

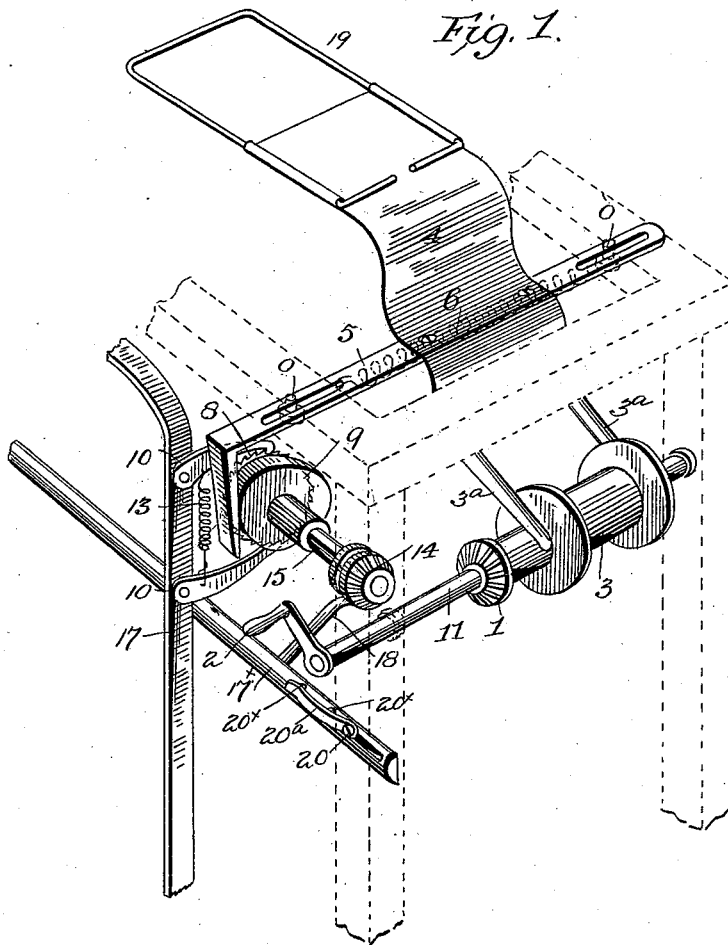
(No Model.)

2 Sheets—Sheet 1.

H. E. GIFFORD.  
TYPE WRITING MACHINE.

No. 523,788.

Patented July 31, 1894.



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Wm. T. Hall.  
A. F. Middleton

Inventor  
H. E. Gifford  
by M. J. Mattern & Co.  
Attys

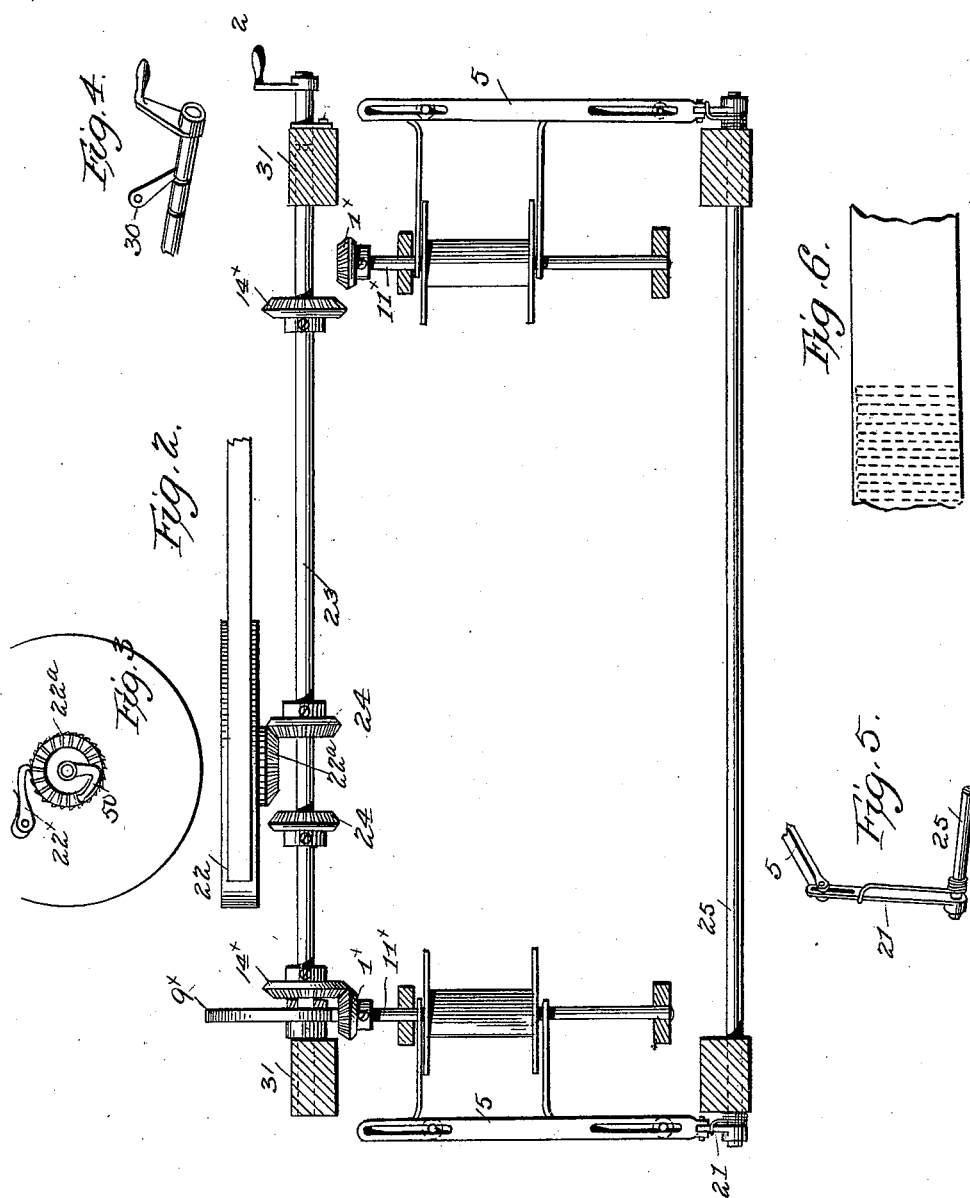
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# UNITED STATES PATENT OFFICE.

