Feb. 20, 1934. H. T. MOSFELT ET AL 1,947,730

RIBBON HOLDING AND FEEDING MECHANISM FOR TYPEWRITERS

Filed Dec. 28, 1931 3 Sheets-Sheet 1

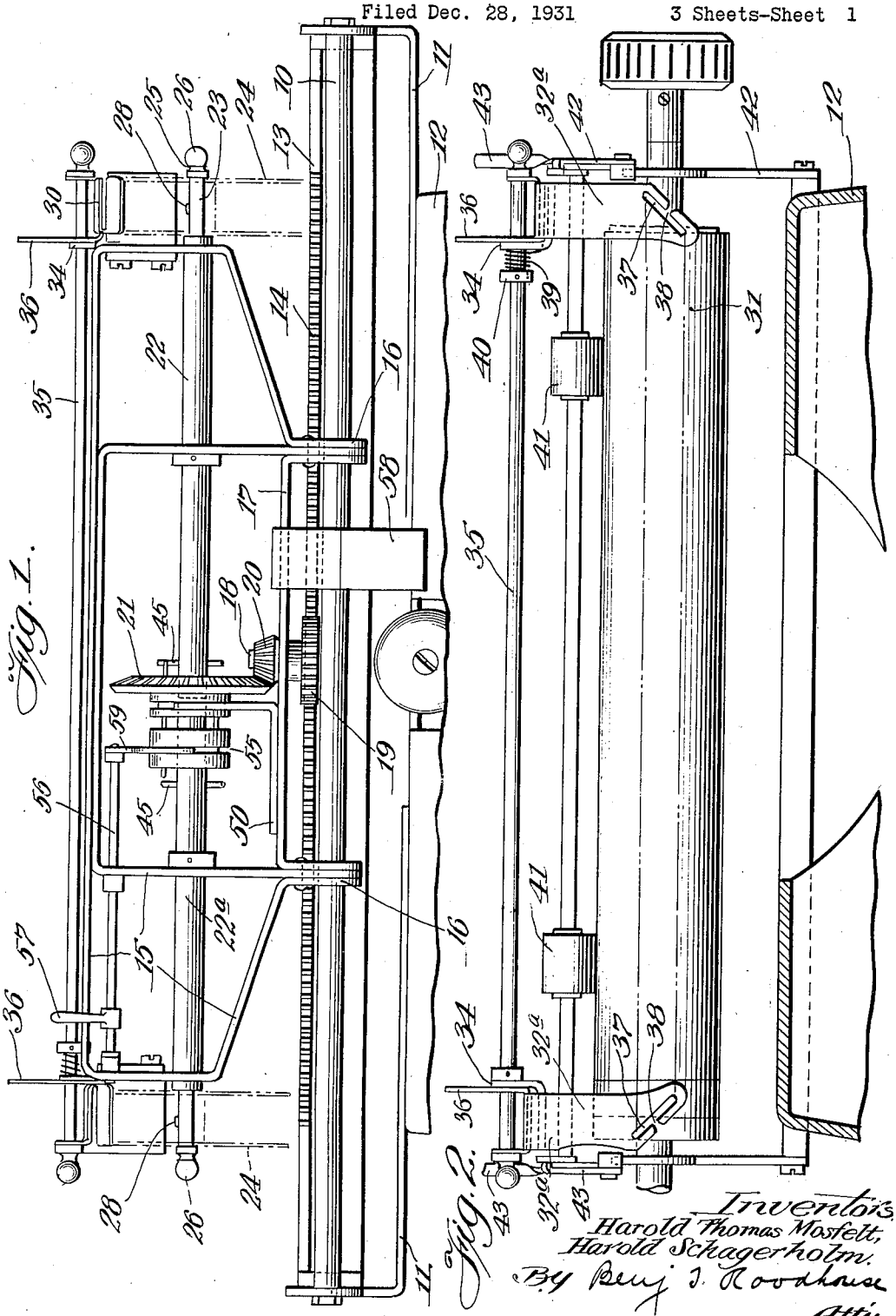


Fig. 1.

Fig. 2.

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Fig. 3.

