

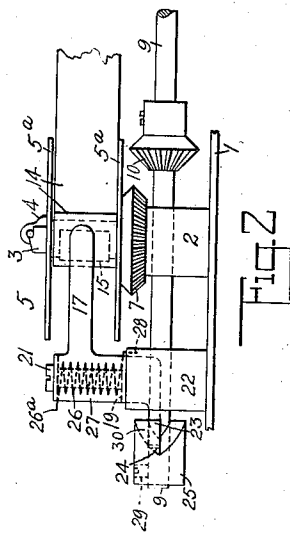
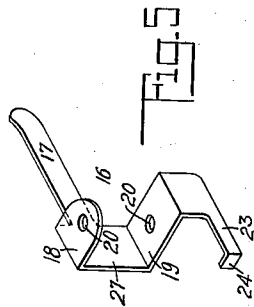
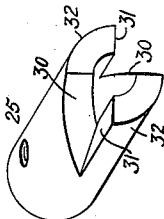
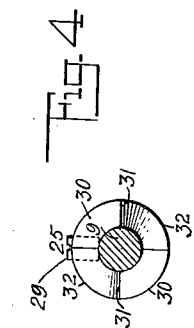
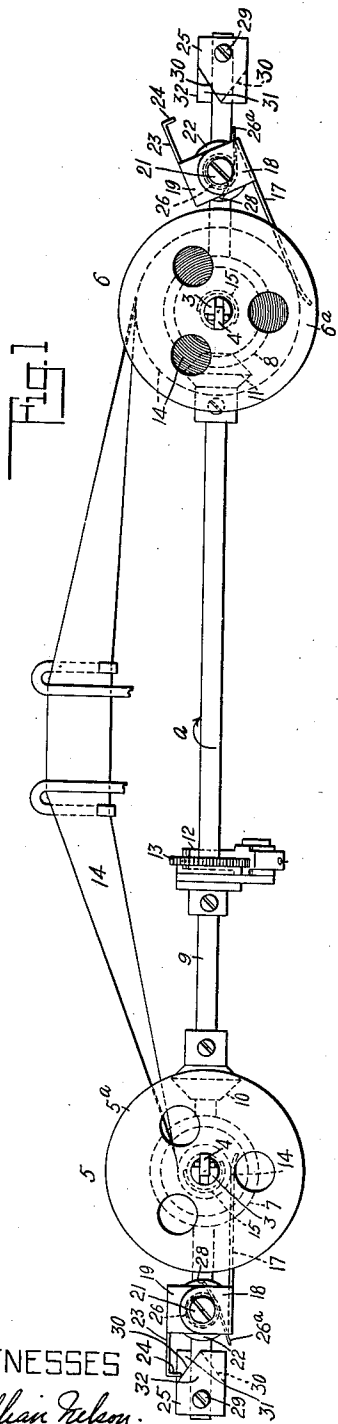
July 10, 1923.

P. L. SCHMIDT

1,461,331

TYPEWRITING MACHINE

Filed July 24, 1922



WITNESSES

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*Charles Smith*

INVENTOR

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## UNITED STATES PATENT OFFICE.

PETER L. SCHMIDT, OF MOHAWK, NEW YORK, ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

## TYPEWRITING MACHINE.

Application filed July 24, 1922. Serial No. 576,944.

*To all whom it may concern:*

Be it known that I, PETER L. SCHMIDT, citizen of the United States, and resident of Mohawk, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a specification.

My invention relates to automatically operating ribbon reversing mechanism for typewriting and like machines, and the main object of the invention, generally stated, is to provide a very simple, compact, inexpensive and yet highly efficient mechanism of the character specified.

To the above and other ends which hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices, set forth in the following description and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the different views,

Figure 1 is a fragmentary detail top plan view showing the automatic ribbon reversing mechanism of my invention.

Figure 2 is a fragmentary detail front elevation of the left-hand ribbon spool and parts associated therewith.

Figure 3 is a detail perspective view of one of the reversing cams.

Figure 4 is an end view of the same shown mounted on the driving shaft.

Figure 5 is a detail perspective view of one of the combined ribbon contact and reversing members.

I have embodied my invention in the present instance in a Remington portable machine which as formerly constructed employed only a hand reversed ribbon mechanism, one form of which is somewhat like that disclosed in the patent to J. B. Holden, 1,397,166, dated Nov. 15, 1921, on which the present invention is an improvement. While the invention is not restricted to embodiment in such a machine it will be understood that it is particularly adapted for use in a small, light, compact portable machine, since there is little room available in such machines for use of complicated, heavy, or bulky mechanism. Therefore the provision of simple, compact, light and inexpensive

mechanism is highly important, if not an absolutely necessary factor, in the successful production of such a machine. While the general objects of the invention stated above may be said to be important in the production of any typewriting machine, they become doubly so in a portable machine where every unnecessary part eliminated without reducing efficiency makes for the greater success in building such a machine.

