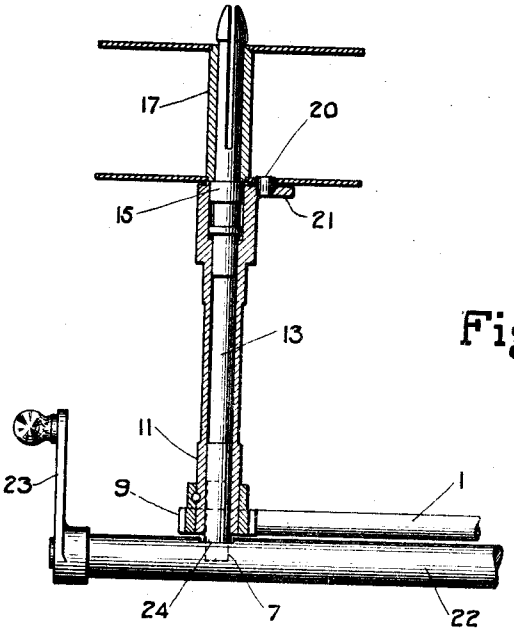
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RIBBON REVERSING MECHANISM FOR TYPE WRITERS.

APPLICATION FILED JUNE 24, 1905. RENEWED DEC. 18, 1913.

1,104,359.

Patented July 21, 1914.



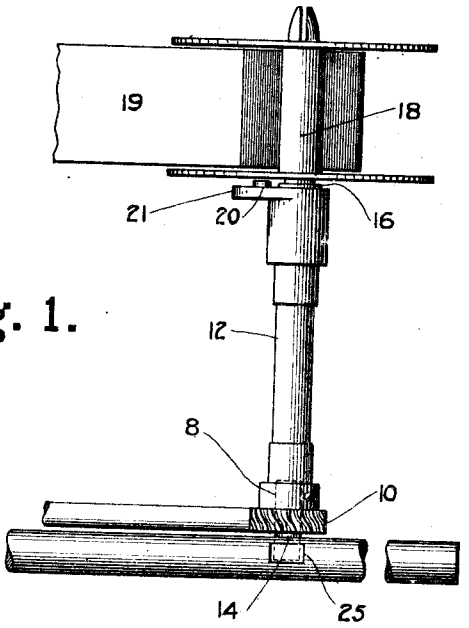


Fig. 1.

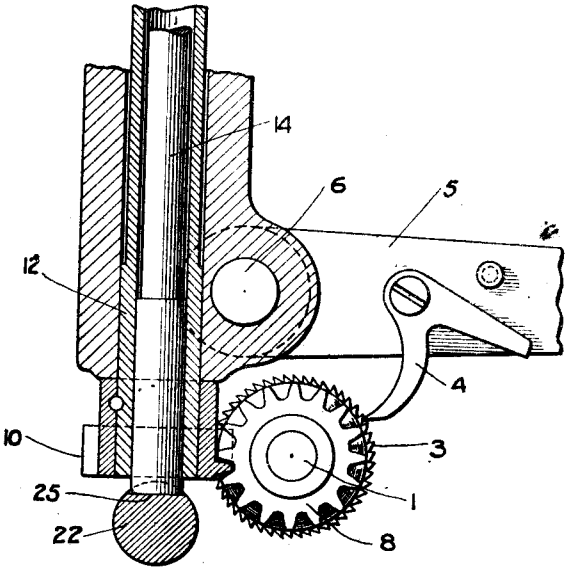


Fig. 2.

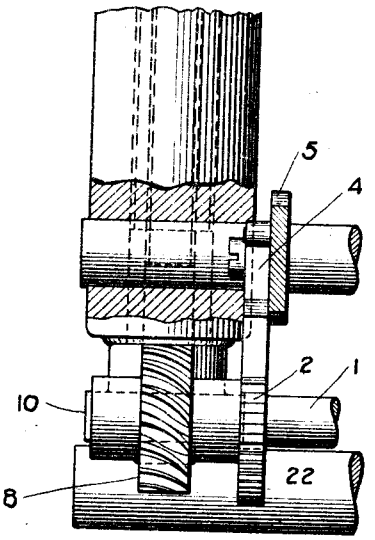


Fig. 3.

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WELLINGTON PARKER KIDDER, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NOISELESS TYPEWRITER COMPANY, OF MIDDLETOWN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

RIBBON-REVERSING MECHANISM FOR TYPE-WRITERS.

1,104,359. Specification of Letters Patent. Patented July 21, 1914.

