

(No Model.)

2 Sheets—Sheet 1.

F. P. STILES.
AUTOMATIC RIBBON REVERSE.

No. 530,365.

Patented Dec. 4, 1894

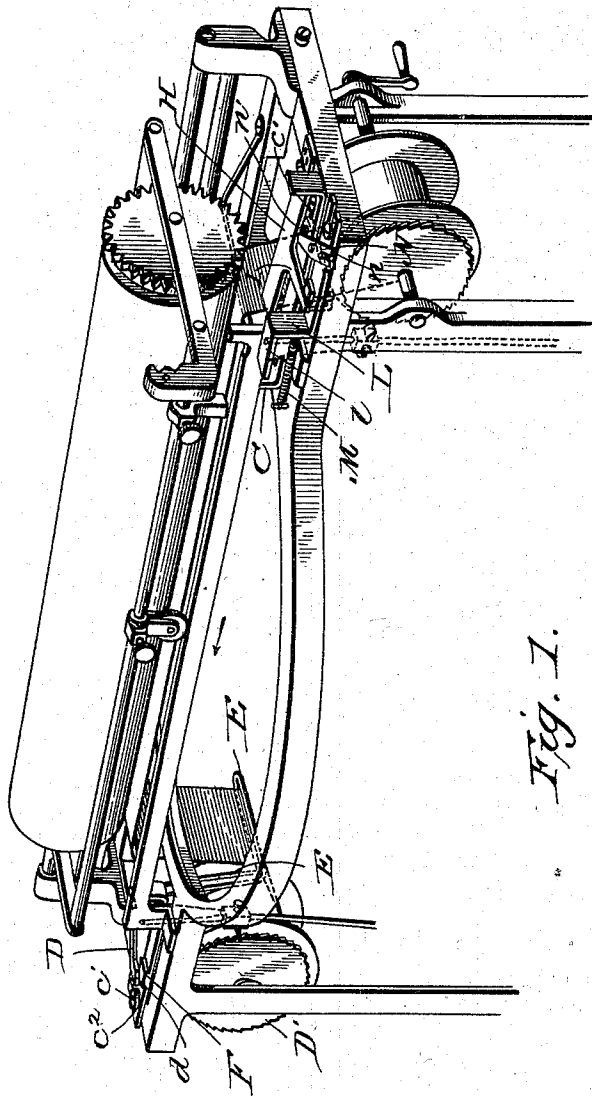


Fig. 1.

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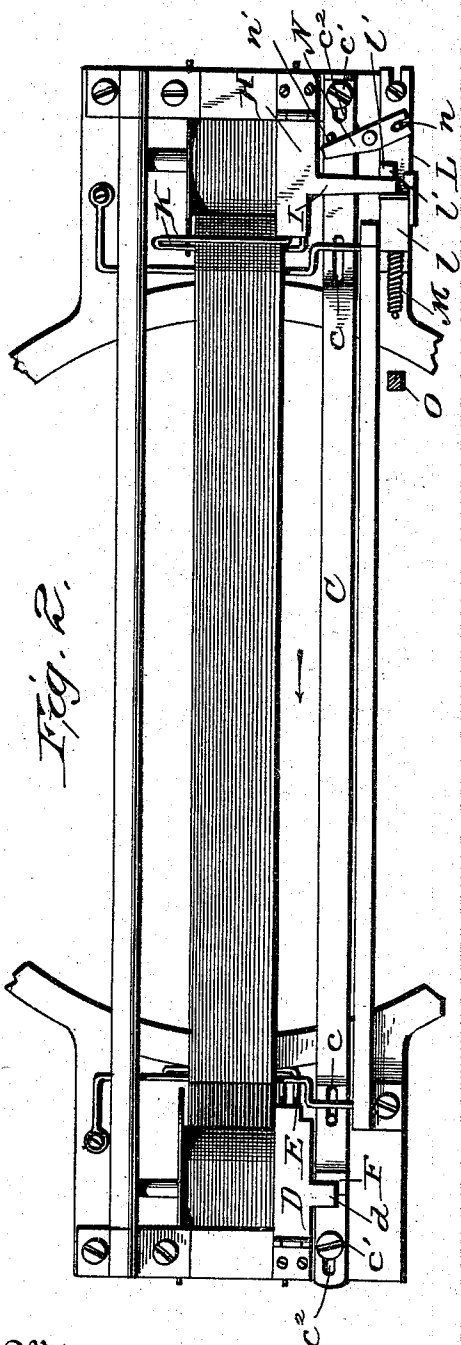


Fig. 2.