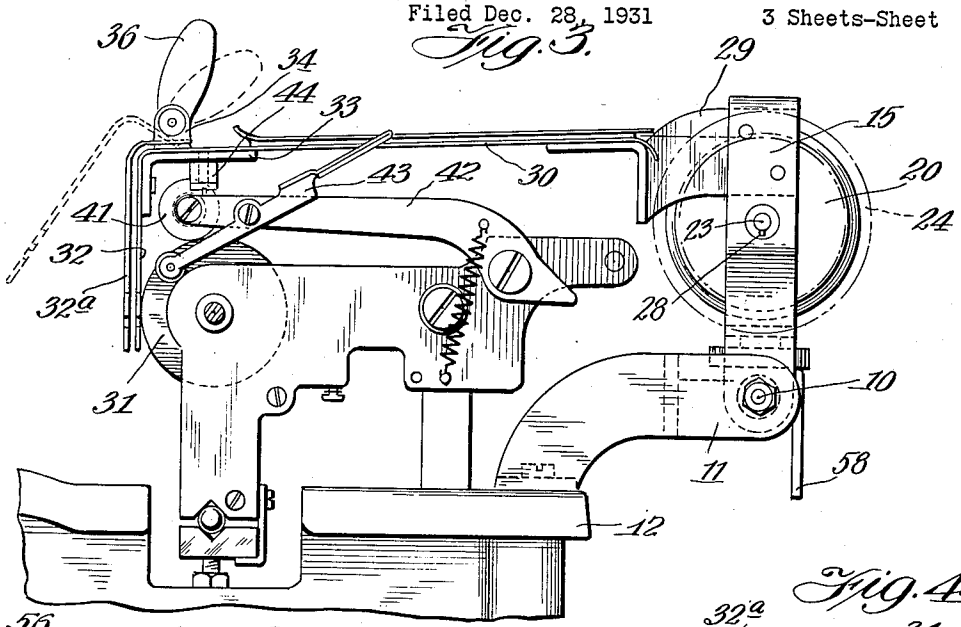


Fig. 4.

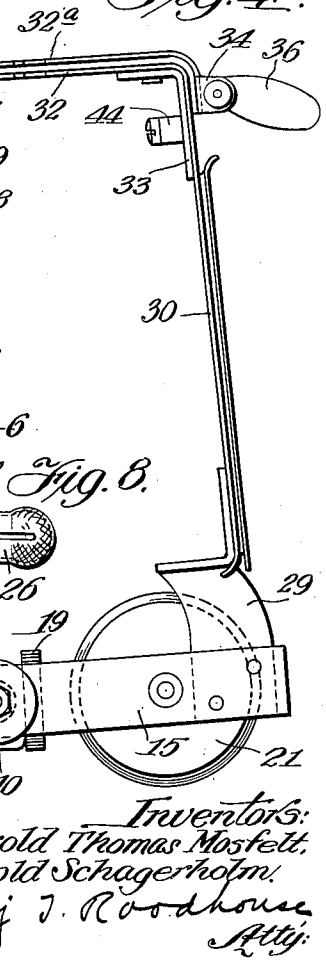


Fig. 5.

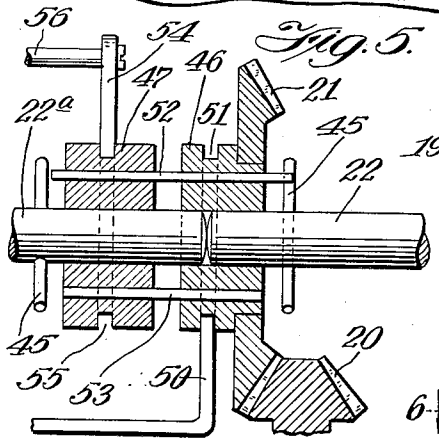


Fig. 6.

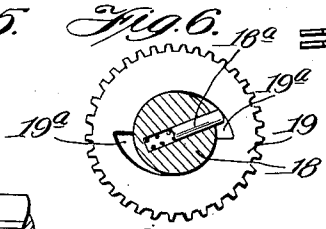


Fig. 7.

