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BIBBON FEEDING MECHANISM FOR TYPE WRITING MACHINES.

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Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Witnesses:

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Inventor:

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By M. W. W.
To all whom it may concern:

Be it known that I, Frederick Alexander, a citizen of the United States, residing at New York city, borough of Brooklyn, Kings county, and State of New York, have invented certain new and useful Improvements in Ribbon-Feeding Mechanism for Type-Writing Machines, of which the following is a clear, full, and exact description.

This invention has for its object to provide a simple and efficient inking ribbon feeding device for typewriting machines. To carry out the object of my invention, I have designed the ribbon feeding mechanism as to adapt it for operation by the carriage as it moves along the guides therefor. The device is also designed to be reversed by the movement of the carriage when the ribbon has reached the end of its length.

After having described my invention, I will finally claim the novel features thereof, reference being had to the accompanying drawings, wherein:

Figure 1 is a transverse sectional view of a typewriting machine embodying my improvement; Fig. 2 is an enlarged top plan view thereof, certain parts being omitted; Fig. 3 is a vertical sectional view taken on a line a—a in Fig. 1, looking from the left; Fig. 4 is a diagrammatic sectional plan view of the ribbon feeding device, as shown in Fig. 2; Fig. 5 is an enlarged detail end view of the rack and support therefor which form part of my invention; Fig. 6 is an enlarged vertical sectional view of the device, which I employ to releasably retain the ribbon spools in position, certain parts being shown in elevation; and Fig. 7 is a vertical sectional view of one of the ribbon spools, the operating shaft being shown in elevation, one end of the ribbon being shown.

To obviate the necessity of the great number of parts usually employed in a standard typewriter for operating and reversing the ribbon, I employ the direct movement of the carriage to operate or feed the ribbon both forwardly and backwardly. The frame in Fig. 1 is an arbitrary form of frame, which is provided with a transversely movable carriage having end members 3 connected by bored member 3a through which a guide rod 4 is adapted to pass. The front end of the end members 3 of the carriage travels in a rabbet 5 in the front member 5a of the frame, the said front member being open as at 5b for the passage of the type-bars 6. The carriage 2 carries a platen 6a, adjacent which a ribbon 7 is adapted to move, the said ribbon passing through a fork 8, as is usual.

To adapt the ribbon for movement, I wind the same on rotatable spools 8a, having a top 9 provided with a beveled edge 9a. The spools 8a are removably supported by shafts 10, having an upper squared portion 11 (see Fig. 7). The lower ends of the shafts 10 carry gears 12 and 12a, having ratchet teeth 13 which are adapted to mesh with similar teeth carried by pinions 14 and 14a, same being rotatably secured to the under side of the front member 5a of the frame 1 (see Fig. 3). The function of the gears 12 and 12a and pinions 14 and 14a is to operate the ribbon spools 8a. To operate the said pinions, which in turn operate the said gears, I provide two racks 15 and 15a, having ratchet teeth 17. The racks 15 and 16 are in this instance slidably mounted on a plate 18 (see Fig. 1) which extends from one side member 3 of the carriage to the other (see also Fig. 5). The racks 15 and 16 are slidably secured to the plate 18 by machine screws 19, which pass through aligned slots 20 angularly disposed relative to the movement of the carriage. Washers 20a are interposed between the racks to keep them slightly apart. To keep the racks 15 and 16 normally engaged with their respective gears, I provide springs 21, 21a which are secured to a post 22, carried by the plate 18.

To keep the spools 8a in position upon the shafts 10, I provide a block 23, which is secured to the end members of the frame, the said block being provided with a spring opposed keeper 24, having a tapered end 25 adapted to contact with the tapered edge 9a of the top 9 of the spools 8a. As long as the keeper 24 is in the position shown, the spools 8a will remain on the shafts 10. Should I desire to remove the spools I pull...
out the keepers 24, against the tension of the 
springs, until the end 25 clears the tops 9 of the spools. I can then remove the spools 
from the shafts 10.

5. I will now describe the operation of the 
ribbon feeding mechanism. When the rib-
bon is wound upon the spools 8*, the ends 
26 of the ribbon are secured by points 27 
(see Fig. 7) in order that the said ribbon 
will not pull off the spools when it has 
reached the end of its forward or backward 

movement.

