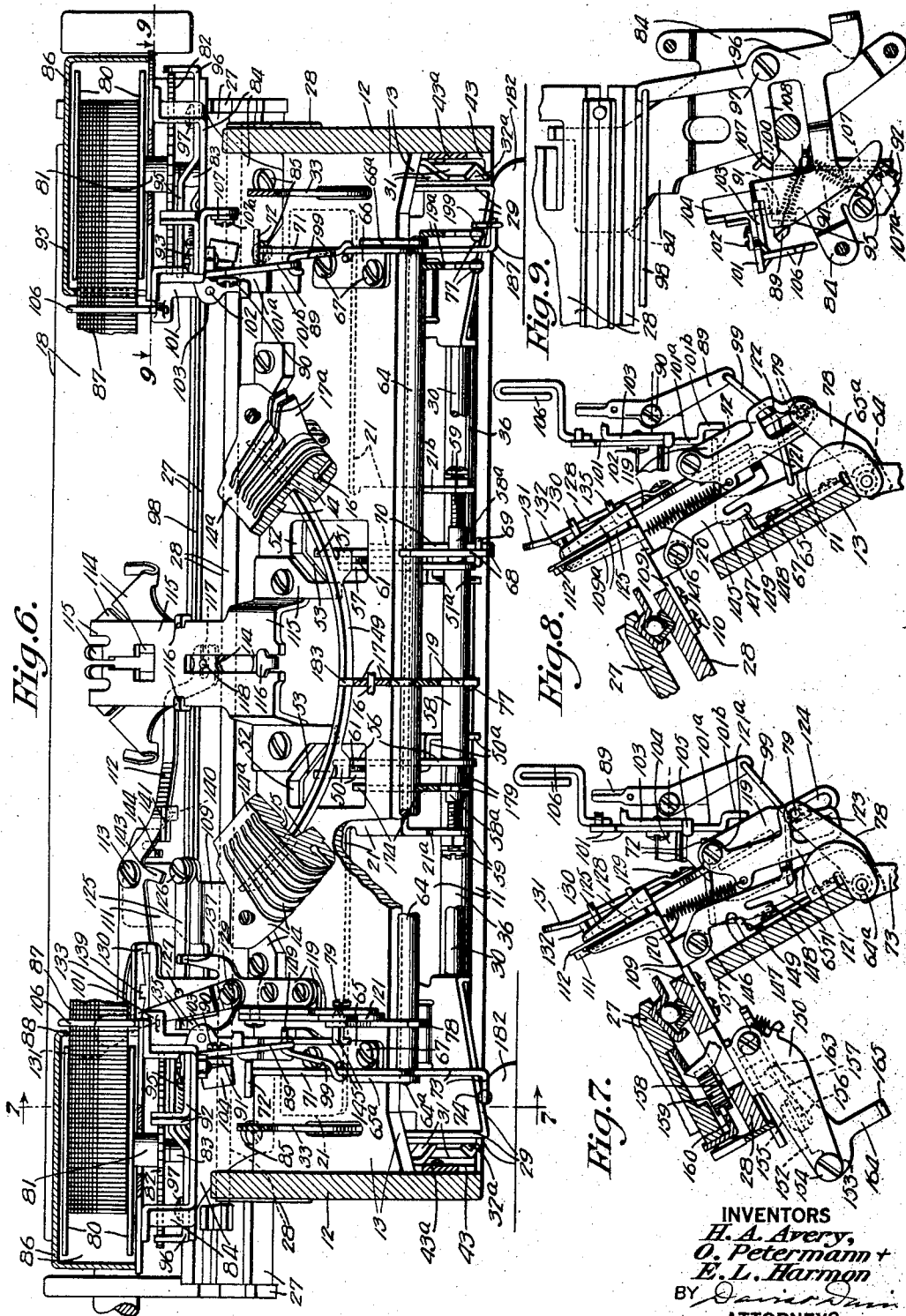
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TYPEWRITING MACHINE

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3 Sheets-Sheet 2



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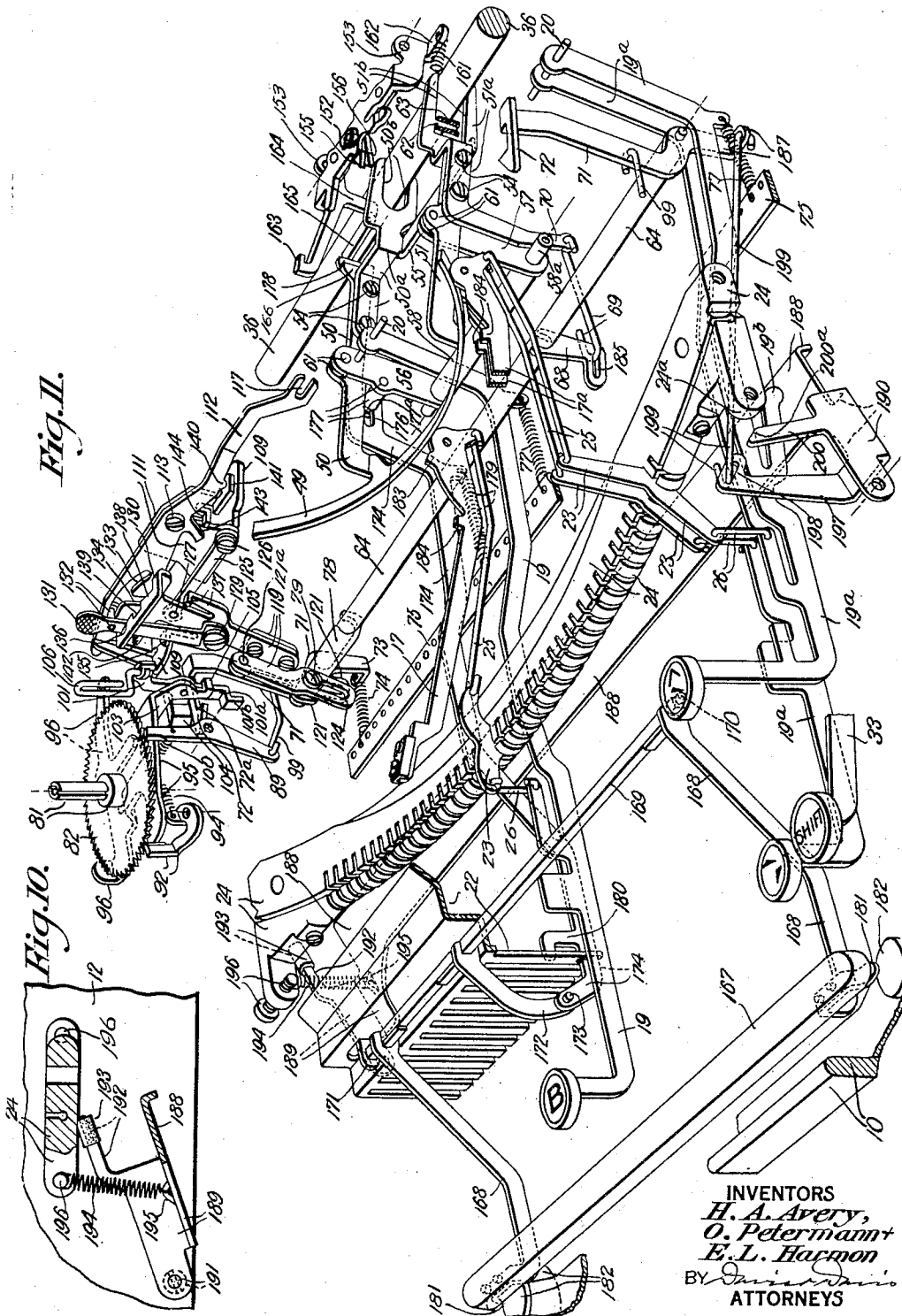
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TYPEWRITING MACHINE

Filed Nov. 13, 1926

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

HENRY ALLEN AVERY, OTTO PETERMANN, AND EDWIN L. HARMON, OF GROTON, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO L C SMITH & CORONA TYPEWRITERS INC., OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK

TYPEWRITING MACHINE

Application filed November 13, 1926. Serial No. 148,256.

This invention relates to improvements in typewriting machines, and has for its objects to provide simple and efficient means whereby one or more type bars may be employed for printing special characters (such as accent characters) without a letter spacing movement of the platen carriage; to provide a simple accent or "silent" key mechanism for a visible writing typewriting machine of the kind in which the carriage feeding mechanism and ribbon vibrating mechanism are normally actuated from a single type-bar-actuated universal bar; to provide a typewriting machine wherein the ribbon feeding mechanism and ribbon vibrating mechanism are both actuated upon actuation of a "silent" key without letter-spacing of the platen carriage; to provide a typewriting machine having ordinary and "silent" keys wherein the entire ribbon mechanism (including feeding means, automatically controlled feed-reversing means, and vibrating means) is operative not only from the ordinary keys but also from the "silent" keys; to provide a typewriting machine wherein any desired number of "silent" type actions may be employed and in which the "silent" actions may be located at any desired points in the system of type actions; to provide accent or "silent" key mechanism co-operable with a ribbon vibrating mechanism having a bi-chrome shift control device, or combined bi-chrome shift and stencil making control device, to permit employment of the accent type bars for writing in different colors or making stencils; to provide a simple accent key mechanism for a typewriting machine having ribbon and escapement mechanism shiftable with a platen carriage in changing case; and to provide a typewriting machine in which either the escapement mechanism or the ribbon mechanism may be operated independently.