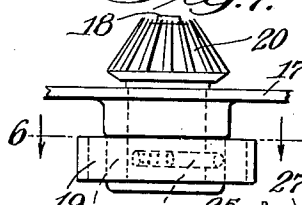
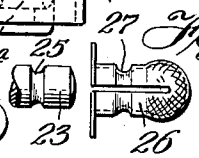
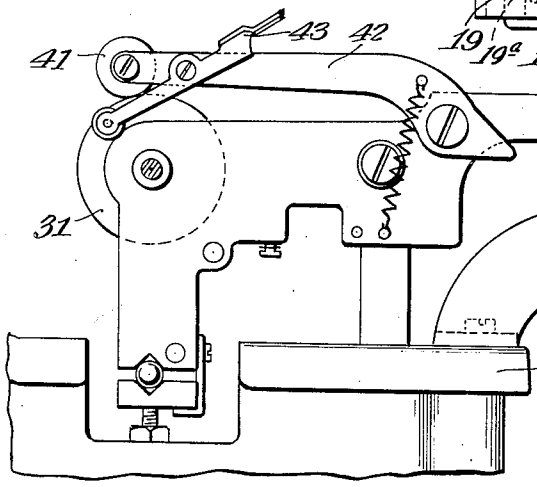


Fig. 8.





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RIBBON HOLDING AND FEEDING MECHANISM FOR TYPEWRITERS

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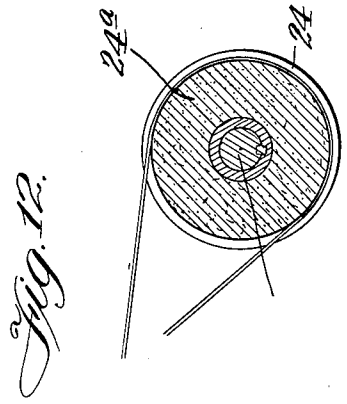


Fig. 12.

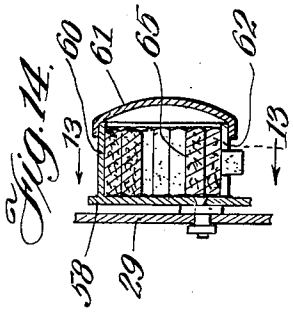


Fig. 14.

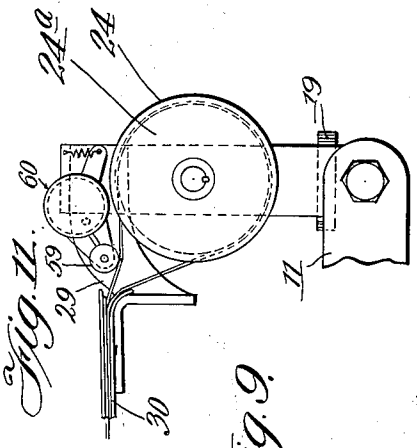


Fig. 11.

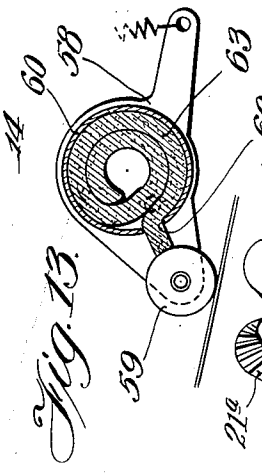


Fig. 13.

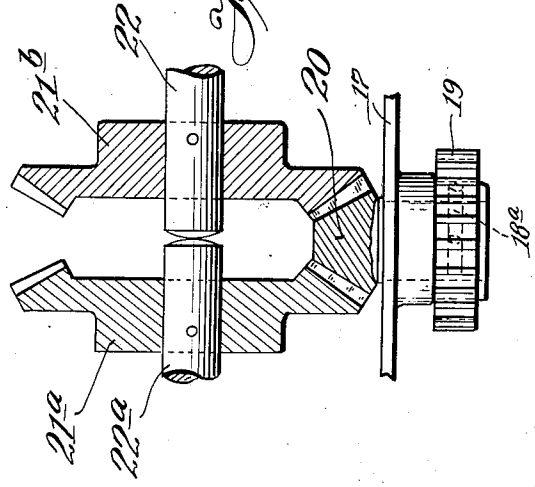


Fig. 9.