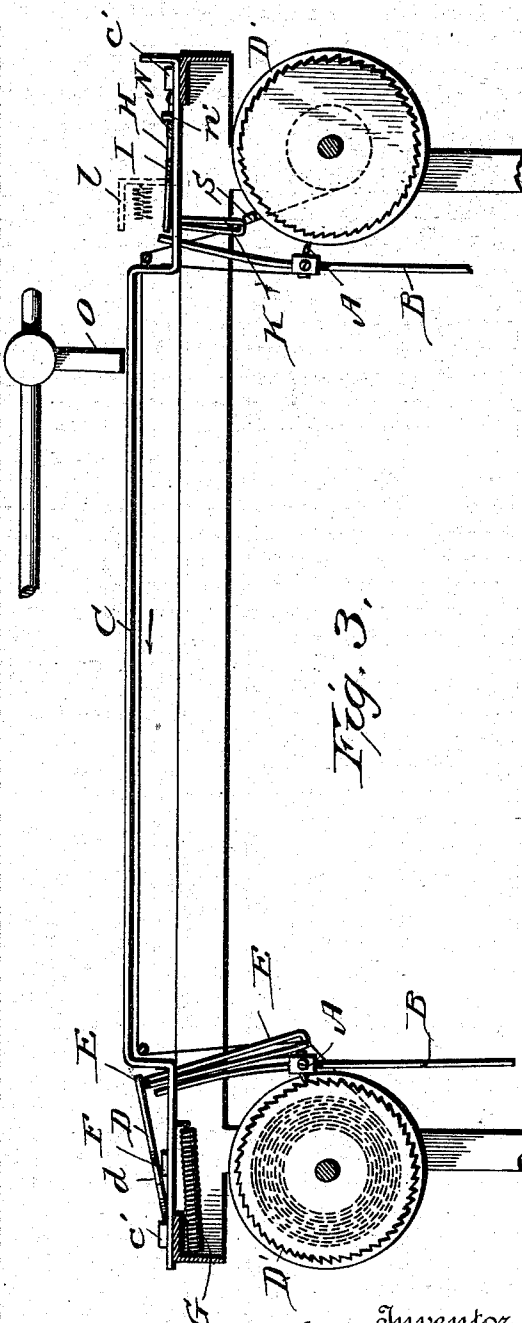


Fig. 3.

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UNITED STATES PATENT OFFICE.

FRED PHELPS STILES, OF SPARTA, WISCONSIN.

AUTOMATIC RIBBON-REVERSE.

SPECIFICATION forming part of Letters Patent No. 530,365, dated December 4, 1894.

Application filed June 11, 1894. Serial No. 514,220. (No model.)

To all whom it may concern:

Be it known that I, FRED PHELPS STILES, a citizen of the United States, residing at Sparta, in the county of Monroe, State of Wisconsin, have invented certain new and useful Improvements in Automatic Ribbon-Reverse; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates generally to type-writing machines and particularly to the ribbon feeding mechanism.

My invention is an improved attachment for automatically reversing the ribbon feed and it is an improvement upon the device described and claimed in my Patent No. 512,091, dated June 6, 1894.

The object of my present invention is to provide an attachment which will automatically reverse the direction of the ribbon either at the end or at any predetermined point.

Another object is to provide an attachment which can if needs be, be operated by an ordinary ribbon, not provided with any auxiliary attachments.

A still further object is to provide an attachment which will operate independent of the operation of the carriage.

With these various objects in view my invention consists in the peculiar construction of the various parts and their novel combination or arrangement all of which will be fully described and then pointed out in the claims.

