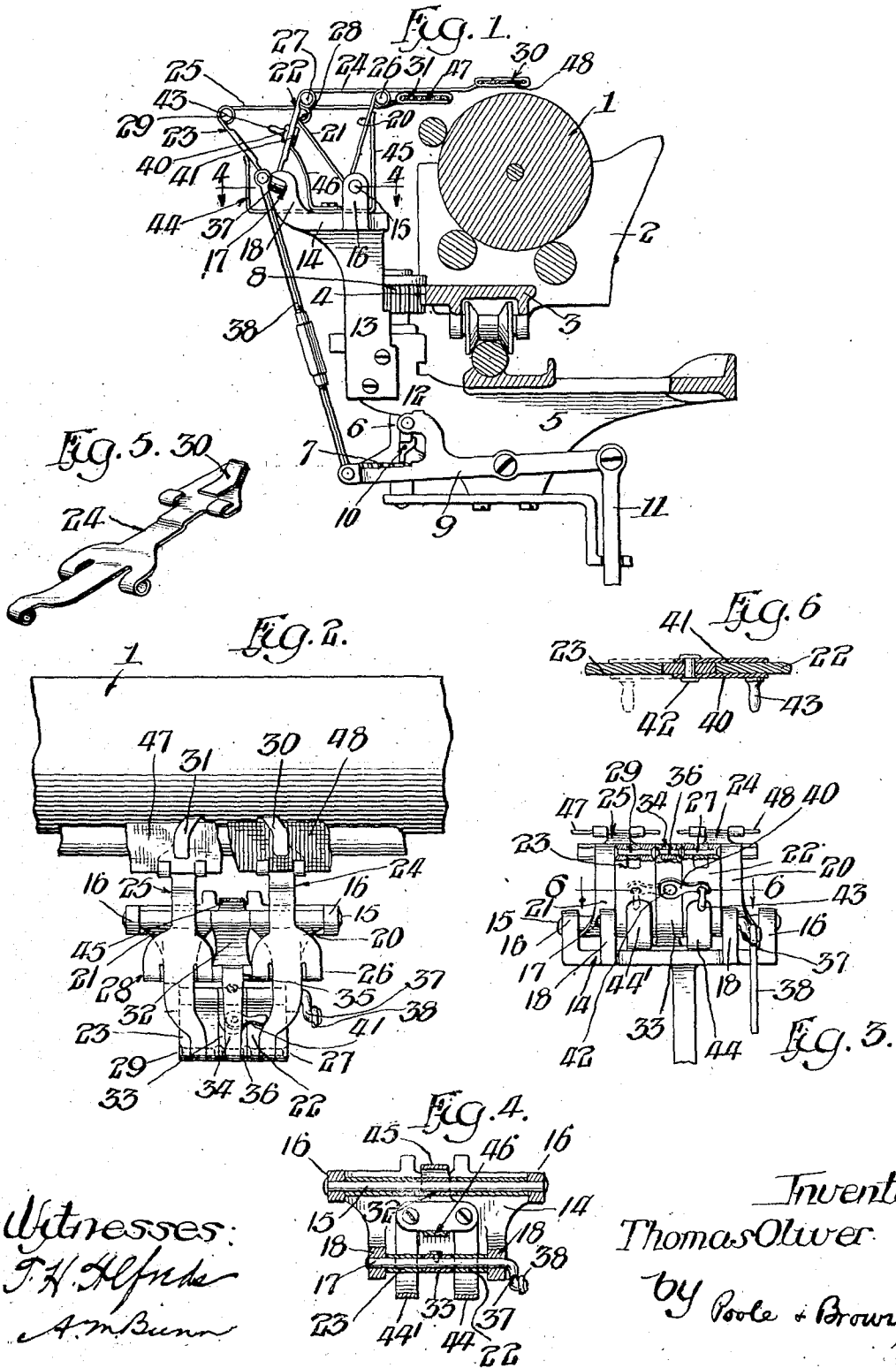


T. OLIVER.

RIBBON THROW MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED DEC. 21, 1907.

2 SHEETS—SHEET 1.



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Inventor:
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No. 895,671.