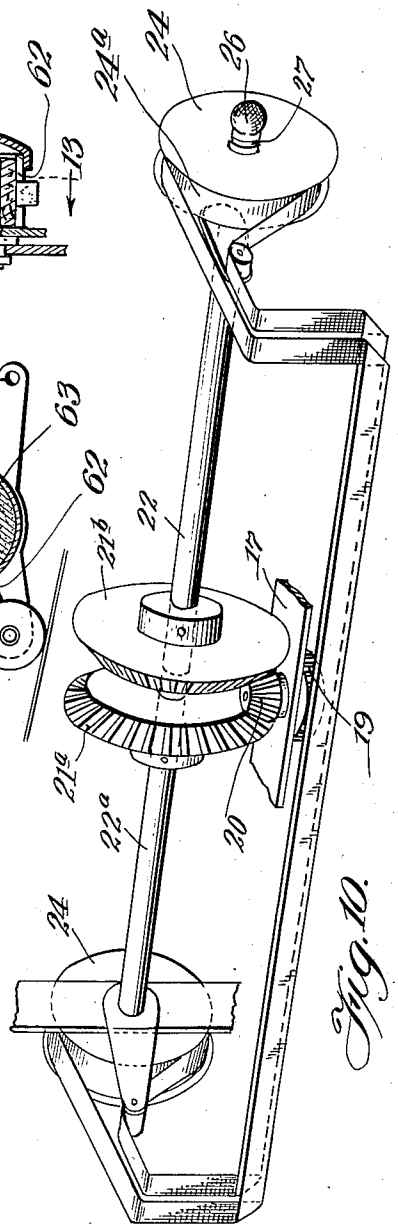


Fig. 10.

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UNITED STATES PATENT OFFICE

1,947,730

RIBBON HOLDING AND FEEDING MECHANISM FOR TYPEWRITERS

Harold Thomas Mosfelt and Harold Schagerholm, Chicago, Ill., assignors to Ross J. Beatty, Chicago, Ill.

Application December 28, 1931. Serial No. 583,472

5 Claims. (Cl. 197—153)

Our present invention relates to ribbon holding and feeding mechanism for typewriters and has for its principal objects the mechanical and functional simplification of such mechanism whereby economies may be effected in its manufacture and the uses of the typewriter enlarged and extended.

We have, in our present structure, employed the design of extending the ribbons entirely across the longitudinal extent of the platten, whereby a fresh area of ribbon is brought by the movement of the platten into position for receiving each succeeding type stroke. This design permits the use of a plurality of ribbons and permits the making of copies from both sides of each ribbon. Such a design as above described is not new with our present application, but, as will be hereafter seen, we have disposed the ribbon spools on opposite ends of an aligning split shaft which permits a considerable simplification of the feeding mechanism.

Our working out of a structure upon the above noted pattern has enabled us to develop, with very slight structural modifications, a continuous or endless ribbon which still further simplifies the construction of mechanism for ribbon feeding, and, in this connection, we have developed a ribbon moistening device, as we have found that commercial typewriter ribbons are supplied with a much greater proportion of pigment than the ribbon is capable of carrying sufficient moisture or fluid to make effective, so that by feeding to the ribbon while it is being used very small quantities of a suitable moistener for the pigment, we can indefinitely prolong the satisfactory useful service of the ribbon.

We have also incorporated in our present structure ribbon guides with hands or fingers which may be brought into registry with the type stroke receiving path upon the platten independently of the structures which may be located at the ends of the platten and we have also provided, when it is desired to employ a plurality of ribbons, very simple and effective means for separating such ribbons for the insertion of the paper.

We have attained the above objects and accomplished the above results by means of the mechanism illustrated in the accompanying drawings, in which—

Fig. 1 is a rear elevation of ribbon holding and feeding mechanism for typewriters embodying our invention.

Fig. 2 is a front elevation of the structure shown in Fig. 1.

Fig. 3 is a side elevation of the structure shown in Figs. 1 and 2 in co-operative relation with a typewriter.