In the drawings hereunto annexed and forming a part of this specification,—Figure 1 is a perspective view of a part of a machine with my improved attachment applied thereto. Fig. 2 is a top plan view showing my attachment in detail. Fig. 3 is a view partly in section showing the manner of operation.

In the drawings I have shown my invention as applied to the well known caligraph machine and the frame, the carriage, and its supports, the ribbon and spools, are all of the usual construction and no description of them is necessary here.

The ribbon spools are also provided with the usual ratchet disks which are engaged by the ribbon dogs A A carried by the ribbon

arms B B which are connected as usual at their lower ends and at their upper ends pass through the openings *c c* made in the ribbon switch C, said switch being connected to the frame by the set screws *c' c'* passing through the slots *c² c²* near each end of the switch so that it can be moved longitudinally to throw the dogs A A into and out of engagement with the ribbon spool ratchets.

At the left hand end of the frame is pivoted an arm D provided with a lateral projection *d* intermediate its ends and at the free end of said arm is attached a combined ribbon guide and tripping device E which projects below the frame and consists of a single piece of wire doubled upon itself and bent at right angles as shown, the upper end being attached to the arm D while the ribbon passes between the members of the lower or horizontal portion.

The ribbon switch is provided with a vertical boss F which is adapted for engagement with the lateral projection on the arm and to the under side of the switch is attached a coiled spring G which in turn is connected with the frame of the machine, the tendency of such spring being to throw and hold the switch bar to the left as shown in the drawings, and when so held the left dog is in engagement with the left spool, and the projection *d* and boss F are out of engagement the arm D being slightly elevated.

At the right hand end of the machine is hinged a second arm H which is also provided with a lateral projection I intermediate its ends and a combined guide and tripping device K at its free end said tripping device being similar to the part E in all respects except that it is shown somewhat shorter in length, the purpose of which will appear further on. The projection I is also longer than the projection *d* and extends nearly to the front of the frame and at the front side of the frame is arranged a sliding plate L having an angular offset *l* at its left hand end and attached to said end is a coiled spring M which at its opposite end is connected with the main frame. The sliding plate L is also provided with a vertical boss *l'* which is intended for engagement with the projection *i*.

A lever N is pivoted upon the frame between the switch bar and sliding plate the

forward end of said lever being slotted and engaging a pin *n* upon the sliding plate, while the opposite end of the lever bears upon a pin *n'* carried by the switch *C*, the object of said lever being to throw the switch to the right as the sliding plate is moved to the left by the coiled spring *M*.

The marginal stop *O* is made somewhat longer than usual so that it can engage the angular offset *l* as the carriage is shifted thus setting the spring *M* which will operate to reverse the feed as soon as the projection *I* is thrown out of engagement with the projection *l'*, and for the purpose of raising the tripping devices *I* preferably mount cross strips or stops *S* upon the ribbon proper which strike against the lower arms of the guides and thus raise them so as to release the switch bar. These cross strips or stops can be placed near the ends of the ribbon or at any particular points and when using more than one color ink on the same ribbon the stops are placed between the colors.

Should it be desired to use an ordinary ribbon the guide or tripping device can be made longer so that the lower member comes nearly level with the short shaft and as the ribbon approaches the end it is drawn taut so that it alone raises the arms and its projections to release the switch.

The operation of my device is as follows: We will begin with the left dog in engagement with the ribbon spool, and the ribbon feeding to the left as indicated by the arrow. The arm at the right of the machine is now at its lowest position and the sliding plate is moved to its limit at the right so that the projection on the arm engages the projection upon the sliding plate and thus holds said plate in that position. Now when the end or any particular point of the ribbon is reached the cross strip or stop *S* engages the ribbon guide or trip and raises it thus throwing the projection *I* out of engagement with the boss *l*. The moment this takes place the spring *M* acts to draw the sliding plate *L* to the left and as it does so, the lever *N* acting upon the pin *n'* throws the ribbon switch to the right as the spring *M* is stronger than the spring *G* at the left of the machine. As the switch is moved to the right the boss *F* is carried a sufficient distance to permit the projection *d* to drop behind it and thus lock the switch in this position. The direction of the ribbon has now been reversed and the dog is in engagement with the right hand spool. The right arm is also elevated and its projection *I* out of engagement with the boss *l'* on the sliding plate. When the carriage is shifted however, the marginal stop *O* strikes the angular offset of said plate, moves it to the right and permits the arm *H* and its projection *I* to drop so that it is also set ready for action again. The switch bar is not disturbed by this last operation and does not move until the stop or ribbon causes the guide and trip to move up throwing the projection *d* out of engagement with the boss,

