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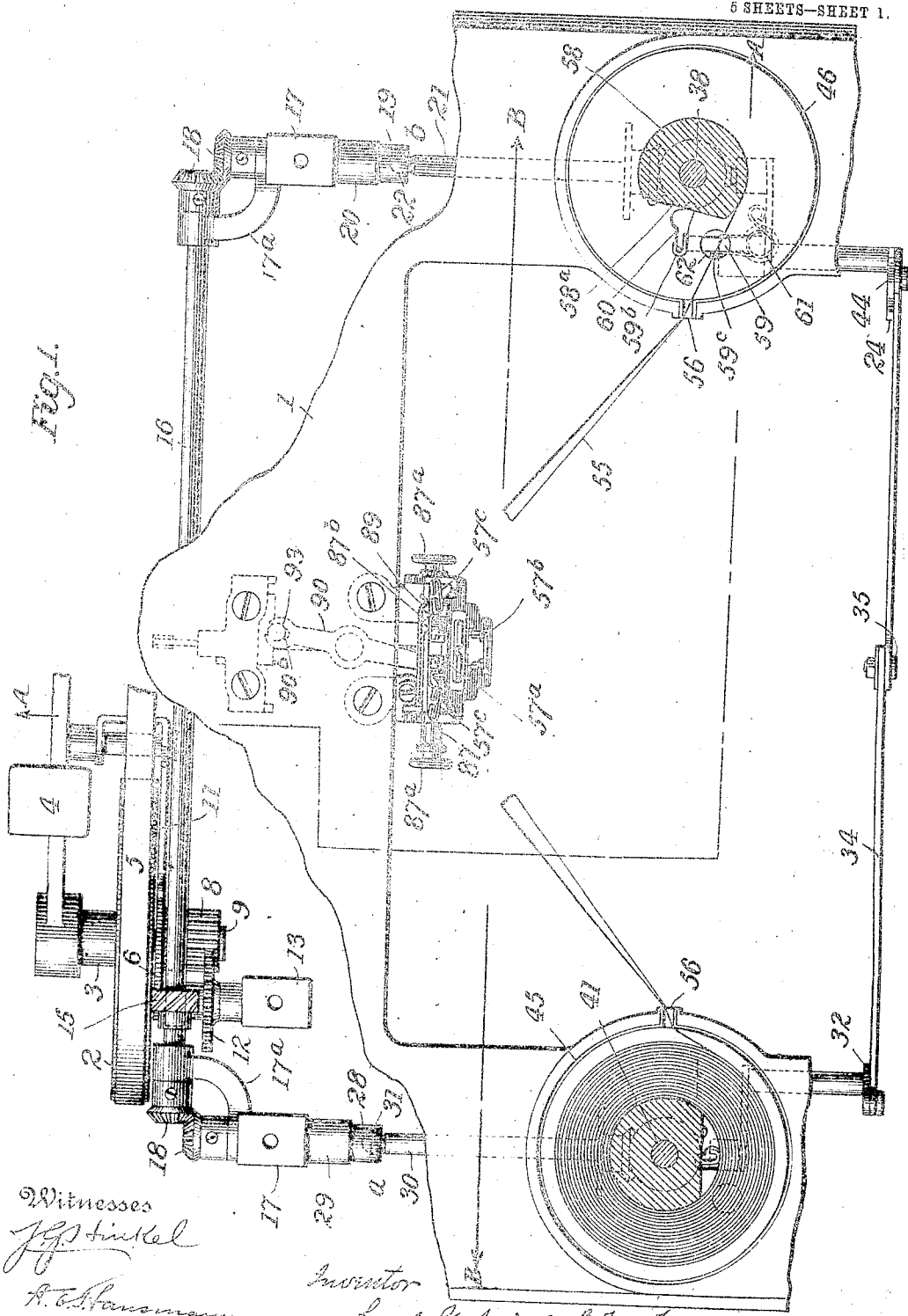
C. GABRIELSON.
 RIBBON MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED AUG. 20, 1904.

Patented May 17, 1910.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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A. C. Hansmann