Fig. 4 is a view similar to that of Fig. 3 with the typewriter holding and feeding mechanism swung into vertical position.

Fig. 5 is a longitudinal transverse section of the ribbon feeding clutch.

Fig. 6 is a central transverse section through the one-way or over-running clutch.

Fig. 7 is a detail elevation of the one-way clutch assembly and the gear driven thereby.

Fig. 8 is an enlarged detail of the ribbon spool retaining cap shown disengaged but ready to assemble with the end of its shaft.

Fig. 9 is a central vertical section of a slightly modified construction for rotating the ribbon spools in opposite directions.

Fig. 10 is a schematic perspective illustrating the employment of an endless or continuous ribbon.

Fig. 11 is a detail elevation showing the application of the ribbon moistening device.

Fig. 12 is a section through a ribbon spool with an enlarged hub.

Fig. 13 is an enlarged detail elevation of the ribbon moistening device; and

Fig. 14 is a transverse sectional detail through the reservoir of the ribbon moistening device.

Similar reference characters have been employed to designate similar parts throughout the respective views.

The mechanism hereinafter described is illustrated as carried by and running upon a rod or cylindrical rail 10 secured between the ends of brackets 11—11, the forward ends of which brackets are secured to the rear upper portion of the main typewriter frame 12. Extending also between the brackets 11—11 is a brace plate or bar 13 having teeth cut upon its rear edge to provide the rack 14. The carriage carried by and running upon the rail 10 comprises a frame 15, the vertical members 16 whereof are extended and perforated or bored for the passage of the rail 10. Journaled in the lower horizontal member 17 of the frame 15 is a short shaft 18 upon the lower extending end of which is secured a gear 19 meshing with the rack 14 when the frame 15 is in vertical operative position. The central bore in gear 19 is eccentrically extended at opposite points to provide recesses 19a, and a spring pressed pin 18a is provided transversely of the shaft 18 which co-operates with the recesses 19a so as to secure the rotation of the shaft 18 by the gear 19 in one direction only.

Upon the upwardly extending end of the shaft

18 is fixed a gear 20. Meshing with the gear 20 is a gear 21 mounted upon and carried by, as hereinafter described, an aligning split shaft 22 journaled horizontally of and upon the frame 15 and extending from and beyond the opposite sides thereof. The ends of the shaft 22 are reduced, as at 23, to receive the perforated hubs of the ordinary ribbon spools 24. The extreme ends of the reduced portions 23 of the shaft 22 are circumferentially grooved, as at 25, and rounded to receive caps 26 which are interiorally provided with a bead 27 to engage the grooves 25. The caps 26 are for securing the spools detachably to the shaft 22 and pins 28 are provided in the reduced ends 23 of the shaft 22 to engage the splineway usually provided in the hubs of ordinary ribbon spools to prevent the rotation of the spools with relation to the shaft.

Secured to the upper portions of the vertical side rails of the frame 15 are brackets 29 and secured to and carried by the brackets 29 are ribbon guide arms 30 located in front of and extending forwardly from the spools 24. The ribbon guide arms are of U-shaped section opening outwardly or from the transverse axis of the apparatus and extend from adjacent the spools 24 to adjacent the plane of the forward face or front of the platten 31 of the typewriter. The groove in the ribbon guide arms is of such depth as to receive the width of the ribbon which it is desired to use and are of such width to receive as many such ribbons as it may be wished to employ, a plurality of which ribbons may be wound upon a single pair of spools. To the forward ends of the ribbon guide arms are secured the ribbon hands or fingers 32, shown as depending at right angles from the ribbon guide arms.

