

(No Model.)

G. W. N. YOST.
TYPE WRITING MACHINE.

No. 583,220.

Patented May 25, 1897.

Fig. 1,

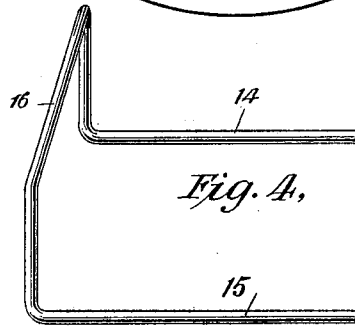
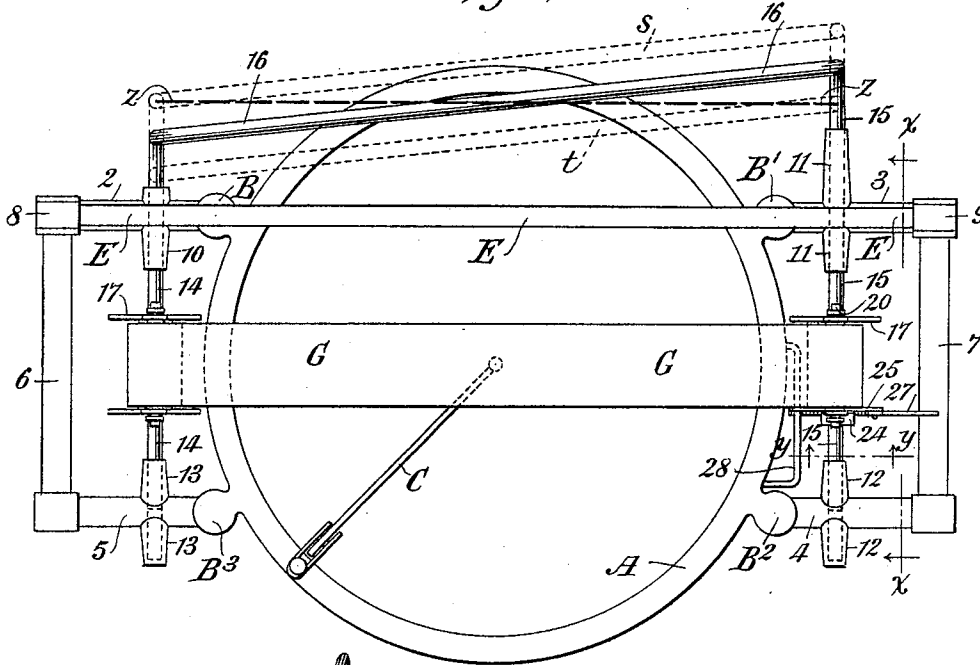


Fig. 4,

Fig. 2,

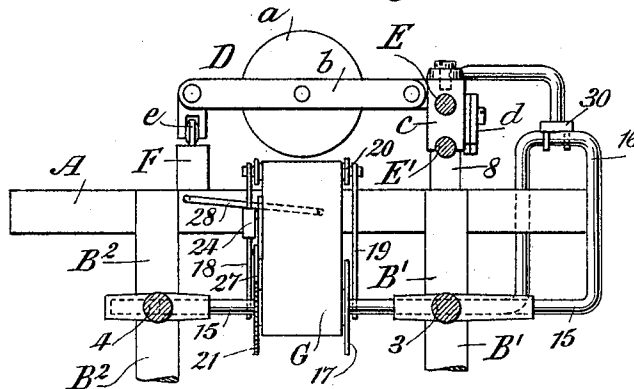
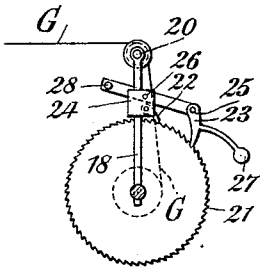


Fig. 3,



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UNITED STATES PATENT OFFICE.

GEORGE W. N. YOST, OF NEW YORK, N. Y., ASSIGNOR TO THE YOST
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TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 583,220, dated May 25, 1897.

Application filed May 16, 1887. Serial No. 238,350. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. N. YOST, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

Previous to my invention the inking-ribbons of type-writing machines have been arranged to move longitudinally in a straight line at each depression of the keys and the spacing-bar, and as a result the ribbon is comparatively soon wound from one spool upon the other, and hence frequently requires the attention and the time of the operator to shift or switch the feeding mechanism so as to enable the ribbon to be moved in the opposite direction and rewound upon the spool from which it had just previously been unwound. By reason of the movements of the ribbon back and forth in a right line during the operation of the machine the ink is soon used up in a narrow line running the whole length of the ribbon, and it becomes necessary to move the spools laterally upon their horizontal shafts in order to present a fresh ribbon-surface for the type. This transverse adjustment of the inking-ribbon has heretofore been accomplished by the hands of the operator and demanded careful manipulation, the two spools requiring an equal movement upon their shafts and arrangement directly opposite each other, so as to enable the ribbon to be properly wound from one spool to the other.