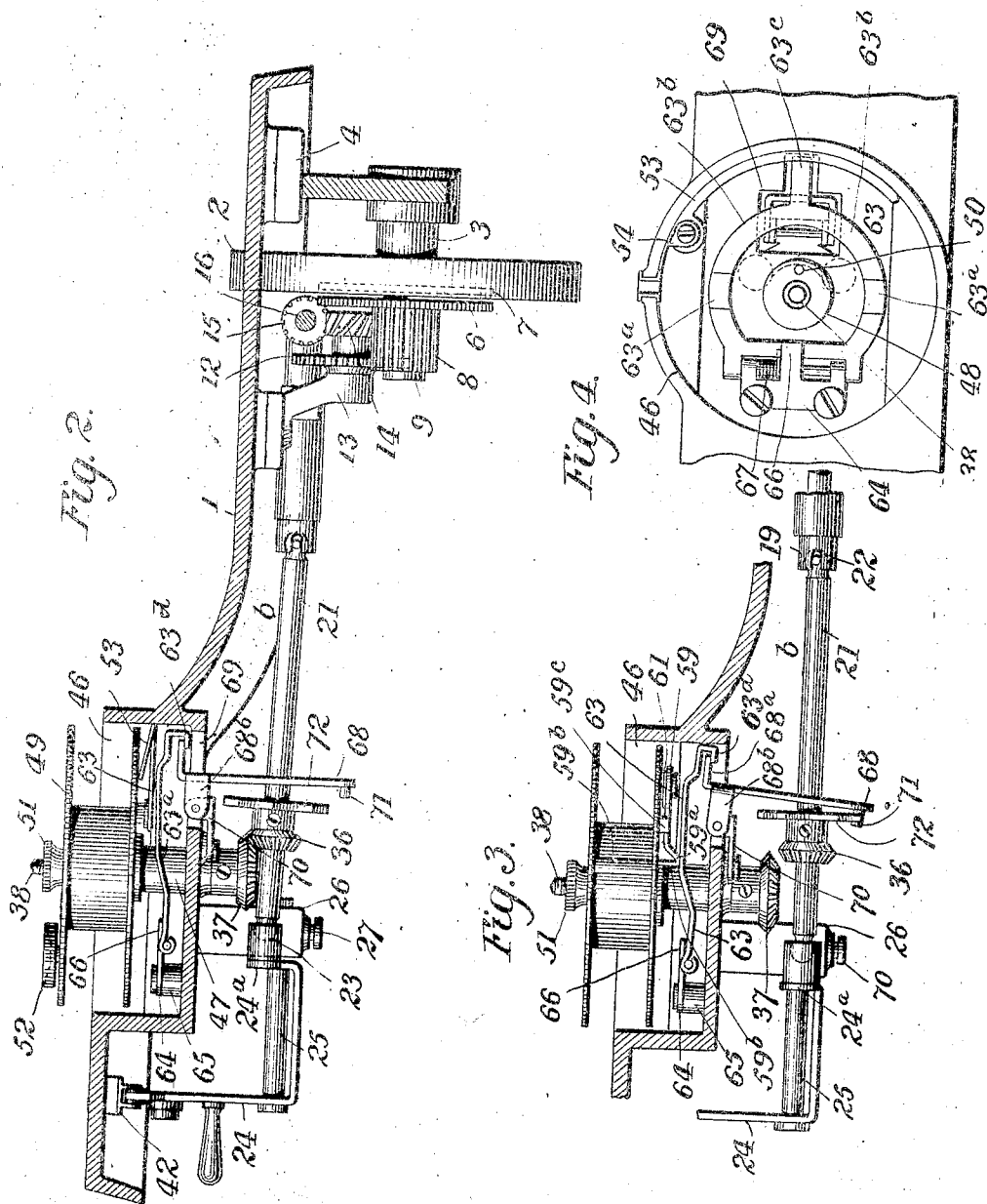
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5 SHEETS—SHEET 2



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Fig. 5^a

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5 SHEETS—SHEET 4.

