May 26, 1925. 1,539,244

C. M. CREWS

TYPEWRITING MACHINE

Filed March 3, 1923

Fig. 1.

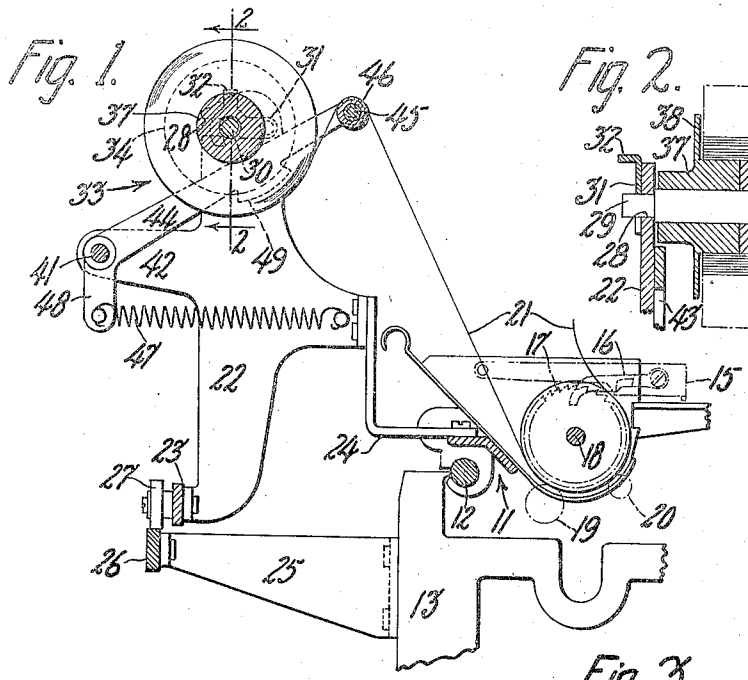


Fig. 2.

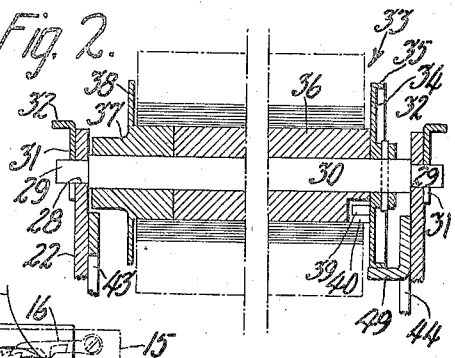
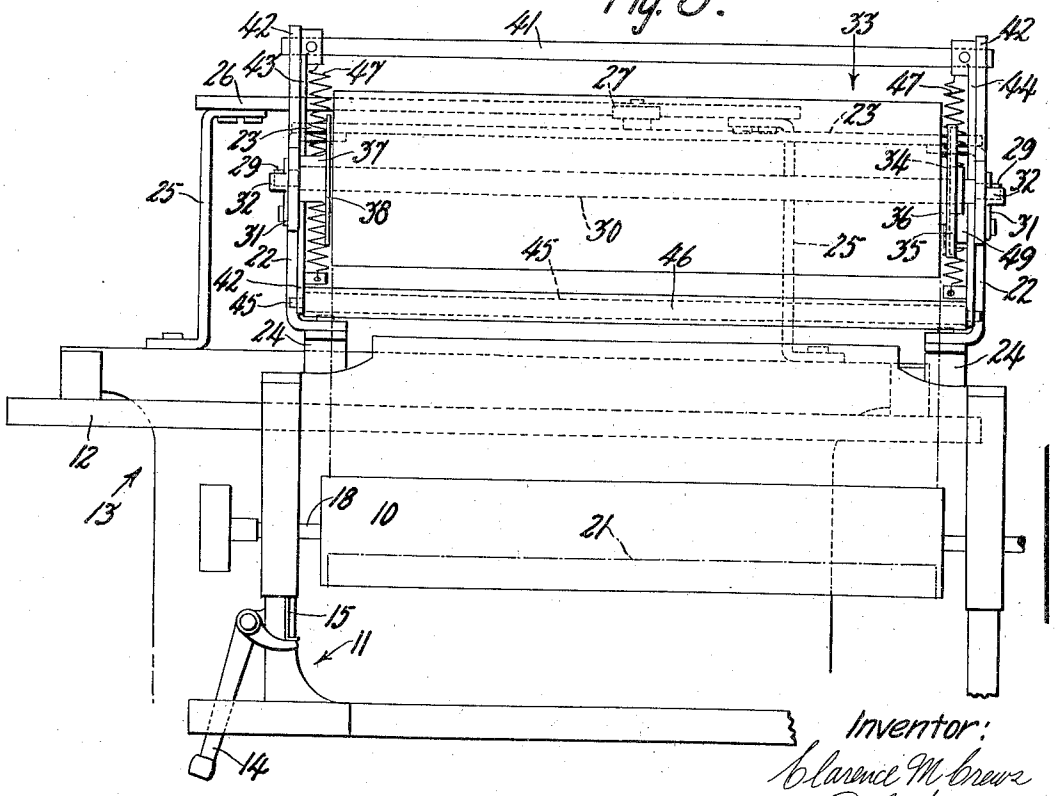


Fig. 3.