My invention has for its main objects to continually move the ribbon laterally automatically during the movements of the paper-carriage and to move it longitudinally only once, and that a short distance, during a complete back-and-forth movement of the carriage. By thus feeding the ribbon I am enabled to use its inked surface widthwise instead of lengthwise, as heretofore, and as a result thereof the ribbon may be used for a much longer time by the operator before it is required to be shifted for a longitudinal movement in an opposite direction.

To these main ends and objects my invention consists in the features of construction and combinations of parts hereinafter more

fully described, and particularly pointed out in the claims of this application.

In the accompanying drawings, Figure 1 is a top view of so much of a type-writing machine as is necessary to illustrate my invention, the paper-carriage and other usually-employed parts being omitted to conduce to clearness. Fig. 2 is a vertical section taken at the line xx of Fig. 1, with the paper-carriage and other parts added. Fig. 3 is a similar section taken at the plane indicated by yy of Fig. 1. Fig. 4 is a perspective view of the ribbon-spool shaft and its connecting-rod.

In the several views the same part will be found designated by the same letter or numeral of reference.

A represents the top plate of the machine, which is supported from the bed-plate by four posts or pillars B B' B^2 B^3 , and around which are mounted, as usual, the type bars or levers C .

D represents the paper-carriage as an entirety, the platen thereof being designated by the letter a , the end frame by b , the yoke by c , the feed-racks by d , and the guide-roller by the letter e .

E E' represent the usually-employed guide-rails, upon which the yoke c slides during the travel of the carriage, and F the track or way for the guide-roller e to move upon.

From the pillars B , B' , B^2 , and B^3 extend outwardly horizontal arms 2, 3, 4, and 5, the arms 2 and 5 being connected together by a cross-bar 6 and the arms 3 and 4 by a cross-bar 7. Posts or uprights 8 and 9 extend from the cross-bars 6 and 7 and support the ends of the guide-rails E E' . Preferably cast integral with the arms 2, 3, 4, and 5 and at right angles thereto are portions 10, 11, 12, and 13, that are perforated to act as guides or bearings for the ribbon-spool shafts, which are designated by the numerals 14 and 15. These shafts are connected to move together a like distance. They are preferably formed of a single piece of round wire, which is bent angularly, as represented at Fig. 4, the portion 16 serving to connect the two shafts together. The rear end of the shaft 15 projects farther than that of the shaft 14, and the connecting portion 16 extends obliquely, as illustrated at Fig. 1. This oblique or inclined arrangement

of the rod 16 serves a purpose, as will presently appear.

17 represents the ribbon-spools, mounted loosely upon the shafts 14 and 15 at opposite ends of the machine, so as to be capable of rotation and wind and unwind the ribbon as usual, but these spools are so arranged upon their shafts as to be incapable of any endwise movements thereupon. For this purpose side arms 18 and 19 are made fast to the shafts exteriorly of the spool-heads. Simple pins or collars would also serve to prevent longitudinal movement of the spools, but I prefer the arms 18 and 19 because I can make them serve the additional function of a support for the cross bars or rollers 20, over which the ribbon G should be supported and moved when fed lengthwise. One of the heads of the spool 17 is formed or provided with closely-cut ratchet-teeth 21, with which pawls 22 and 23 engage, for the purposes to be presently explained.

Upon the rod 18 is secured a bracket 24, in which the pawl 22 is pivoted. This pawl is provided for the purpose of preventing the spool from turning backwardly. The pawl 23 is jointed to a lever 25, that is fulcrumed at 26 in the bracket 24, and this pawl is employed to push the spool 18 around and wind the ribbon thereupon. It is preferably weighted, as at 27, to insure an engagement with the ratchet-teeth 21, but a spring connected to the arm 25 and to the pawl 23 would do as well.

28 represents an inclined or slanting rod or bar affixed to the top plate or frame of the machine, upon which the rear perforated end of the lever 25 rides and by which it is vibrated, as will be hereinafter more fully described.

Secured about centrally of the carriage-frame and projecting rearwardly and downwardly is an arm or bracket 29, the lower end of which is bifurcated at 30 and sets astride and moves the connecting-rod 16 of the ribbon-spool shafts.

Having sufficiently described the construction of a machine involving my invention, I will now proceed to explain the mode of operation thereof.

As the carriage travels back and forth the bifurcated portion of the arm 29 travels always in the path indicated by the dotted line *z z* and moves the rod 16 in and out, as represented by the dotted lines at Fig. 1. In the positions in which the parts are drawn the rod 16 and the shafts 14 and 15 are represented to have been moved outwardly about half their full distances. When the carriage shall have traveled to the extreme left of the machine, the connecting-bar 16 and the shafts or rods 14 and 15 will have been moved outwardly or rearwardly to the positions indicated by the dotted lines *s*, and when the carriage shall have traveled to the extreme right of the machine these parts will have been moved inwardly or forwardly to the positions indicated by the dotted lines *t*.

