

(No Model.)

3 Sheets—Sheet 1

C. E. JOHNSON.  
RIBBON REVERSING MECHANISM FOR TYPE WRITING MACHINES.  
No. 512,584.

Patented Jan. 9, 1894.

Fig. 1.

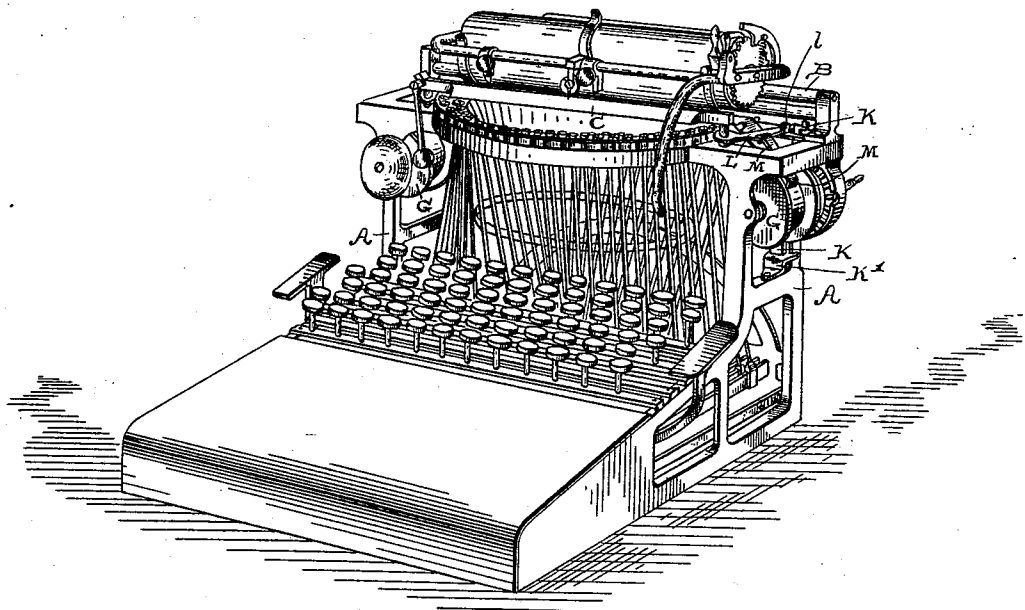
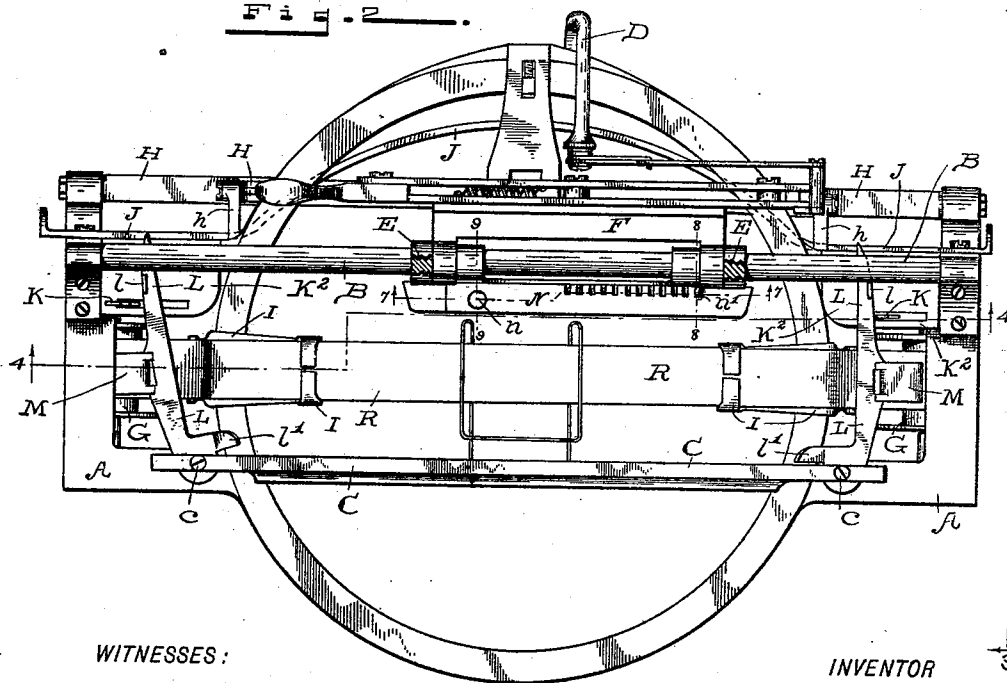


Fig. 2.