Referring to Figs. 2 and 4, and presum-
ing that the carriage is moving toward the 
left, it will be seen that the lower rack 16 
is in engagement with the pinion 14*. As the 
carriage continues to move toward the 
left it will rotate the pinion 14* as shown 
by the arrow 28, and the gear 12* as per the 
arrow 29; this movement will feed the rib-
bon 7 as shown by the arrow 30. When the 
carriage reaches the end of its stroke the 
rack 16 will jump the teeth of the pinion 
14* when the carriage is forced to its ex-
treme right position for a new line. The 
rack 16 will engage the teeth of the pinion 
14* until the ribbon reaches the end of its 
movement, as shown in Fig. 7. Should the 
ribbon 7 reach the end of its length, as 
shown by dot and dash lines 7* (Fig. 4) 
when the carriage reaches half of its travel, 
the ribbon will pull taut, thereby prevent-
ing further rotation of the spools 8*, pinion 
14* and gear 12*. When the ribbon is pulled 
taut, and as the carriage continues its move-
ment, the racks 15 and 16 will also tend to 
move, but as the pinion 14* cannot turn, 
the pressure upon the rack 16, due to the taut 
ribbon, will move it angularly upwardly, 
due to the slots 20, whereby the lever-arms 
30, 31, which are rotatably mounted on 
the plate 18, will be moved, as pressure is 
exerted by the upward movement of the rack 
16, due to the taut ribbons; that is to say, 
the levers 31 will move up and the levers 
30 down, whereby the upper rack 15 will be 
forced into mesh with the pinion 14. The 
spring 21 will act to force the rack 15 into 
engagement with the teeth of the pinion 14 
while the teeth of the rack 16 leave the teeth 
of the pinion 14*, while the spring 21* will 
be forced upwardly. When the rack 15 en-
gages the teeth of the pinion 14, the move-
ment of the ribbon will be reversed, and 
will continue to move in the latter direction 
until the opposite end of the ribbon is 
reached. At such a time the ribbon move-
ment will be reversed again in a manner 
above mentioned.

By referring to Fig. 3 it will be seen that 
the lower rack 16 is in alinement with the 
pinion 14*, while the upper rack 15 is in 
alinement with the pinion 14, which is po-

sitioned nearer the bottom of the member 5* 
than the pinion 14*. In Fig. 3, the racks 
15 and 16 are shown in dotted lines to show 
their position relative to the pinions which 
they operate.

Having now described my invention, what I claim and desire to secure by Letters Pat-
ent is:

1. In a typewriting machine, a movable 
carriage, a platen on said carriage, a pla-
rumality of spools, an inking ribbon carried by 
said spools, gears adapted to rotate said 75 
spools, a plurality of racks carried by said 
carriage, one of said racks being adapted to 
move with one of said gears to operate the 
ribbon in one direction, the other of said 
racks being adapted to mesh with the other 
of said gears to operate the ribbon in the op-
posite direction, only one of said racks being 

in mesh with its respective gear at a time, 
and means adapted to throw the disengaged 
rack in mesh with its cooperating gear when 
the ribbon has reached the end of its length, 
the engaged rack being adapted to auto-

matically leave its engaging gear.

2. In a typewriting machine, a movable 
carriage, a platen carried thereby, a pla-
rumality of spools, an inking ribbon carried 
thereby, gears adapted to rotate said spools, 
a plurality of racks slidably mounted on said 
carriage, one of said racks being adapted to 
move with one of said gears to operate said 
ribbon in one direction, the other of said 
spools being adapted to mesh with the other 
of said gears to operate said ribbon in the 
opposite direction, only one of said racks be-
ing in mesh with its respective gear at a 100 
time, and means operated by the engaged 
rack adapted to cause the disengaged rack to 
 mesh with its cooperating gear when the 
ribbon has reached the end of its length, the 
engaged rack being adapted to automatically 
leave its engaging gear.

3. In a typewriting machine, a movable 
carriage, a platen carried thereby, a pla-
rumality of spools, an inking ribbon carried 
thereby, gears adapted to rotate said spools, 
a plurality of racks slidably mounted on said 
carriage, one of said racks being adapted to 
move with one of said gears to operate said 
ribbon in one direction, the other of said 
spools being adapted to mesh with the other 
of said gears to operate said ribbon in the 
opposite direction, only one of said racks be-
ing in mesh with its respective gear at a 115 
time, and levers operated by the engaged 
rack adapted to cause the disengaged rack to 
leave its engaging gear.

4. In a typewriting machine, a movable 
carriage, a platen carried thereby, a pla-
rumality of rotatable spools, an inking ribbon 
carried thereby, and a plurality of coop-
erating devices carried by said carriage adapted to rotate said spools, one of said devices being adapted to operate one of said spools in one direction, the other of said devices being adapted to operate the other of said spools in the opposite direction, said devices being adapted to automatically change their position to rotate their respective spools, whereby the movement of the ribbon is reversed at intervals.

Signed at New York city, N. Y., on this 7th day of June 1909.

FREDERICK ALEXANDER.

Witnesses:

Wm. F. Laskowski, Jr.,

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