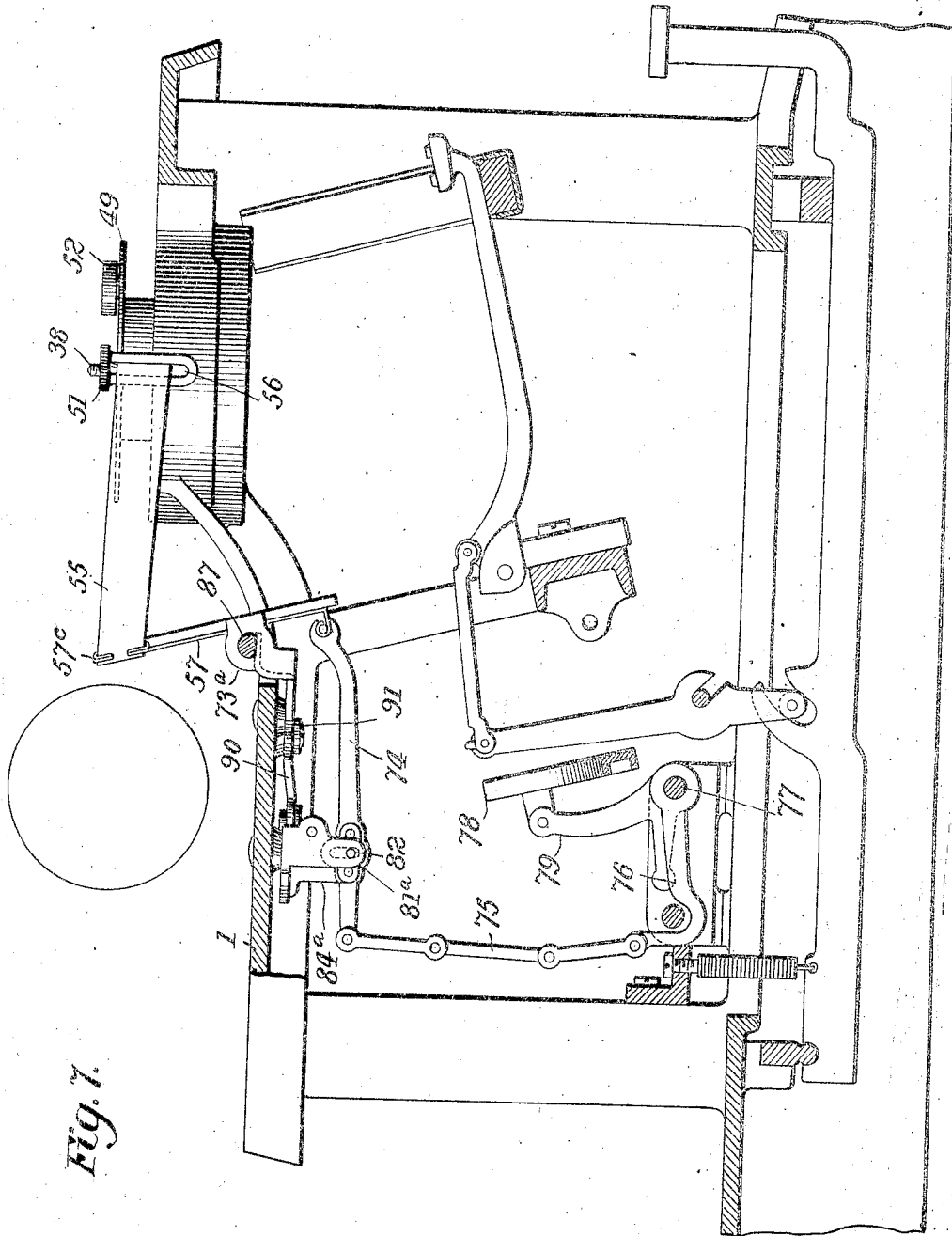


Fig. 7.

Witnesses
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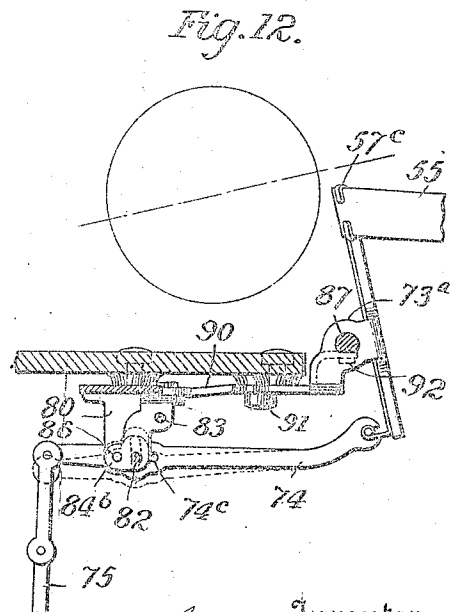
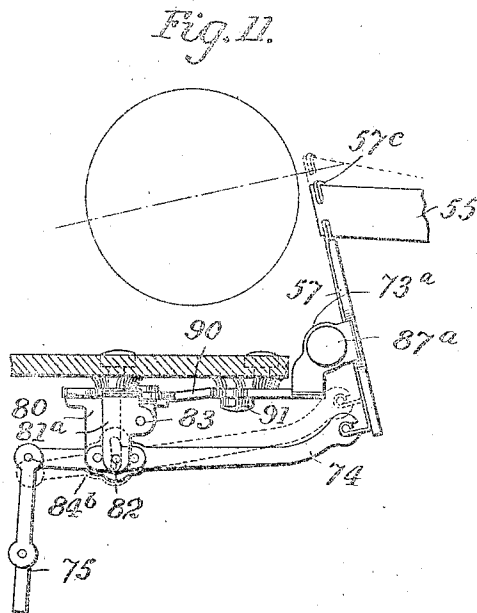
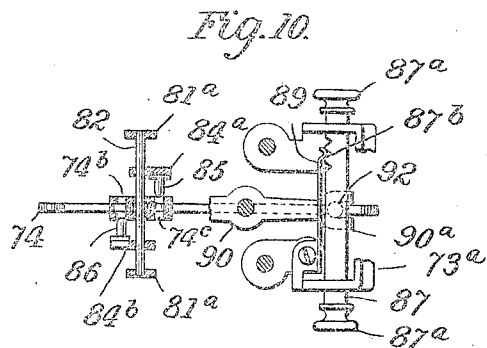
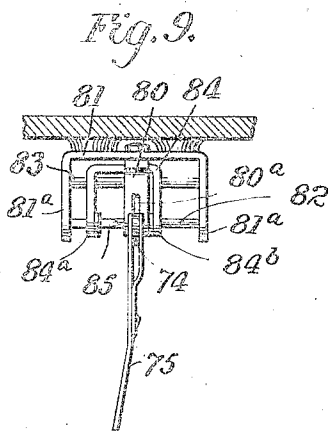
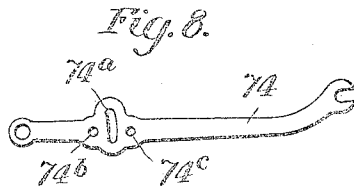
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958,388.

Patented May 17, 1910.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

CARL GABRIELSON, OF SYRACUSE, NEW YORK, ASSIGNOR TO L. C. SMITH & BROS. TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

RIBBON MECHANISM FOR TYPE-WRITING MACHINES.

958,388.

Specification of Letters Patent. Patented May 17, 1910.

Application filed August 20, 1904. Serial No. 221,522.