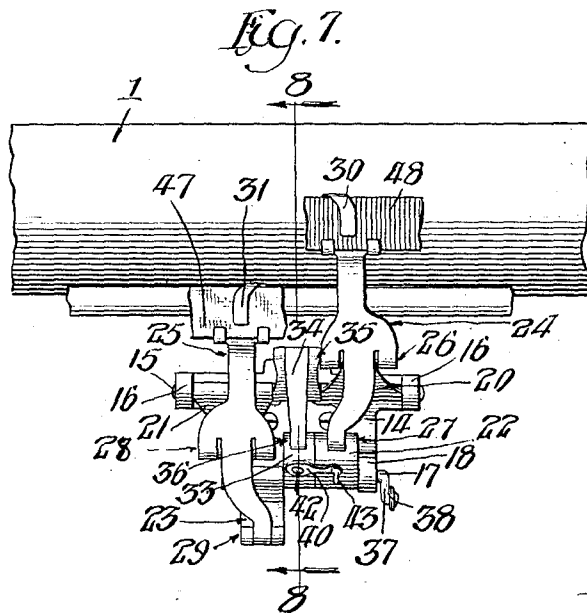
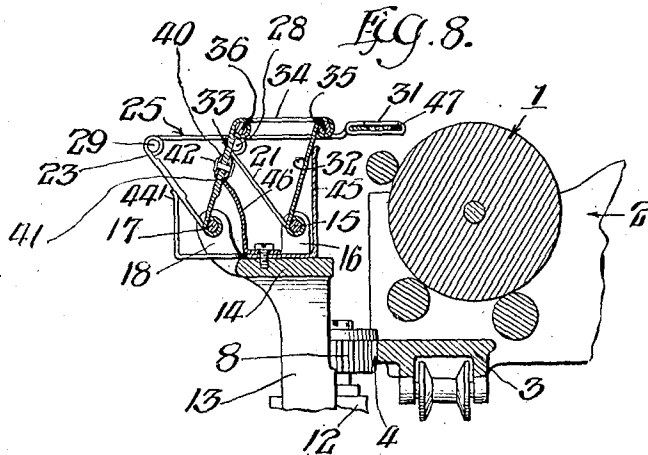
PATENTED AUG. 11, 1908.

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APPLICATION FILED DEC. 21, 1907.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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RIBBON-THROW MECHANISM FOR TYPE-WRITING MACHINES.

No. 895,871.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed December 21, 1907. Serial No. 407,455.

To all whom it may concern:

Be it known that I, THOMAS OLIVER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ribbon-Throw Mechanism for Type-Writing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in mechanism, known as the ribbon-throw device, employed in typewriting machines of the kind known as "visible" machines, or those in which the line of writing is visible to the operator as the writing progresses, for the purpose of shifting or moving the inking ribbon to a position over the striking point of the type each time an impression is made and withdrawing the ribbon after each impression is made to expose the printed line.

The invention relates more especially to a construction of such ribbon-throw mechanism adapted for use in connection with two inking ribbons of different colors, whereby one or the other of such inking ribbons may be brought into use at the will of the operator.

A device embodying my invention is more particularly adapted for, and is illustrated in the accompanying drawings as applied to, a typewriting machine of the kind known as the "Oliver" machine, such as is illustrated in the prior patent No. 599,863 granted to Thomas Oliver, March 1st, 1898. The invention may, however, be applied to typewriting machines other than the "Oliver" machine wherein the shifting movement of the inking ribbon is required in order to expose the printed line during the operation of printing.

The ribbon-throw mechanism illustrated in the accompanying drawings as illustrating my invention is similar to the ribbon-throw mechanism of said prior "Oliver" patent with respect to the means for supporting the inking ribbon adjacent to the printing point and giving reciprocatory motion to said ribbon, but the principal feature of the invention may be embodied in a device differing in its details therefrom.

The invention consists in the matters hereinafter described and more particularly pointed out in the appended claims.

