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(Under International Convention.)

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At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

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COMPLETE SPECIFICATION.

Ribbon Actuating Mechanism for Typewriters.

We, GEORGE JAMES GRIFFITHS, of 364, Lincoln Avenue, Woodstock, County of McHenry, State of Illinois, United States of America, Mechanician, and CHARLES HENRY RODERICK, of 115, Fremont Street, Woodstock, County of McHenry and State of Illinois, United States of America, Mechanician, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to ribbon actuating mechanism for typewriting machines of that general class in which the direction of movement of the ribbon is reversed by causing it to be wound alternately from one and upon the other of two ribbon spools arranged at opposite sides of the machine. It relates more particularly to such a class of mechanism in which a rotatable shaft is provided at each of its ends with a gear member adapted according to the position of the shaft to be engaged with or disengaged from a corresponding gear member in rigid communication with one of the ribbon spools.

The object of the invention is to provide a new and improved means for effecting the oscillation of the rotating shaft to occasion the desired engagement or disengagement of the before mentioned gear members.

The invention consists in a ribbon actuating mechanism of the above class in which the oscillation of the rotating shaft is effected by the movement of an operating rod extending across the typewriting machine frame and mounted to slide endwise therein.

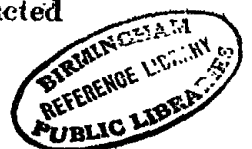
The invention also consists in ribbon actuating mechanism for typewriting machines substantially as hereinafter described.

The invention is intended more particularly for application to typewriting machines of the kind known as the "Oliver typewriter" and is illustrated herein in a form suitable for application to such a machine. It must be understood, however, that the invention is readily applicable to typewriting machines of different constructions.

Referring now to the accompanying drawings:—

Figure 1. is a bottom plan view of a ribbon-actuating mechanism constructed

[Price 6d.]



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in accordance with the invention; the parts of said mechanism being shown in midway or neutral position, and in which position of said parts, the ribbon is not wound upon either of the ribbon spools in the operation of the machine;

Figure 2 is a like plan view of the parts shown in Figure 1; said parts being shown connected with one of the ribbon spool shafts, whereby the latter is turned to effect the movement of the ribbon in one direction upon the operation of the machine;

Figure 3 is a front elevational view of the parts shown in Figure 1;

Figure 4 is a sectional view taken on line 4—4 of Figure 3; and

Figure 5 is a sectional view of a detail of construction.

Referring to the drawings, the ribbon actuating mechanism is shown in combination with, and is adapted for rotating two vertical or upright ribbon-spool shafts 10, 10, arranged one at each side of the machine. On the lower ends of said ribbon-spool shafts 10, 10 are affixed gear-pinions 11, 11. Said ribbon-spool shafts 10, 10 are rotated or turned through the medium of a horizontal, transversely arranged worm-shaft 12, upon the opposite ends of which are mounted and rigidly secured worm-gears 13, 13; one provided with right-hand worm-teeth and the other with left-hand worm-teeth. The worm-shaft 12 is adapted to be oscillated or swung horizontally about a vertical axis so as to effect the engagement of one or the other of said worm-gears 13, 13 with the gear-pinions 11, 11, or to simultaneously disconnect both of said worm-gears from said gear-pinions. Said worm-shaft 12 is mounted in a horizontal oscillating bearing-member 14, provided at its ends with depending arms or lugs 15, 15 in which said worm-shaft 12 is journaled; the worm-shaft being retained from endwise movement by means of a collar 16 rigidly secured to said shaft by a set screw 16^a, and located between one of the arms 15 and a stop-flange 17 attached to said bearing-member 14. Said bearing member 14 is pivotally connected with a fixed, horizontal bracket-member 18 by means of a vertically disposed pivot bolt 19. As shown in Figure 4, said bracket-member 18 has adjustable connection with a transverse frame-member 20, on the machine base, by means of a bolt 21 inserted through said frame-member 20 and through an elongated slot 22 in said bracket-member 18.

The worm-shaft 12 is rotated by means of a pawl and ratchet mechanism operated from the universal bar 23 of the machine, (Figures 3 and 4). As shown, the ratchet mechanism comprises a ratchet wheel 24 rigidly secured to the worm-shaft 12 between the depending arms 15, 15, and said ratchet wheel is rotated by the action of two oppositely acting pawls 25, 26 arranged on opposite sides of said ratchet wheel and pivoted to a bracket-member 27 attached to said universal bar. The universal bar 23 has connection with the letter spacing mechanism and has rising and falling movement imparted to it upon the operation of the key-levers and space-bar of the machine as is usual in typewriting machines. The pawls 25, 26 are held in engagement with the ratchet wheel 24 by means of a spring 24^a connected with the pawls in a manner to draw the free ends thereof together, (see Figure 4).