To all whom it may concern:

Be it known that I, CARL GABRIELSON, a citizen of the United States, and resident of Syracuse, Onondaga county, State of New York, have invented certain new and useful Improvements in Ribbon Mechanism for Type-Writing Machines, of which the following is a specification.

The present invention relates to the ribbon mechanism of typewriting machines, and it consists in novel mechanism for reversing the feed of the ribbon automatically, for varying the throw of the ribbon and for throwing the ribbon out of action.

It also consists in various novel combinations and arrangements of parts, all of which will be described in the following specification, reference being had to the accompanying drawing in which:

Figure 1 is a plan view showing part of the machine frame and the ribbon mechanism, the spools being shown in horizontal section; Fig. 2 is a section on the line A—A of Fig. 1, showing the driving shaft geared to the spool shaft for winding the ribbon; Fig. 3 is a partial section on the same line showing the spool unwound, the driving shaft being out of gear with the spool shaft and about to move into gear with it to cause a reverse movement of the ribbon; Fig. 4 is a top plan view of one of the spool cups in the top plate and the mechanism located within the cup; Fig. 5 is a section on the line B—B of Fig. 1; Fig. 5^a is a top view of the ribbon carrier; Fig. 6 is a front view of the reversing gear shafts and connections between said shafts, the top plate being shown partly in section; Fig. 7 is a longitudinal vertical section through part of the machine, taken at one side of the ribbon guide, showing the mechanism for vibrating the ribbon; Fig. 8 is a side view of the lever for vibrating the ribbon carrier; Fig. 9 is a rear view of the mechanism for vibrating the ribbon carrier and for varying or stopping the movement of the carrier; Fig. 10 is a sectional plan view of devices for shifting the fulcrum of the ribbon guide; Figs. 11 and 12 are side views of the ribbon vibrator arm and connected parts showing the arm fulcrumed at different points.

Referring to Figs. 1-6 inclusive of the drawing, 1 indicates the top plate of the machine, to which the ribbon winding and reversing mechanism is connected. A spring

drum 2 is supported at the rear of the machine upon a stud 3, which is secured to a bracket 4 depending from the top plate, and a strap 5 connects this drum with the carriage, (not shown,) in the usual manner. Two ratchet wheels 6 and 7, and a pinion 8, all rigidly connected, are also journaled upon the stud 3 and held thereon by a screw 9. A moving pawl 10, pivoted to the spring drum, engages the ratchet wheel 7, so that the ratchet wheels and pinion will turn with the drum when the carriage moves to the left, and a holding pawl 11, pivoted to the spring drum bracket, engages the ratchet wheel 6 and prevents rotation of the ratchet wheels and pinion, while the carriage is being drawn to the right. The pinion 8 meshes with a gear 12, journaled upon a stud projecting from a bracket, 13, depending from the top plate, and a spiral gear 14, having teeth cut about at an angle of 45 degrees, is secured to and rotates with the gear 12. This gear 14 meshes with a similar gear 15 upon the main driving shaft, 16, for the ribbon mechanism. By reason of the reducing gearing between the shaft 16 and pinion 8, the shaft rotates at a much slower speed than the pinion, giving a slow movement to the ribbon. The shaft 16 extends transversely at the rear of the machine and is journaled at its ends in arms 17^a of brackets 17 which are secured to the top plate of the machine. The main driving shaft 16 is geared at its ends to a pair of flexible shafts *a* and *b*, projecting forwardly at the sides of the machine, by bevel gears 18, as shown in Fig. 1. The shafts *a* and *b* each consists of two sections flexibly connected together. The shaft *b* consists of a short section or spindle 19 journaled in a bearing 20 in the bracket 17 at the right side of the machine, and a section 21, connected at its rear end to the short section 19 by a universal joint 22, and having its forward end journaled at 23 in the laterally projecting arm 24^a of a bell crank lever 24. The bell crank lever 24 is journaled upon a stud 25 which is adjustably secured within a bracket 26 by means of a set screw 27, and projects forward horizontally therefrom. Similarly, the shaft *a* comprises a short section or spindle 28 journaled in a bearing 29 in the bracket 17 at the left side of the machine, and a section 30, connected at its rear end to said spindle by a universal joint 31, and having its for-

ward end connected by a universal joint to an arm 32^a of a bell crank lever 32 journaled upon a stud 33 at the left side of the machine. The shafts *a* and *b* are alike in construction and similarly mounted. The upwardly extending arms 24^b and 32^b of the bell crank levers are connected together by a link 34 having a slot and pin connection 35 by which the length of the link may be adjusted. The arrangement is such that when the bell crank lever 24^a is rocked to throw its arm 24^a, carrying the shaft section 21, upward, the bell crank 32 will be rocked in the reverse direction, the arm 32^a, carrying the shaft section 30, moving downward, and vice versa. When the bell cranks are rocked to the left to their full extent, as shown in Fig. 6, a bevel gear 36 upon the movable shaft section 21 engages a similar gear 37 upon a spool shaft 38 vertically arranged at the right side of the machine and the section 30 of the shaft *a* is lowered, so that a bevel gear 39 upon said section is out of engagement with a bevel gear 40 upon a vertical spool shaft 41 at the left side of the machine. When the bell crank levers are rocked in the opposite direction to their full extent, the gears 36 and 37 are disconnected and the gears 39 and 40 are engaged with one another. The bell crank levers are held in either of their two positions by a spring 42 secured to the top plate of the machine and having a roller 43 which bears upon a V-shaped cam surface 44 at the upper end of the arm 24^b of the bell crank 24.

