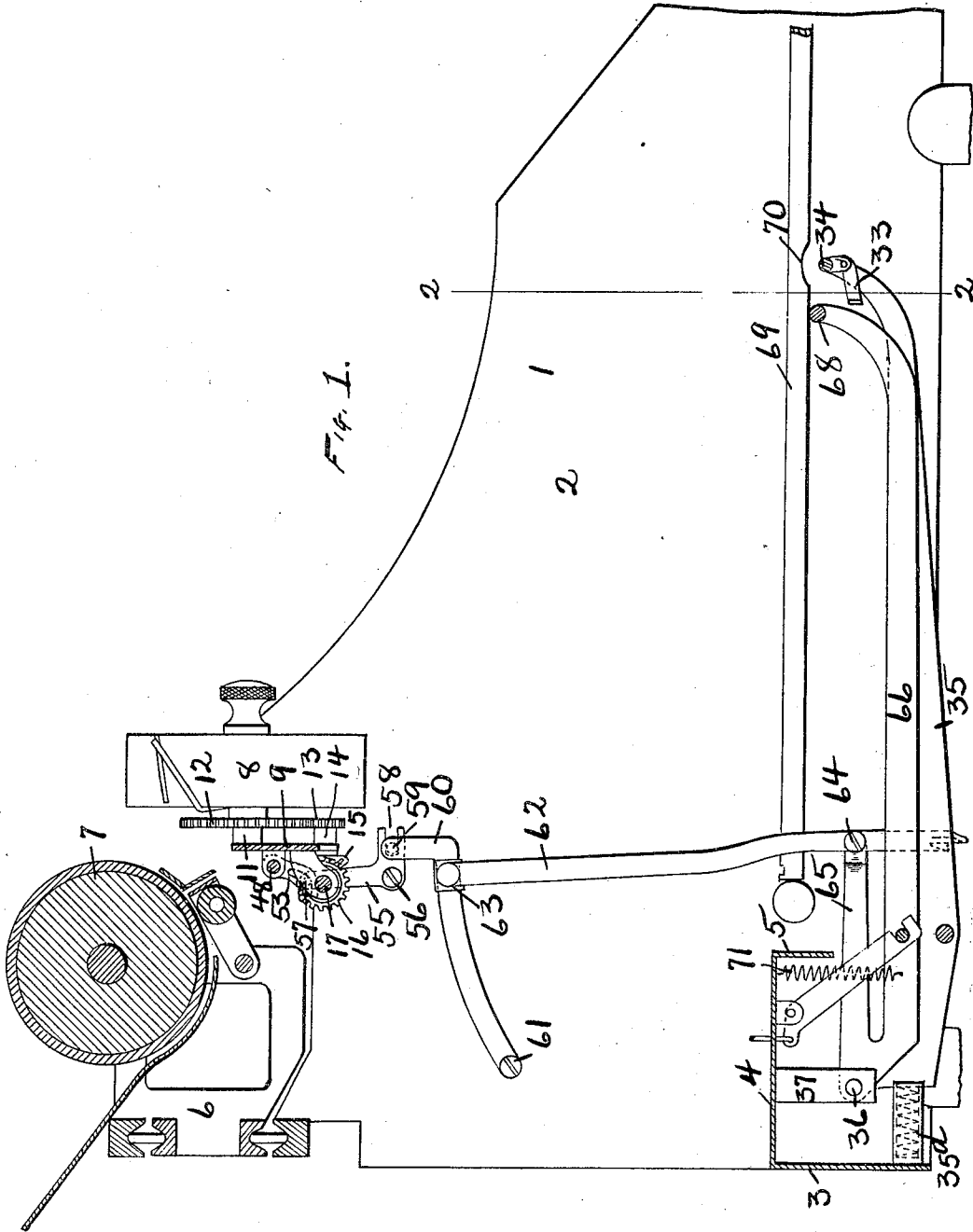


902,506.

J. W. PAUL.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 10, 1907.

Patented Oct. 27, 1908.
3 SHEETS—SHEET 1.



Witnesses
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3 SHEETS—SHEET 2.