HARRY E. GIFFORD, OF WOLLASTON, MASSACHUSETTS, ASSIGNOR TO THE  
WYCKOFF, SEAMANS & BENEDICT, OF NEW YORK, N. Y.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,788, dated July 31, 1894.

Application filed May 21, 1892. Renewed April 13, 1894. Serial No. 507,480. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY E. GIFFORD, a citizen of the United States of America, residing at Wollaston, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to type writers and particularly to the ribbon movement thereof, my purpose being to utilize the whole surface of the ribbon as it is unwound from one spool and wound upon the other by giving it back and forth lateral feeding movement in lines running directly across the ribbon or approximately so and in giving it a longitudinal movement one step at the end of each back and forth lateral movement. Various devices have been employed for giving the ribbon lateral movement in irregular and zig-zag lines and I aim to make the movement regular and positive and adjusted to utilize the entire surface of the ribbon and to carry out the invention by simple means.

In the accompanying drawings:—Figure 1 is a perspective view of my invention as applied to a Caligraph machine. Fig. 2 is a plan view of the invention as applied to Remington. Figs. 3, 4 and 5 are views of details. Fig. 6 is a plan view of a ribbon, the dotted lines representing the line of impressions made transversely across the same by the type, this view serving also to show the way the ribbon is moved.

Referring to Fig. 1 I have shown only one end of the machine, the other end it is well understood being exactly the same but reversed. The ribbon shaft 11, carries the spool 3, the core of which projects therefrom and carries upon its end a miter pinion 1. The ribbon carrier 4 is connected with the spool by the arms 3<sup>a</sup> and this carrier is provided with the bent wire 19 which holds the ribbon in proper position and prevents it from curling. To the ribbon carrier 4 is screwed a slotted slide 5, which is held to the frame and guided by the screws 6 and held under tension by a spring 6 tending to draw the slide constantly toward the front of the machine. The rear end of the slide engages a cam 9 on

a shaft 15 journaled in the frame which shaft is moved step by step as the keys are operated by the ordinary rocker arm 17 which is provided with reversely set pawls 10, 10 engaging the upper and lower periphery of the ratchet 8 also secured on the shaft 15, and said pawls being held in yielding contact with said ratchet by a spring 13. The forward and back movements of the rocker-arm through the pawls, turn the ratchet wheel and cam and the ribbon slide is thus gradually moved with the carrier and the ribbon spool step by step across toward the front of the machine and then back to the starting point, the forward movement of the parts being effected by the spring before mentioned. At or about the end of the rearward movement of the spool the pinion 1 engages with the pinion 14 on the shaft 15, and the next motion of the rocker arm will cause the pinion 14 to turn the pinion 1 and the spool and wind the ribbon longitudinally one step or a short distance, after which, through the rotations of the cam, the engagement between said pinions is broken and the parts are caused to move forwardly again under the pull of the spring. At the end of the forward movement of the ribbon carrier and its connections the cam operates to return the parts against the tension of the spring, and during the forward and backward movements of the ribbon its surface widthwise is used in a line parallel to the line in which the ribbon was first used. Thus the ribbon is used widthwise in parallel lines, being moved longitudinally one step or space at the end of a complete forward and backward movement of the ribbon and its spool.