The spool shafts 38 and 41 are arranged vertically at the centers of spool pockets 45 and 46 located in the forward part and at the sides of the top plate and having circular walls which are cast integral with the top plate. Mechanism for reversing the direction of movement of the ribbon, when the latter is unwound from the spool, is arranged within and adjacent to each spool pocket, and as these mechanisms are, in all respects, duplicates, a description of one set of devices will apply to both. As shown in Figs. 1 to 4 inclusive, the spool shaft 38 at the right of the machine is journaled in a bearing 47 projecting upwardly from the top plate in the center of the spool pocket—that is, from the bottom of the spool pocket—and a collar 48, secured to the shaft, rests upon this bearing. This collar supports the shaft, and also supports a ribbon spool 49, which is secured against rotation upon the collar by a pin 50 which engages the lower flange of the spool. The spool is held against the collar by a thumb nut 51 upon the spool shaft. For the purpose of turning the spool by hand, when desired, a finger piece 52 is pivoted to the upper flange of the spool, and the latter may be turned by placing the finger upon this piece and giving it a circular motion. A spring 53, secured at

one end to a lug within the pocket, bears against the base of the spool, as shown, in order to hold the spool which is unwinding frictionally to keep the ribbon 55 taut between the spools. The ribbon passes through vertical U-shaped guides 56 arranged in the adjacent walls of the pockets, and through a ribbon carrier or guide 57 adjacent to the printing point, as shown in Figs. 1 and 7, and hereinafter further referred to. The guides 56, as shown, consist in slots in the walls of the pockets and sheet metal linings in the slots, each lining being connected to its pocket by an arm 54 and a screw or other fastening.

The spool cores 58 each have one side 58^a flat or cut away, as shown, and a lever 59 is pivoted to the lower side of the bottom flange of the spool. This lever, as shown in Figs. 1 and 3, has, at its free end, a downwardly inclined part 59^a and a part 59^b extending vertically upward through a slot 60 in the lower spool flange, said slot extending from the flat face of the spool core toward the periphery of the flange. It will be seen, from an inspection of Fig. 1, that when the ribbon is wound on the spool, the ribbon will bear upon the projection 59^b of the lever 59 and hold the latter against the flat face of the core, as shown at the left in Fig. 1. A spring 61 tends to force the lever away from the core, and when the ribbon is unwound from the spool, as shown at the right in Fig. 1, the lever moves away from the core until a stop 59^c, upon the lever, engages the outer wall of a circular opening 62 in the lower spool flange.

Within each spool pocket is arranged a ring shaped cam lever 63 which encircles the bearing of the spool shaft and its internal diameter is such that the downward projection or bearing piece 59^a of the laterally movable lever 59 may turn with the spool, without engaging the cam lever; when the lever 59 is held against the spool core by the ribbon. When the ribbon is unwound, however, the bearing piece 59^a moves into position to bear upon and depress the cam lever. This cam lever is hinged at one side to a plate 64 supported upon studs 65 within the pocket, and having a stop projection 66 extending to the adjacent portion of the cam lever, as shown. The cam lever is normally pressed upwardly against this stop by a spring 67. The cam lever extends horizontally for a short distance from the hinge joint and then upwardly at both sides to form cam surfaces 63^a. In its normal position, shown in Fig. 2, the remaining circular portion 63^b, at the free end of the lever, is inclined upward slightly from the horizontal. The cam lever has an extension 63^c at its forward end which extends downwardly and then rearwardly, as shown, to form a hook 63^d. This hook is engaged by

the upper horizontal end 68^a of a vertically arranged latch 68 which extends through a slot 69 in the bottom of the spool pocket, and is provided with a pair of laterally extending arms 68^b which are pivoted to a support or bracket 70 secured to the underside of the spool pocket. This latch has a pin or projection 71 at its lower end which extends laterally in the same direction as the arms, and in the opposite direction to the part 68^a of the latch. Each of the movable shaft sections 21 and 30 has a cam wheel 72 secured to it, adjacent to the latch, and these cam wheels have a series of cam surfaces 72^a upon their peripheries for coöperating with the pins 71 (see Figs. 2, 3 and 6). While the lever 59 is held against the spool core, the bearing portion of this lever will not engage the cam lever, and, therefore, the parts will remain as shown in Fig. 2, the latch being held with its pin out of line with the cam wheel on the movable gear shaft. When the ribbon is unwound sufficient to release the cam lever 59 the free end of the latter moves outward, and the bearing piece or projection 59^a, with the continued rotation of the spool, rides up onto one of the surfaces 63^a of the cam lever, thus depressing said latter lever and allowing the latch to swing about its pivotal point until the pin 71 extends beneath the cam wheel, as shown in Fig. 3. It will be understood, of course, that the movable gear shaft is out of gear with the spool shaft upon which the spool which is unwinding is mounted, as shown in Fig. 3. In this figure the shaft section 21 is in its lower position with the cam wheel 72 resting upon the pin 71. The continued rotation of the shaft section 21 and cam wheel 72, while the cam lever is depressed, causes one tooth on the cam wheel to bear upon the pin 71 and thereby elevate the shaft section 21. This upward movement of the shaft section 21 tilts the bell crank levers until the roller 43 on the spring 42 passes over the center of the cam surface 44 on the bell crank lever 24, when the gear 36 on the shaft section 21 will be thrown into mesh with the gear 37 on the right hand spool shaft, and the gear on the shaft section 30 will be thrown out of engagement with the gear 40 on the left hand spool shaft, as shown in Fig. 6. The ribbon will then wind onto the spool at the right of the machine, and when the ribbon has been entirely unwound from the spool at the left of the machine, the same reversing action will be accomplished by the mechanism connected with the left spool.