In the accompanying drawings illustrating my invention:—Figure 1 is a view in central vertical section of the paper-carriage and shift-frame of an "Oliver" typewriting machine, illustrating in side elevation a ribbon-throw mechanism having two ribbon-guides, together with actuating mechanism therefor. Fig. 2 is a plan view of the parts shown in Fig. 1 showing both ribbon-guides in retracted position. Fig. 3 is a view in front elevation of the ribbon-throw mechanism more immediately concerned in giving movement to the ribbons, parts thereof being shown in section. Fig. 4 is a detail plan section, taken upon the line 4—4 of Fig. 1. Fig. 5 is a perspective view of one of the ribbon-guide-plates separate from the other parts. Fig. 6 is a detail section, taken upon the line 6—6 of Fig. 3. Fig. 7 is a plan view, corresponding with Fig. 2, except that one of the ribbon-guides is shown in its retracted and the other in its advanced, position. Fig. 8 is a sectional view, taken on line 8—8 of Fig. 7.

As illustrated in said drawings, 1 indicates the platen of the machine, 2 the paper-carriage in which said platen is mounted, and 3 the lower, front, longitudinal frame-bar of said carriage, on the front edge of which is formed rack-teeth 4 constituting part of the letter-spacing mechanism.

5 indicates the shift-frame of the machine on which the carriage is mounted and has endwise movement. Said shift-frame itself has backward and forward shifting movement on the machine frame to bring the paper in position for receiving the impression from one or the other of a plurality of types, as in said "Oliver" typewriting machine. Mounted in the forward part of said shift-frame is an upright shaft 6 having at its lower end an escape-wheel 7 and at its upper end a gear-pinion 8 which intermeshes with the rack-teeth 4.

9 indicates a vertically oscillating escapement-lever also mounted on the shift-frame and provided with a pawl 10 that engages said escape-wheel 7. Said escape-wheel, together with the oscillating escapement-lever, constitutes the escapement mechanism of the machine by which the letter-spacing is accomplished; oscillatory movement being

communicated to said escapement-lever 10 from the key-levers of the machine, through the medium of an upright connecting rod 11.

12 indicates a rigid arm on the front of the shift-frame 5 in the upper end of which the shaft 6 has bearing.

13 indicates a frame standard which is attached to the arm 12 of the shift-frame and rises at the front of the platen. Said standard 13 is provided at its upper end with an integral, horizontal plate 14, constituting a support for the ribbon-throw mechanism, which is mounted upon the upper end of said standard.

Now referring to the construction of the ribbon-throw mechanism, in which is embodied the novel features constituting my invention, the same as illustrated embraces parts as follows:

15 indicates a pivot-rod arranged horizontally at the front of and parallel with the platen 1. Said pivot-rod is supported at its ends in lugs 16, 16 which rise from the horizontal plate 14 of the standard 13.

17 indicates a horizontal rock-shaft arranged in the same horizontal plane with the pivot-rod 15 and forward of the latter. Said rock-shaft 17 is mounted at its ends in two bearing lugs 18, 18 which rise from the said plate 14 at the forward edge of the latter.

20, 21 indicate two supporting links which are pivotally supported on the opposite ends of the pivot-rods 15, 15 and extend upwardly therefrom. 22 and 23 indicate two similar supporting links which are pivotally supported at their lower ends on the rock-shaft 17 and extend upwardly from the latter.

24 and 25 indicate two horizontally arranged guide-plates which are pivotally connected with and supported upon the upper ends of the two pairs of links 20, 21 and 22, 23 and extend rearwardly from said links toward and over the platen. The rear and forward links 20 and 22 at the right-hand side of the device are pivotally connected with the right-hand guide-plate 24 by means of horizontal transverse pivot-pins 26 and 27. Similarly, the rear and forward links 21 and 23 at the left-hand side of the device are pivotally connected at their upper ends with the left-hand guide-plates by means of pivots 28 and 29.

The four supporting links referred to are made of equal lengths and the pivots connecting their upper ends with the guide-plates are arranged the same distance apart horizontally, or from front to rear, as the pivot-rod 15 and rock-shaft 17, so that said guide-plates are supported in a horizontal position, and will maintain their horizontal position, when given a backward and forward shifting movement through the turning or swinging of said links about the pivot-rod 15 and rock-shaft 17. The said guide-plates 24 and 25 are provided at their rear ends with

guide-loops 30, 31 for engagement with the ribbons. Said guide-loops are so arranged that when the guide-plates are swung rearwardly they will rest over the printing line and in position to hold the ribbons engaged therewith over the printing point.