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per

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(No Model.)

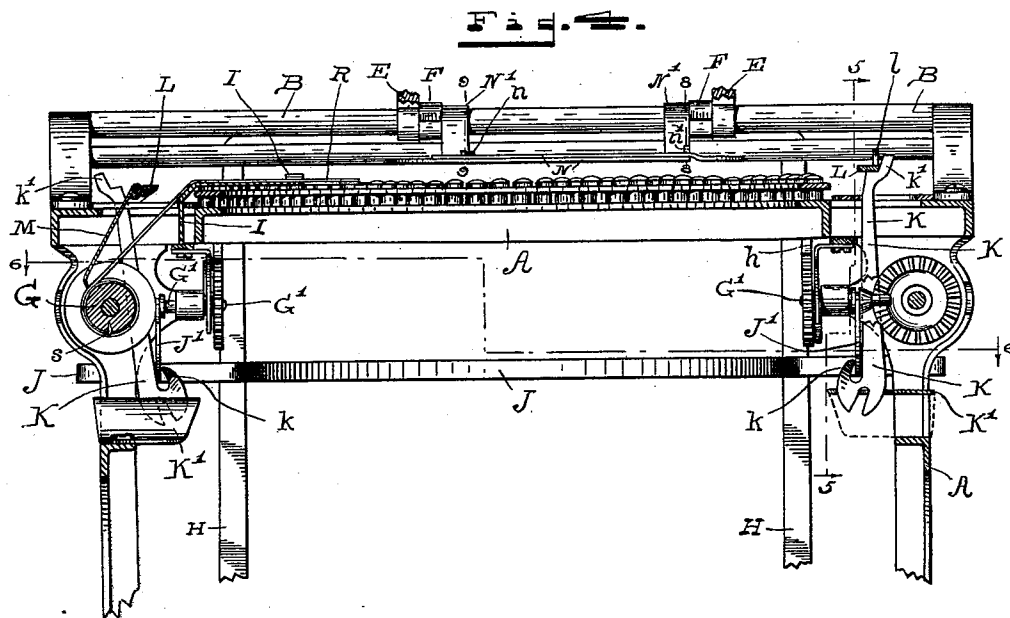
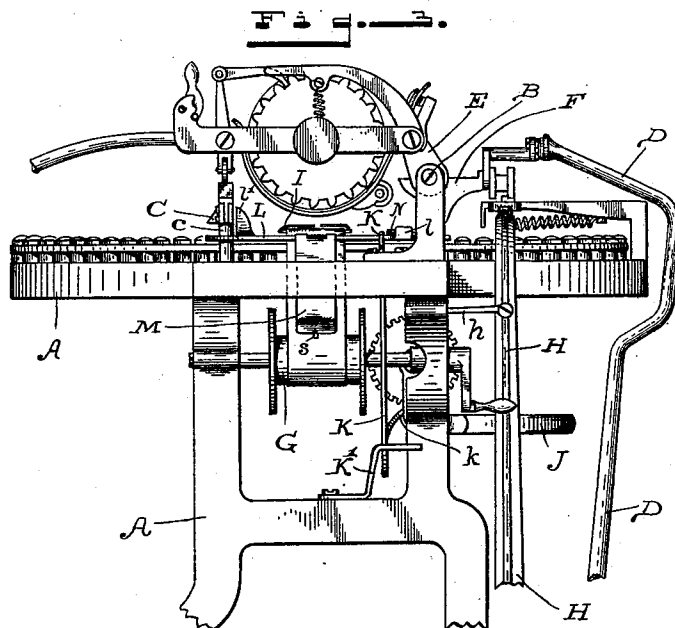
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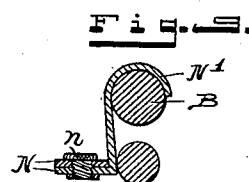
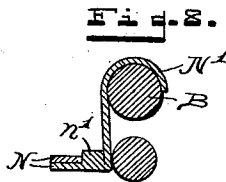
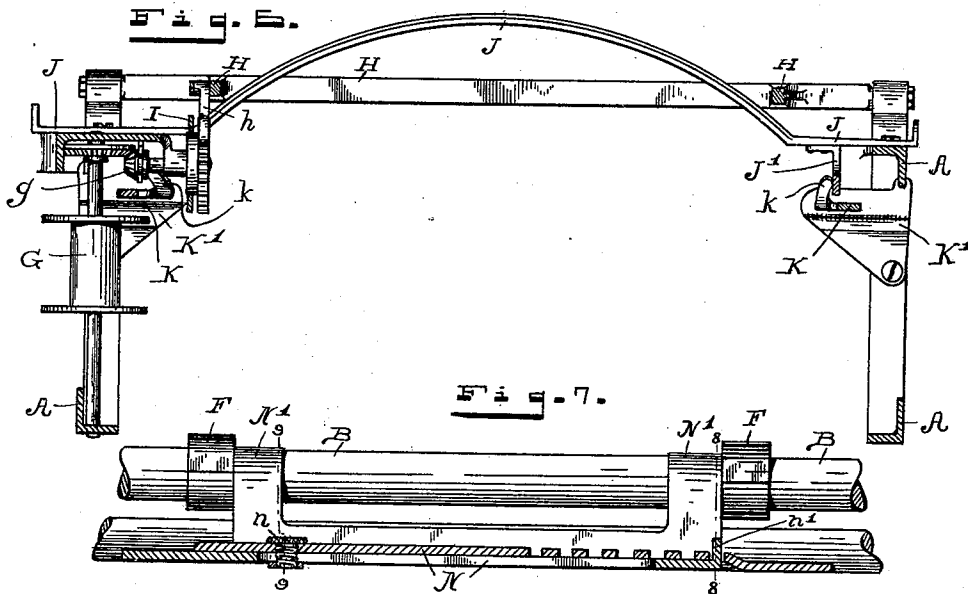
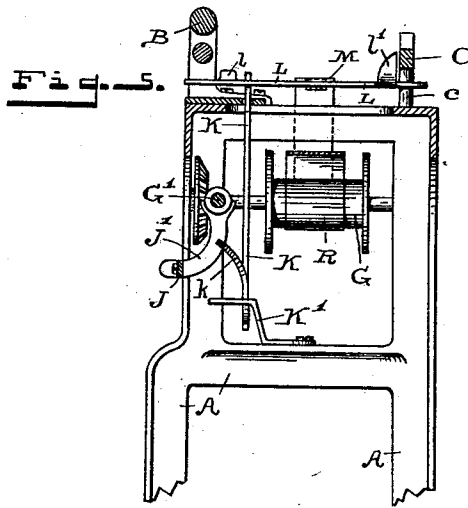
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# UNITED STATES PATENT OFFICE.