For the purpose of effecting the rocking of the bearing-member 14, to alternately connect and disconnect the worm-gears 13, 13 and the gear-pinions 11, 11 means are provided as follows: Horizontally disposed and arranged to extend transversely of or across the machine base and forward of the bearing-member 14, is an endwise movable operating or shift-rod 28, the opposite ends of which extend through and slide in the side walls 29, 30 of the machine base; the ends of said rod 28 extending beyond said side walls, so that they may be pressed upon by the hand of the operator for the purpose of pushing the rod endwise. In an "Oliver" typewriting machine, said walls 29, 30 constitute the side walls of the machine base. Adjustably connected with and extending from the central part of the bearing-member 14 toward the rod 28 is a flat horizontal plate 31, provided with longitudinally spaced, outwardly projecting fingers 32, 33. The outer ends of said fingers bear against

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cam-members 34, 34, preferably in the form of conical collars, which are mounted on the rod 28 and are rigidly secured by set screws 35, 35, to said rod. (See Figures 1 and 2.) The said cam-members and fingers are located at opposite sides of the pivotal axis of the bearing-member 14 and equidistant therefrom. The said plate 31 is adjustably connected with the bearing-member 14 by means of fastening screws 36, 36 threaded into said bearing-member 14 from the under side thereof and through elongated slots 37, 37 in said plate 31. (Figure 5.)

By connecting said plate 31 with the bearing-member 14 in the manner described, the fingers 32, 33 may be adjusted toward and away from the cam-members 34, 34 for the purpose of taking up wear on the ends of said fingers and for maintaining the ends of the same in proper engagement with said cam-members. The cam-members 34, 34 are alike and each has bearing surfaces for contact with its associated finger. Each cam-member has three parts at different distances from the longitudinal axis of the rod 28, to wit, a lower part 38, a higher part 39 and an intermediate part 40; the lower part 38 being nearest the outer end of the rod, the higher part 39 being nearest the centre of the length of the rod, and the intermediate part 40 being located between the parts 38 and 39. Each cam-member is preferably made in the form of a collar on said rod having a hub portion 41 at its inner end, through which the clamp screw 35 is inserted, the lower part 38 having the form of a cone at the outer end of the collar, the intermediate part 40 being cylindrical, and the higher part 39 having the form of an annular rib between the intermediate part 40 and hub 41. Said higher part 39 is made inclined or conical on both of its sides, or in the form of a double cone, for a purpose hereinafter set forth. In the endwise movement of the rod 28 in one direction, one of the fingers 32 or 33 bearing against the adjacent cam-member, in passing from the lower to the higher part of the cam-member, throws the adjacent end of the bearing-member 14 away from the rod, thereby swinging said bearing member 14 on its vertical axis in one direction. The other finger operates in the same manner upon the other cam-member in the endwise movement of the rod 28 in the opposite direction.

The plate 31 is provided with an integral stop-projection 42 located between and in the same plane with the fingers 32, 33; said projection 42 having at its end outwardly and laterally facing stop-shoulders 43, 43 located in the paths of movement of the hubs 41, 41. Said stop-shoulders 43, 43 are adapted for contact with the inner ends of the hubs 41, 41 in the endwise movement of the actuating or shift rod 28, and act to arrest the endwise movement of said rod when the higher part or rib 39 of either one of the cam-members is in contact with the end of its associated finger, (Figure 2). The inner ends of the hubs 41, 41 form in effect stop-shoulders on the rod, while the stop-shoulders 43, 43 on the plate 31 are in effect stop-shoulders on the bearing-member 14.