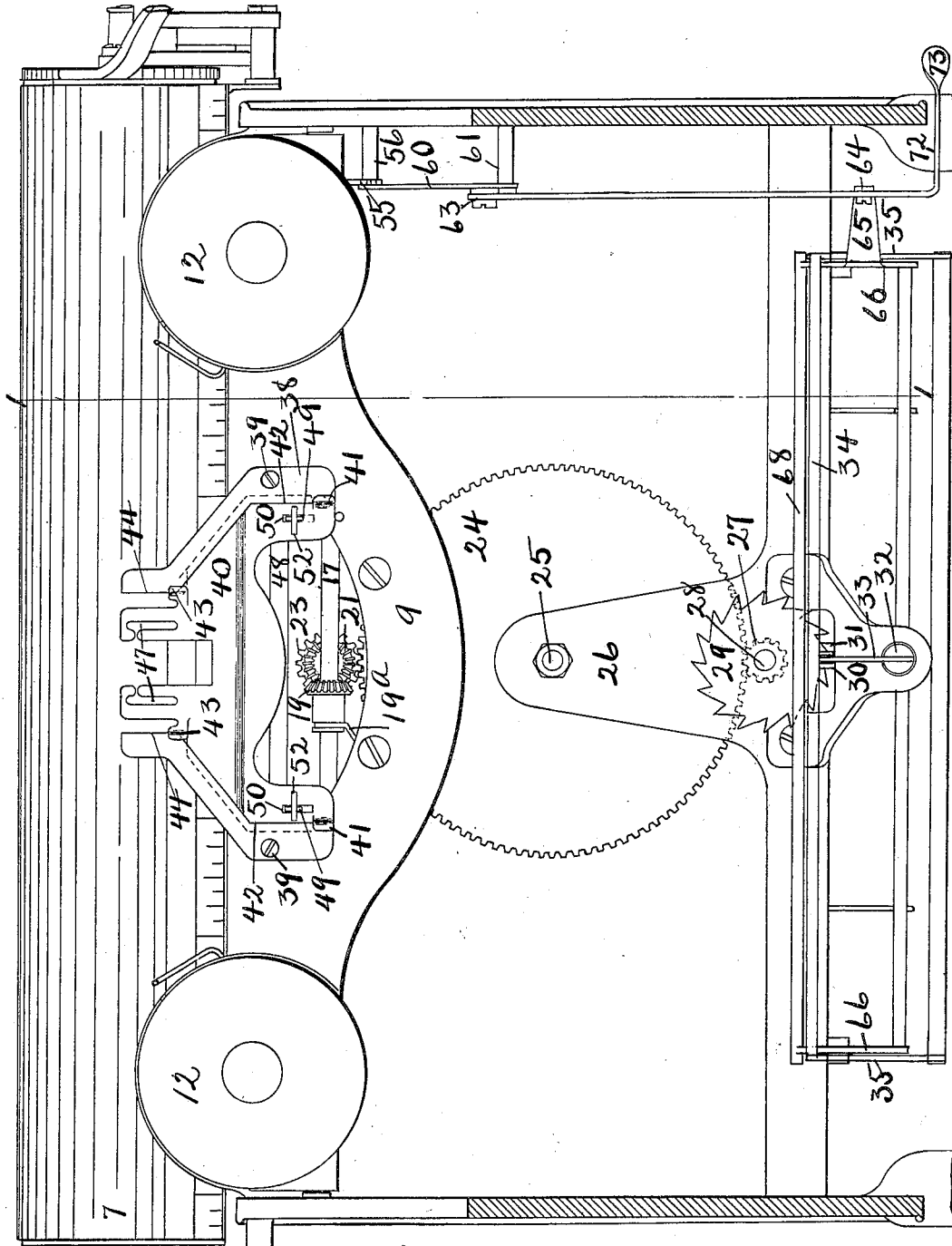


Fig. 2.