CHARLES E. JOHNSON, OF MOUNT JACKSON, INDIANA.

RIBBON-REVERSING MECHANISM FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 512,584, dated January 9, 1894.

Application filed January 23, 1893. Serial No. 459,312. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. JOHNSON, a citizen of the United States, residing at Mount Jackson, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My said invention relates to devices for automatically reversing the feed of type writer ribbons, and embodied in my present construction are devices especially adapting the invention for use upon that class of typewriters which have a transverse as well as a lengthwise ribbon feed. Some of its features are also shown, but not claimed in my application, Serial No. 418,010, filed January 14, 1892. Said invention will now be first fully described and then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a perspective view of a "caligraph" typewriting machine with my improved device attached thereto; Fig. 2 a top or plan view, with the platen and immediately adjacent parts broken away, and type-bars omitted, and showing particularly my improved reversing mechanism in connection with the ribbon and the operating mechanism thereof, said reversing mechanism being shown in one position at one end of the view, and in the other position at the other end; Fig. 3 an end elevation, as seen from the dotted line 3 3 alongside Fig. 2; Fig. 4 a vertical sectional view looking upwardly from the dotted line 4 4 in Fig. 2; Fig. 5 a detail transverse sectional view looking toward the right from the dotted line 5 5 in Fig. 4; Fig. 6 a horizontal sectional view looking downwardly from the dotted line 6 6 in Fig. 4; Fig. 7 a detail sectional view on the dotted line 7 7 in Fig. 2; Fig. 8 a transverse sectional view on the dotted line 8 8 in Figs. 2, 4 and 7; and Fig. 9 a similar view on the dotted line 9 9 in Figs. 2, 4 and 7.