According to the details of construction illustrated, the two guide-plates 24 and 25 and the supporting links therefor are made of sheet-metal and eyes are formed thereon for engagement with the pivot-pins by which they are connected with the supporting links, as well as the guide-loops at their rear ends, by means of integral prongs on the said plates which are bent to form said eyes and loops, as seen in the perspective view, Fig. 5. As illustrated, each guide-plate is provided with laterally separated, downwardly extending eyes which engage the ends of its associated pivot-pin 26 or 28, at opposite sides of the upper ends of the rearmost links 20 and 21, and at its forward end with a single eye that is engaged with one of the pivot-pins 27 or 29, centrally of the latter; the ends of said latter pivot-pins being engaged with laterally separated eyes formed by a forked construction of the upper ends of the forward links 22 and 23. Moreover, the guide-loops 30 and 31 on said guide-plates 24 and 25 are formed by means of prongs cut from the rear end-portions of said plates and bent toward each other to embrace opposite side margins of the ribbon, as clearly seen in said Fig. 5.

Pivotally supported on the pivot-rod 15 between the links 20 and 21 is an upwardly extending arm 32. Attached rigidly to the rock-shaft 17 centrally thereof and between the two forward supporting links 22 and 23 is an upwardly extending arm 33 which is rigidly attached to said rock-shaft, and which will be herein referred to as the actuating arm. A horizontally arranged connecting bar 34 is pivotally connected at its rear and forward ends with the arms 32 and 33 by means of horizontal transverse pivots 35 and 36. Said rock-shaft 17 is provided at one end with a crank-arm 37 with which is connected the upper end of a connecting rod 38 that extends downwardly to and is connected with the forward end of the escapement-lever 9; said escapement lever forming part of the letter-spacing mechanism of the machine and being lifted at the time one of the key-levers of the machine is operated to effect the printing of a letter or character. It follows that each time an impression is made, and the forward end of said escapement-lever is lifted, the said rock-shaft 17 will be swung or oscillated in a direction to carry the upwardly extending actuating arm 33 thereon rearwardly or towards the platen. The arm 32 being pivotally supported upon the pivot-rod 15 and connected at its upper end with the upper end of said arm 33 by the connect-

ing bar 34, partakes of the oscillatory movement of said actuating arm 33.

It being manifest from the construction described, that the two ribbon guide-plates 24 and 25 are separately sustained by their supporting links and are adapted for movement forwardly and rearwardly independently of each other and that the arms 32 and 33 with their connecting bar 34 are located between the supporting links of said guide-plates and, because of the rigid connection of the forward arm 33 with the rock-shaft 17, partake of the oscillatory movement given to said rock-shaft, it follows that if one of the parts so given oscillatory movement by the rock-shaft, (namely, the arms 32 and 33 and connecting bar 34,) be engaged or connected with one of the guide-plates 24 or 25, or with one of the supporting links of one of said guide plates, the guide-plate thus connected with one of the parts which is actuated by the rock-shaft will partake of the oscillatory movement of said rock-shaft. To provide for the actuation of either of said guide-plates, therefore, I provide manually operable locking means by which one of said parts which always moves with the rock-shaft may be detachably connected with one or the other of said guide-plates, thereby permitting either of the inking ribbons engaged with said guide-plates to be thrown into action, as desired. The particular construction of such locking means, illustrated in the drawings, is as follows: 40, 41 (Figs. 6 and 7) indicate two latch arms located at the forward and rear faces of the actuating arm 33 and pivotally connected with said arm by means of a pivot stud 42 to which both of said latch-arms are rigidly secured in parallel relation to each other. The forward or outer latch-arm 40 is shown as provided with a crank-arm or handle 43 by which the latch-arms may be swung or moved on the arm 33, in such manner that the same will project from either the right or left-hand side of the said arm, as indicated in full and dotted lines in Fig. 3 and in said Fig. 6. Said latch-arms 40 and 41 are so arranged with respect to the forward supporting links 22 and 23 that when either of said links is in the same plane with the actuating arm 33, the said latch-arms may be swung into engagement with said link and will extend at the forward and rear face thereof, thereby locking it securely to said actuating arm.