In the accompanying drawings I have shown only so much of the Remington portable machine as is necessary to arrive at an understanding of my invention in its embodiment therein, the construction being well understood by those skilled in the art and is illustrated in the main in said herebefore mentioned Holden patent.

The supporting plate 1 corresponds to the usual ribbon supporting plate in a Remington portable machine which is mounted to partake of the case shifting movement of the platen fore-and-aft of the machine. This supporting plate carries two uprights or supporting posts 2, one for each side of the machine. Projecting upwardly from each post is a fixed spindle 3 provided with a ribbon spool catch 4 to hold the associated spool 5 or 6 against accidental removal or displacement from the spindle 3 on which it is mounted to turn. The spools may be of any suitable construction, and for the purpose of the present invention each spool may be considered to comprise a core and two flanges as 5<sup>a</sup> and 6<sup>a</sup> rigidly connected to the core. Preferably, however, each spool is made of separable parts and the lower flanges 5<sup>a</sup> and 6<sup>a</sup> are attached to the bevel gears 7 and 8 respectively, as in the present Remington portable machine. In any event each spool directly engages the associated bevel driving gear 7 or 8 which is arranged directly beneath the spool and turns freely on its spindle 3 and forms a support for the spool. A driving shaft 9 extends across the machine from side to side thereof, and is supported in bearing openings in the post 2 for rotary and for longitudinal movement therein. Oppositely disposed bevel pinions 10 and 11 are mounted on this shaft, one beneath each spool and in a position to be thrown into mesh with its companion gear

7 or 8 when the other pinion is thrown out of mesh with its gear or vice versa. Intermittent rotary motion is transmitted to the shaft 9 at each printing operation by a pawl 12 coacting with a ratchet wheel 13 on the shaft 9; the construction and arrangement of the parts being such that the pawl and ratchet receive a bodily movement with the supporting plate 1 when the latter moves at case shifting operations.

Each end of the ribbon 14 may be connected to its spool by any suitable means, as by a C-shaped spring clip 15 that clamps the ribbon to the core of its spool, as shown in the accompanying drawings.

Means whereby the driving shaft 9 is automatically shifted longitudinally to reverse the direction of feed of the ribbon comprises two independently operable controlling members, one associated with each ribbon spool and each designated as a whole by the reference numeral 16. Each member is in the nature of a combined ribbon contact and reversing device preferably struck up from a single piece of sheet metal, as best shown in Fig. 5. An arm 17 of each member forms a contact device that enters between the flanges or heads of its spool and bears against the outer face of the ribbon wound on the spool; moving towards the axis of the spool as the ribbon is unwound therefrom. Parallel supporting portions 18 and 19 of each member 16 are provided with aligned openings 20 through which the stem of a headed screw 21 passes. The lower threaded end of each screw 21 is received in a post 22 fixed to the support 1. These posts like the posts 2 are formed with bearing openings for the driving shaft 9 which extends outwardly beyond said post 22. The supporting portion 19 of each member 16 rests on the upper end of its post 22; the member as a whole being prevented from accidental detachment from its post and pivotal support on the screw by the head of the screw overlapping the portion 18 of the member. An arm 23 on each member 16 carries a forwardly projecting engaging member 24 co-operative with its associated reversing cam member 25, as will hereinafter appear. A spring 26 is coiled around each screw 21 and has one end 26<sup>a</sup> thereof bearing against the body portion 27 of its member 16, the other end 28 of the spring being anchored in an opening in the associated post 22. The force of each spring is exerted to turn its member 16 so as to move the contact arm 17 thereof rearwardly against the ribbon on the companion spool and to move its engaging member 24 forwardly towards its cam 25.

Each cam member is in the nature of a sleeve tapped to receive a screw 29 by which it may be adjustably and detachably secured to the driving shaft 9. Preferably

each member is notched on opposite sides to provide two oppositely disposed cam faces 30 and two abrupt straight faces 31, each of the latter being coincident with the lower portion of its associated cam face 30. The outer peripheral surfaces 32 intermediate the cam faces 30 constitute dwells or rests on which the associated engaging member 24 is adapted to bear before the rotation of the cam member brings a notch therein in register with said engaging member of the effective reversing device.