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Patented May 26, 1925. 1,539,244

UNITED STATES PATENT OFFICE.

CLARENCE M. CREWS, OF BROOKLYN, NEW YORK, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPEWRITING MACHINE.

Application filed March 3, 1923. Serial No. 622,476.

To all whom it may concern:

Be it known that I, CLARENCE M. CREWS, a citizen of the United States, residing in Brooklyn Borough, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a specification.

This invention relates to typewriting machines wherein the paper is supplied in continuous web form, from a reel, and has for its principal object to reduce the resistance of the paper to feeding by the platen in the line-spacing operation.

The line-spacing of a typewriter platen is generally effected by a sharp stroke of the line-spacing lever which occupies but a moment. Where the paper is led directly from the reel to the platen, the reel must be turned at the same peripheral speed as the platen in line-spacing, and since the reel is stationary at the beginning of this operation it must be accelerated rapidly. Such acceleration requires considerable force and consequently a substantial resistance is opposed to the feeding of the paper from the reel, which is apt to cause the paper to slip relatively to the platen, causing irregular line-spacing on the work-sheet.

This invention aims to reduce the resistance of the paper to feeding, in the line-spacing operation by making it unnecessary to accelerate the reel rapidly. As herein disclosed, the paper is guided indirectly from the reel to the platen by a yieldingly supported guide whereby a greater amount of paper is maintained between the reel and the platen than would be the case if the paper were passed directly from the reel to the platen in a straight course. The guide is supported in a definite normal position by a spring which may be overcome with much less force than would be required to feed the necessary amount of paper directly from the reel in the brief line-spacing operation, but which is strong enough, nevertheless, to turn the reel slowly. The paper is partially straightened during line-spacing, the guide being moved by the paper against the opposition of the guide-supporting spring to permit this, so that the paper is supplied to the platen from the surplus maintained between the reel and the platen. The reel is not necessarily set into motion at all during this operation, although its movement may be begun at this time. During the interval between line-spacing operations, the guide-supporting spring slowly returns the guide to its normal position, and, in so doing, turns the reel, slowly unreeling an amount of paper equal to the amount just used.

In the course of the unreeling operation, the reel acquires a momentum which may result in over-feeding. One feature of the present invention is the provision of means for checking rotation of the reel to prevent over-feeding, which means is automatically rendered ineffective during unreeling operations. The yielding paper-guide is preferably mounted on a swinging support which carries a brake normally in engagement with a rotatable part of the reel. As soon as the line-spacing operation is begun, the guide is moved by the paper, and this automatically moves the guide-support to withdraw the brake from engagement with the reel, so that the reel may be rotated without restraint. The brake remains disengaged from the reel until the line-spacing and unreeling operations have been completed, and re-engages the reel only when the guide has been restored to its initial position. The re-engagement of the brake with the reel limits the movement of the guide and determines the normal position thereof.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a fragmentary sectional side elevation of a typewriting machine having the present improvement applied thereto.

Figure 2 is a vertical section on the line 2—2 of Figure 1, with an intermediate portion of the reel omitted.

Figure 3 is a fragmentary plan view of the machine.

A platen 10 is rotatably mounted in a traveling carriage 11, which is guided in letter-feed and return directions upon a front rail (not shown) and a rear rail 12 upon the machine-frame 13. The platen is line-spaced by a line-spacing lever 14, which operates the usual line-spacing mechanism comprising a slide 15, a pawl 16 and a ratchet-wheel 17 fast on the platen-shaft 18. Feed-rolls 19 and 20 press the paper 21 against the platen 10 and cause it to be frictionally gripped and fed by the platen when the platen is line-spaced. A paper-carrying frame, comprising end plates 22 and a con-

necting bar 23, is mounted on brackets 24 which extend rearwardly from the traveling carriage 11 at opposite ends thereof. Rearwardly-extending brackets 25 on the machine-frame carry a supporting rail 26, upon which a roller 27, carried by the paper-carrying frame, travels. The end plates 22 of the paper-carrying frame have horizontal slots 28 for receiving the reduced opposite ends 29 of a reel-shaft 30, and pivoted latches 31, having finger-pieces 32, are provided for retaining said shaft 30 in the forward ends of the slots 28. The reel 33 comprises a disk 34 fixed to the shaft 30 and provided with a braking flange 35, a core 36 on which the paper 21 is wound, and a second core or hub 37 having a flange 38 upon it. The core 36 is connected to the disk 34 through a pin 39 on the disk, which is received in a recess 40 in the core. When the supply of paper on the reel 33 is exhausted, the reel may be removed from the machine, and a new core 36, with a fresh supply of paper upon it, may be assembled with the other parts of the reel. It should be observed that the disk 34 turns with the paper.

