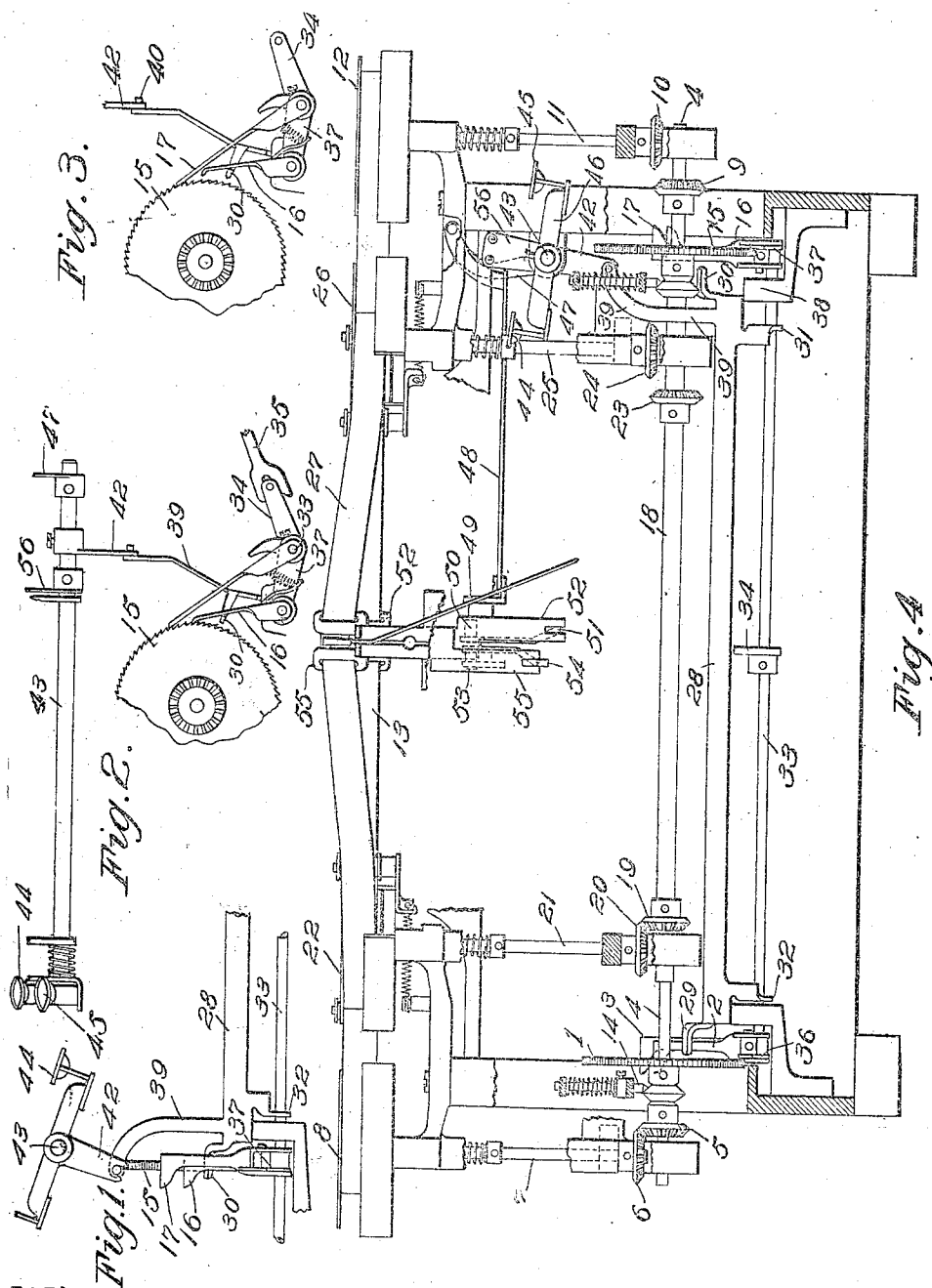


J. C. DOANE.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 20, 1908.

921,599.

Patented May 11, 1909.