When the several parts of the mechanism are in the position shown in Figure 1, the ends of the fingers 32, 33, bear against the intermediate parts 40, 40 of both cam-members 34, 34. In this position of the parts, both gears 13, 13 on the actuating-shaft 12 are disconnected from the gears 11, 11 on the ribbon-spool shafts 10, 10. To swing the actuating-shaft 12 horizontally from its position shown in Figure 1 to that shown in Figure 2, so as to effect the engagement of the gear 13 at the right-hand end of said shaft 12 with the correspondingly located gear on the ribbon-spool shaft at the right-hand side of the machine, the shift-rod 28 is moved endwise toward the left by pushing inwardly on the right-hand end of the rod which extends beyond the said wall 30. In this movement of the rod 28, both cam-members 34, 34 are moved toward the left-hand side of the machine and the finger 32 nearest the wall 29, passes from the intermediate part 40 of the associated cam-member 34 over the higher part or rib 39 of same cam-member and is stopped when it has passed the

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annular edge of said rib and is in bearing against the inner inclined surface of the rib, by the stop-shoulder, formed by the inner-end of the hub 41 on the other cam-member, coming into contact with the adjacent stop-shoulder 43 on the bearing-member 14. In the passing of said finger 32 over the said rib or higher part 39 of said associated cam-member, the adjacent end of the bearing-member 14 is moved away from the rod and the bearing-member 14 swung in a direction to effect the engagement of the said right-hand gear 13 with the said associated gear 11, (Figure 2). The opposite end of the bearing-member 14 is at the same time moved toward the rod and the other finger 33 passes from the intermediate part 40 of the associated cam-member 34 to the lower part 38 of the same cam-member. The gear 13 at the left-hand end of the actuating shaft 12 is at this time disconnected from the corresponding gear 11. The right-hand ribbon-spool shaft 10 will then be turned or rotated and the ribbon wound upon the spool connected with said shaft 10 and unwound from the spool connected with the left-hand ribbon-spool shaft. A movement of the rod 28 toward the right, so as to cause the right-hand finger to pass from the lower part over the higher part of the associated cam-member will effect the oscillation or swinging of the bearing-member 14 in the opposite direction and cause the engagement of the gear at the left-hand end of the shaft 12 with the gear on the correspondingly located ribbon-spool shaft 10, and as a result effect a reversal of direction of movement of the ribbon.

In order to hold the cam-members 34, 34 at all times yieldingly in contact with the ends of the fingers 32, 33 so as to lock the rod 28 from accidental endwise movement and prevent shifting of the parts through the jarring of the typewriter while in use the rod 28 is made resilient or of spring metal, so that it is capable of flexing laterally toward and from the fingers as said fingers pass over the higher parts or ribs 39 of said cam-members. When the end of one finger bears against the inner inclined surface of the associated rib and slightly beyond the annular edge of said rib, as shown in Figure 2, that surface of the cam-member is held yieldingly in contact with the end of said finger by reason of the rod being resilient and the annular edge of the rib, which projects beyond the end of said finger, forms in effect a shoulder against which the finger bears in a manner to lock the rod from accidental endwise movement in a direction to effect the passing of the finger over the annular edge of said rib. Likewise, the forward edge of the cylindric or intermediate part 40 of the other cam-member forms in effect a shoulder against which the end of the other finger bears when said finger is in contact with the inclined surface of the lower part 38 of said other cam-member whereby the rod is additionally locked from movement in the direction referred to. The contacting of one stop-shoulder 43 on the bearing-member 14, with the associated stop-shoulder on the rod prevents endwise movement of the rod in the opposite direction. Moreover, the intermediate portions 40 of the cam-members 34, 34 when in engagement with the ends of the fingers, are held by the resiliency of the rod yieldingly in contact with said fingers, and the fingers engaging said intermediate portions at the base of the outer inclined surface of the adjacent higher parts or ribs 39, the rod is locked from accidental endwise movement in a direction to cause one finger to pass over the higher part or rib 39 of the associated cam-member. It follows, therefore, that the resiliency of the rod has the effect of locking the rod from endwise movement in either of the three positions into which the frame member may be swung, and the shifting of the parts from any one of said three positions, through the jarring of the typewriter while in use, is prevented.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. For use in a typewriting machine, a ribbon actuating mechanism of the type set forth, wherein the oscillation of the rotating shaft is effected by the

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movement of an operating rod extending across the typewriting machine frame and mounted to slide endwise therein, substantially as described.

2. A ribbon actuating mechanism according to Claim 1 in which the operating rod is provided with cam surfaces with which contact fingers formed upon the member adjustably mounted upon the bearing member of the rotating shaft, substantially as described.

3. A ribbon actuating mechanism according to Claim 2 in which the finger carrying member is formed with stop shoulders co-acting with stop shoulders upon the operating rod to limit the movement of the latter in each direction.

10 4. A ribbon actuating mechanism according to Claim 2 in which the operating rod is resilient to permit lateral flexure thereof thus to effect the locking of the rod against endwise movement through the engagement of a finger with the cam projection, substantially as described.

15 5. A ribbon actuating mechanism for typewriting machines substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 21st day of August, 1914.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]