Ribbon vibrating mechanism.—In traveling from one spool to the other the ribbon passes through the ribbon carrier 57 which is adjustable vertically in front of the platen upon a guide bracket 73 having arms 73^a secured to the top plate centrally of the ma-

chine. The ribbon carrier is preferably of sheet metal, and, as shown in Figs. 1 and 5, has integral angular arms 57^a and 57^b at its upper and lower ends respectively, engaging guiding edges on the bracket. These arms 57^a and 57^b are some distance apart and permit the carrier to slide freely on the bracket, without binding. The ribbon extends through angular guides 57^c at the upper side edges of and integral with the carrier, and these guides are inclined forwardly in line with the ribbon coming from the spools and joined to the carrier slide by round bends or corners, as shown in Figs. 1, 5 and 5^a, so that the ribbon is not required to travel over any sharp edges on the carrier. Normally the ribbon is held by the carrier below the printing line on the platen, so that all writing on the paper is visible. Means are provided for moving the carrier upward each time a key is depressed, to bring the ribbon to the printing line, and the movement of the carrier may be regulated so that type impressions may be made from the upper or the lower half of the ribbon as desired; or the ribbon carrier may be held inoperative, in its normal position, below the printing point, while the keys are operated. By varying the throw of the carrier the upper and lower portions of an ordinary ribbon may be used, or polychrome ribbons may be employed and the throw of the carrier adjusted to bring differently colored zones of the ribbon to the printing point, at will, for printing in different colors. In mimeograph work, where it is desirable to have the type strike directly against the mimeograph sheet, instead of against a ribbon, the mechanism is adjusted so that the ribbon carrier will remain inoperative, in its normal position, with the ribbon below the printing point, while the keys are operated.

As shown in Figs. 7 to 12 inclusive, a ribbon vibrating lever 74 is connected to the lower end of the ribbon carrier 57 by a pin-and-slot connection, and it extends rearwardly therefrom beneath the top plate. The rear end of this lever or vibrator is connected by a link 75 to an arm 76 which is adjustably secured to a rock shaft 77. The universal bar 78 is connected by arms 79 to this rock shaft, and the movement of the universal bar, therefore, communicates a vertical reciprocating motion through the arm 76 and link 75 to the rear end of the lever or vibrator 74, each time a key is depressed. As shown in Fig. 8, the vibrator arm or lever 74 has a vertical slot 74^a near its rear end, and perforations 74^b and 74^c arranged respectively at opposite sides of said slot. The lever 74 extends through a vertical guide slot 80^a in a guide piece or bracket 80, and is held against lateral movement by the walls of said slot, although

free to move vertically therein. The guide piece or bracket 80 is, as shown, secured to the center of a bracket 81, of the top plate of the machine, and having arms 81^a depending at the sides of the guide 80. A guide rod or pin 82 extends between the arms 81^a of the bracket and passes through the guide 80 and through the slot 74^a in the lever 74. Above the lever, a similar guide rod or pin 83 is secured in the arms of the bracket 81, and upon these guide rods or pins is arranged a slide 84 having arms 84^a and 84^b at opposite sides of the guide 80. The arm 84^a carries a fulcrum pin 85 adapted to the perforation 74^a in the vibrator 74, and the arm 84^b carries a fulcrum pin 86 adapted to the perforation 74^b in the lever 74. The slide 84 is movable upon the guide pins 82 and 83 transversely of the lever 74, and when moved in one direction the fulcrum pin 85 will enter the perforation 74^a, and when moved in the opposite direction the fulcrum pin 86 will enter the perforation 74^b. The pins are of such length that when one pin is in engagement with the lever 74 the other pin will be out of engagement, and in the mid position of the slide both pins will be out of engagement with the lever. It will be seen, therefore, that when the slide is in the mid position, with both fulcrum pins out of engagement with the lever, the rear end of the latter will move freely up and down when the universal bar is rocked by the operation of the keys, as indicated in dotted lines, Fig. 12, the slot 74^a in the lever permitting such movement, while the guide pin 82, extending through said slot, prevents endwise movement of the lever. In this mid position of the slide, the forward end of the lever turns pivotally about its connection with the ribbon carrier, and the latter remains in its normal position, shown in Fig. 7, with the ribbon below the printing point. When the slide is moved so that the pin 85 engages and becomes the fulcrum point for the lever, the latter will rock about this point as a center, giving the ribbon a sufficient upward movement at each depression of the keys to bring the upper half of the ribbon opposite the printing point, as shown in dotted lines in Fig. 11. When the slide is moved in the opposite direction, and the fulcrum pin 86 enters the opening 74^b in the lever, it will be seen that the forward end of the lever will be given a greater movement, at each depression of the keys, bringing the lower half of the ribbon to the printing point.