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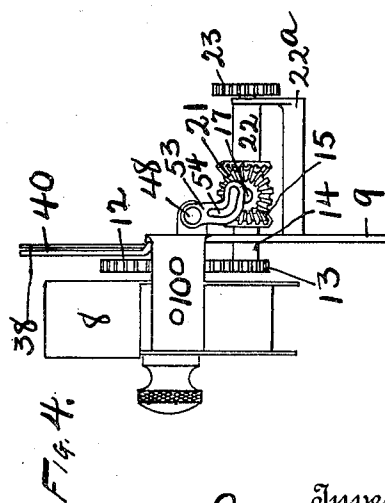
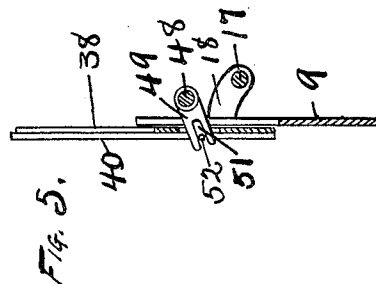
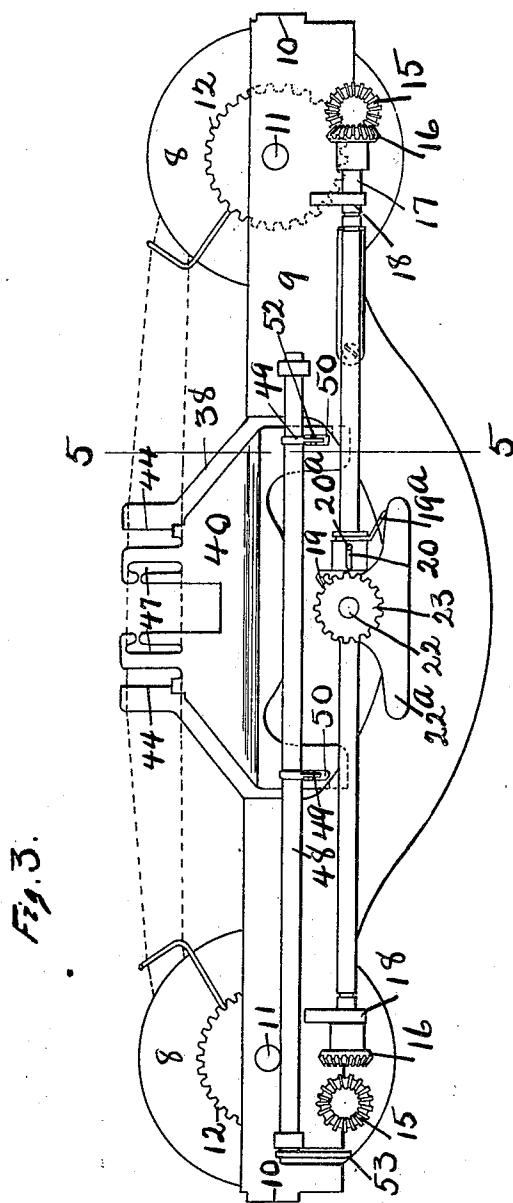
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN W. PAUL, OF KITTANNING, PENNSYLVANIA.

TYPE-WRITING MACHINE.

No. 902,508.

Specification of Letters Patent.

Patented Oct. 27, 1908.

Application filed May 10, 1907. Serial No. 372,841.

To all whom it may concern:

Be it known that I, JOHN W. PAUL, a citizen of the United States, residing at Kittanning, in the county of Armstrong and State of Pennsylvania, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification:

This invention relates to typewriting machines and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

More particularly the invention relates to that part of a typewriting machine relating to the ribbon actuating mechanism.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a section on the line 1—1 in Fig. 2. Fig. 2, a section on the line 2—2 in Fig. 1. Fig. 3 a rear elevation of the ribbon mechanism carrying plate with the assembled mechanism thereon. Fig. 4, an end elevation of the same. Fig. 5, a section on the line 5—5 in Fig. 3.

1 marks the frame as a whole; 2 the side of the frame; 3 a cross piece at the rear of the machine; 4 a cross plate extending horizontally across the machine above the cross piece 3; 5 a downwardly extending lip from front of the cross plate 4; 6 the carriage and 7 the platen.

The ribbon spools 8 are mounted on a ribbon mechanism carrying plate 9. This plate is ordinarily formed of sheet metal and has the ears 10 formed at its ends by means of which it may be removably attached to the frame. In this way the entire ribbon actuating mechanism is self contained and can be assembled on this plate, and after being assembled the plate mounted in the frame. This facilitates the manufacture of the mechanisms.

The ribbon spools are mounted on the shaft 11 and a gear 12 is fixed on this shaft. The gear 12 meshes a pinion 13. The pinion 13 is fixed on a shaft 14. A miter gear is arranged on the shaft 14 in position to be engaged by a gear 16 on a cross shaft 17. The cross shaft 17 is slidingly mounted in the bearing lugs 18 secured to the plate 9. By shifting the shaft 17 the gears 16 may alternately be moved into and out of mesh with the gears 15 so that the movement of the ribbon may be reversed. A pinion 19 is slidingly mounted on the shaft. This is pro-