A right angled reinforcing plate 33 is provided at the juncture of the ribbon guide arms 30 and the depending ribbon hands or fingers 32, and the reinforcing plate 33 is provided with an upstanding perforated projection 34 from the inner edges thereof, as most clearly seen in Fig. 2, to provide journals or bearings for a cross bar 35. Fixed to the cross bar 35, in registry with the ribbon hands or fingers 32, are an additional set of ribbon hands or fingers 32*a*. The ribbon hands or fingers 32*a* are provided with upstanding lever arms or finger pieces 36, by means of which the ribbon hands or fingers 32*a* may be separated or swung outwardly and upwardly to separate the ribbons for the insertion of paper into the machine, as shown in dotted lines in Fig. 3. The ribbon hands or fingers adjacent their lower ends are provided with slots 37 disposed at an angle of 45° with the ribbon path and the end of the ribbon hands or fingers between the slots and the end thereof is interrupted, as at 38, to facilitate the threading of the ribbon into the slot. A coil spring 39 encircles the end of the rod 35 and is attached at its respective ends to the bearing projection 34 and a collar 40 fixed to the rod 35 for returning the ribbon hands or fingers 32*a* to their normal position after having been separated, as shown in dotted lines in Fig. 3.

Particularly in connection with various models of typewriters there is provided, as shown in Fig. 3, a roller 41 co-operating with the platten 31 to hold the paper in proper relation with the patten. This roller 41 is held in association with the platten by spring pressed levers 42 and the release of this roller 41 from the platten is secured through the operation of a lever arm 43. By providing projecting legs 44 depending from the ribbon guide arms 30 to engage the outer ends of the spring pressed levers 42 we have provided facilities for lifting the inked ribbon or ribbons out of registry with the type path of the platten, which facility is found to be most convenient and desirable in the writing of certain material.

It will be seen from what has been previously said that a movement of the frame 15 on the rod or rail 10 will, through the inter-action of the rack 14, gears 19 and 20, impart motion to the gear 21, and that a suitable method of fixing the gear 21 to the shaft 22 will cause the rotation of the shaft 22 and the rotation of the ribbon spools 24 carried on either end thereof.

In order to secure reversal of feed between the respective ribbon spools 24 we have provided the following construction, illustrated most clearly in Figs. 5 and 6. In the form of construction illustrated we interrupt the shaft 22 at about the center thereof so as to secure shafts 22 and 22*a*. Pins 45 are secured transversely of both shafts 22 and 22*a* and between the pins 45 on the respective shafts are mounted collars 46 and 47. The gear 21 is pinned or otherwise fixed to the collar 46. A bracket 50 secured to the frame 15 and co-operating with an annular slot 51 in the collar 46 fixes the longitudinal position of the collar 46 upon the shafts 22 and 22*a* and maintains the gears 20 and 21 in mesh.

Fixed to the collar 47 is a rod 52 which traverses both collars 46 and 47 and which, by a movement of the collar 47, may be projected into the plane or path of either of the pins 45 carried by the respective shafts 22 and 22*a*. A second pin or rod 53 extends between the collars 46 and 47 but this latter pin 53 is merely to assist in maintaining the registry of the collars with respect to each other and does not engage either of the pins 45. The collar 47 is shifted by means of a yoke 54 co-operating with an annular groove 55 in the collar 47 through the instrumentality of a rod 56 and a lever arm 57 co-operating therewith.

It will now be seen that when the rod 52 engages the pin 45 in the shaft 22 the spool carried by the shaft 22 will be rotated and the spool carried by the shaft 22*a* will be free to rotate with the shaft 22*a*. When the rod 52 is thrown so as to cause its engagement with the pin 45 carried by the shaft 22*a*, the shaft 22*a* will be engaged and the shaft 22 released, whereby either spool may be caused to take up the ribbon and the other spool released to permit the ribbon to be wound therefrom.

Secured to and depending from the lower horizontal frame member 17 is a plate 58 which contacts with one of the brackets 11 or the back of the main typewriter frame to limit the upward rearward motion of the frame 15 and the associated parts, as shown most clearly in Fig. 4.

An endless or continuous ribbon, as shown in Fig. 10, may be employed with the construction heretofore described, but when a continuous ribbon is employed there is no necessity for the direction altering clutch comprised in the pins 45, collars 46 and 47 and the parts associated therewith. In such a case we pin gears 21*a* and 21*b* to the respective shafts 22 and 22*a* so that they will be in mesh with the gear 20 and will be caused to rotate in opposite directions thereby. When employing a continuous or endless ribbon we prefer to provide the ribbon spools 24 with larger hubs 24*a* of fibre or rubber to secure more friction or traction with the ribbon. It

will now be seen that the endless or continuous ribbon is fed between the ribbon spools, the layer of ribbon nearer the platten traveling in one direction and the layer of ribbon further from the platten in the opposite direction.