F, on the switch. As soon as this takes place the spring *G* draws the switch to the left and the feed of the ribbon is again reversed. The pin *n'* is then again brought against the lever *N* so that when the arm *H* is again raised said lever will cause the switch to move to the right again. As soon as the ribbon is reversed and beginning to feed to the right, the stop *S*, of course, is carried back a sufficient distance before the carriage is returned, to permit the arm *H*, to drop down when said carriage is returned and the plate *L*, operated. In case, the stop *S*, is not moved sufficiently to effect an automatic lock, then the plate *L*, and arm *H*, can be set by hand. The combined ribbon guide tripping device at the left side of the machine is shown as being much longer than the one to the right. This form is employed at each end when an ordinary ribbon is used free from all auxiliary attachments as the tension of the ribbon when nearing the end will be sufficient to raise the said tripping device, but when cross strips or stops are arranged upon the ribbon, the guide and trip can be made small at each end as shown at the right side of the machine.

By means of my device different colored inks can be used upon the same ribbon and by separating the colors by a strip or stop all danger of accidentally running from one color to the other is avoided.

It will also be noticed that the shifting of the switch is not done directly by the carriage, the said carriage serving only to set the spring plate which if needs be can be set by hand equally as well.

It will also be seen that the device is exceedingly simple taking up very little room and it will also be noticed how easily it can be applied to any typewriter now in use employing a ribbon switch bar to effect the change of ribbon feed.

Where desirable, weights may be used in place of the coiled springs to shift the bar.

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

1. In a ribbon shifting attachment for typewriters a spring actuated switch bar, provided at one end with means for locking the same, a tripping device for releasing said locking device, and a spring actuated shifting device arranged at the opposite end to shift it in a direction opposite to the tendency of the switch bar spring, substantially as shown and described.

2. In a ribbon shifting attachment for typewriters, a spring actuated switch bar provided at one end with means for locking the same and a tripping device for releasing said lock a spring actuated shifting device arranged at the opposite end, a locking device for holding the same, and a tripping device for releasing said lock, substantially as shown and described.

3. In a ribbon shifting device for typewriting machines the combination with a switch

bar and springs for moving the same, of a locking device at each end and a tripping device at each end also for releasing the lock, and a spring actuated shifting device at one end adapted to operate the switch bar in a direction opposite to its own spring, substantially as shown and described.

4. The combination with the frame, of the hinged arms having projections and tripping devices, the spring actuated switch bar and plate and the locking connections between said arms, bar and plate all arranged substantially as shown and described.

5. The combination with a frame of the ribbon having one or more strips or stops thereon, the arms having tripping devices, the spring actuated switch bar, and sliding plate and means for connecting the plate, bar and arms, substantially as shown and described.

6. The combination with a frame of the arms hinged at each end and having lateral projections, and tripping devices, the spring act-

uated switch bar having a boss, the spring actuated sliding plate having a boss and means for connecting the said plate and switch bar at definite intervals, substantially as shown and described.

7. The combination with the frame of the arms hinged at each end and provided with projections and tripping devices, the switch bar having a boss at one end, a spring connected with the switch bar at said end, a sliding plate near the opposite end, said plate having an offset and a boss, the spring connected with said plate and frame, the lever pivoted between the plate and switch bar and the pins carried by said switch bar and plate, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

FRED PHELPS STILES.

Witnesses:

H. ENCKHAUSEN,
GEO. P. STEVENS.