In order to conveniently operate the slide and hold it stationary in its several positions, I provide a switch consisting of a bar 87 arranged to slide, as shown, in openings in the bracket arms 73^a. This rod is provided with finger pieces 87^a at its ends, by which it may be moved in either direction,

and it has a series of notches 87^b corresponding in number to the number of positions of the fulcrum carrying slide 84. A holding spring 89 is adapted to engage these notches and hold the rod in any of its several positions. A lever 90 secured by a pivot screw 91 to the under side of the top plate, has a fork 90^a at its forward end engaging a pin 92 on the bar 87, and said lever has a fork 90^b at its rear end engaging a pin 93 upon the fulcrum slide 84, the arrangement being such that a movement of the bar 87 in one direction will cause the movement of the slide in the opposite direction. It will be apparent that by simply adjusting the rod 87 to the desired position, the leverage on the vibrator bar or arm 74 may be changed, at will, in the manner indicated, or the arm 74 may be rendered inoperative as a lever, and the throw of the ribbon carrier may be thus varied or stopped.

Having described my invention what I claim as new and desire to secure by Letters Patent is,

1. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, mechanism operatively related to the key levers for vibrating the carrier to move the ribbon over the printing line each time a key is depressed, means for adjusting said mechanism to vary the extent of movement of the carrier, and means for rendering said mechanism inoperative to move the carrier when the keys are operated.

2. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, and means for vibrating the carrier to move the ribbon to the printing line, comprising a lever having one end connected to the carrier, means operatively related to the key levers for vibrating said lever, means for adjusting the fulcrum point of said lever to vary the movement of the carrier, and means for rendering said lever inoperative to move the carrier when the key levers are operated.

3. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, and means for vibrating the carrier to move the ribbon to the printing line, comprising a lever having one end pivotally connected to the carrier, means operatively related to the key levers for vibrating said lever, and a fulcrum movable into and out of engagement with said lever.

4. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, and means for vibrating the carrier to move the ribbon to and from the printing line, comprising a lever having one end pivotally connected to the carrier, means oper-

actively related to the key levers for vibrating said lever, and two fulcrums adapted to engage the lever at different points in its length, alternately.

5 5. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, and means for vibrating the carrier to move the ribbon to and from the printing line, comprising a lever having one end pivotally connected to the carrier, means operatively related to the key levers for vibrating said lever, and a slide adjacent to said lever and having fulcrum pins secured thereto at opposite sides of the lever, said pins being adapted to alternately engage different points of the lever.

6. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, and means for vibrating the carrier to move the ribbon to and from the printing line, comprising a lever having one end pivotally connected to the carrier, means operatively related to the key levers for vibrating said lever, a slide adjacent to said lever and having fulcrum pins at opposite sides of the lever, said pins being adapted to alternately engage different points in the lever, and a hand-operated device for moving said slide.

7. In a typewriting machine, the combination with a ribbon carrier arranged to normally hold the ribbon at one side of the printing line, of a lever connected at one end to said carrier, means for vibrating the opposite end of the lever, and a fulcrum movable into and out of engagement with said lever.

8. In a typewriting machine, the combination with a ribbon carrier arranged to normally hold the ribbon at one side of the printing line, of a lever connected at one end to said carrier, means for vibrating the opposite end of the lever, and a pair of fulcrums movable into and out of engagement with said lever, said fulcrums being arranged to engage the lever alternately at different points in its length.

9. In a typewriting machine, the combination with a ribbon carrier arranged to normally hold the ribbon at one side of the printing line, of a lever connected at one end to said carrier, means for vibrating the opposite end of the lever, and a slide having fulcrum pins secured thereto at opposite sides of the lever, said fulcrum pins being arranged to engage the lever, alternately, at different points in its length, in the extreme positions of the slide, and to remain disconnected from said lever in the intermediate position of the slide.

10. In a typewriting machine, a ribbon carrier arranged to normally hold the ribbon away from the printing line, a lever

connected to said carrier, means for vibrating the lever, a bearing having a pin-and-slot connection with said lever adapted to permit of the vibration of the lever without vibrating the ribbon carrier, and fulcrums adjustable into and out of engagement with said lever, for the purpose set forth.

11. In a typewriting machine, the combination with a pair of ribbon spools, of a bracket arranged in the rear of said spools, and a sheet metal ribbon carrier mounted to slide on said bracket, said carrier comprising integral guiding arms which engage the bracket, and forwardly inclined ribbon guides extending toward the respective ribbon spools and through which the ribbon passes in a substantially straight line from the spools to the rear of the carrier.

12. In a typewriting machine, the combination with the spools and spool shafts, of a plurality of flexible driving shafts, and means for shifting the latter to engage and disengage them with the spool shafts.

