No. 735,089. PATENTED AUG. 4, 1903.

J. J. GREEN.

RIBBON MECHANISM.

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NO MODEL.

Fig. 1.

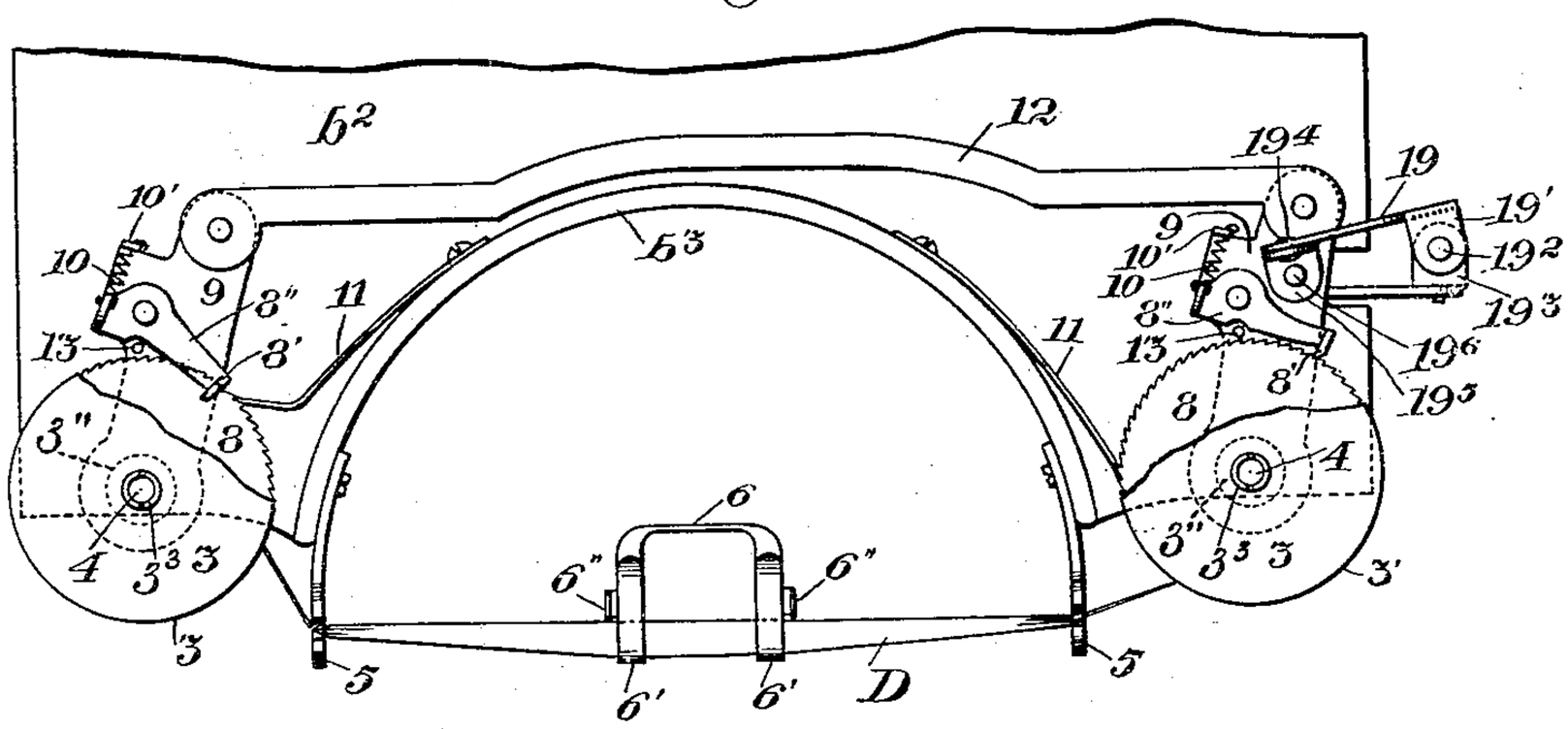

Fig. 2.