The improvements have been shown embodied in the compact portable three-quarter-strike typewriting machine disclosed in our application for patent, Serial No. 148,255, filed November 13, 1926, which has matured Feb. 5, 1929 into Patent 1,700,827, one specific purpose of the present invention being to provide a silent key mechanism especially adapted for use in such a machine, and consisting of few parts of simple, light and inexpensive construction.

To the foregoing and other ends, which will hereinafter appear, the invention consists in the constructions of devices, combinations of elements, and arrangements of parts pointed out in the claims, and more fully hereinafter described.

In the drawings:

Fig. 1 is a fragmentary central longitudinal sectional view of a typewriting machine wherein the improvements are embodied in their preferred form, the escapement devices and the universal bar supporting means being shown in side elevation, and one of the ordinary or "live" type bars being shown in the act of printing;

Fig. 2 a view similar to Fig. 1, showing one of the accent or "silent" type bars in the act of printing, the operating connections for all the ordinary type bars and the major portion of the sub-lever segment being broken away;

Fig. 3 a detail perspective view of part of the operating means for the ribbon mechanism;

Fig. 4 a detail view showing parts of the case shift devices in perspective and detached;

Fig. 5 a detail sectional view of part of the case shift mechanism;

Fig. 6 a section on the line 6—6 of Fig. 1;

Fig. 7 a fragmentary section on the line 7—7 of Fig. 6;

Fig. 8 a view similar to Fig. 7 but with the parts in upper case position;

Fig. 9 a fragmentary section on the line 9—9 of Fig. 6;

Fig. 10 a fragmentary sectional view showing the left hand end portion of the accent key universal bar; and

Fig. 11 a fragmentary perspective view of the machine.

The main frame of the machine comprises a front wall 10, a back wall 11, side walls 12, and a transverse partition wall 13 which is located in the rear portion of the main frame with its lower edge above the level of the lower edges of the other frame walls and in-

clines upward and rearward. A rearwardly inclined type-bar segment 14, having an arcuate recess 15 in its rear face, is held to the front face of the wall 13 by screws, as shown, with the usual curved type-bar-pivot wire 16 therein lying in a plane parallel with said wall. The type bar action comprises a system of type bars including ordinary type bars 17 and any desired number of accent or "silent" type bars 17^a, all fulcrumed on wire 16 and guided in the segment slots to strike on the upper front quarter of a platen 18. The ordinary type bars 17 and accent type bars 17^a are actuated by ordinary key levers 19 and silent key levers 19^a, respectively, all of the key levers being fulcrumed at their rear ends on a pivot wire 20 held to a fulcrum plate 21 secured to the rear face of wall 13 by suitable fastening screws. The key levers extend downward behind wall 13 and then forward under said wall to the front part of the main frame and are guided in a comb member 22 to the main frame. The connection between each key lever and its associated type bar comprises a bell-crank lever 23 fulcrumed in a sub-lever segment 24 and connected with the type bar heel and key lever by links 25 and 26, respectively.

The shift frame for the platen carriage 27 comprises a rearwardly and downwardly inclined carriage bed 28 having rigid downwardly and forwardly extending guiding members 29 adjacent opposite sides of the machine connected by a transverse brace rod 30 adjacent their lower ends. The carriage is mounted on the bed in rearwardly tilted position on suitable antifriction bearings as shown, to travel transversely of the machine, and supports the platen 18 above and in rear of the type bar pivots. The carriage and bed overlie the space between frame walls 11 and 13, and the guide members 29 extend down between said walls between co-operating guide members 31 held to the main frame side walls in upwardly and rearwardly inclined position, members 29 and 31 being provided with races 32 and 32^a in which are confined suitable ball bearings, said members and races being arranged to guide the platen carriage and shift frame to shift obliquely in a plane parallel with the planes of wall 13 and the segment 14.

The shift frame is adapted to be shifted by either of two shift key levers 33 having forked rear ends embracing studs 34 on the forward ends of the side arms 35 of a shift torsion and counterbalancing frame. This latter frame comprises said arms 35 and a rock shaft 36 to which said arms are held, said shaft being journaled on the side walls 12 of the main frame between back wall 11 and the lower part of the shift frame. The studs 34 are engaged in rearwardly and downwardly extending slots 37 in guide members 29 of the shift frame. The shift levers 33 extend through

slots in wall 13 and are fulcrumed intermediate their ends on transverse pivot screws 38 held to brackets 39 (secured to the side walls 12 of the frame), which brackets also support a rest 40 for the heads of the type bars. Downward movement of the shift frame is limited by engagement of stops 41 on guide members 29 with adjustable stop screws 42 on brackets 43 held to the main frame side walls. Upward movement of the shift frame is limited by the engagement of adjustable stop screws 44 on members 29 with stops 45 on brackets 43. The frame 35—36 is arranged to counterbalance the shift frame by connecting lugs 46 on arms 35 with the lower ends of counterbalancing springs 47 which are secured at their upper ends to arms 48 of brackets 43.

In addition to the platen carriage and platen, there are mounted on the shift frame carriage-feeding means, ribbon vibrating means (including bichrome shift and stencil control), ribbon feeding means, and ribbon feed reversing means, all operable from the keyboard of the machine. Means are provided on the main frame of the machine for actuating the carriage feeding, ribbon vibrating, ribbon feeding, and ribbon reversing means on the shift frame from the keyboard in all case positions of the platen carriage.

The arcuate sheet metal universal bar 49 is located between the segment 14 and the partition wall 13, and is supported in a plan parallel with the planes of said wall and segment to vibrate in the recess 15 in the segment in a path substantially perpendicular to the planes of said wall and segment and the rearwardly inclined plane in which the type bar pivot wire 16 in the segment lies. Universal bar 49 is carried at the forward ends of a pair of two-part sheet metal side arms comprising front sections 50 and 51 and rear sections 50^a and 51^a, said side arms extending downward and rearward from the universal bar. The sections 50 and 51 are preferably formed integrally with the universal bar, as shown, and extend through pairs of registering apertures 52 and 53 formed, respectively, in wall 13 and fulcrum plate 21, as shown in Fig. 6. The front portions of sections 50^a and 51^a are rigidly but detachably clamped to the right hand side faces of the rear portions of sections 50 and 51 by pairs of screws 54 threaded into sections 50 and 51.

Sections 50^a and 51^a of the side arms are preferably both offset laterally inward at the rear ends of sections 50 and 51, as shown, and are provided with longitudinal guiding and supporting slots 50^b and 51^b in their offset rear portions extending perpendicular to the planes of wall 13 and the segment. These slots are open at their rear ends and correspond in width with the diameter of rock shaft 36 which extends therethrough and

upon which the side arms are thus slidably supported and guided at their rear ends to reciprocate fore-and-aft of the machine. A transverse bridge or spacer bar 55, formed integrally with section 50^a forward of shaft 36, abuts the inner face of section 51^a.

The side arms extend rearward and downward through the shift frame and the shift torsion and counterbalancing frame, between guide members 29 and rock arms 35, and above brace rod 30 and below the carriage bed 28, to a point adjacent frame wall 11 and the base line of the main frame and are supported and guided intermediate the universal bar 49 and shaft 36 on fore-and-aft rocking supporting arms 56 and 57. Rock arms 56 and 57 are rigidly held at their lower ends to a short transverse rock shaft 58. Shaft 58 has trunnions 58^a journaled on the inner ends of horizontal bearing screws 59 threaded through the rear ends of a pair of arms 21^a and 21^b which are formed integrally with fulcrum member 21 and extend rearward and downward to a point forward of shift frame rod 30 and close to the base line of the main frame. Arms 56 and 57 normally extend upward and rearward, forward of shift frame rod 30, at a slightly less angle from the vertical than the wall 13 and shift frame, and have pivot holes in their upper ends in which are engaged the reduced inner ends of pivot studs 61, the reduced outer ends of the studs being swaged in apertures in the universal-bar-carrying arm sections 50 and 51, respectively, forward of side arm sections 50^a and 51^a.

Forward movement of the universal bar 49 is limited by engagement of said bar with the front wall of recess 15 in the segment 14, and rearward movement of the universal bar is limited by engagement of an adjustable overthrow preventing stop 62—63 with rock shaft 36. This stop comprises a fore-and-aft bendable integral finger 62 on side arm section 51^a, depending from the top wall of slot 51^b in said section, and having a rubber cushioning sleeve 63 frictionally held thereon. The universal bar 49 is operable solely by the ordinary type bars 17, and stop 62—63 is adjusted to engage shaft 36 only after a full printing movement of one of said type bars, the type bars 17 being provided adjacent their pivots with lugs 183 for engaging the front edge of the universal bar and moving it rearward. Lugs 183 are omitted from accent type bars 17^a, two of which are shown in the drawings, so that the accent type bars are ineffective to actuate universal bar 49. All of the type bars are preferably provided with lugs 184 for engaging an anvil face 14^a on segment 14.