Application filed June 24, 1905, Serial No. 266,815. Renewed December 13, 1913. Serial No. 807,564.

To all whom it may concern:

Be it known that I, WELLINGTON P. KIDDER, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Ribbon-Reversing Mechanism for Type-Writers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to typewriters and, while capable of being employed in many forms of machines, is especially adapted for use in machines known as "silent typewriters", and has for one of its objects to provide means whereby the feed of the ribbon may be reversed.

Another object is the provision of mechanism adapted to operate silently to shift the ribbon feed reversing mechanism in machines of the above general type.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the mechanism hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing wherein is illustrated one of various possible embodiments of my invention. Figure 1 is an elevation of the same partly in section, some of the parts being broken away. Fig. 2 is a sectional view of a portion of the same. Fig. 3 is an elevation partly in section showing the worm mechanism adapted to operate the ribbon shafts.

Similar reference characters refer to similar parts throughout the several views of the drawing.

As tending to render better understood certain of the various features of my invention, it may here be noted that, in a typewriter of the above type, it is essential to so construct the machine as to enable it to be operated in all respects with the production of as little noise as possible. I have, therefore, found it desirable to provide a silently operating mechanism designed to reverse the feed of the ribbon. The above and other advantages are secured in constructions of the nature of that hereinafter described.

Referring now to the drawing, a shaft 1, suitably journaled in the frame of the machine, is provided at one end with a ratchet wheel 2 having teeth 3 with which a pawl 4 pivoted upon a reciprocating arm 5 is adapted to engage. Reciprocating arm 5 is rotatably mounted in the frame at 6 and is adapted to be actuated by the key-levers acting upon the universal bar or equivalent part of the machine, to which said arm 5 is connected.

Mounted upon each end of shaft 1 are worms 7 and 8 adapted to co-act with worm wheels 9 and 10, respectively, fixed to hollow shafts 11 and 12 suitably journaled in the frame of the machine. The spirals of worms 9 and 10 are reversely arranged for the purpose of driving shafts 11 and 12 in opposite directions. Encircled by each of hollow shafts 11 and 12 are spindles 13 and 14 each having a shoulder 15 and 16, upon which are rotatably mounted ribbon spools 17 and 18 adapted to carry the ribbon 19, said shafts being adapted to rotate the spools to feed the ribbon alternately from one spool to the other. One of the side members of each ribbon-spool is provided with a plurality of openings arranged concentrically thereon, any one of which is adapted to be engaged by a pin 20 projecting from an integral arm 21 carried by each of the hollow shafts 11 and 12. Cam shaft 22 journaled in the frame of the machine and extending transversely thereof is provided with an operating handle 23 and a pair of cam-faces 24 and 25 angularly disposed with respect to each other. In the present instance I have shown cam-faces 24 and 25 arranged at an angle of about one hundred and twenty degrees from each other; the angle is however, immaterial as will be apparent hereinafter. Spindles 13 and 14 are adapted to rest on cam-shaft 22, one end of one of said spindles engaging the cam face 24, and the other resting upon the periphery of shaft 22 by reason of the angular arrangement of cam faces 24 and 25 as above explained. At this point it may be noted that cam faces 24 and 25 may

be arranged at any angle on shaft 22 such that but one of the spool supporting spindles can rest at a given time upon a cam face. When either of spindles 13 and 14 is in engagement with a cam face of shaft 22, the ribbon-spool carried thereby is in its lowermost position, as shown at the left of Fig. 1 of the drawing, and in operative engagement with pin 20 positioned upon arm 21 of shaft 11.

Having thus described my invention, the operation of the same which should be largely obvious to those skilled in the art to which the invention pertains, is substantially as follows: Shaft 1 is intermittently rotated by means of ratchet wheel 2 and pawl 4 pivoted to reciprocating arm 5 attached to the usual universal bar or equivalent part not herein shown as the same comprises no essential part of my present invention. It will be understood, of course, that reciprocating arm 5 may be connected with any frequently moving part of the machine. Worms 7 and 8 engaging worm wheels 9 and 10 rotate shafts 11 and 12 in opposite directions. As shown at the left hand side of Fig. 1 of the drawing, spindle 13 is in engagement with the cam face 24 and spool 17, is therefore, in engagement with pin 20 mounted upon hollow shaft 11. The spool at the opposite side is therefore out of engagement with its coacting pin by reason of spindle 14 resting on the periphery of shaft 22. Spoon 17 is therefore the receiving spool and spool 18 the feeding spool. To reverse the direction of the feed of the ribbon, it is only necessary to rotate shaft 22 by means of handle 23, thereby raising spindle 13 and causing a disengagement of spool 17 from pin 20 and simultaneously bringing cam face 25 into engagement with spindle 14, allowing the ribbon spool 18 to engage with the pin and be thereby rotated to wind the ribbon in an opposite direction. It will be noted that, by reason of the spindles 13 and 14 resting constantly on cam shaft 22 and being adapted alternately to be recipro- by a partial revolution of said shaft, no concussion or impact occurs during the reversing of the feed of the ribbon and it should be further observed that on account of the balancing action of the ribbon spools together with their respective spindles, such operation is attended by the expenditure of very little power.