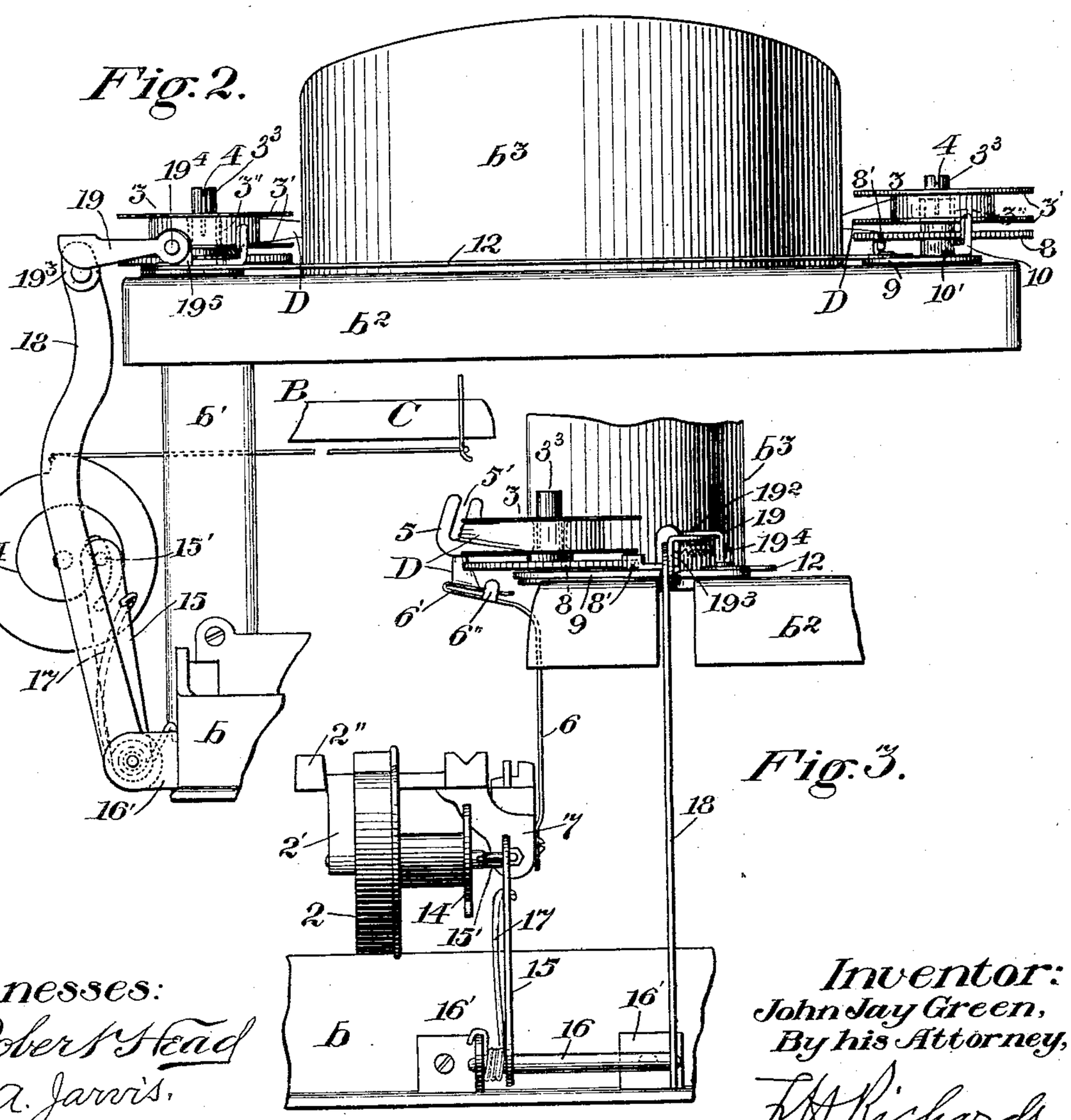

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN J. GREEN, OF BOONTON, NEW JERSEY.

RIBBON MECHANISM.

SPECIFICATION forming part of Letters Patent No. 735,089, dated August 4, 1903.

Application filed June 12, 1902. Serial No. 111,247. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. GREEN, a citizen of the United States, residing in Boonton, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Ribbon Mechanisms, of which the following is a specification.