2 SHEETS—SHEET 1.



Witnesses

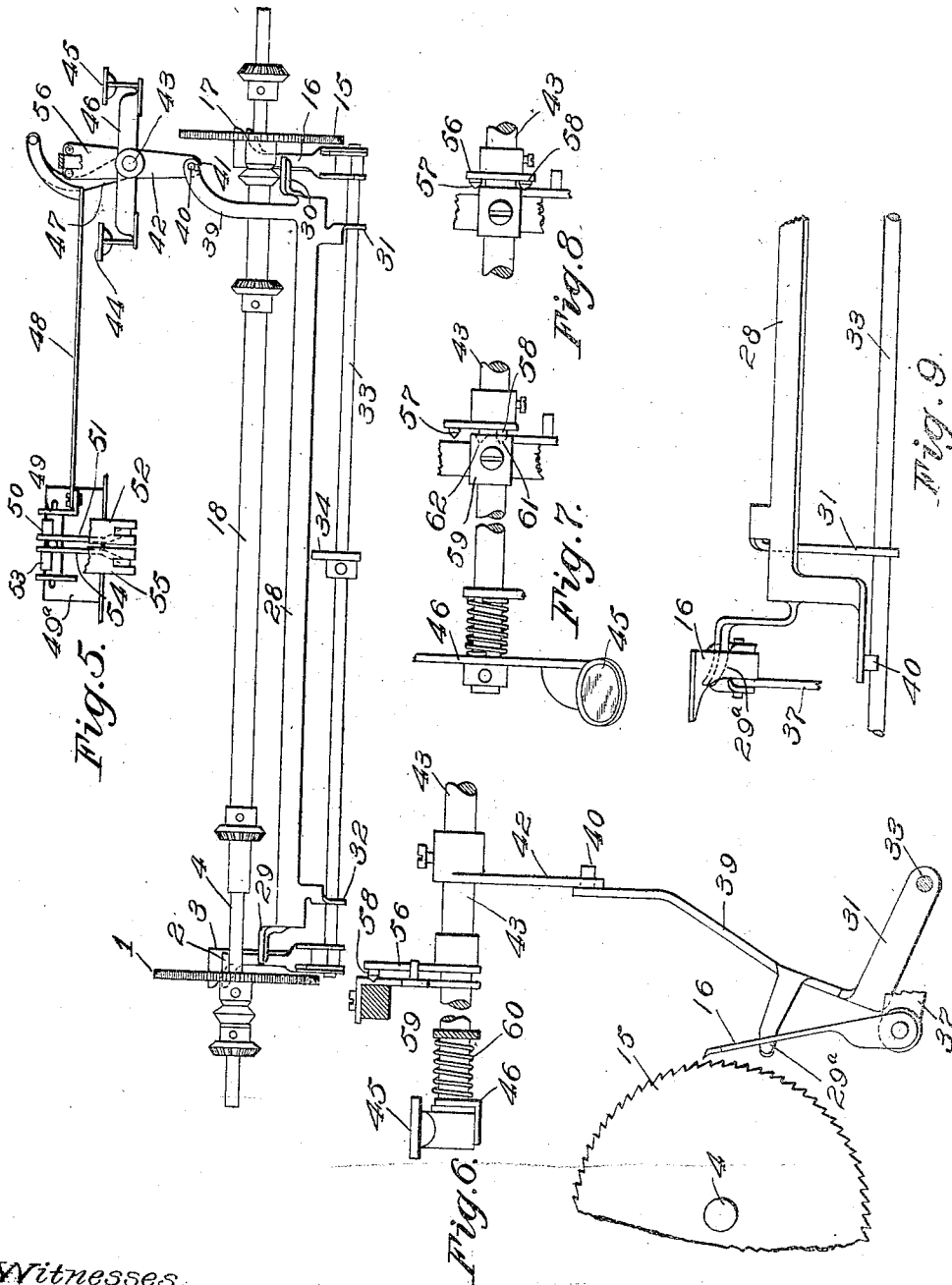
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UNITED STATES PATENT OFFICE.

JOHN C. DOANE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 921,589.

Specification of Letters Patent.

Patented May 11, 1909.

Application filed March 20, 1903. Serial No. 422,226.

To all whom it may concern:

Be it known that I, JOHN C. DOANE, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to two ribbon mechanisms for visible writing machines, such as disclosed in my co-pending application No. 378,357, filed June 11, 1907. Said application shows two pairs of spools lying in front of the platen, each spool mounted upon a separate vertical shaft. Each pair of spools is provided with a separate horizontal driving shaft, either driving shaft being rotated at the type strokes while the other is silenced. It also discloses two ribbon-winding ratchet wheels to be driven by key-operated pawls, one ratchet wheel for each pair of spools; either pair of spools being switched into use, and the other out of use, by simply rendering one of said pawls active and the other inactive; this operation being performed by the same finger lever that is set to cause the winding ribbon to be vibrated at the type strokes.