In said drawings the portions marked A represent the frame-work of the machine; B the main carriage ways; C the front rail or track; D the driving bar to the carriage; E the yoke by which the carriage rod carrying the platen is secured to the carrying shaft or way; F the yoke hinge; G the ribbon spools

carrying the ribbon R; G' G' the shafts from which said spools are respectively driven; H the rock-bar carrying pawls *h h* by which said shafts are driven; I I the transversely moving devices for giving the ribbon the transverse feed, and operated by cams on the shafts G' G'; J the ordinary ribbon shifting-bar having arms J' J' which engage with and are adapted to shift pinions *g* on the shafts G' into and out of engagement with corresponding gears on the spool shafts; K vertical levers forming part of my invention; L transverse levers, adapted, as hereinafter described, to operate said vertical levers; M swinging tongues pivoted to said transverse levers and adapted to be operated by projections on the ribbon spools, and N an "abutment" on the carriage by which the lever L is operated when in raised position.

All the typewriter mechanism above mentioned and briefly described are those of the machine known as the "No. 3 caligraph," and, being no part of my present invention, will not be further described herein, except incidentally in describing said invention.

The levers K are slitted or bifurcated at their lower ends; and are there mounted upon suitable bearings in the supports K' secured to the frame A, and are adapted to rock back and forth on said bearings. Near the upper ends they pass through slots in guide-plates K<sup>2</sup> also on the frame-work. They have wings *k* which extend up alongside and are adapted to come in contact with the arms J' on the bar J, the arrangement being such that when either of the levers K is pushed outwardly toward its end of the machine it will operate through the corresponding arm J' to slip the pinion *g* on the corresponding shaft G' endwise, and cause said pinion to engage with the gear-wheel on the spool shaft, while disengaging these wheels at the other end of the machine. In other words, these levers K push the bar J back and forth, and engage and disengage the gearing operating the ribbon spools, in the same manner that said bar J has heretofore been operated by hand. At the upper end these levers K have seats to receive the levers L, as shown most plainly in Fig. 4, with upward projections *k'*, and are thus adapted to be operated thereby, as will now be explained. Said levers L are pivoted

to the front rail pillars *c*, and extend thence across the machine to a point at or near the carriage shafts or ways, and across the levers *K*, and their free ends are adapted to be positioned upon the seats on top of said levers, or to rest down alongside said levers upon the frame of the machine, as may be occasioned by the operation of the mechanism. Centrally, over the ribbon *R*, these levers *L* are provided with bearings to which the tongues *M* are attached, and near their free ends they are provided with upwardly-extending points *l*, with which an abutment (presently to be described) upon the carriage will come in contact when said levers are in their raised position. At the other end, beyond or to one side of the pivots *c*, are arms *l'* with which the transversely-moving ribbon-guide *I* will come in contact, after said lever has been raised and the operation of shifting the ribbon operating mechanism has been completed, and thus throw said lever *L* down off the seat at the top of the lever *K*, in position to be raised again when next the operation of shifting is performed.

The tongue *M* is hinged to a bearing on the lever *L* and extends down to a point in contact with the ribbon, close to the ribbon-spool *G*. In the body of said ribbon-spool, underneath the ribbon, I place a stud *s* having a sharp point projecting outwardly, of such length that the two or three turns of tape usually placed upon the spools to which the ends of the ribbons are usually pinned will cover the point and protect it from contact with anything upon the outside. When, however, the ribbon is unwound and this tape is nearly unwound, the point of this stud will project through said tape, and thus, during the last or next to the last revolution of the spool, said point will come in contact with the lower end of the tongue *M*, and its further revolution will cause said point to push said tongue, raising it and the lever *L* to the higher position. The parts are so proportioned, that, when the lever *L* is thus raised the required height, the lever *K* will pass under it, and thus said lever *L* will become mounted upon the seat provided therefor on the top of said lever *K*. After this is done, the carriage still continuing to move, the abutment on said carriage will come in contact with the projection *l* extending up from said lever *L*, thus forcing it and the lever *K* backward, toward the end of the machine, and said lever *K*, as heretofore explained, will, through its wing *k*, operate upon the bar *J* to shift the gearing operating the ribbon spools, and thus reverse the travel of said ribbon. This being done, at the next movement of the ribbon-guide *I* the lever *L* is thereby thrown off the lever *K*, and falls into its lower position, where it remains until the ribbon has completed its travel, and the spool is again uncovered. As will be seen by an examination of the drawings, more especially Fig. 4, the

ribbon *R* reaches the spool in a tangential line to said spool, and thus the stud *s* can only remain with its point extended through the tape or ribbon for a short distance, as, shortly after it passes the point where the end of the tongue *M* is shown as in contact with the ribbon, it will be withdrawn from said ribbon, or tape, as the spool continues to revolve. As soon as this is done, the tongue *M* is, of course, freed from engagement, and may slide down the ribbon to its former position, where it will remain until the ribbon is again wound upon and unwound from said spool, when the operation will be repeated.