The universal bar 49 is normally held at the forward limit of its movement by a return spring, hereinafter described, and its extent of throw, and the throw of rock arms 56 and

57, are such that the pivot studs 61 swing between points substantially equal distances at opposite sides of a plane through the axis of rock shaft 58 perpendicular to the plane of the carriage bed and parallel with wall 13, as will be apparent from Figs. 1 and 2. The described arrangement and movement of rock arms 56 and 57, together with the arrangement of slots 50^b and 51^b longitudinally of the side arms and perpendicular to the plane of wall 13, provides for supporting and guiding universal bar 49 to vibrate obliquely to the horizontal plane of the machine in a path substantially perpendicular to the plane of the segment and its type bar pivot wire.

The ribbon vibrating, ribbon feeding, and ribbon reversing means on the shift frame are all operated from a single tappet-carrying rock shaft 64. This rock shaft is preferably formed of steel, extends transversely of the machine above the key levers, and has trunnions 64^a at its ends which are journaled in arms 65^a and 66^a of a pair of sheet metal brackets 65 and 66. The brackets 65 and 66 are detachably held to the front face of the frame wall 13 at opposite ends of the segment 14 by screws 67, and arms 65^a and 66^a lie flatwise in vertical planes extending fore-and-aft of the machine and curve downwardly and rearwardly to points closely under the lower edge of wall 13 where they are provided with bearing apertures for the trunnions of shaft 64, which is thus supported closely adjacent and under the edge of wall 13 above the character key levers to oscillate about a horizontal axis. A sheet metal rock arm 68 extends downwardly from rock shaft 64 at a point intermediate the ends of said shaft and substantially in the fore-and-aft vertical plane of side arms 51—51^a of the universal bar. The rock arm 68 is brazed or welded on shaft 64 and extends down between adjacent key levers of the machine to a point below the key levers and close to the base line of the main frame, and is provided at its lower end with a fore-and-aft extending slot 185 in which is slidably engaged the hook-like forward end of a fore-and-aft extending and substantially horizontal rigid wire link 69. The link 69 extends under shaft 58 and is connected at its rear end with the lower end of an arm 70 formed integrally with side arm section 51^a and extending downward from the forward end of said section to a point below rock shaft 58 and between said shaft and the shift frame brace rod 30. The hook-like rear end of link 69 is pivotally engaged in a pivot hole in arm 70 to vibrate with said arm, while the hook-like forward end of the link is normally engaged in the rear end of slot 185 in arm 68.

A pair of sheet metal tappet arms 71 are brazed or welded on the trunnions 64^a of shaft 64 and extend forwardly from said shaft and then upwardly and rearwardly di-

rectly in front of wall 13, said arms being formed with integral hook-like tappets 72 at their upper ends disposed flatwise in a substantially horizontal plane and having rearwardly facing abutments or contact edges 72^a thereon extending inward transversely of the machine. Universal bar 49 and tappet shaft 64 are preferably both returned or restored to normal position by means common to both thereof. To this end, a rock arm 73 (preferably formed integrally with the left hand tappet arm 71) is provided, said rock arm extending downward below the level of the key levers and having the rear end of a coiled return spring 74 attached to its lower end. Spring 74 extends forward from arm 73 and is connected at its forward end with a spring-anchor bar 75. This anchor bar extends transversely of the machine and is supported in slots 76 in arms 43^a of brackets 43, which bracket arms extend forward under frame wall 13 and support bar 75 below the key levers and forward of the upturned rear end portions of said key levers. Return springs 77 for the character key levers 19 and 19^a are connected at their forward ends to bar 75 and at their rear ends to the key levers. A third sheet metal tappet arm 78 is brazed or welded on rock shaft 64 and lies flatwise in a vertical plane located between the left hand tappet arm 71 and the left hand end of the type bar segment 14. This tappet arm 78 extends upward and forward from shaft 64, and the outer end of a horizontally and transversely extending tappet screw 79 is threaded into the forward end of said arm. It will be obvious that spring 74 will normally hold the universal bar 49, the tappet arms 71 and 78, and rock arm 68, in the positions thereof shown in Figs. 6, 7, 8 and 11 of the drawings.

Ribbon feeding and reversing devices which are supported from the shift frame and are operated from the arms 71 on shaft 64, will now be described. The ribbon spools 80 are held to the slotted upper ends of hubs 81 of spool-rotating ratchet wheels 82 to rotate therewith, said hubs being journaled on reduced upper portions of vertical posts 83 fixed on a pair of sheet metal brackets 84. Brackets 84 are secured by screws 85 at their rear ends to the bottom face of the carriage bed 28 and extend forward over frame wall 13, supporting the spools substantially level with the platen at opposite sides of the system of type bars. The spools are housed in cups 86 attached to the brackets, and the bichrome ribbon 87, wound on and attached to the barrels of the spools, passes through openings 88 in the cups across the front of the platen.

The ratchets are adapted to be rotated by pawls 89 loosely pivoted intermediate their ends on transversely and horizontally extending pivot screws 90 threaded in ears 91 depending from brackets 84. Springs 100 con-

necting the pawls (above their pivots) with the brackets, normally tend to tilt the pawls laterally on their pivot screws to pull the upper or nose ends of the pawls outwardly against the toothed edges of the ratchets. Horizontally swinging detent pawls 92 (pivoted on the brackets 84 at 93) have their noses normally urged to the toothed edges of the ratchets by springs 94 connecting the pawls with brackets 84. Cams 95 on the forward arms of horizontally swinging feed reversing levers 96 (pivoted on the brackets at 97 and having their rear arms connected by a rigid transversely extending wire link 98) are adapted to disengage and hold disengaged from one ratchet wheel the ratchet-rotating and ratchet-detent pawls associated with said wheel and simultaneously permit action on the other ratchet wheel of the rotating and detent pawls associated therewith.

The swinging and laterally tiltable pawls 89 are connected below their pivots, by rigid wire links 99, with the tappet arms 71, said links extending upward and forward from the tappet arms to the pawls in such manner that the forward end of each link swings between points located substantially equal distances below and above a plane through the point of connection of the link with the associated tappet arm perpendicular to the plane of shift of the shift frame, when the shift frame is shifted from one case position to the other, so that the pawls will be given substantially equal swinging movements in both case positions when shaft 64 is oscillated. The arrangement of the pawls and ratchets, and the novel operating mechanism therefor, is such that the spools are turned in opposite directions by their rotating pawls, and the active or winding spool is rotated by its pawl on the return movement of shaft 64.

The interconnected cams 95 for reversing the feed of the ribbon are simultaneously shifted in opposite directions by first one and then the other of the tappets 72, through the medium of a pair of ribbon-controlled connecting devices carried by the cams. Each of these devices comprises an upstanding lever 101 pivoted intermediate its ends to swing transversely of the machine on a pivot screw 102 carried by an ear 103 depending from the adjacent cam 95. A weight 104 on each lever 101 normally holds the lever upright against a stop lug 105 on ear 103 with the lower arm of the lever out of the path of movement of the adjacent tappet 72. A wire ribbon-guide loop 106, rigidly held to the upper arm of each lever 101, is adapted to be engaged by one of the ordinary reversing abutments or metal eyelets (not shown), carried by the ribbon 87 near its opposite ends, to rock the lever 101 (associated with the spool from which the ribbon has been exhausted) to swing the lower arm of said lever outward into the path of movement of the edge portion 72^a of the

adjacent tappet 72. Upon return movement of the tappet (following setting of the connecting lever into active position) the tappet will push rearward on the lower arm of the lever and carry it bodily rearward, thereby rocking the adjacent cam 95 rearward to permit the feed and detent pawl associated with the adjacent ratchet to become effective on the adjacent spool to rewind the ribbon thereon, the cam 95 associated with the full spool being at the same time rocked forward to throw out the feed and detent pawls associated therewith and hold them out of effective action on the adjacent ratchet.

A spring detent 107, held to the right hand bracket 84 at 107^a and co-operating with a finger 108 on right hand lever 96, yieldably holds the cams 95 in their shifted positions. In order that tappets 72 may impart uniform bodily rearward movements to connector levers 101 in both case positions of the obliquely shiftable shift frame, the lower arms of said levers are stepped to provide faces 101^a and 101^b adapted to be engaged by tappet edges 72^a in lower and upper case positions, respectively, of the shift frame. The face 101^b is located forward of the face 101^a a distance corresponding with the extent of bodily rearward movement of the lever 101 due to the upward and rearward movement of the shift frame from lower to upper case.