The present invention relates to inking mechanism for machines of the type-writer class, and has for an object to provide a simple organization for effecting the gradual shifting of an inking-ribbon past the printing-point and in proper relation to the type-bars of the machine to interpose between the working types on such bars and the platen an inking-ribbon adapted to ink the successively-operating types.

A further object of the present improvements is to provide a ribbon mechanism of simple construction, the operation of which in causing the passage past the printing-point of the inking-ribbon first in one direction and then in the opposite is effected with the expenditure of little or no effort on the part of the operator.

In the drawings accompanying the present specification, Figure 1 is a plan view illustrating a ribbon mechanism embodying my present improvement. Fig. 2 is an elevational view looking from the front of the machine; and Fig. 3 is a view similar to Fig. 2, but looking from the left-hand side of the machine.

Similar characters of reference designate corresponding parts in all figures.

I have represented in the present drawings only so much of a type-writing machine and its component mechanisms as suffices to illustrate the application of my present improvements, many of the parts being wholly omitted, while others are merely indicated, since a full showing is not deemed necessary to an understanding of the present mechanism. Thus the supporting-framework of the machine may be of any desired and appropriate form and construction, the same being indicated only in a more or less conventional way and designated generally by B, comprising in this instance a base-frame *b*, on which is erected a post *b'*, (one only being shown,) supporting a platform b^2. This latter is provided with an arc-shaped rest for the type-bars, (not shown,) since the application of the present improvements is made in this particular instance to a type-writer of the top-strike variety, the type-bars in their normal position resting within and against the aforesaid arc-shaped support.

The carriage of the machine is designated in a general way by C, and under the control of the usual key-operating mechanism a retracting-spring (not shown) located within a drum 2 operates to draw the carriage step by step toward the left in Fig. 2. This drum 2 is rotatably mounted on a lug 2', dependent in this instance from the shiftable carriage-supporting bed 2'' of the machine.

The inking-ribbon (designated in a general way by D) is wound up at its opposite ends on rolls 3 3 at the right and left, each of which functions alternately as a supply-roll and a take-up roll. These rolls may be of any suitable construction, each comprising in this instance upper and lower plates 3', connected by a shaft-tube length 3'', which latter is fitted snugly over a split sleeve 3^3, which in turn is mounted upon a corresponding post 4, extending upward from the platform b^2 on opposite sides of the aforementioned rest b^3. Between the rolls 3 3 the ribbon is suitably guided to pass the printing-point in proper juxtaposition to the working types of the actuated type-bars. (Not shown.) In this instance the ribbon leads through a slot 5'' in each arm 5 of a pair thereof secured to the rest b^3 and adjacent to the printing-point passes through the bight of curved fingers 6' 6' at the ends of a U-shaped strip 6. As the machine to which the present ribbon mechanism is applied is designed to expose a printed character after an actuated type-bar has operated to print it, the guide-fingers 6' 6' serve to draw the ribbon away from the printed character. For effecting this result the strip 6 is secured to a rock-frame 7, which during the operation of the key mechanism is oscillated to and fro, permitting a step-by-step movement to be imparted to the carriage by the force exerted thereon by the spring of the drum 2. Stop-pieces 6'' 6'' at opposite sides of the fingers prevent the ribbon from being accidentally withdrawn from the loops of the guide-fingers.

Referring now to the means provided for actuating each roll 3 3 in turn, according as one or the other acts as a take-up roll for winding the ribbon upon it, rigid with each sleeve 3^3 is a ratchet-wheel 8, in coöperative relation to which is mounted a pawl 8′ in the nature in this instance of a tooth on a pawl-arm 8″, pivoted upon a pawl-carrier 9. Each pawl-carrier is pivotally mounted to oscillate about an axis coinciding with the axis of the corresponding roll 3, and by the action of a spring 10, secured at one end to the pawl-arm and at the other end to a lug 10′ on the pawl-carrier, the pawl is drawn toward the teeth of the ratchet-wheel, engaging therewith when the roll is in an axial position, such that the ratchet-wheel thereon is in the plane of its pawl. Combined with each ratchet-wheel 8 is a retaining-pawl 11 in the nature of a spring-finger, whose end is adapted to engage with the teeth of the ratchet-wheel and prevent a reverse movement of the latter.