I have shown the abutment *N* as having two hangers *N'* which extend up over the carriage shaft or way *B*, and which rest between and are held in place by the two portions of the yoke hinge *F*. The ends of this abutment are so positioned that they will come in contact with the projection *l* on the levers *L*, when said levers are raised and seated on top of the lever *K*. Said abutment may also be arranged to come in contact with the carriage-rail standards, and thus take the place of the ordinary marginal stop. To do this effectually, and also to provide for a shifting of the ribbon when the machine is used upon work having wide margins, I make this abutment in two parts, and form the second part so that it will be adjustable upon the first. The construction which I have devised for this purpose consists in securing the second part to the first by means of a screw or bolt *n*, which passes through the hole in one part and the slot in the other, and in providing a projection *n'* upon one which shall enter one of a series of notches in the other. The adjustment is effected by the simple operation of loosening the bolt, swinging the part secured thereby slightly to one side, moving it to the desired position, and swinging it back so that a notch therein will engage with the projection *n'*, and then sufficiently re-tightening the bolt *l*. The abutment can thus be extended to any desired degree, as will be readily understood.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a ribbon reversing mechanism for typewriting machines, of a spool, a fixed stud therein underneath the ribbon, a pivoted tongue extending alongside said spool and connected to the shifting mechanism, said stud being adapted when the ribbon is wholly or nearly unwound to engage with and operate said tongue and shift said reversing mechanism.

2. The combination, in a ribbon reversing mechanism, of the ribbon extending to the spool on a tangential line, the ribbon-spool having a pointed stud therein adapted to penetrate one or more thicknesses of the ribbon or the tape to which said ribbon is secured, and a tongue adapted to slide over said rib-

bon until engaged by said stud, and be then carried up the incline of the ribbon for a short distance until by the revolution of the spool the stud is withdrawn from extending through the ribbon, and the tongue thus released therefrom, substantially as set forth.

3. The combination, in a typewriting machine, of a movable carriage, and a movable device for automatically reversing the ribbon feed, located in the path of the carriage.

4. The combination, in a typewriting machine, of a movable carriage, a movable device for reversing the ribbon feed, and means for interposing said device in the path of the carriage.

5. The combination, in a ribbon reversing mechanism for typewriting machines, of a lever operated from the ribbon or spool extending transversely of the machine and provided with an engaging point, a vertical lever engaging with the shifting bar of the machine and provided with a seat for said transverse lever, and an abutment secured to the carriage and adapted to come in contact with said engaging point, substantially as set forth.

6. The combination, in a ribbon reversing mechanism for typewriting machines, of a vertical lever having a wing which engages with an arm on the shifting bar, and a seat at its upper end, a transverse lever pivoted at one end and extending across the path of the vertical lever, and adapted upon occasion to rest upon the seat thereon, a tongue extending downwardly from said transverse lever and adapted to be operated by the ribbon or ribbon-spool, and an abutment secured to and traveling with the carriage and adapted to come in contact with a projection or engaging point on said transverse lever, whereby the same and the vertical lever are pushed back toward the end of the machine, and the

shifting mechanism operated, substantially as set forth.

7. The combination, with the ribbon reversing mechanism of a typewriting machine, of the traveling carriage and an abutment secured thereto, one end whereof is extensible, thereby permitting a variation of the margins of the work produced.

8. The combination, with the ribbon reversing mechanism of a typewriting machine, of a traveling abutment consisting of two parts secured together, one adjustable on the other, substantially as and for the purposes set forth.

9. The combination, with the ribbon reversing mechanism of a typewriting machine, of a traveling abutment for operating the same consisting of two parts secured together by a bolt or screw, one being provided with a hole and the other with a slot therefor, and one being provided with a projection and the other with a series of notches adapted to fit over said projection, whereby the same may be adjusted and fastened in position, substantially as set forth.

10. The combination, in a ribbon reversing mechanism for typewriting machines, of an operating lever extending transversely across the machine, with which the force-imparting device comes in contact, a transversely moving ribbon guide, and a wing on said lever with which said guide will come in contact and throw said lever back in position for future operation, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 18th day of January, A. D. 1890.

CHARLES E. JOHNSON. [L. S.]

Witnesses:

CHESTER BRADFORD,  
JAMES A. WALSH.