The pinion 14 has a collar on its rear side provided with a peripheral groove in which the end of a fork 18 engages which fork is attached to the switch bar 17<sup>x</sup>. The arrangement as before stated is the same at the other end of the machine, where the switch bar has a second fork engaging a pinion similar to 14 and thus by shifting the switch bar in either direction either one or the other of the pinions 14 is brought in line with the line of travel of the pinion 1 at that end, thus allowing the ribbon to be moved step by step in either direction as desired. It being under-

stood that the pinions are splined to the shafts 15. The switch bar is slotted and is held by a screw 20 which screw also holds a spring finger 20<sup>a</sup> adapted to engage either one of the small notches 20<sup>x</sup> to hold the switch bar in either position.

The ribbon spool shaft may be turned by a crank 2 to wind the ribbon by hand. The ribbon spool fits upon a reduced and flattened portion of its shaft and thus may have lateral movement and be at the same time adapted to be rotated by the crank.

In Fig. 2 the invention is shown as adapted to a Remington form of machine in which the spring drum for operating the carriage to the left step by step is shown at 22. It has a pawl 22<sup>a</sup> on its side engaging a ratchet on a miter pinion 22<sup>b</sup> which in turn engages either one or the other of the pinions 24 on the shaft 23 any suitable check pawl 50 may be used to prevent retraction of the pinion. The shaft 23 has a crank at one end and its spring pawl 30 adapted to fit in either one of two peripheral grooves to hold the shaft in either position to which it may be shifted, the said shaft answering the purpose of a switch bar and moving longitudinally in its bearings in the posts 31. It carries near each end a pinion 14 adapted to mesh separately with the pinions 1<sup>x</sup> on the shafts 11<sup>x</sup> carrying the spools, the said shafts moving longitudinally in their bearings. The cam 9<sup>x</sup> in this case is arranged upon the shaft 23 being splined thereto and bears directly on the end of the left hand shaft 11<sup>x</sup> so that in the step by step movement of the driving shaft 23 the cam will move the shaft 11<sup>x</sup> longitudinally and thus move the ribbon laterally giving it the same step by step shifting movement as before described and separating the pinions 1<sup>x</sup> and 14<sup>x</sup> shown on the left of the figure until the low part of the cam comes around and allows the pinions to engage for another feeding of the ribbon, thus turning the shaft 11 and moving the ribbon longitudinally one step. In this machine, as in the machine shown at Fig. 1, ribbon spool carriers 4 and slotted slides 5 are provided, and springs 21 are connected to the slides 5 through rocker arms and a cross rock shaft 25 at the front of the machine, to move said slides, ribbon spool carriers, ribbon spools and ribbon in a direction opposite to that in which they are moved by the cam in substantially the manner before explained.

When the ribbon has been entirely wound upon the left hand spool the shaft 23 is shifted to the right, thus separating the pinions 14<sup>x</sup> and 1<sup>x</sup> at the left hand side of the figure and engaging the corresponding pinions at the right hand side to re-wind the ribbon on to the right hand spool. During this re-winding the ribbon spools and their connections are moved

step by step back and forth between periodic longitudinal movements of the ribbon, and the latter is thus used in substantially parallel lines transversely or widthwise.

I do not wish to limit myself to the use of the springs and cams for it will be obvious that the cams may be used alone to accomplish the same purpose.

I claim as my invention—

1. In combination, the ribbon, the laterally movable ribbon spools carrying the same, the means for moving the ribbon spools with the ribbon forwardly and rearwardly, and the means positively operated at each operation of the machine arranged in the line of movement of the ribbon spool for rotating the spool at the end of its lateral movement substantially as described.

2. In combination, the ribbon, the laterally movable ribbon spool carrying the same, the spring cam and slides for moving the ribbon spool laterally, a pinion operatively connected to the ribbon spool, the pinion rotated during the operation of the machine and arranged in the line of movement of the ribbon spool pinion.

3. In combination, the ribbon, the laterally movable ribbon spools, the pinions operatively connected to said ribbon spools the means for moving the spools laterally, the pinions 14 or 14<sup>x</sup> with connections to the moving parts of the machine for rotating the said pinions, and the shifting shaft connected to the pinions for moving them into and out of line with the ribbon spool pinions.

4. In combination, the ribbon spools carrying the ribbon and having pinions, the means for moving the ribbon spools laterally including the ratchet, the cams, the rocker bar 17 and the double spring pawls, the shafts 15 journaled in the frame, the pinions 14 carried by the shafts 15 and arranged to be adjusted into and out of line with the ribbon spool pinions, and the shifting bar connected to the pinions, substantially as described.

5. In combination, an inking ribbon, a ribbon spool, means for moving the ribbon spool and the ribbon forward and backward, a pinion connected to move back and forth with said ribbon spool, and a positively-operated rotatory driver normally disconnected from said spool pinion and adapted to partially rotate the same at the end of its movement toward said driver and thus wind the ribbon in the direction of its length upon the ribbon spool.

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

HARRY E. GIFFORD.

Witnesses:

SIMON DAVIS,  
WM. H. FURBER.