As the ribbon is about to be exhausted from one spool, say the left-hand spool 5, as shown in Fig. 1, the associated contact 17 pressing towards the axis of the spool carries the free end of the engaging device 24 against one of the surfaces 32 where it is held against further pivotal movement towards the axis of the shaft 9 until the further turning of the shaft brings the next advancing abrupt face 31 past the part 24, as shown in Figs. 1 and 2. Then the part 24 is free to be forced by the spring 26 into the registering notch and to engage the adjacent cam face 30. As the shaft continues to turn in the direction of the arrow *a* in Fig. 1 it will be forced to move longitudinally to the left by the action of the cam on the relatively fixed part 24 and shift the bevel pinion 10 into mesh with its companion gear 7, while the pinion 11 is being forced out of mesh with the gear 8 of the full spool. This effects a reversal in the direction of the feed, the ribbon winding on the empty spool 5 and off the full spool 6. When the shaft 9 has completed its longitudinal shifting movement just described the inner end of the active cam member will be carried outwardly beyond the reach of the part 24 where the latter can no longer coact therewith until the shaft has been shifted in the opposite direction. As the ribbon continues to wind on the empty spool the ribbon thereon will cause the controlling member 16 to be turned on its pivot 21 carrying the associated contact 24 away from the cam, as will be understood from an inspection of the parts at the right-hand side of Fig. 1. When the ribbon is about exhausted from the right-hand spool 6, its controlling member 16 will automatically be brought in active position to shift the shaft 9 to the right in order to wind the ribbon on the spool 6 and off the spool 5.

It will be seen that by my invention the pinions on the driving shaft mesh directly with the gears which carry the ribbon spools and that each controlling member coacts directly with its ribbon spool and with its cam on the driving shaft, thus dispensing with all trains of connections between these parts. It will be seen, moreover, that the parts are all carried by and shift with the supporting plate 1 in the case shifting move-

ments of the latter, thus maintaining their effective relation one to another without the use of complicated connections.

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

1. In a typewriting or like machine, the combination of two ribbon spools, two spring pressed independently operable pivoted members, each comprising a sheet metal combined ribbon contact and reversing device with its parts all rigidly united, one member associated with each spool and having its contact bearing against the outer surface of the ribbon thereon and moving inwardly towards the axis of its spool to bring about a reversal in the direction of the feed of the ribbon, a driving gear for each ribbon spool and on which the spool is directly mounted and supported, a longitudinally shiftable driving shaft carrying pinions, one movable into mesh with its driving gear when the other is moved out of mesh with its companion driving gear, and two independently adjustable cams on said shaft and with each of which directly coacts the associated combined ribbon contact and reversing device member to cause the shaft to be shifted longitudinally by a camming action and reverse the direction of feed of the ribbon, whereby there is a direct meshing between the pinions on the shiftable shaft and the driving gears for the spools, a direct connection between the driving gears and the spools and a direct control between each of said combined members with the ribbon on its spool on the one hand, and between the member and its associated cam on the other hand.

2. In a typewriting or like machine, the combination of two ribbon spools arranged at opposite sides of the machine, two independently operable spring pressed controlling members arranged at opposite sides of the machine and each formed from a single piece of sheet metal and having a contact portion that bears against the outer surface of the ribbon and moves inwardly towards the axis of the associated ribbon spool to bring about a reversal in the direction of the feed of the ribbon and also having a rigidly connected engaging device, a shaft that extends transversely of the machine from spool to spool and is mounted to receive a longitudinal shifting movement as well as a turning movement, bevel pinions carried by said shaft, coacting bevel gears each having a ribbon spool directly connected therewith, and mounted to turn on a fixed spindle and with which the said pin-

ions are adapted to be thrown alternatively into mesh by longitudinal movements of the shaft, automatically operating means for intermittently turning said shaft, and two individually adjustable cams on said shaft one near each of said spools and with each of which cams the engaging device of the associated controlling member is adapted to coact to bring about a longitudinal shift of the shaft to reverse the direction of feed of the ribbon.

3. In a typewriting or like machine, the combination of two ribbon spools, a support therefor shiftable at case shifting operations, a driving shaft in geared connection with one or the other of said ribbon spools and shiftable longitudinally to shift into geared connection with one spool and to be out of geared connection with the other, cams on said shaft, controlling members co-operative with the ribbon on said spools and with said cams to automatically shift the shaft and change the direction of feed of the ribbon, all of said parts being carried by and shiftable with said shiftable support.

4. In a typewriting or like machine, the combination of two ribbon spools, two independently operable members, each comprising a combined ribbon contact and reversing device, one member associated with each spool and having its contact bearing against the outer surface of the ribbon thereon and moving inwardly towards the axis of the spool to bring about a reversal in the direction of the feed of the ribbon, a driving gear for each ribbon spool, a longitudinally shiftable driving shaft carrying pinions, one movable into mesh with its driving gear when the other is moved out of mesh with its companion driving gear, two separate cams on said shaft and with each of which directly coacts the associated combined ribbon contact and reversing device member to cause said shaft to be shifted longitudinally by a camming action and to reverse the direction of feed of the ribbon, and a support shiftable at case shifting operations and by which all of said hereinbefore mentioned parts are carried for shifting movements therewith.

Signed at Ilion in the county of Herkimer and State of New York this 19 day of July, A. D. 1922.

PETER L. SCHMIDT.

Witnesses:

FRANK BURGOR,  
LINNIE F. BURNETT.