The ribbon vibrating means, which is carried by the shift frame and is operated by the tappet screw 79 on the tappet arm 78 held to rock shaft 64, will now be described. A bracket 109, held by screws 110 to the bottom face of the carriage bed 28 adjacent the left hand spool bracket 84, extends forwardly over wall 13 and is provided at its front edge with an upstanding arm 111 lying flatwise in a plane parallel with said wall. A ribbon guide supporting and vibrating lever 112 extends transversely of the machine in front of said bracket arm and is pivotally held to said arm intermediate its ends by a pivot screw 113 to rock up and down in a plane parallel with wall 13. A ribbon guide 114 lies behind a type bar guide 115 which is held by screws, as shown, to the front face of wall 13 above the central portion of the segment and extends upward and rearward in front of the platen parallel with said wall. The ribbon 87 is adapted to be threaded through said ribbon guide 114, which is slidably guided on the type guide 115 by fingers 116 to vibrate in a plane parallel with the path of case shift movement of the platen. The inner end of lever 112 lies behind the ribbon guide and is provided with a horizontal slot 117 in which is engaged the shank of a headed stud 118 carried by the ribbon guide.

A vibrator 119 for lever 112 extends downward and forward from the outer arm of the lever to the actuating tappet 78 forward of wall 13 and at the left hand side of the seg-

ment and the system of type bars pivoted in the segment. The vibrator is reciprocable endwise in a rearwardly inclined path, being movable upward (and normally held elevated) by a supporting and return spring 120 and being movable downward by tappet screw 79 which has a down push connection with a tappet toe 121 pivoted on the vibrator at 121^a to swing fore-and-aft of the machine.

Spring 120 is connected with bracket 109 and tappet toe 121 in such manner as to normally hold the vibrator 119 elevated and normally hold the toe 121 rocked rearward to maintain an abutment 122 thereon engaged under tappet screw 79. A fore-and-aft swinging cam lever 145 pivoted on bracket 109 at 146 has its lower end extended inward behind toe 121 and is adapted to swing toe 121 forward about its pivot at the beginning of an upper case movement of the shift frame to disengage abutment 122 from under tappet screw 79 and permit engagement of a second and lower abutment 123 on the toe under said screw at the end of an upper case movement of the shift frame, as shown in Fig. 8. Cam lever 145 is rocked forward about its pivot 146 upon a minute lift of the shift frame by a cam shoulder 147 on a supporting finger 148 riding up over a forwardly and upwardly extending lug 149 formed on the left hand bearing bracket 65 for the tappet shaft 64, said lug being normally engaged with the upper end portion of said cam shoulder. Abutments 122 and 123 constitute the lower edges of the branches of an inverted L-shaped slot in the toe 121, the upper edges of which branches are held out of contact with screw 79 by spring 120.

The vibrator 119 is guided at its lower end on screw 79, having a longitudinal guide slot 124 therein through which the shank of said screw extends and which is so arranged that the ends thereof are not engageable by said screw shank at any time. The vibrator is guided adjacent its upper end by a transversely extending link 125 which is pivoted at 126 on bracket arm 111 and is pivotally held to the vibrator at 127.

A transversely swinging spring steel connector arm 128 is pivoted at 129 on the vibrator and extends upward through a yoke 130 formed on the vibrator. This arm is provided at its upper end with a finger piece 131 whereby it may be adjusted transversely by flexing it rearward and swinging it about its pivot 129 to position the shank of a headed stud 132, carried by the arm, in either end portion of a longitudinal slot 133 (formed in the outer arm of lever 112), or in register with a connected slot 134 formed in said lever arm and extending upward from the lower edge of the lever to the middle portion of slot 133.

A stop 135 on the vibrator co-operates with a cam edge 136 on yoke 130 to hold the con-

nector with stud 132 in the left hand end of
 slot 133 for effecting a short throw of the rib-
 bon guide for writing in black. A stop 137 on
 the vibrator co-operates with a cam edge 138
 on yoke 130 to hold the connector with stud
 132 in the right hand end of slot 133 for effect-
 ing a long throw of the ribbon guide for
 writing in red. A notch 139 in the yoke is
 adapted to receive the resilient connector arm
 128 to lock the same with stud 132 in line with
 slot 134 to render the vibrator ineffective on
 lever 112 during writing of stencils. Co-oper-
 ating stops 140 and 141 on lever 112 and
 bracket arm 111 limit upward movement of
 the vibrator and downward movement of the
 ribbon guide, which guide normally holds the
 ribbon lowered to uncover the printing point
 P on the upper front quarter of the platen.
 An over-throw-preventing stop 142 on the vi-
 brator is adapted to engage the upper face of
 bracket 109 to limit down throw of the vibra-
 tor. Co-operating stops 143 and 144 on the
 lever 112 and bracket arm 111 are adapted to
 engage only when the device is adjusted for
 writing in red, these stops being employed to
 prevent overthrow of the ribbon guide due to
 momentum acquired during the long throw
 of the guide in writing in red. The outer arm
 of lever 112 is guided between fingers 109^a on
 bracket 109.

It will be obvious that the ribbon guide will
 be moved upward by tappet 79 on the printing
 strokes of the ordinary type bars 17 to cover
 the printing point if the connector 128 is ad-
 justed for printing through either half or
 color zone of the bichrome ribbon, and that
 the guide will be returned to uncover the
 printing point by spring 120. It will also be
 obvious that the guide will remain stationary
 in lowered position during the type bar
 strokes when the connector is adjusted to sten-
 ciling position. As abutments 122 and 123 on
 tappet toe 121 are stepped longitudinally of
 the toe a distance corresponding with the ex-
 tent of case shift movement of the shift frame,
 it will be obvious that tappet 79 will depress
 the vibrator 119 equal distances in both case
 positions of the shift frame.

The carriage feeding mechanism, which is
 also mounted to partake of the case shift
 movements of the platen carriage, comprises
 a rotary escapement and will now be de-
 scribed. A bracket 150 held to the bottom
 face of the carriage bed has depending fore-
 and-aft extending side arms. A sheet metal
 dog rocker 152 has depending side ears 153
 journaled on horizontal transversely extend-
 ing pivot screws 154 carried by the rear ends
 of said bracket arms. The dog rocker carries
 a fixed dog 155 and a loose dog 156 projecting
 forwardly therefrom and cooperating with
 the toothed escapement wheel 157 fixed on the
 lower end of a shaft 158 journaled in the
 bracket 150 to rotate about an axis perpen-
 dicular to the carriage bed. A pinion 159

fixed on the upper end of shaft 158, which ex-
 tends through the bed, meshes with a rack 160
 secured to the carriage. The carriage is nor-
 mally urged to the left, as usual, by a spring
 drum and draw band (not shown), which
 may be arranged as in the Corona Four ma-
 chine. A return spring 161, connecting a lug
 162 on the right hand pivot ear 153 of the dog
 rocker with the bracket 150, normally holds
 the dog rocker in the position shown in Figs.
 2, 7 and 11 of the drawings with the fixed dog
 above the plane of escapement wheel 157 and
 the loose dog engaged with the wheel. A stop
 arm 163 extending forward from the left
 hand pivot ear 153 of the dog rocker normally
 engages under bracket 150 to limit return
 movement of the dog rocker.

The left hand pivot ear 153 of the dog
 rocker is formed with a downwardly and for-
 wardly extending arm 164. This arm extends
 down outside of the inwardly offset slotted
 rear portion of side arm section 50^a of the
 supporting means for universal bar 49, and is
 provided with a lug 165 at its lower end ex-
 tending outward beyond the rear end of side
 arm section 50 and lying flatwise in a plane
 perpendicular to the wall 13 and the path of
 movement of the shift frame.

A tappet or shoe 166, formed on the rear
 end of side arm section 50 and projecting
 rearward beyond the rear end of the out-
 wardly offset forward portion of side arm
 section 50^a, is adapted to engage the forward
 edge of lug 165 and push rearwardly and
 downwardly thereagainst on the printing
 strokes of the ordinary type bars 17 to rock
 the dog rocker to carry the loose dog down out
 of co-operative engagement with escapement
 wheel 157 and the fixed dog into co-operative
 engagement with the wheel as shown in Fig. 1.
 The rear contact edge of tappet 166 inclines
 upward and rearward parallel with the plane
 of shift of the carriage and dog rocker, and
 it will be obvious that the dog rocker will be
 rocked uniformly in both case positions of
 the platen carriage.

It will be evident that, whenever one of the
 ordinary character key levers 19 is actuated,
 the universal bar 49 will be actuated, and
 that actuation of the universal bar 49 causes
 actuation of the escapement mechanism and
 the ribbon vibrating and feeding mechanism,
 as shown in Fig. 1, except, of course, that the
 ribbon guide will remain quiescent when the
 controller 128 is adjusted for stenciling. It
 is desirable that the escapement mechanism
 may be actuated from the space bar without
 causing an operation of the ribbon mecha-
 nism. To this end means have been provided
 for actuating the dog rocker from the space
 bar without actuating the universal bar 49
 or any part of the ribbon mechanism of the
 machine, which means will now be described.