vided with the groove 20 in which is arranged a pin 20^a which locks the gear against rotation on the shaft. The plate 19^a holds the gear against movement longitudinally, but permits the shaft to move in order to reverse the gears 16. The gear 21 is mounted on a shaft running in a direction from front to rear of the machine and is in mesh with the gear 19. A bearing bracket 22^a extends from the plate 9 and with the plate 9 forms a bearing for the shaft. A pinion 23 is fixed on the inner end of the shaft 22. It is in mesh with the gear 24. The gear 24 is journaled on a shaft 25. The shaft is supported by a post 26 extending upwardly from the plate 4. The gear 24 meshes a pinion 27. This pinion is fixed on a shaft 28, the shaft 28 being journaled on the post 26. An escapement wheel 29 is fixed in the front end of the shaft 28. The dogs 30 and 31 are mounted on a reciprocating rod 32 and act on the wheel 29 to permit of its escapement.

The link 33 extends from the rod 32 to the universal bar 34 and communicates the movement of the universal bar to the rod 32 so that as the universal bar is depressed the rod 32 is reciprocated to act on the escapement mechanism. The universal bar is mounted on the levers 35, one at each side of the machine and these levers are pivoted on a rod or pin 36 arranged on the hangers 37. The hangers 37 project downwardly from the plate 4. The levers 35 act upon spring socket 35^a which tends to hold the levers in the upper position. A ribbon carrier guide plate 38 is secured to the ribbon mechanism carrying plate 9 by means of the screws 39. The ribbon carrier 40 projects under this plate and has the ears 41 which hold the carrier in place on the guide plate 38. The ears slide along the guiding surfaces 42 and 44. The slots 47 are arranged in the ribbon carrier through which the ribbon may be run for guiding the ribbon. A ribbon carrier actuating rod 48 extends across the machine and has the arms 49 extending from it into slots 50 in the ribbon carrier. The arms 49 have slots 51 in their ends which engage the pins 52 on the ribbon carrier so that as the rod 48 is oscillated the ribbon carrier is reciprocated.

An arm 53 having the cam slot 54 thereon is secured to the end of the rod 48. A bell crank lever 55 is fixed on a stud 56 secured to the side 2 of the frame. A pin 57 extends from one arm of the bell crank lever into the

cam slot 54. The auxiliary arm of the bell crank lever has a slot 58 which engages a pin 59 on the end of the curved lever 60. The curved lever is fixed at 61. A link 62 is connected with the curved lever by means of a sliding block 63. The link is pivoted at 64 on an arm 65 of a lever 66. The levers 66 are arranged at each side of the machine and are pivoted on the pins 36. The levers 66, one at each side of the machine have a connecting bar 68 which forms a universal bar for the machine. Some of the key levers 69 have a notch 70 arranged thereon so that while they operate the universal ribbon bar 68, they do not operate the universal bar 34. The purpose of this is to permit of the actuation of some type bars without operating the escapement. This is particularly desirable in relation to some characters, especially in some of the foreign languages. A spring 71 extending from the plate 4 to the lever 66 tends to hold the lever in its upper position.

The lever 60 is curved with an arc having the pivot 64 as a center so that the link 62 may be moved along the lever 60 without shifting the position of the lever 60. This shifting of the mechanism, however, changes the action of the link 62 on the end of the lever 60. The purpose of this is to permit of the use of a plurality color ribbon. When it is desired to use one color, one part of the block 63 may be adjusted on one end of the lever 60 as shown in Fig. 1. When a different color is used the block 63 may be shifted on the curved lever 60. This will not change the initial position of the ribbon carrier, that is the ribbon carrier will return to its initial position each time, but it will vary the throw of the ribbon carrier, the ribbon carrier being moved a greater distance as the block 63 is moved toward the pivot 61. The link 62 has an extending arm 72 which protrudes through the side of the machine and is provided with a handle 73 by means of which the link may be moved from one position to another as desired so as to shift the part of ribbon to be used.

The operation of the ribbon carrier mechanism may be readily followed: The ribbon bar 68 is depressed. It carries the link 62 downwardly thus carrying down the curved bar 60 and swinging the bell crank lever 55. The bell crank lever 55 acting through the cam arms 53 oscillates the shaft 48 and the shaft acting through the arms 49 reciprocates the ribbon carrier 40.

What I claim as new is:

1. In a front strike typewriting machine the combination of a universal ribbon bar; ribbon bar levers carrying the ribbon bar; a link pivotally connected to the bar lever; a pivoted lever curved in an arc with the pivotal connection between the link and ribbon bar lever as a center; a connection between the curved lever and the link; a ribbon

carrier slidably mounted; a rock rod; a rock arm extending from the rod to the arm for reciprocating the carrier when the rod is oscillated; a cam arm on the rock rod; a bell crank lever, one end of which operated on the cam arm and the opposite end is connected to the curved lever.