It will be manifest from the construction described that when the latch-arms 40 and 41 are swung to the right and are thereby engaged with the forward link 22 at the right-hand side thereof, the guide-plate 24 will be given backward and forward movement with the actuating arm 33, so that said guide-plate will give backward and forward movement to the inking ribbon engaged thereby, and the said ribbon will be actuated in the

same manner as in the case of the ribbon-throw mechanism illustrated in said prior Oliver patent. When the actuating arm 33 is thus in operative connection with the guide-plate 24, however, the opposite or left-hand guide-plate will be disconnected from the ribbon-throw actuating devices and the ribbon engaged therewith will remain out of action.

The guide-plate which is at any time disconnected from the operating devices will stand at the forward limit of its movement, as indicated in the case of the left-hand guide-plate 25 in Fig. 1. For the purpose of limiting the forward movement of the guide-plates when thrown out of action, I have shown stop-arms 44, 44' as attached to the forward edge of the plate 14 and rising in front of the forward links 22 and 23; the weight of the guide-plate which is out of action serving to retain the same at the forward limit of its movement, when the forward supporting link thereof rests against one of said stop-arms 44 or 44'. For positively limiting the rearward throw or movement of the guide-plate which is at any time connected with the actuating arm 33, a stop-arm 45 is attached to and rises from the plate 14 in position for contact therewith of the oscillating arm 32 which, as before described, partakes of the oscillatory movement of said actuating arm 33. A similar stop-arm 46 is shown as rising from the plate 14 at the rear of the said actuating arm 33 and as arranged to limit the rearward swinging movement of the latter.

In the drawings, (Figs. 1, 2 and 3) 47 and 48 indicate the portions of two inking ribbons adjacent to the printing point which are engaged and operated by the guide-loops on the guide-plates 24 and 25. These inking ribbons will usually be of different colors as, for instance, the ribbon 47 may be red and the ribbon 48 black. Manifestly, by locking the actuating arm to either one or the other of the two guide-plates 24 or 25, either ribbon may be brought into use as desired, while the other one will be held forward and out of the way of the type by its guide-plate which will rest at the forward limit of its movement.

When a locking-device, adapted for connecting one or the other of the two guide-plates with the ribbon-throw actuating device, is arranged to connect the actuating arm 33 with one of the forward supporting links 21 or 22, as illustrated, the arm 32 and connecting bar 34 may be omitted.

In its broader aspect, my invention includes two ribbon-guides capable of reciprocal movement, and locking means whereby either one of said ribbon-guides may be connected with a part of the machine which is given oscillatory or vibratory movement at the time of making each impression, or in the printing of each character. My inven-

tion is not, therefore, limited to a construction in which motion is transmitted to the ribbon-throw device from the escape-lever of the machine, nor is it limited to the details and arrangement of parts illustrated, except so far as the same in themselves constitute features of novelty and are pointed out in the appended claims as included in my invention.

In some circumstances, as when doing what is known as "stencil" work, it is desirable to throw both ribbon-guides out of action, and this may be easily done in the structure described by placing the latch-arms 40 and 41 in the central portion thereof so that they will be disengaged from both of the links 22 and 23, and the guide-plates will both be disconnected from the actuating devices.

I claim as my invention:—

1. In a typewriting machine, the combination with a vibratory part of the machine which is moved in the making of each impression, of two movable guide-plates carrying ribbon-guides, two pivotally supported oscillating links movably sustaining each of said guide-plates, a pivotally supported oscillating actuating arm, means for operating said oscillating actuating arm from said vibratory part of the typewriting machine, and means for detachably connecting said actuating arm with either one or the other of said guide-plates.

2. In a typewriting machine, the combination with the letter-spacing mechanism thereof embracing a vibrating escapement-lever, of two reciprocating guide-plates provided with ribbon-guides, two pivotally supported oscillating links severally connected with said guide-plates, an oscillating actuating arm, a rock-shaft on which said links are mounted and to which said actuating arm is attached between the links, said rock-shaft being provided with a crank-arm, a connecting rod connecting said crank-arm on the rock-shaft with said escapement-lever, and means for detachably connecting said actuating arm with either one of said oscillating links.