It will thus be seen that I have constructed a device wherein the objects of my invention are attained and one which is characterized by simplicity, efficiency and ease of operation, the ribbon-feed shifting mechanism being silently reversed to change the direction of feed of the inking ribbon.

While I have shown and described my invention in connection with a typewriting machine of the above type, I do not wish to be understood as limiting the employment of my invention exclusively to machines of such type, as it is adapted for use as to many of its features in many other forms of machines although of peculiar value in the relation shown.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

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

1. In a typewriting machine, in combination, a ribbon, a spool upon which said ribbon is adapted to be wound, means adapted to carry said ribbon spool, means having its axis parallel with the axis of said carrying means adapted to rotate said spool, and cam means for causing a longitudinal movement of one of said means with respect to the other whereby said spool is disconnected from its rotating means.

2. In a typewriting machine, in combination, a ribbon, a spool on which said ribbon is wound, vertically disposed means for supporting said spool, means parallel to said supporting means for rotating said spool, and rotatably mounted cam means in engagement with and adapted to cause a relative movement of one of said means to disengage said spool from said rotating means.

3. In a typewriting machine, in combination, a ribbon, a spool on which said ribbon is wound, means for supporting said spool, rotatable means engaging said spool and adapted to rotate the same to feed the ribbon, said supporting means adapted to be operated upon to shift said spool whereby said rotatable driving means is disengaged therefrom, and a cam for operating said supporting means.

4. In a typewriting machine, in combination with a ribbon-spool of a vertically disposed spindle adapted to support the same, means actuated by a constantly moving part of the machine adapted to drive said spool, and means adapted to lift said spindle and thereby cause a lateral movement of said spool to disengage said driving means therefrom.

5. In a typewriting machine, in combination, a ribbon, a spool upon which said ribbon is adapted to be wound, an upright spindle on which said spool is mounted, means surrounding said spool adapted to be actuated by the key levers of the machine to drive said spool, and means adapted to

cause a movement of said spool with respect to said driving means to disengage said parts.

6. In a typewriting machine, in combination, a ribbon, a pair of ribbon spools adapted to feed the ribbon past the printing point, ribbon spool supports, means surrounding said supports adapted to engage each ribbon spool to drive the same on its respective support, and means adapted to shift both ribbon spools in opposite directions to engage and disengage the respective driving mechanisms.

7. In a typewriting machine, in combination, a ribbon, a pair of ribbon spools, separate means for supporting each of said spools, separate means for rotating each ribbon spool about its support to feed the ribbon, and means connecting said last mentioned means for shifting the ribbon spools with respect to the rotating means to disengage said parts.

8. In a typewriting machine, in combination, a ribbon, a pair of spools, a separate support for each spool, means adapted to engage each ribbon spool to drive the same to feed the ribbon, and means adapted to engage said supports to shift the ribbon spools in opposite directions to disengage them from the driving means.

9. In a typewriting machine, in combination, a pair of ribbon spools and a ribbon adapted to be fed from one to the other, vertically disposed ribbon spool supports located at opposite sides of the machine, separate means adapted to drive each spool, and means for shifting both spools vertically whereby the spools are engaged and disengaged with their respective driving mechanisms in order to reverse the feed of the ribbon.

10. In a typewriting machine, the combination of a ribbon, a pair of separate upright ribbon-spools, a pair of ribbon-spool supports, separate means adapted to drive each ribbon spool, and a rotatably mounted cam shaft adapted to shift both ribbon-spools in opposite directions whereby one of said ribbon-spools is engaged with its driving means and the other of said driving means is disengaged from its driving means.