The spools being secured upon their shafts against endwise movement are moved back and forth with them and the ribbon is consequently shifted bodily laterally or at right angles to the longitudinal axis of the carriage. It will be understood, of course, that the lateral movement of the ribbon, which takes place as the carriage moves to the left, is effected gradually as the carriage moves step by step under the action of the driving and feeding mechanisms, and the several parts are so proportioned and relatively arranged that in one full movement of the carriage from right to left the ribbon is moved laterally a distance slightly less than its own width. At the commencement of the travel of the carriage from right to left the rear longitudinal edge of the ribbon just overlaps the printing-point of the machine and at the completion of the travel of the carriage from right to left the front longitudinal edge of the ribbon overlaps the impression-point.

During the return of the carriage to the right of the machine, which is usually accomplished quickly by the hand of the operator, the ribbon is moved laterally toward the front of the machine by the action of the bifurcated arm of the carriage and at the same time the ribbon is fed lengthwise to the right upon the spool 17 a distance about equal to one letter-space, so as to produce a fresh ink-surface for the type-characters. This longitudinal movement of the ribbon is effected automatically in the following manner: During the movement of the spool toward the front of the machine the inner end of the lever 25 is forced to travel up the inclined rod 28, and its outer end is consequently vibrated downwardly. The pawl 23 upon the outer end of the lever is at this time moved downwardly also, and pushing upon the tooth of the ratchet in front turns said spool upon its axis and winds thereupon a portion of the length of the ribbon.

During the movement of the carriage to the left of the machine and the descent of the inner arm of said lever 25 the pawl is gradually raised and finally engaged with a tooth in rear of the one it before acted upon, so as to again effect a rotation of the spool upon the return of the carriage. While the pawl 23 is being raised, as just explained, the spool is prevented from being turned backwardly by reason of the engagement of the dog 22 with the ratchet thereof.

It will be obvious that many changes in detail construction may be made without departing from the spirit of my invention, and so far as the main features thereof are concerned I do not consider myself limited to just what is herein shown and described.

By my invention is provided a type-writing machine in which the ribbon is moved laterally as the printing is done and its whole surface widthwise (except within a short distance of its extreme edges) utilized, and by giving the ribbon this movement and winding it slightly only once during a complete

back-and-forth movement of the carriage the ribbon is not only kept in good shape and enabled to do better work, but will not need the attention of the operator until hundreds of thousands of impressions shall have been taken, and then all that will be required will be to disengage the pawls 22 and 23 and by hand wind the ribbon back upon the spool 17 at the left of the machine, which was originally the full one.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination with a traveling carriage and an inking-ribbon and ribbon-spools, of a reciprocatory frame or carrier connected to said inking-ribbon and ribbon-spools, and a device attached to said carriage and connected to said ribbon-spool frame or carrier so as to cause a movement of the latter by the travel of the carriage.

2. In a type-writing machine, the combination of a traveling carriage having a ribbon-actuating arm, an inking-ribbon, a pair of ribbon-spools, a reciprocatory frame or carrier connected to said ribbon-spools and extended to be engaged by the said carriage-arm, whereby the longitudinal movement of the carriage, through said arm, frame and spools, causes a widthwise movement of the inking-ribbon.

3. In a type-writing machine, the combination with the carriage, the inking-ribbon, and the ribbon-spools, of the spool-shafts, an obliquely-arranged rod connecting them together, and an arm or bracket secured to the carriage and connected to said obliquely-arranged rod, substantially as and for the purposes set forth.

4. In a type-writing machine, the combination with the carriage, the inking-ribbon, and the ribbon-spools, of the spool-shafts connected together, the perforated or tubular

horizontal bearings for said shafts, and means substantially as described for reciprocating said shafts; substantially as and for the purposes set forth.

5. In a type-writing machine, the combination of a carriage, an inking-ribbon, reciprocatory ribbon-spools, an inclined way, and a traveler thereupon to actuate the ribbon-spools, whereby the inking-ribbon is moved transversely during the longitudinal movements of the carriage; substantially as described.

6. In a type-writing machine, the combination of a carriage, an inking-ribbon, reciprocatory ribbon-spools, an inclined way, a traveler thereupon to actuate the ribbon-spools and move the ribbon transversely, and means for moving the ribbon longitudinally; substantially as described.

7. In a type-writing machine, the combination with the carriage, the inking-ribbon, and the ribbon-spools, of the connected spool-shafts, an obliquely-arranged rod, and an arm or bracket adapted to said obliquely-arranged rod, whereby the ribbon is moved transversely; substantially as described.

8. The combination with a framework having carriage-guides, a carriage mounted upon said guides, carriage-feeding mechanism, type-bars, keys, and operative connections, of ribbon-spool shafts carrying ribbon-spools and capable of longitudinal movement, a guideway inclined to the carriage-guides, a traveler moving upon said guideway and connected to said spool-shafts, and means for rotating said spools; substantially as described.

Signed at New York, in the county of New York and State of New York, this 18th day of April, A. D. 1887.

G. W. N. YOST.

Witnesses:

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J. FELBEL.