The principal object of the present invention is to provide simplified and improved means for controlling the said driving pawls. According to the present improvements, a switch bar is extended horizontally across the machine from one pawl to the other and connected to the ribbon shift key to be moved endwise, said bar provided with cams to disengage either pawl from its ratchet wheel, and to permit the other pawl to fall into engagement with its ratchet wheel. I also provide for causing the bar to hold both pawls out of use at the same time that both ribbon vibrators are silenced, so that neither ribbon either winds or vibrates at the type strokes.

In the accompanying drawings, Figure 1 is a fragmentary rear elevation of the pawl and ratchet mechanism at the right hand side of the machine, showing the pawl shifter bar in position to disengage the pawls at this side of the machine. Fig. 2 is a fragmentary side elevation of the ribbon mechanism at the right hand side of the machine, showing the pawls in effective positions. Fig. 3 shows the driving pawl at Fig. 2 as switched away

from its ratchet wheel. Fig. 4 is a front elevation of the ribbon mechanism, the positions of the parts corresponding with Fig. 2, and the type being shown in printing position. Fig. 5 is a front elevation of a portion of the ribbon mechanism, showing the shifter bar in position to hold both driving pawls out of use. Fig. 6 is a sectional side elevation showing the parts in the position seen at Fig. 5. Fig. 7 is a plan of the key shaft which controls the ribbon switching mechanism, the positions of the parts corresponding with Fig. 1. Fig. 8 shows the position of the detent holding the parts in the Fig. 5 position. Fig. 9 is a plan showing the right hand end of the shifter bar, and the method of mounting the same.

A ratchet wheel 1 operated by a pawl 2 and detained by a pawl 3, is mounted upon a shaft 4 connected by gears 5, 6 to a vertical shaft 7 carrying a spool 8, and by gears 9, 10 to a shaft 11 carrying a spool 12, said spools carrying a rear ribbon 13. The shaft 4 is movable endwise to reverse the travel of the ribbon, and is held in either position by a yielding detent 14. Another ratchet wheel 15 is operated by a pawl 16 and detained by a pawl 17; said ratchet wheel 15 mounted upon a hollow shaft 18 (through which the shaft 4 extends), connected by gears 19, 20 to a vertical shaft 21 carrying a spool 22, and by gears 23, 24 to a vertical shaft 25 carrying a spool 26; said spools 22 and 26 carrying a front ribbon 27, all as set forth in my said application.

A shifter bar 28 extending horizontally across the machine controls the driving pawls 2 and 16, and hence determines which ribbon shall wind at the type strokes. Said bar has at its ends cam-projections 29 and 30, to engage the pawls 2 and 16 respectively, to cam either one or the other or both away, from the ratchet wheels. The cam-like formation of the projections 29, 30 is seen clearly in plan at 29^a, Fig. 9, from which it will be understood that an endwise movement of the shifter bar causes the cam to engage the under or front side of the pawl and draw it back from the wheel.

The bar 28 is mounted for endwise movements by means of a pair of arms 31, 32, which have a sliding fit upon a rock shaft 33, which extends horizontally across the machine. Said rock shaft is provided with an

arm 34, whereby it is vibrated at the key strokes, having for this purpose a pin-and-slot connection with an arm 35, Fig. 2, that forms part of the universal bar mechanism in the Underwood typewriting machine. It will be observed that the driving pawls 2 and 16 are carried upon arms 36, 37, which are fixed upon said rock shaft 33, and project forwardly therefrom. The supporting arms 31, 32 extend forwardly from the rock shaft to the bar 28; and one end of the latter is supported upon the top of a bracket 38 fixed upon the machine.