2. In a front strike typewriting machine the combination with an escapement therefor; a universal bar for controlling the escapement; a universal ribbon bar; a key lever lever arranged to actuate the ribbon bar with each operation without actuating the universal bar; a ribbon carrier; and means actuated by the ribbon bar for actuating the carrier.

3. In a front strike typewriting machine the combination of the universal bar; a universal ribbon bar; levers at each side of the machine carrying said universal bar; a universal bar lever at each side of the machine carrying the universal ribbon bar; a key lever adapted to actuate the ribbon bar without actuating the universal bar; a ribbon carrier; and connections between the lever carrying the ribbon bar and the ribbon carrier for communicating the action of the ribbon bar to the carrier.

4. In a front strike typewriting machine the combination of the ribbon spools; an escapement wheel arranged near the bottom of the machine; a pinion controlled by the escapement wheel; a gear above the pinion and in mesh therewith; a ribbon drive controlled by said gear.

5. In a front strike typewriting machine the combination of the ribbon spools; an escapement wheel arranged near the bottom of the machine; a pinion controlled by the escapement wheel; a gear above the pinion; a ribbon drive controlled by said gear, comprising a pinion meshing with said gear; a drive shaft on which the pinion is mounted; a miter gear on said shaft; a cross shaft extending to the ribbon wheels at the sides of the machine; a miter gear in mesh with the first mentioned miter gear for driving said cross shaft; and driving connections between the cross shaft and the ribbon spools.

6. In a front strike typewriting machine the combination of a machine frame; the ribbon spools, one for each side of the machine; a stationary ribbon carrying mechanism plate on which the spools are mounted, said plate being removably mounted on the machine frame; the ribbon carrier mounted on said plate; and gears for driving the ribbon spools mounted on said plate.

7. In a front strike typewriting machine the combination of a machine frame; the ribbon spools, one for each side of the machine; a stationary ribbon mechanism carrying plate on which the spools are mounted, said plate being removably mounted on the machine frame; the ribbon carrier mounted

on said plate; and gears for driving the ribbon spools; and devices for reciprocating the carrier mounted on said plate.

8. In a front strike typewriting machine the combination of a machine frame; the ribbon spools, one for each side of the machine; a stationary ribbon mechanism carrying plate on which the spools are mounted, said plate being removably mounted on the machine frame; the ribbon carrier mounted on said plate; gears for driving the ribbon spools mounted on said plate, comprising a cross rod extending to each spool; a shaft extending in a direction from front to rear of the machine, mounted on said plate; a gear connection between said shaft and rod; a pinion on said shaft; and a driving gear mounted on the frame in position to mesh with said pinion when said ribbon mechanism carrying plate is in position in the frame.

9. In a front strike typewriting machine the combination of a machine frame; the ribbon spools, one for each side of the machine; a stationary ribbon mechanism carrying plate on which the spools are mounted, said plate being removably mounted on the machine frame; the ribbon carrier mounted on said plate; gears for actuating said carrier, mounted on said plate comprising an oscillating rod mounted on said plate; a connection between said rod and carrier; and means mounted on the frame for actuating said oscillating rod when the plate is in position in the frame.

10. In a front strike typewriting machine the combination of a machine frame; the ribbon spools, one for each side of the machine;

a ribbon mechanism carrying plate on which the spools are mounted; the ribbon carrier mounted on said plate; means for driving the ribbon spools and for reciprocating the carrier, mounted on said plate comprising a cross rod extending to each spool; a shaft extending in a direction from front to rear of the machine mounted on said plate; a gear connection between said shaft and rod; a pinion on said shaft; a driving gear mounted on the frame in position to mesh said pinion when the plate is in position on said frame; an oscillating rod mounted on said plate; a connection between said oscillating rod and carrier; and means mounted on the frame of the machine for actuating said oscillating rod when said plate is in position on the frame.

11. In a typewriter, the combination of a main frame, a stationary ribbon carrying plate removably mounted on the frame, ribbon spools at each side of the machine mounted upon said plate, a ribbon carrier at the center also mounted upon said plate, a universal bar and actuating devices for the spools and carrier certain of which are mounted on the plate and others on the frame, comprising severable connections permitting the removal of the plate.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W PAUL.

Witnesses:

TRACY J. LORD,
SARAH A. DALEY.