The space bar 167 is supported forward of
 the character keys on the forward ends of a

pair of rock arms 168 which are fixed on a transverse rock shaft 169 having trunnions 170 at its ends journaled in ears 171 punched up from the key lever guide comb 22. A rock arm 172, fixed on said shaft, extends downward in front of the comb and is pivotally connected at its lower end by a transverse pivot screw 173 with the forward end of a fore-and-aft extending and endwise reciprocable tappet bar 174.

Tappet bar 174 extends rearwardly through a guide slot 175 in comb 22 and under sub-lever segment 24 and the segment 14, and also under rock shaft 64 and wall 13, and over an auxiliary universal bar 188 and anchor bar 75. Bar 174 is bent upward behind wall 13 forward of shaft 58 and then extends rearward and downward along the outer side of side arm section 50 of the supporting means for universal bar 49 above rod 30. This inclined rear portion of the bar 174 is formed with a guide slot 176 extending substantially perpendicular to wall 13 in which is engaged the reduced shank portion 177^a of a horizontal supporting and guiding stud 177 carried by and extending outward from the rock arm 56 on rock shaft 58. A tappet or shoe 178, formed on the rear end of bar 174 and located alongside tappet 166, has its rear contact edge parallel with the path of shift of the platen carriage and dog rocker and arranged to push rearwardly on the contact lug 165 on the dog rocker arm 164.

Bar 174 and the space bar are returned, and normally yieldably held in the position shown in the drawings, by a return spring 179 connected at its rear end with the bar 174 and at its forward end with the anchor bar 75. An upstanding stop lug 180 formed on bar 174 engages the rear face of guide comb 22 to limit return movement of the space bar 167 and tappet bar 174. Down throw of the space bar and rearward movement of the tappet bar is limited by stop lugs 181 on the space-bar-supporting arms engaging the upper ends of the forward pair of four rubber supporting feet 182 attached to the main frame, this stop arrangement for limiting the down throw of the space bar being the same as that embodied in the Corona Four machine.

With the described arrangement for operating the dog rocker from the universal bar 49 and space bar 167, the tappet bar 174 (while supported or guided in part on a swinging part of the supporting and guiding means for universal bar 49) is operable without moving the universal bar 49, and said universal bar 49 is operable without actuating the tappet bar 174. The rock arms 172 and 56, stud 177 and slot 176 support and guide tappet bar 174 so that its tappet carrying end moves rearward and downward, when the space bar is depressed, with the contact edge of tappet 178 always substantially parallel with wall

13, the pivot 173 moving rearward and downward when the space bar is depressed and slot 176 being inclined rearward and downward. Tappet 166 is preferably arranged slightly forward of tappet 178, which latter tappet preferably normally engages contact lug 165 on the dog rocker, so that the dog rocker may be actuated by a short dip of the space bar.

Means have been provided whereby the ribbon mechanism will function upon actuation of the silent keys exactly as upon actuation of the ordinary keys, but without actuation of the universal bar 49 and the dog rocker of the escapement device, i. e. the ribbon guide will carry the black or red zone of the bichrome ribbon over the printing point or will remain quiescent (according to the adjustment of the bichrome shift and stencil control device of the ribbon vibrating means), the ribbon will be fed lengthwise, and (if the ribbon is exhausted from one spool) the direction of feed of the ribbon will be reversed, upon actuation of any silent key.

The ribbon mechanism operating shaft 64, by reason of the fact that link 69 is normally engaged in the rear end of the slot 185 in arm 68, may be oscillated to actuate the ribbon mechanism without transmitting motion to the universal bar 49, the forward hooked end of said link sliding in the slot upon independent actuation of rock shaft 64, and said slot being made sufficiently long to permit full oscillation of said shaft without the forward end of the slot exerting a rearward push on link 69. Shaft 64 is provided with a third depending rock arm 187 (preferably formed integrally with the right hand tappet arm 71, as shown) and extending down below the level of the key levers. This rock arm 187 is rigidly held to shaft 64 and is adapted to be rocked rearward by an auxiliary or silent-key-operated universal bar 188, and is also adapted to rock with shaft 64 without operating said universal bar 188 when shaft 64 is oscillated from the main universal bar 49.

The universal bar 188 is preferably formed of sheet metal (as shown) and extends transversely of the machine below sub-lever segment 24 and under the entire system of character key levers. At its opposite ends, universal bar 188 is formed with integral forwardly extending side arms 189 and 190 pivotally supported at their forward ends to rock up and down on the inner ends of horizontal pivot screws 191 tapped through the side walls of the main frame. The left hand side arm 189 of universal bar 188 is formed with an integral rearwardly extending stop arm 192 (preferably having a rubber cushioning sleeve 193 thereon) normally engaged under the left hand end of sub-lever segment 24 to limit return movement of the universal bar. Arm 192 is bendable up and down for purposes of adjustment. The universal bar

188 is returned to normal position by a coil spring 194 having its lower end hooked in an eye 195 punched up from side arm 189 in rear of the fulcrum of the side arm, the upper end of said spring being hooked over the projecting inner end of one of the screws 196 which extend through the side walls of the main frame and are threaded in the sub-lever segment 24 to hold it to said frame.

The right hand side arm 190 of universal bar 188 is formed with an integral upstanding arm 197 in rear of its fulcrum and forward of segment 24. Arm 197 has a rearwardly and downwardly extending slot 198 formed therein, and the hook-like forward end of a rigid wire link 199 is slidably engaged in said slot, normally abutting the forward end of the slot. Link 199 extends rearward and downward under segment 24 and over universal bar 188 and has its hook-like rear end engaged in a pivot hole in the lower end of rock arm 187 to vibrate with said rock arm.

Side arm 190 of universal bar 188 is also formed with an integral upstanding stop arm 200 forward of segment 24 having a downwardly and rearwardly inclined stop edge 200^a at its upper end adapted to engage the forward edge of segment 24 at 24^a to limit downward movement of the universal bar 188. The throw of universal bar 188 is controlled by stops 192 and 200 to permit rocking of shaft 64 from said universal bar to the same extent as said shaft is rocked from universal bar 49, and to prevent rocking of said shaft by universal bar 188 far enough to cause rock arm 68 to transmit motion to the universal bar 49.

The universal bar 188 is depressible only by the silent key levers 19^a, said key levers being provided with integral fingers 19^b at their under sides overlying said universal bar and adapted to engage and depress the universal bar on the down strokes of the silent keys. Fingers 19^b are bendable up and down for purposes of adjustment. As the ordinary key levers 19 have no fingers 19^b thereon, said key levers are ineffective on universal bar 188, and as accent type bars 17^a have no lugs 183 thereon they are ineffective on universal bar 49.

It will be evident that, when the key on an ordinary key lever 19 is depressed (as shown in Fig. 1) its associated type bar 17 will swing rearward and a type thereon will strike on the upper front quarter of the platen and lug 183 on the type bar will move universal bar 49 rearward from its normal position (shown in Fig. 2) to the position shown in Fig. 1. This movement of universal bar 49 causes tappet 166 to move rearward from the position shown in Fig. 2 to that shown in Fig. 1, thereby rocking dog rocker 152 from the position shown in Figs. 2 and 7 to that shown in Fig. 1 to disengage

loose dog 156 and engage fixed dog 155 with escapement wheel 157. At the same time, arm 70 is carried rearward and link 69 pulls rock arm 68 rearward thereby rocking the ribbon mechanism operating shaft 64 to swing arms 71 forward and arm 78 downward from the positions thereof shown in Fig. 7. The ribbon guide will be actuated by arm 78 to carry either the upper or lower zone of the ribbon over the printing point as type bar 17 moves rearward (or said guide will remain lowered) according to the position of the adjustable control device 128. The noses of the ribbon feed pawls will swing rearward and tappets 72 will move forward. Link 199 will slide rearward in slot 198 in arm 197 without moving universal bar 188, said slot being of sufficient length to prevent rearward pull on said arm by the link. On the return stroke of the type bar 17 the dog rocker will return to normal position and the carriage will advance one letter space, the spring 74 will restore rock shaft 64 and arms 71 and 78 to normal position and will also cause rock arm 68 to restore the universal bar to normal position by a forward pull of said arm 68 on link 69, arm 187 pushing link 199 back to normal position at the same time. The return movement of arms 71 swings the noses of the ribbon feed pawls forward, the active pawl turning its associated ratchet wheel at this time to feed the ribbon endwise. If one of the ribbon-controlled connector levers has been rocked by the associated ribbon eyelet, the associated tappet 72 on the adjacent arm 71 will move said tripped connector lever rearward on the return movement of rock shaft 64 to reverse the feed of the ribbon.