The operating mechanisms so far as described are essentially duplicates of each other, and the pawl-carriers are compelled to move in unison by a connecting-link 12, pivoted at opposite ends to the said carriers 9 9. It is not designed that both pawls 8′ 8′ shall at any one time be both in engagement with their respective ratchet-wheels, but, on the contrary, that they shall operate alternately, each wheel being in turn shifted by hand from a position in which the wheel is located in a plane above the coöperative pawl to a position in which it engages therewith, and vice versa, in order to change a supply-roll to a take-up roll and the roll which has previously functioned as a take-up roll to a supply-roll. In this elevated position of a roll the same rests upon and slides over the edge of the retaining-pawl, a stop 13 being supplied on each pawl-carrier for limiting the inward movement of the tooth under the tension of the corresponding spring 10 when the roll is elevated. As the drum by virtue of the tension of the spring therein shifts the carriage toward the left in Fig. 2, the pawl-carriers, moving as a unit, are gradually shifted in such a direction as to cause that pawl which is in operative engagement to rotate the roll of the engaged ratchet-wheel. This result is accomplished in a convenient manner by mounting rigidly with the drum 2 a volute cam 14, against the edge of which presses a pin 15′, extending laterally from an arm 15, secured to a shaft 16, rotatably mounted in brackets 16′ 16′ on the base-frame *b*, contact between the surface of the cam and the pin being assured by a spring 17. To the shaft 16 there is also secured an arm 18, which extends upward and adjacent to the upper surface of the platform b^2 carries a link 19, which is operatively connected with the adjacent pawl-carrier to permit of the free movements of the parts as the angle between the various members changes. In the simple construction set forth the link 19 has a laterally-bent portion 19′, which is pivoted by a pin 19^2 to an angle-bracket 19^3, which in turn is pivoted to the aforesaid arm 18, while the opposite end of the link is pivoted by a pin 19^4 to one member of an angle-piece 19^5, whose opposite member is pivoted by a pin 19^6 to the pawl-carrier. The length of the cam-surface represented by the edge of the volute cam 14 is sufficient to maintain operative engagement between it and the pin 15′ during the entire longitudinal movement of the carriage C. As the carriage gradually shifts toward the left in Fig. 2 the arm 18 and its connecting parts are gradually moved toward the right, and that pawl 8′ which engages with its associated ratchet-wheel accomplishes an angular movement of the corresponding roll, thus winding up the ribbon on the latter as it is supplied from the other roller whose ratchet-wheel, it will be readily understood, is in inoperative relation to the pawl associated with it. When the motion of the carriage is reversed in order to begin a new line, the pin 15′, sliding over the surface of the volute cam, reaches a point of minimum radius, and simultaneously with this movement the engaging pawl slides back idly over the teeth of the ratchet-wheel. The printing of the next line results in a movement of the inking-ribbon, as before. When the ribbon has been unwound to a desired amount from that roller from which it has been supplied to the take-up roller, the relation of the pawls to their respective ratchet-wheels is changed by hand and that roller which before was the take-up roller now becomes the supply-roller and, conversely, the supply-roller becomes the take-up roller.

A ribbon mechanism such as has been described is of simple construction, comprises few parts, and is capable of being cheaply manufactured, since most of the parts may be made from sheet metal struck up to form and by a like process provided with necessary lugs, fingers, or the like convenient for the mounting or the attachment of parts.

Having described my invention, I claim—

1. The combination with a pair of ribbon-rolls mounted on opposite sides of the printing-point of a type-writing machine, of pawl-and-ratchet mechanisms in coöperative relation with the ribbon-rolls, and the parts of each of which mechanisms are relatively shiftable in line with the axis of the respective roll to convert a take-up roll into a supply-roll and vice versa, means for causing the two said mechanisms to move in unison, and an actuating-cam.