11. In a typewriter machine, the combination of a ribbon, a pair of ribbon-spools, a pair of spindles each adapted to rotatably support one of said ribbon-spools, separate means adapted alternately to drive each ribbon-spool, and means operating upon each spindle to shift both ribbon-spools laterally in opposite directions whereby one of said ribbon-spools is engaged with its driving means and the other of said ribbon-spools is disengaged from its driving means.

12. In a typewriting machine, the combination of a ribbon, a pair of ribbon-spools, a pair of spindles each adapted to rotatably support one of said ribbon-spools, separate means adapted alternately to drive each ribbon spool, and single means operating upon said spindles to shift both ribbon-spools laterally in opposite directions whereby one of said ribbon spools is engaged with its driving means and the other of said ribbon spools is disengaged from its driving means.

13. In a typewriting machine, the combination of a ribbon, a pair of ribbon-spools, a pair of spindles each adapted to rotatably support one of said ribbon-spools, means adapted alternately to drive each ribbon-spool and a cam shaft operating upon both spindles to shift both ribbon-spools laterally in opposite directions whereby one of said ribbon-spools is engaged with its driving means thereby changing the direction of the feed of said ribbon.

14. In a typewriting machine, the combination of a ribbon, a pair of ribbon-spools, a pair of spindles each adapted to rotatably support one of said ribbon-spools, a pair of driving means, one for each ribbon-spool, said driving means being adapted to rotate in opposite directions and also adapted alternately to be engaged with said ribbon spools, and means for shifting both ribbon spools in opposite directions to engage one of said spools with its driving means and to disengage the other of said ribbon spools from its driving means whereby the feed of the ribbon is reversed.

15. In a typewriting machine, the combination of a ribbon, a pair of ribbon-spools, a pair of spindles each adapted to rotatably support one of said ribbon-spools, a pair of driving means each adapted to actuate one of said ribbon-spools, said driving means rotating in opposite directions and adapted alternately to be engaged with one of said ribbon spools and a cam shaft for shifting both ribbon-spools in opposite directions to engage one of said ribbon-spools with its driving means and disengage the other of said spools from its driving means whereby the feed of the ribbon is reversed.

16. In a typewriting machine, the combination of a ribbon, a pair of ribbon-spools, a pair of ribbon-spool supports, a pair of spindles each adapted to rotatably support one of said ribbon-spools, a pair of hollow shafts each encircling one of said spindles, said shafts being adapted alternately to engage with one of said ribbon-spools, means for driving said shafts in opposite directions, and means operating upon said spindles adapted to shift both ribbon-spools in opposite directions to engage one of said spools with its driving shaft and simultaneously disengage the other of said spools from its driving shaft whereby the feed of the ribbon is reversed.

17. In a typewriting machine, the combi-

nation of a ribbon, a pair of ribbon-spools, a pair of spindles each adapted to rotatably support one of said ribbon-spools, a pair of hollow shafts each encircling one of said spindles, said shafts being adapted alternately to engage with a ribbon spool, means for driving said shafts in opposite directions, and a cam shaft operating upon said spindles adapted simultaneously to shift both ribbon spools laterally in opposite directions to engage one of said spools with its driving shaft and simultaneously to disengage the other of said spools from its driving shaft whereby the feed of the ribbon is reversed.

18. In a typewriting machine, the combination of a ribbon, a pair of ribbon spools, a pair of spindles adapted to rotatably support each ribbon spool, a pair of hollow shafts each encircling one of said spindles, said shafts being adapted alternately to engage with a ribbon spool, and a shaft having cam faces angularly arranged with respect to each other adapted to operate said spindles simultaneously to shift said ribbon spools laterally in opposite directions to engage one of said spools with its driving shaft and simultaneously to disengage the other of said spools from its driving shaft whereby the feed of the ribbon is reversed.

19. In a typewriting machine, the combination of a ribbon, a pair of ribbon spools, a pair of spindles one for each ribbon spool, a pair of hollow shafts encircling each of said spindles, co-acting means located upon each shaft adapted alternately to engage with said ribbon spools, means for driving said shafts in opposite directions, a shaft having a pair of cam faces arranged at an angle to each other, said cam faces adapted alternately to engage one of said spindles, means for rotating said cam shaft to shift both ribbon spools laterally in opposite directions to engage one of said ribbon spools with its co-acting means and simultaneously to disengage the other of said ribbon spools from its co-acting means whereby the feed of said ribbon is reversed.