The ribbon moistening device comprises a suitably shaped plate 58 pivoted to one of the brackets 29. Extending laterally from the forward end of the plate 58 over the ribbon path is a pin which secures and upon which rotates a rubber or fibre roller 59. Located adjacent the roller 59 upon the plate 58 is a reservoir 60, preferably of cylindrical form, with a closure 61.

The reservoir has a lateral slot or opening 62 and we place in the reservoir a roll of felt or suitable absorbent material 63, one end whereof extends through the slot 62 into contact with the roller 59. By supplying the felting occasionally with a drop or so of fluid suitable for moistening the pigment in the ribbon, the ribbon may be kept in satisfactory serviceable condition for a very ling time.

It will be seen that the amount of moisture imparted to the roller 59 by the felting 63 is relatively small and this is important as suitable mositeners for the pigment of the ribbon have an oleaginous character which would effect the appearance of the work done by the machine if employed in other than minute quantities.

It is not new to moisten or treat dried out typewriter ribbons and several fluids for so doing are at present upon the market, but the difficulty in employing such fluids lies in using them in sufficiently sparing quantities and securing an even distribution of what fluid is used to the ribbon. As will be seen from the foregoing description we have provided means for securing an even distribution of extremely small quantities of moisture to the ribbon.

The moistening device may be employed with advantage in connection with the use of the standard ribbons of approximately twelve yards in length, but its greatest advantage is apparent in keeping the much shorter endless or continuous ribbon in satisfactory writing condition.

Having described our invention what we claim as new and desire to secure by Letters Patent is:

1. In combination with a typewriting machine having a longitudinally movable platten, ribbon holding and feeding mechanism comprising a frame, a rail disposed parallel to the path of longitudinal movement of said platten upon which said frame is mounted, a rack fixed in relation to said rail, a gear co-operating with said rack carried by said frame, aligning shafts carried by said frame, means for selectatively transmitting the movement of said gear to either of said shafts, ribbon spools detachably secured to said respective shafts, inked ribbon guide arms carried by said frame and extended in the planes of said spools, ribbon hands carried by said arms in the planes of, but at an angle with, said arms, said hands having slots for the passage of the ribbon at a 45° angle with the path thereof.

2. Ribbon holding and feeding mechanism comprising a fixed rail, a fixed rack, a carriage supported by said rail and having longitudinal and rotative movement with respect thereto, a gear co-operating with said rack carried by said frame, aligning shafts carried by said frame, means for selectatively transmitting motion from said gear to said respective shafts, ribbon spools carried by said shafts, ribbon guide arms extended from said frame in the planes of said spools having slots therein for the passage of the ribbon disposed at a 45° angle with axis of said arms.

3. In ribbon holding and feeding mechanism a frame mounted for longitudinal and rotative motion, a pair of aligning shafts journaled in said frame, a pair of ribbon spools disposed in spaced parallel relation on said shafts, means for translating the longitudinal movement of said frame into the selectative rotation of said shafts and ribbon guides carried by said frame and extended in the planes of said respective spools and a plurality of slotted ribbon fingers carried by the ends of each of said ribbon guides.

4. In ribbon holding and feeding mechanism a frame mounted for longitudinal and rotative motion, a pair of ribbon spools disposed in spaced parallel relation on said frame, means for translating the longitudinal movement of said frame into the selectative rotation of said spools and ribbon guides carried by said frame and extended in the planes of said respective spools, a slotted ribbon finger fixedly carried by each of said ribbon guides and a second slotted ribbon finger pivotally carried by each of said ribbon guides.

5. In ribbon holding and feeding mechanism a frame mounted for longitudinal and rotative motion, a pair of ribbon spools disposed in spaced parallel relation on said frame, means for translating the longitudinal movement of said frame into the selectative rotation of said spools and ribbon guides carried by said frame and extended in the planes of said respective spools, and means carried by said guide arms co-operating with the paper release of the typewriter for elevating said guide arms.

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