3. A ribbon throw mechanism for typewriting machines comprising two reciprocating guide plates provided with ribbon guides and means for supporting and separately actuating said guide plates, said supporting means sustaining the said guide plates in parallel relation and affording separate endwise movement thereof toward and from the printing point of the machine and the said actuating means including two pivotally supported oscillating links swinging on a common axis and associated one with each of said guide plates, an oscillating actuating arm mounted to oscillate on an axis in alinement with the axis of oscillation of said links, means for giving vibratory movement to said actuating arm and means for locking said actuating arm to either one of said links.

4. A ribbon throw mechanism for typewriting machines comprising two reciprocating guide plates provided with ribbon guides and means for supporting and separately actuating said guide plates, said supporting means sustaining the said guide plates in parallel relation and affording separate endwise movement thereof toward and from the printing point of the machine and the said actuating means including two pivotally supported oscillating links swinging on a common axis and associated one with each of said guide plates, an oscillating actuating arm located between said links and swinging on an axis in alinement with the axis of oscillation thereof, means for giving vibratory movement to said actuating arm, and means for locking said actuating arm to either one or the other of said links.

5. A ribbon throw mechanism for typewriting machines, comprising two reciprocating guide plates provided with ribbon guides and means for supporting and separately actuating said guide plates, said supporting means sustaining the said guide plates in parallel relation and affording separate endwise movement thereof toward and from the printing point of the machine, and the said actuating means including two oscillating links associated one with each of said guide plates, a rock-shaft on which said links are mounted, an actuating arm attached to said rock-shaft between the links thereon and means for giving oscillatory movement to said rock-shaft.

6. A ribbon-throw mechanism for typewriting machines comprising two reciprocating guide-plates provided with ribbon-guides, two pivoted oscillating links sustaining each of said guide-plates, the links associated with each guide-plate having their pivotal axes in alinement with the pivotal axes of the links associated with the other guide-plate, an oscillating actuating arm, a rock-shaft on which is mounted one of the links associated with each guide-plate and to which said actuating member is attached between the links thereon, means for actuating said rock-shaft, and means for locking said actuating member to either one or the other of said links on said rock-shaft.

7. A ribbon-throw mechanism for typewriting machines comprising two reciprocating guide-plates provided with ribbon-guides, two pivotally supported oscillating links mounted to swing about a common axis and connected severally with said guide-plates, an oscillating actuating arm located between said links adapted to swing on an axis in alinement with the axis of oscillation thereof, means for giving vibratory movement to said actuating member, and means for locking said actuating member to either one or the other of said links, consisting of two rigidly connected, pivoted locking arms mounted on

said actuating arm and adapted to be swung thereon into engagement with one or the other of the said links.

8. A ribbon-throw mechanism for type-writing machines comprising two reciprocating guide-plates provided with ribbon-guides, two pivotally supported, oscillating links sustaining each of said guide-plates, an oscillating actuating member, means for giving vibratory movement to said actuating member, means for detachably connecting said actuating member with either one or the other of said guide-plates, and stops for limiting the forward movement of said guide-plates.

9. A ribbon-throw mechanism for type-writing machines comprising two endwise reciprocating guide-plates provided with ribbon-guides, two pivotally supported, oscillating links sustaining each of said guide-plates, an oscillating actuating arm, means for giving vibratory movement to said arm, means for detachably connecting said actuating arm with either one or the other of said

guide-plates, and a stop for limiting the rearward movement of said actuating arm.

10. A ribbon-throw mechanism for type-writing machines comprising two reciprocating guide-plates provided with ribbon-guides, two pivotally supported, oscillating links sustaining each of said guide-plates, an oscillating actuating arm, means for giving vibratory movement to said actuating arm, means for detachably connecting said actuating member with either one or the other of said guide-plates, stops for limiting the forward movement of the guide-plates, and a stop for limiting the rearward movement of said actuating arm.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 16th day of December A. D. 1907.

THOMAS OLIVER.

Witnesses:

C. CLARENCE POOLE,
G. R. WILKINS.