2. The combination with a pair of axially-shiftable ribbon-rolls mounted on opposite sides of the printing-point of a type-writing machine, of ratchet-wheels secured to the ribbon-rolls, pawl-carriers pivoted concentrically with the axes of the ribbon-rolls, spring-pressed pawls mounted on said carriers and adapted to engage with said ratchet-wheels,

a link extending from side to side of the machine and pivotally connected at its ends to said pawl-carriers, and an actuating-cam.

3. The combination with the upper plate or platform of a type-writing machine, of a pair of axially-shiftable ribbon-rolls mounted on said platform at opposite sides of the printing-point to turn about vertical axes, ratchet-wheels secured to the ribbon-rolls, pawl-carriers pivoted concentrically with the axes of the ribbon-rolls and shiftable to and fro in a horizontal plane, spring-pressed pawls mounted on said carriers and adapted to engage the said ratchet-wheels, a link extending from side to side of the machine and pivotally connected at its ends to said pawl-carriers, and an actuating-cam.

4. The combination with the upper plate or platform of a type-writing machine, of a pair of axially-shiftable ribbon-rolls mounted on said platform at opposite sides of the printing-point to turn about vertical axes, ratchet-wheels secured to the ribbon-rolls, pawl-carriers pivoted concentrically with the axes of the ribbon-rolls and shiftable to and fro in a horizontal plane, spring-pressed pawls mounted on said carriers and adapted to engage with said ratchet-wheels, a link extending from side to side of the machine and pivotally connected at its ends to said pawl-carriers, a volute cam rotating in unison with the movement of the carriage of the type-writer, a pivoted lever, a pin thereon spring-pressed into engagement with the cam, a second lever fixed relatively to the first-mentioned lever, and a link pivoted at one end to said second-mentioned lever and at the other end to one of said pawl-carriers.

5. The combination with the upper plate or platform of a type-writing machine, of a pair of axially-shiftable ribbon-rolls mounted on said platform at opposite sides of the printing-point to turn about vertical axes, ratchet-wheels secured to the ribbon-rolls, pawl-carriers pivoted concentrically with the axes of the ribbon-rolls and shiftable to and fro in a horizontal plane, spring-pressed pawls mounted on said carriers and adapted to engage with said ratchet-wheels, a link extending from side to side of the machine and pivotally connected at its ends to said pawl-carriers, a carriage-retracting drum, a volute cam secured thereto, a pivoted lever, a pin thereon spring-pressed into engagement with the cam, a second lever fixed relatively to the first-mentioned lever, and a link pivoted at one end to said second-mentioned lever and at the other end to one of said pawl-carriers.

6. The combination with the upper plate or platform of a type-writing machine, of a pair of axially-shiftable ribbon-rolls mounted on said platform at opposite sides of the printing-point to turn about vertical axes, ratchet-wheels secured to the ribbon-rolls, pawl-carriers pivoted centrally with the axes of the ribbon-rolls and shiftable to and fro in a horizontal plane, spring-pressed pawls mounted on said carriers and adapted to engage with said ratchet-wheels, a link, a connection between one end of said link and one of said pawl-carriers permitting pivotal movement about a vertical and a horizontal axis, a lever for operating the pawl-carriers, and a connection between the opposite end of said link and said operating-lever permitting pivotal movement about two axes at right angles to each other.

7. The combination with the upper plate or platform of a type-writing machine, of a pair of axially-shiftable ribbon-rolls mounted on said platform at opposite sides of the printing-point to turn about vertical axes, ratchet-wheels secured to the ribbon-rolls, pawl-carriers pivoted concentrically with the axes of the ribbon-rolls and shiftable to and fro in a horizontal plane, spring-pressed pawls mounted on said carriers and each having a struck-up tooth adapted to engage with the respective ratchet-wheel, a holding-detent engaging with each of said ratchet-wheels, a link extending from side to side of the machine and pivotally connected at its ends to said pawl-carriers, a volute cam rotating in unison with the movement of the carriage of the type-writer, a pivoted lever, a pin thereon spring-pressed into engagement with the cam, a second lever fixed relatively to said first-mentioned lever, a link extending between the second-mentioned lever and one of the pawl-carriers and pivotal connection between the ends of said link and said pawl-carrier and lever, each embodying a pivoted angle-piece.

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Witnesses:
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JOHN O. SEIFERT.