A rock-shaft 41, mounted in rearward extensions 42 on the end plates 22, has fixed upon it a pair of upwardly and forwardly extending arms 43 and 44, which support, at their forward ends, a rod 45 carrying an anti-friction paper-guiding roll 46, over which the paper 21 is led from the reel 33. This roll 46 is urged in an upward direction by springs 47, which draw forward on the tails 48 of the arms 43 and 44. The arm 44 has a brake-forming flange 49 which co-operates with the flange 35 on the disk 34 to check the rotation of the reel 33, and these flanges 35 and 49, by their engagement, limit the upward movement of the roll 46. The paper is led upward from the reel 33 around the roll 46, and then downward to the platen 10. When the platen is line-spaced, the paper 21 tends to become straightened between the reel and platen, drawing the roll down against the opposition of the springs 47 until the required amount of paper has been supplied to the platen. The tension of the springs 47 is then effective to swing the arms 43 and 44 upwardly and thereby lift the roll 46 to draw the paper from the reel 33. This turns the reel 33 slowly in a counterclockwise direction, as shown in Figure 1. The brake 49 is moved out of engagement with the flange 35 automatically as the guide-roll 46 begins its downward movement, and it does not re-engage the flange 35 until the roll 46 has resumed its initial position. At this point, an amount of paper will have been unwound from the reel equal to the amount which was fed to the platen in the line-spacing operation. The re-engagement of the brake 49 with the flange 35 arrests the upward movement of the roll 46, and simultaneously checks rotation of the reel 33. It will be seen that the mechanism described greatly reduces the drag on the paper in the line-spacing operation by making it unnecessary to accelerate the reel rapidly, and that a reel-brake is provided which is automatically ineffective during unreeling operations and effective at other times.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, a paper-reel, paper unreeling mechanism, a brake acting on said reel, and means for automatically rendering the brake ineffective during unreeling operations.

2. In a typewriting machine, a paper-reel, paper-unreeling mechanism, and a reel-brake controlled by the unreeling mechanism to be ineffective during operation of the unreeling mechanism and to become effective upon the completion of an unreeling operation of predetermined extent.

3. In a typewriting machine, paper-feeding means, a reel for supplying paper thereto, and a reel-brake automatically controlled by the paper itself to be ineffective during paper-feeding operations.

4. In a typewriting machine, a platen, line-spacing mechanism, a paper-reel comprising a member having a braking surface, a brake co-operating with said surface, and means operated by the operation of the line-spacing mechanism for moving the brake out of engagement with said member.

5. In a typewriting machine, a platen, line-spacing mechanism therefor, a paper-reel for supplying paper thereto, means for causing the line-spacing and unreeling operations to occupy different periods, a reel-brake, and means for automatically rendering the brake ineffective during the line-spacing and unreeling operations and effective at all other times.

6. In a typewriting machine, a platen, line-spacing mechanism therefor, a paper-reel, a paper-guide, a reel-brake, a swinging support common to the paper-guide and reel-brake, and spring means for moving said support in a direction to cause the paper-guide to withdraw paper from the reel and to move the brake into engagement with the reel, said brake being effective by engagement with the reel to limit such movement of the paper-guide.

7. In a typewriting machine, a platen, line-spacing mechanism therefor, a paper-reel, a paper-guide, a reel-brake, a swinging support common to the paper-guide and reel-brake, and spring means for holding

the support in a position with the brake engaging the reel and with the paper-guide in position to be engaged and moved by the paper in the line-spacing operation, the construction and arrangement being such that movement of the paper-guide by the paper automatically withdraws the brake from engagement with the reel.

8. In a typewriting machine, a platen, line-spacing mechanism therefor, a paper-reel for supplying paper to the platen, a paper-guide, a support therefor, said guide and support being movable in one direction by the paper in the line-spacing operation, yielding means for moving the support in the opposite direction to unreel the paper, and a brake on said support movable into engagement with the reel to arrest the unreeling movement of the paper-guide and the rotation of the reel simultaneously.

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Witnesses:
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EDITH B. LIBBEY.