13. In a typewriting machine, the combination with the spools and spool shafts, of flexible driving shafts for the spools, cams carried by said latter shafts, and means controlled by the ribbon for engaging said cams, whereby the spool shafts are engaged and disengaged with their driving shafts.

14. In a typewriting machine, the combination with the ribbon spool, of the lever carried thereby, the cam lever arranged to be engaged by the lever on said spool, the lever controlled by the cam lever, and the driving shaft having a cam cooperating with the said controlled lever, whereby the driving shaft is automatically engaged with the spool when the ribbon is exhausted from the spool.

15. In a typewriting machine, the combination with the frame, and horizontally arranged spools having spool shafts rotatably mounted upon the frame, of a shaft extending across the frame, means for driving said shaft, flexible shafts arranged at right angles to said first named shaft and in gear therewith, gears upon said flexible shafts for driving the spool shafts, and means for connecting and disconnecting said flexible shafts alternately with the spool shafts.

16. In a typewriting machine, the combination with a ribbon spool and its shaft, of a laterally movable driving shaft, intermeshing gears upon said spool shaft and driving shaft, a cam wheel on said driving shaft, and a part actuated from the spool and adapted to engage the said cam wheel and move the driving shaft laterally to couple said shafts as the ribbon becomes exhausted from the spool.

17. In a typewriting machine, the combination with a pair of ribbon spools and their shafts and driving gears, of a pair of driving shafts having gears adapted to in-

termesh with the spool gears, laterally movable bearings for said driving shafts whereby they may be moved into and out of engagement with the spool shafts, connections between said bearings whereby they are moved alternately, and a spring latch adapted to hold said bearings in their extreme positions.

18. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing point, mechanism operatively related to the key levers for vibrating the carrier to move the ribbon over the printing point each time a key is depressed, and means for connecting and disconnecting the carrier and its vibrating mechanism when the carrier is in normal position and to thus prevent at will said mechanism from moving the ribbon carrier to bring the ribbon to the printing point when the keys are operated.

19. In a typewriting machine, the combination of a ribbon vibrator, actuating means therefor, and means for disconnecting the vibrator from its actuating means, said ribbon being normally away from the printing point while its vibrator is disconnected, for the purpose set forth.

20. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, a ribbon vibrating lever for operating said carrier, and means for engaging said lever to vary its throw to bring different zones of the ribbon to the printing point, said means and lever being movable relatively transversely of the lever.

21. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, a ribbon vibrating lever for operating said carrier, and means for engaging said lever to vary its throw to bring different zones of the ribbon to the printing point, said means being movable transversely of the lever and adapted to engage the lever at different points.

22. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, a ribbon vibrating lever for operating said carrier, and means for engaging said lever to vary its throw to bring different zones of the ribbon to the printing point, said means being movable transversely of the lever and into and out of engagement with the lever, for the purpose set forth.

23. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, a ribbon vibrating lever for operating said carrier, means for engaging said lever at different points to vary the throw of the ribbon carrier, said means being

adapted to be disengaged at will from the lever, whereby the latter may be rendered inoperative to move the ribbon carrier.

24. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, a ribbon vibrating lever for operating said carrier, means movable transversely of the lever for engaging said lever at different points to vary the throw of the ribbon carrier, the said means being disengaged from the lever when in mid-position, whereby the lever is rendered inoperative to move the carrier.

25. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, a ribbon vibrating lever for operating said carrier, a device movable transversely of the lever and having pins adapted to engage the lever at different points to vary the throw of the carrier, and a universal bar and connections for actuating the lever.

26. In a typewriting machine, the combination of a ribbon carrier arranged to normally hold the ribbon away from the printing line, a ribbon vibrating lever for operating said carrier, a device movable transversely of the lever and having pins adapted to engage the lever at different points to vary the throw of the carrier, the said pins being out of engagement with the lever when the said device is in mid-position, and means for actuating the lever.

27. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, connections between the universal bar and the vibrator for actuating the latter, and hand-operated means for adjusting the said connections to different relative positions to effect different movements of the vibrator, each adjustment being adapted to bring a different zone to the printing point.

28. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, connections between the universal bar and the vibrator for actuating the latter, hand-operated means for varying the said connections to effect different movements of the vibrator, whereby different zones of the ribbon may be presented at will to the printing point, and means for rendering the vibrator inoperative to move the ribbon to the printing point when the universal bar is operated.

29. In a typewriting machine, a frame having a top plate and pockets for the ribbon spools cast integral with said top plate, the said pockets each having a slot or outlet in its side wall for the passage of the ribbon.

30. In a typewriting machine, a top plate a depression or pocket on each side of the machine cast integral with said top plate, and a bearing for the ribbon spool shaft supported by the bottom of said pocket.

31. In a typewriting machine, a metal top plate having two integral pockets adapted to receive the ribbon spools, said pockets having openings in their sides for the passage of the ribbon, and bearings for the ribbon spool shafts supported by the bottoms of the pockets.

openings for the passage of the ribbon, and bottoms provided with integral bearings for the ribbon spool shafts.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL GABRIELSON.

Witnesses:

GEORGE A. HILL,
J. B. STANNARD.

32. In a typewriting machine, a cast metal top plate having two pockets for the ribbon spools cast integral therewith, said pockets having circular side walls provided with