20. In a typewriting machine, the combination of a ribbon, a pair of ribbon spools, a pair of spindles one for each ribbon spool, a pair of hollow shafts encircling each of said spindles, co-acting means mounted upon each shaft adapted alternately to engage with said ribbon spools, means for driving said shafts in opposite directions, a rotatably mounted shaft having cam faces arranged angularly thereon, said cam faces being adapted alternately to engage said spindles, and means for rotating said cam shaft to shift both of said ribbon spools in opposite directions to thereby engage one of said ribbon spools with its co-acting means and simultaneously to disengage the other of said spools from its co-acting means whereby the feed of said ribbon is reversed.

21. In a typewriting machine, the combination of a ribbon, a pair of ribbon spools, a pair of spindles one for each ribbon spool, a pair of hollow shafts encircling each of said spindles, co-acting means located upon each of said shafts adapted alternately to engage with said ribbon spool, a pair of worms adapted to drive said shafts in opposite directions, a shaft having a pair of cam faces angularly arranged with respect to each other, said cam faces being adapted alternately to engage each of said spindles, means for rotating said cam shaft to shift both of said ribbon spools laterally in opposite directions to engage one of said ribbon spools with its co-acting means, and disengage the other of said spools from its co-acting means whereby the feed of said ribbon is reversed, and a pair of worms adapted to drive said shafts.

22. In a typewriting machine, the combination of a ribbon, a pair of ribbon spools, a pair of spindles one for each ribbon spool, a pair of hollow shafts encircling each of said spindles, co-acting means located upon each of said shafts adapted alternately to engage with each ribbon spool, a pair of worms adapted to drive said shafts in opposite directions, a shaft having a pair of cam faces angularly arranged with respect to each other, said cam faces being adapted alternately to engage said spindles, means for rotating said cam shaft to shift both of said ribbon spools laterally in opposite directions to disengage one of said ribbon spools from the co-acting means and simultaneously to engage the other of said spools with its co-acting means whereby the feed of said ribbon is reversed, and pawl and ratchet mechanism adapted to operate each of said worms.

23. In a typewriting machine, in combination, a pair of spindles each provided with a shoulder, a pair of ribbon spools each rotatably mounted upon one of said spindles and adapted to rest upon one of said shoulders, a pair of hollow driving shafts each encircling one of said spindles, co-acting means located upon each shaft adapted alternately to operate one of said ribbon spools, a pair of worms, one for each of said driving shafts adapted to rotate said shafts in opposite directions, and a shaft having angularly arranged cam faces adapted alternately to engage with said spindles, and means adapted to operate said last-mentioned shafts to cause a longitudinal movement of one of said spindles in one direction to disengage the ribbon spool mounted thereon from its co-acting means and to allow a longitudinal movement of the other of said spindles in an opposite direction to engage

the other of said ribbon spools mounted thereon with its co-acting means, and thereby reverse the direction of the feed of said ribbon.

24. In a typewriting machine, in combination, a pair of spindles each provided with a shoulder, a pair of ribbon spools each rotatably mounted upon one of said spindles and adapted to rest upon one of said shoulders, a pair of hollow driving shafts each encircling one of said spindles, co-acting means located upon each shaft adapted alternately to engage with one of said ribbon spools, a pair of worms one for each of said driving shafts adapted to rotate said shafts in opposite directions, a shaft having angularly arranged cam faces adapted alternately to engage with one of said spindles, means adapted to operate said last-mentioned shaft to cause a longitudinal movement of one of said spindles in one direction to disengage the ribbon spool mounted thereon from its co-acting means and to allow a longitudinal movement of the other of said spindles in an opposite direction to engage the other of said ribbon spools mounted thereon with its co-acting means and thereby reverse the direction of the feed of said ribbon, and pawl and ratchet mechanism adapted to drive each of said worms.

25. In a typewriting machine, the combination of a pair of ribbon spools, a shouldered spindle supporting each spool, a driving shaft for each spool having means for engaging the same, and means for raising one spindle to disengage the spool from its driving shaft and simultaneously allow the other spindle to fall by gravity, thereby engaging its spool with the other driving shaft.

26. In a typewriting machine, the combination of a pair of ribbon spools, a shouldered spindle supporting each spool, a driving shaft for each spool having means for engaging the same, and a cam shaft interposed in the support of said spindles adapted when rotated to raise one spindle and allow the other to fall by gravity, whereby one spool is disengaged from its driving shaft and the other spool engaged with its driving shaft.

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

WELLINGTON PARKER KIDDER.

Witnesses:
A. WHITE,
C. H. WILSON.