It will be evident that, when a key on one of the accent or silent key levers 19^a is depressed, its associated type bar 17^a will swing rearward to the platen and universal bar 49 and tappet 166 and dog rocker 152 will remain in normal position, as shown in Fig. 2. Finger 19^b on the key lever 19^a will, however, depress universal bar 188 to the position shown in Fig. 2, thereby causing arm 197 on said universal bar to push link 199 and arm 187 on shaft 64 rearward to rock shaft 64 and arms 71 and 78 (as shown in Fig. 2) to the same positions as in the case of rocking said shaft from universal bar 49, arm 68 swinging rearward with the forward end of link 69 sliding in slot 185 so that no movement is imparted to universal bar 49 from the rock shaft 64. The ribbon guide will be carried up on the printing stroke of the bar 17^a to position the upper or lower zone of the ribbon over the printing point (or will remain lowered) according to the adjustment of controller 128. On the return stroke of type bar 17^a the active ribbon feed pawl will rotate its associated spool. If one of the ribbon reversing control levers should

have been tripped by a ribbon eyelet, the associated tappet 72 will act thereon to reverse the ribbon feed on the return stroke of the type bar 17^a, exactly as in the case of the operation of an ordinary type bar. On the return of type bar 17^a, spring 194 restores universal bar 188 to normal position, and spring 74 restores rock shaft 64 and its connected arms 71, 73, 68, 78 and 187, and link 199 to normal position.

It will be observed from the foregoing description of the construction and operation of the improved typewriting machine, that a simple and compact arrangement of ribbon feeding means, ribbon vibrating means (including bichrome shift and stencil-writing control means), automatically-controlled ribbon feed reversing means, carriage feeding means, and actuating means therefor, has been provided whereby, upon actuation of an ordinary character key of the machine, a bichrome ribbon will be fed lengthwise and the ribbon guide will be either vibrated to position the selected color zone at the printing point or will remain quiescent (according to the setting of the bichrome shift and stencil-writing control means), and the platen carriage will be letter-spaced; and whereby, upon actuation of an accent or silent character key of the machine, the ribbon will be fed lengthwise and the ribbon guide will be either vibrated to position the selected color zone at the printing point or will remain quiescent (according to the setting of the bichrome shift and stencil-writing control means), and the carriage feeding means will remain inactive. It will also be observed that the automatically controlled ribbon-feed-reversing means is operable upon actuation of a silent key as well as upon actuation of an ordinary character key, and that the carriage feeding means is operable from the space bar without actuating either the ribbon feeding, ribbon vibrating, or ribbon reversing means.

It will also be seen that exceedingly simple and inexpensive silent key mechanism has been provided for a machine wherein the carriage feeding mechanism and ribbon mechanism are ordinarily operated from a type-bar-actuated universal bar, and that means have been provided on the main frame of the machine for operating escapement, ribbon vibrating, ribbon feeding, and ribbon reversing devices (all of which partake of case shift movements of a shiftable platen carriage) conjointly from ordinary or "live" character keys, for operating the escapement alone from the space bar, and for operating the ribbon vibrating, ribbon feeding and ribbon reversing devices from accent or "silent" keys without actuating the escapement.

What we claim is:

1. In a visible-writing typewriting machine, ordinary and accent or "silent" type actions, a platen, letter-feed mechanism for the

platen, a vibratory ribbon guide, a lever connected with said guide for vibrating the guide, a vibrator for the lever having a fixed throw and supported to vibrate in a fixed path, manually adjustable connecting means mounted on the vibrator and adjustable relatively thereto to connect the vibrator with said lever at either of two points located different distances from the lever fulcrum for effecting a variable throw of the lever to present over the printing point the desired color zone of a bichrome ribbon, a universal bar operable solely by the ordinary type actions, an actuator for the letter-feed mechanism positively connected with said universal bar to move therewith at all times, a second universal bar operable solely by the accent or "silent" type actions, an actuator for the vibrator, and means connecting said vibrator actuator with both of said universal bars for actuation by either bar without transmitting motion to the other bar.

2. In a visible-writing typewriting machine, ordinary and accent or "silent" type actions, a platen, letter-feed mechanism for the platen, a vibratory ribbon guide, a lever connected with said guide for vibrating the guide, a vibrator for the lever having a fixed throw and supported to vibrate in a fixed path, a manually adjustable connector device mounted on the vibrator and adjustable relatively thereto to disconnect the vibrator and lever or to connect the vibrator with said lever at either of two points located different distances from the lever fulcrum, a universal bar operable solely by the ordinary type actions, an actuator for the letter feed mechanism operable by said universal bar, a second universal bar operable solely by the accent or "silent" type actions, an actuator for the vibrator, and means connecting said vibrator actuator with both of said universal bars for actuation by either bar without transmitting motion to the other bar.

3. In a visible-writing typewriting machine, a main frame, a shift frame, a platen shiftable with the shift frame, ordinary and silent key levers mounted on the main frame, type bars operable by said key levers and mounted on the main frame, a type-bar-actuated universal bar mounted on the main frame engageable solely by the type bars connected with the ordinary key levers, a key-lever-operated universal bar mounted on the main frame engageable solely by the silent key levers, letter-feed mechanism for the platen shiftable with the shift frame and operable solely by the type-bar-actuated universal bar, a vibratory ribbon guide, a lever connected with said guide for vibrating the guide, a vibrator for the lever, a bichrome shift control means manually settable to connect the vibrator with the lever at either of two points located different distances from the lever fulcrum, said guide, lever, vibrator and control

means all being shiftable with the shift frame, a rock shaft journaled on the main frame, an operating connection between said shaft and the vibrator for vibrating said vibrator uniformly in all case positions of the shift frame, and independent operating connections between said two universal bars and said shaft for rocking said shaft uniformly at the key strokes, the connection between the shaft and type-bar-actuated universal bar being constructed to permit rocking of the shaft from the key-lever-actuated universal bar without actuating the type-bar-actuated universal bar.

4. In a visible-writing typewriting machine, a platen, ordinary and silent key levers, type bars operable by said key levers, a type-bar-actuated universal bar engageable solely by the type bars actuated by the ordinary key levers, a key-lever-actuated universal bar engageable solely by the silent key levers, letter-feed mechanism for the platen, ribbon feeding and vibrating devices, a rock shaft, connections between said rock shaft and said ribbon feeding and vibrating devices for actuating said devices, a connection between said key-lever-operated universal bar and said shaft for actuating said shaft, and connections between said type-bar-actuated universal bar and the letter-feed mechanism and said shaft for actuating the letter-feed-mechanism and said shaft and including means whereby said shaft may be rocked by the key-lever-actuated universal bar without actuating the letter-feed mechanism.

5. In a visible-writing typewriting machine, having a platen and ordinary and accent type actions, the combination of ribbon feeding means, ribbon vibrating means, letter-feed means for the platen, a universal bar operable solely by the ordinary type actions, and means whereby said universal bar is adapted to actuate all of said means and the accent type actions are adapted to actuate the ribbon feeding means and the ribbon vibrating means without actuating the universal bar and the letter-feed means.

6. In a visible-writing typewriting machine, a platen, a type-bar-actuated universal bar, ribbon feeding means operable by said universal bar, ribbon-feed-reversing means automatically setttable for actuation by said universal bar, ribbon vibrating means operable by said universal bar, letter-feed mechanism for the platen operable by said universal bar, ordinary type-bars effective on said universal bar, one or more accent type bars ineffective on said universal bar, a system of key levers for actuating the ordinary and accent type bars, and means whereby said ribbon feeding means and said ribbon-feed-reversing means and ribbon vibrating means are all operable from the accent type-bar actuating key levers and the letter-feed mechanism remains inactive during operations of an accent type bar by its connected key lever.

7. In a visible-writing typewriting machine, a platen, a ribbon guide, ribbon-guide-vibrating means including a connection shiftable to vary the throw of the guide and to render the guide inactive for writing stencils, ribbon feeding means, an actuator for said vibrating means and said feeding means, escapement mechanism for letter-spacing the platen, a universal bar, an actuator for the escapement mechanism movable with the universal bar at all times, ordinary and accent type actions, said ordinary type actions alone being effective on the universal bar, means for operating the actuator for the ribbon feeding and ribbon vibrating means from the universal bar adapted to permit actuation of said actuator without movement of the universal bar from the actuator, and independent means for operating the actuator for the ribbon vibrating means and ribbon feeding means from the accent type actions.

8. In a visible-writing typewriting machine, a main frame, a shift frame, a platen carriage on the shift frame, a platen on the carriage, ordinary and silent key levers fulcrumed on the main frame, type bars operable by said key levers and mounted on the main frame, an arcuate type-bar-actuated universal bar mounted on the main frame and engageable only by the type bars actuated by the ordinary key levers, a key-lever-actuated universal bar mounted on the main frame and engageable only by the silent key levers, carriage feeding means and ribbon feeding means and ribbon vibrating means all mounted to shift with the shift frame, a rock shaft journaled on the main frame, connections between said rock shaft and said ribbon feeding and vibrating means for actuating said means in the different case positions of the shift frame, a connection between said key-lever-operated universal bar and said rock shaft for actuating the shaft, a connection between said type-bar-actuated universal bar and the carriage feeding means for actuating said means in the different case positions of the shift frame, and a connection between the type-bar-actuated universal bar and rock shaft for actuating said shaft arranged to permit actuation of the shaft by the key-lever-operated universal bar without actuation of the type-bar-actuated universal bar and the carriage feed operating connection.