An operating arm 39 extends upwardly from the right hand end of the switch bar 28, and is provided with a pin 40 to engage a slot 41 formed in the lower end of an arm 42 pendent from a horizontal rock shaft 43; the latter extending forwardly and backwardly and carrying keys 44, 45 upon a cross-arm 46 fixed upon said shaft 43. By pushing down either key, either driving pawl 2 or 16 may be caused to act at the type strokes to wind its associated ribbon, while the other driving pawl is cammed away from its ratchet wheel, so that its associated ribbon is silenced at the type strokes. Depression of the key 45 therefore (Figs. 2 and 4) causes the arm 42 to swing to the left, and the switch-bar 28 to shift in the same direction to cause the cam 29 thereon to release the pawl 2 from the ratchet wheel 1, so that the spools 8, 12 are silenced. At the same time an arm 47 on the key-bearing rock shaft 43 draws to the right a link 48 and an actuator 49, to disengage said actuator (which is connected to the universal bar frame 49^a to vibrate at each key stroke) from a wrist 50 provided upon a lever 51, which engages a vibrator 52 that carries the back ribbon 13; said actuator being at the same time movable into engagement with a wrist 53 provided upon a lever 54 which is connected to a vibrator 55 that carries the front ribbon 27. Thus the rear vibrator 52 is silenced at the type strokes and the front vibrator 55 is rendered active. Moreover, the cam 30 at the right hand end of the switch bar 28 is drawn away from the right hand pawl 16, and the latter is caused to engage the ratchet wheel 15 and wind the spools 22, 26, which carry the ribbon that is threaded through the front vibrator 55. When the other ribbon key 44 is depressed, the opposite result is produced, as at Figs. 1, 3, 7 and 9, the cam 29 releasing the driving pawl 2, and the cam 30 disengaging the driving pawl 16, so that the back ribbon 13 is caused to wind and the back vibrator 52 is caused to operate at the type strokes, while the front ribbon remains altogether motionless.

At Fig. 5, the keys 44 and 45 are illustrated in midway positions, in which both driving pawls 2 and 16 are disengaged from their ratchet wheels 1 and 15, so that neither ribbon

winds; while the actuator 49 is disengaged from both lever wrists 50 and 53, so that neither ribbon vibrates, thus rendering it convenient to produce stencils upon the typewriter. At Fig. 8, it will be seen that the parts are held in the Fig. 5 position, by means of a detent arm 56, fixed upon the key shaft 43 and having points 57, 58 catching on both sides of the fixed plate 59, and held there yieldingly by a spring 60 coiled around the front of said shaft. At Fig. 7, it will be seen that the detent point 58 engages a seat 61 in the plate 59, to hold the parts in the Fig. 1 position; while said plate is also provided with a seat 62 to receive the detent 57 to hold the parts in the Fig. 4 position.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with two pairs of ribbon spools, two ratchet wheels for winding the ribbons back and forth, one ratchet wheel for each pair of spools, and pawls to operate said ratchet wheels, of a switch bar extending from one pawl to the other and movable endwise and having cams to disengage the pawls from the wheels in alternation, and a finger-piece connected to said switch bar.

2. In a typewriting machine, the combination with two pairs of ribbon spools, two ratchet wheels for winding the ribbons back and forth, one ratchet wheel for each pair of spools, and pawls to operate said ratchet wheels, of a switch bar extending from one pawl to the other and movable endwise and having cams to disengage the pawls from the wheels in alternation, a finger-piece connected to said switch bar, and means for holding said switch bar either in a midway position to hold both driving pawls away from the wheels at one extreme or the other of its switching movement.

3. In a typewriting machine, the combination with two pairs of ribbon spools, two ratchet wheels for winding the ribbons back and forth, one ratchet wheel for each pair of spools, and pawls to operate said ratchet wheels, of a rock shaft operated by a ribbon key, an arm upon said rock shaft, a switch bar having an arm loosely connected to the first arm, and also having means to disengage said pawls from the ratchet wheels in alternation.

4. In a typewriting machine, the combination with two pairs of ribbon spools, two ratchet wheels for winding the ribbons back and forth, one ratchet wheel for each pair of spools, and pawls to operate said ratchet wheels, of a rock shaft operated by a key, an arm upon said rock shaft, a switch bar having an arm loosely connected to the first arm, and also having means to disengage said pawls from the ratchet wheels in alternation, said pawls mounted upon a pair of arms, which are fixed upon a shaft which rocks at

the key strokes, and said switch bar having ears whereby it is guided upon said pawl shaft.

5 In a typewriting machine, the combination with two ribbon vibrators, and a key connected to means to control the same, of two ribbon-winding pawls, a shifter bar controlled by said key and movable endwise to render said pawls ineffective in alternation,
10 two ratchet wheels, and a pair of spools connected to each ratchet wheel, one spool in each pair on each side of the printing point.

6. In a typewriting machine, the combination with a key-bearing rock shaft and a

spring to move said shaft endwise, of a de- 15
tent arm fixed upon said shaft to cooperate with a fixed part of the framework to hold the shaft in different positions, ribbon vibrators controlled by said shaft, and ribbon-winding devices also controlled by said shaft; 20
said detent-arm having two teeth to engage simultaneously the opposite edges of a fixed plate, said plate having a notch or notches to engage said teeth.

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Witnesses:

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MORTON C. TALCOTT.