9. In a visible-writing typewriting machine, a main frame, a shift frame, a platen carriage on the shift frame, a platen on the carriage, ribbon feeding means and ribbon vibrating means and carriage feeding means all mounted to shift with the shift frame, ordinary and accent type actions mounted on the main frame, a universal bar mounted on the main frame and operable solely by the ordinary type actions, means on the main frame operable by said universal bar to actuate the ribbon feeding and vibrating and

carriage feeding means in all case positions of the shift frame, said last mentioned means including a part operable also by the accent type actions and effective on the ribbon feeding and vibrating means when so operated without transmitting movement to the universal bar and the carriage feeding means.

10. In a visible-writing typewriting machine, a main frame, a shift frame, a platen carriage on the shift frame, a platen on the carriage, a ribbon guide and vibrating means therefor shiftable with the shift frame and including manually shiftable means settable to vary the throw of the ribbon guide and to render the guide inactive for writing stencils, an actuator for said vibrating means mounted on the main frame, letter-feed mechanism for the platen carriage shiftable with the shift frame, a universal bar mounted on the main frame, an actuator for the letter feed mechanism mounted on the main frame to move with the universal bar at all times, ordinary and accent type-actions mounted on the main frame, said ordinary type actions being alone effective to actuate the universal bar, means mounted on the main frame and operable solely by the accent type actions and connected with the actuator for the ribbon vibrating means to actuate said vibrating means through the medium of said actuator, and a connection between the universal bar and the actuator for the ribbon vibrating means for actuating said vibrating means through the medium of said actuator, said connection being arranged to permit actuation of said actuator from the accent type actions without the transmission of motion to the universal bar and the actuator for the carriage feeding means.

11. In a visible-writing typewriting machine, a main frame, a shift frame, a platen carriage on the shift frame, a platen on the carriage, a ribbon guide vibrating lever fulcrumed on the shift frame, a ribbon guide held to said lever, a vibrator for said lever shiftable with the shift frame, manually settable means shiftable with the shift frame for connecting the vibrator with said lever at either of two points located different distances from the fulcrum of the lever and for disconnecting the vibrator from the lever at will, carriage feeding means shiftable with the shift frame, a universal bar mounted on the main frame, an actuator for the carriage feeding means mounted on the main frame, an actuator for the vibrator mounted on the main frame, connections between said universal bar and both of said actuators for operating the actuators from the universal bar arranged to permit actuation of the vibrator actuator independently of the universal bar and the carriage feed actuator, ordinary type actions on the main frame effective to actuate the universal bar, one or more accent type actions on the main frame ineffective to actuate the universal bar, and means on the main

frame operable solely from the silent type actions and connected with the vibrator actuator to actuate the vibrator through the medium of said actuator.

12. In a visible-writing typewriting machine, a main frame, a shift frame, a platen carriage on the shift frame, a platen on the carriage, a ribbon guide vibrating lever fulcrumed on the shift frame, a ribbon guide held to said lever, a vibrator for said lever shiftable with the shift frame, manually settable means shiftable with the shift frame for connecting the vibrator with said lever at either of two points located different distances from the fulcrum of the lever and for disconnecting the vibrator from the lever at will, carriage feeding means shiftable with the shift frame, a type-bar-actuated universal bar mounted on the main frame, ordinary and accent type bars mounted on the main frame, ordinary and accent key levers connected with said ordinary and accent type bars respectively, a connection between said universal bar and the carriage feeding means for actuating said means, an actuator for the ribbon vibrating means mounted on the main frame, a connection between said universal bar and actuator for operating the actuator from the universal bar arranged to permit operation of the actuator independently of movement of the universal bar, and independent means on the main frame connected with said actuator to operate said vibrator through the medium of said actuator from the accent key levers, the ordinary key levers being ineffective on said independent means and the accent type bars being ineffective on the universal bar.

13. In a visible-writing typewriting machine, a main frame, a shift frame, a platen carriage on the shift frame, a platen on the carriage, a ribbon guide vibrating lever fulcrumed on the shift frame, a ribbon guide held to said lever, a vibrator for said lever shiftable with the shift frame, manually settable means shiftable with the shift frame for connecting the vibrator with said lever at either of two points located different distances from the fulcrum of the lever and for disconnecting the vibrator from the lever at will, carriage feeding means shiftable with the shift frame, a type-bar-actuated universal bar mounted on the main frame, ordinary and accent type bars mounted on the main frame, ordinary and accent key levers connected with said ordinary and accent type bars respectively, a connection between said universal bar and the carriage feeding means for actuating said means, said connection permitting actuation of said feeding means independently of the universal bar, an actuator for the ribbon vibrating means mounted on the main frame, a connection between said universal bar and actuator for operating the actuator from the universal bar arranged to

permit operation of the actuator independently of movement of the universal bar, to actuate said vibrator through the medium of said actuator, independent means on the main frame for operating said actuator from the 5 accent key levers, the ordinary key levers being ineffective on said independent means and the accent type bars being ineffective on the universal bar, a space bar mounted on the main frame, and a connection between 10 the space bar and the carriage feeding means for operating said means without operating the universal bar and said actuator.

14. In a visible-writing typewriting machine, a rock shaft, a rock arm on said shaft, 15 ribbon vibrating means connected with said rock arm, a pair of rock arms fixed on said shaft, a pair of universal bars, a rigid link connecting one of said universal bars with one of said pair of rock arms, a rigid 20 link connecting the other of said universal bars with the other one of said pair of rock arms, both of said universal bars being arranged to rock the shaft in the same direction through the medium of the link and rock arm 25 connected with each bar, each of said links having a one-way operating connection at one end thereof with one of the parts connected thereby, a platen, a platen carriage, ordinary type actions operative on one of said 30 universal bars only, accent type actions operable on the other universal bar only, and letter feed mechanism for the carriage operable from the universal bar actuated by the ordinary keys. 35

15. In a typewriting machine, a platen, a platen carriage, an escapement mechanism for the carriage, a type-bar-actuated universal bar for operating said escapement mechanism mounted for fore-and-aft movement, 40 a rock shaft extending transversely of the machine, ribbon vibrating mechanism connected with said shaft for operation thereby, a pair of rock arms depending from said shaft, a fore-and-aft extending link having a pull 45 connection only with one of said rock arms at its forward end and a positive push-and-pull connection at its rear end with said type-bar-actuated universal bar, a key-lever-actuated universal bar pivotally mounted for 50 up and down swinging movement, an upstanding arm held to said key-lever-actuated universal bar in rear of the pivotal axis of the universal bar, a second fore-and aft extending link having a positive push-and-pull 55 connection at its rear end with the other depending rock arm and a push connection only at its forward end with said upstanding arm, ordinary and accent type bars, ordinary 60 and accent key levers for actuating said type bars, said accent type bars being ineffective on the type-bar actuated universal bar and said ordinary key levers being ineffective on the key-lever-actuated universal bar, and the 65 type-bar-actuated universal bar being mov-

able rearwardly by the ordinary type bars on their printing strokes and the key-lever-operated universal bar being depressible by the accent key levers on the down strokes of the keys on said levers. 70

16. A typewriting machine as claimed in claim 15, wherein a return spring is connected with the rock shaft to rock said shaft in the direction opposite to that in which it is rocked by said universal bars, and a return spring is provided for said key lever 75 actuated universal bar.

17. A typewriting machine as claimed in claim 15, wherein means are provided for positively arresting return movements of the 80 universal bars and for positively limiting the down throw of the key-lever-actuated universal bar, and wherein a return spring is provided for the key-lever-actuated universal bar and a return spring is connected with 85 the rock shaft to rock said shaft in the direction opposite to that in which it is rocked by the two universal bars.

18. In a typewriting machine, a platen, a platen carriage, escapement mechanism for 90 the carriage, a universal bar for actuating the escapement mechanism, ribbon vibrating means, an actuator for the ribbon vibrating means operable by the universal bar and also operable independently of movement of the 95 universal bar, a second universal bar having forwardly extending side arms pivotally supported at their forward ends to rock up and down about a horizontal axis, means for limiting the up and down movements of said 100 second universal bar, ordinary and accent type actions including type bars and key levers for operating the type bars, an upstanding rock arm held to one of the side arms of said second universal bar having a fore-and-aft extending slot therein, a rigid fore-and-aft extending link pivotally connected with 105 said actuator at its rear end and having its forward end slidably engaged in said slot in the upstanding arm, and return springs connected with said actuator and said second 110 universal bar, said link being normally engaged in the forward end of said slot, the first universal bar being operable directly by the ordinary type bars and the second universal 115 bar being depressible directly by the accent key levers, the ordinary type actions being ineffective on the second universal bar and the accent type actions being ineffective on the 120 first universal bar.

19. A typewriting machine, as claimed in claim 18, wherein the means for limiting movements of the second universal bar comprises a fulcrum segment for sub-levers of 125 the type actions and a pair of stops on the side arms of the universal bar, the stop on one of said arms being engageable with said segment on down movements of the universal bar and the stop on the other arm being 130

engageable with said segment on up movements of the universal bar.

20. In a three-quarter strike typewriting machine, a main frame having an upwardly and rearwardly inclined transverse partition wall, a type bar segment held to the front face of said wall, a platen carriage above and in rear of the segment, a platen on the carriage, a sub-lever segment on the main frame forward of said wall, sub-levers fulcrumed on said segment, ordinary and accent key levers extending under said sub-lever segment and fulcrumed in rear thereof on the main frame, ordinary and accent type bars pivoted in the type-bar segment to strike on the upper front quarter of the platen, a series of links connecting the sub-levers with the type bars, a series of links connecting the sub-levers with the key levers, an arcuate universal bar located forward of said wall and engageable solely by the ordinary type bars, a second universal bar extending transversely of the machine below the sub-lever segment and under the key levers and pivotally supported on the main frame to rock up and down, said second universal bar being engageable solely by the accent key levers, stops carried by said second universal bar engageable with said sub-lever segment to limit the up and down movements of said bar, a return spring for elevating said second universal bar, a transverse rock shaft adjacent said frame wall, ribbon vibrating means forward of the plane of said wall, and operable from said shaft, vibratory supporting means for the arcuate universal bar mounted on the main frame in rear of said wall and extending through the wall, a rock arm depending from said shaft having a fore-and-aft extending slot therein, a link held to said vibratory supporting means at its rear end and engaged at its forward end in said rock arm slot, a second rock arm depending from said shaft, an upstanding arm rigidly held to the second universal bar and having a fore-and-aft extending slot therein, a second link held to said second rock arm at its rear end and engaged at its forward end in the slot in said upstanding arm, a spring normally holding said shaft and depending rock arms with the first-mentioned link engaged in the rear end of the slot in the first-mentioned rock arm and the second-mentioned link engaged in the forward end of the slot in the upstanding arm, and escapement mechanism for the carriage located in rear of the plane of said wall and operable from said vibratory supporting means for the arcuate universal bar.

21. In a typewriting machine, a main frame, a platen carriage, a shift frame for the platen carriage at the rear of the main frame, ordinary and accent type actions on the main frame entirely forward of the shift frame, a carriage escapement shiftable with the shift frame and located in rear of the type actions,

ribbon vibrating means shiftable with the shift frame and located forward of the escapement, an arcuate universal bar forward of the shift frame engageable solely by the type bars of the ordinary type actions, fore-and-aft movable vibratory supporting means to which said arcuate universal bar is positively held extending through the shift frame and mounted on the main frame in rear of the type actions, an actuator for the escapement carried by said vibratory supporting means, an actuator for the ribbon vibrating means mounted on the main frame forward of the shift frame, a second universal bar mounted on the main frame below the type actions and operable solely from the key levers of the accent type actions, and connections between said actuator for the ribbon-vibrating means and said second universal bar and the vibratory supporting means for the arcuate universal bar whereby said actuator is operable from either universal bar without transmitting movement to the other bar.

22. In a visible-writing typewriting machine having a platen and ordinary and accent type actions, the combination of a universal bar operable solely by the ordinary type actions, letter-feed means for the platen operable by said universal bar, ribbon mechanism operable by and also independently of said universal bar and including ribbon feeding, vibrating, and automatically-settable feed-reversing means, said ribbon mechanism being operable independently of operation of the letter-feed means, and means operable by the accent type actions for actuating said ribbon mechanism without actuating the universal bar and the letter-feed means.

23. In a visible-writing typewriting machine having ordinary and accent type actions, the combination of a platen, letter-feed means for the platen, ribbon vibrating means, ribbon feeding means, ribbon-feed-reversing means automatically settable for actuation, an actuator for operating said ribbon vibrating means and ribbon feeding means and ribbon-feed reversing means, a universal bar operable solely by the ordinary type actions, a connection between said universal bar and said letter-feed means for actuating the letter feed means, an independent connection between said universal bar and said actuator arranged to permit actuation of the actuator independently of the universal bar and letter-feed means, and means operable solely by the accent type actions for actuating said actuator independently of the universal bar.

24. In a visible-writing typewriting machine, the combination of a main frame, a shift frame, a platen and letter-feed mechanism therefor shiftable with the shift frame, ribbon mechanism shiftable with the shift frame and including vibrating means,

feeding means and automatically settable feed-reversing means, ordinary and accent type actions on the main frame, a universal bar on the main frame operable solely by the ordinary type actions, separate operating connections between said universal bar and the letter-feed and ribbon mechanisms, the connection with the ribbon mechanism being adapted to permit actuation of the ribbon mechanism without an operation of the universal bar, and means operable solely by the accent type actions for operating the ribbon mechanism without operating the universal bar.

25. In a visible-writing typewriting machine, the combination of a main frame, a shift frame, a platen and letter-feed mechanism therefor shiftable with the shift frame, ribbon mechanism shiftable with the shift frame and including vibrating means, feeding means, and feed-reversing means automatically settable for actuation, ordinary and accent type actions on the main frame, a universal bar on the main frame operable solely by the ordinary type actions for actuating the letter feed mechanism, an actuator for the ribbon mechanism mounted on the main frame operable by and independently of said universal bar, and means on the main frame operable solely by the accent type actions for actuating said actuator for the ribbon mechanism independently of operation of the universal bar.

26. In a visible writing typewriting machine, a platen, letter-feeding means for the platen, ribbon feeding and vibrating means operable independently of said letter-feeding means, ordinary and accent type actions, two independently movable universal bars, one operable solely by the ordinary type actions and the other solely by the accent type actions, connections between the ribbon feeding and vibrating means and both universal bars for actuating said ribbon-feeding and vibrating means from either bar without movement of the other bar, and an operating connection between the letter-feeding means and that universal bar operated by the ordinary type actions, said letter-feeding means being unconnected with the universal bar operated by the accent type actions.

27. In a visible-writing typewriting machine, a platen carriage, a platen on the carriage, escapement mechanism for the carriage, ribbon feeding and vibrating mechanism operable independently of the escapement mechanism, an actuator for the ribbon feeding and vibrating mechanism, ordinary and accent type actions, two independently movable universal bars, one operable solely by the ordinary type actions and the other operable solely by the accent type actions, two independent operating connections between the ribbon mechanism actuator and said universal bars arranged for operation of the actuator from either universal bar

without imparting movement to the other universal bar, a space bar, and two independent escapement mechanism actuators arranged for operation of the escapement mechanism by either of said actuators without imparting movement to the other actuator, and two independent operating connections connecting one of said escapement mechanism actuators with the space bar and the other with that universal bar operable by the ordinary type actions.

28. In a visible-writing typewriting machine, a main frame, a shift frame, a platen carriage on the shift frame, a platen on the carriage, a carriage escapement mechanism shiftable with the shift frame, a ribbon guide, a ribbon guide vibrating device shiftable with the shift frame and entirely disconnected from the escapement mechanism, means for limiting the throw of said device, a motion transmitting connection between said device and guide settable to vary the extent of vibration of the guide by said device without varying the throw of said device, ordinary and accent type actions on the main frame, a universal bar on the main frame movable solely by the ordinary type actions, means operable by said universal bar for operating the escapement mechanism in all case positions of the shift frame, a second universal bar operable solely by the accent type actions, an actuator for the ribbon vibrating device mounted on the main frame and entirely disconnected from the escapement mechanism, a connection between said actuator and device for imparting a full throw to said device in all case positions of the shift frame, and two independent one-way operating connections between said actuator and said universal bars arranged to move said device in the same direction upon movement of either universal bar by a type action.

29. In a visible writing typewriting machine, the combination of a platen carriage, a platen on the carriage, a reciprocable ribbon guide, an actuator for a ribbon guide reciprocating means, ribbon guide reciprocating means connected with said actuator and including provisions for manually setting said means at will without changing said connection for imparting long or short throws to the guide or permitting the guide to remain quiescent when the actuator operates, ordinary type actions, accent type actions, two independent universal bars, one directly actuated solely by the ordinary type actions and the other directly actuated solely by the accent type actions, an escapement for the platen carriage entirely disconnected from the universal bar which is actuated by the accent type actions and from the ribbon guide reciprocating means and the actuator therefor and operable by the other universal bar, and independent connections between said two universal bars and said actuator for operating the actuator from either

bar without transmitting movement to the other bar.

30. In a visible writing typewriting machine, the combination of a platen carriage, a platen on the carriage, a reciprocable ribbon guide, ribbon guide reciprocating means comprising a lever connected with the guide and a vibrator for the lever with provisions for at will operatively connecting the lever and vibrator at either of two different distances from the lever fulcrum and operatively disconnecting the lever and vibrator, a vibratory actuator for the vibrator, ordinary type actions, accent type actions, two independent universal bars, one directly actuated solely by the ordinary type actions and the other directly actuated solely by the accent type actions, two independent members each directly connecting said actuator with a different one of said universal bars for vibration of the actuator by either bar without transmitting movement to the other bar, and an escapement for the carriage operable by the universal bar which is actuated by the ordinary type actions and entirely disconnected from the actuator and ribbon guide reciprocating means and the other universal bar.

In testimony whereof we hereunto affix our signatures.

HENRY ALLEN AVERY.
OTTO PETERMANN.
EDWIN L. HARMON.