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TYPEWRITING MACHINE.

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This invention relates to an improvement in typewriting machines, and, with respect to its more specific features, to machines of the portable type.

5 A feature of the invention is the provision of improved means engaging the work-sheet above and below the platen printing line, and at each end thereof to hold the work closely to the platen.

10 Another feature is the provision, in such machines, of an improved feeding means engaging the work-sheet above the printing line throughout the length of the platen, mounted to be moved into operative position, or well away from the platen into inoperative position, and spring-controlled to be held in either position.

Another feature is a simple and compact construction of carriage and appurtenances, together with a paper-control, including a deflector to be moved to paper-release position by a suitable finger-piece or by grasping the deflector, and having means to lock the deflector in release position when desired.

25 Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a top plan view of the carriage.

30 Figure 2 is a front view with parts in section.

Figure 3 is an end view, partly in section.

Figure 4 is a section on the line A—A of Figure 2.

35 Figure 5 is a similar view, with the parts in release position.

Figure 6 is an enlarged sectional detail, showing the mounting of the paper-scales and paper-fingers.

40 Figure 7 is a similar view, showing the mounting of the paper-table extension fingers.

50 In the present embodiment of the invention, the carriage, which is especially designed for use with portable typewriters of the character forming the subject-matter of my co-pending application, Serial No. 697,476, filed March 7, 1924, in which the typing system is tilted so that the printing plane of the type-faces inclines rearwardly, comprises a base-plate 10 provided at each end with an upstanding portion 11 forming the side or cheek plates for the carriage. The base has integral flanges 12 and 13 at its front and rear, the flanges formed by bending up the side edges of the base, and

each flange is bent inwardly, and then outwardly to form a trough having walls extending at substantially a right angle with respect to each other. The walls are also at angles of approximately 45 degrees to the base, and each trough serves as a shifting rail co-operating with a similar rail on the carriage-shift-frame to form a bearing race for receiving a bearing 14.

60 A platen 15 is journaled in the cheek-plates of the carriage, the platen having the usual finger-knob 16 for turning the same. A paper-deflector 17 is mounted below and behind the platen. This deflector, which is of sheet-material, curved to conform roughly with the curvature of the platen, is pivotally mounted by means of ears or lugs 18 depending from the deflector at its ends, and between its forward and rear edges, said lugs being pivotally connected to other lugs 19 on the base of the carriage. At its forward edge the deflector has pairs of bearings 20, open toward the platen, as shown in Figures 3 to 5, inclusive, and feed-rolls 21 are supported by the bearings; the rolls having journal pins 22 engaging the bearings. The feed-rolls are designed to co-operate with the platen to feed the work-sheet, and they are normally pressed toward the platen by means of plate-springs 23 secured to the base-plate of the carriage, and engaging at their free ends the deflector near the feed-rolls. As shown in Figure 2, the feed-rolls 21 are spaced apart at their adjacent ends, and they are also spaced apart from the ends of the platen.

70 The deflector at its rear edge extends well above and behind the platen, and may be readily grasped at any portion of its length whereby to swing the deflector against the resistance of the springs 23 to release the work-sheet. When, however, it is desired to lock the paper-release in release position, mechanism is provided for moving the forward edge of the deflector away from the platen, and for holding it in such position. Said mechanism includes a lever 24 pivoted on the axle 25 of the platen, and having at its upper forward end a finger-piece 26 for convenience in operating the same. The other end of the lever has a cam-arm 27, which is designed to engage a radial arm 28 on a rock-shaft 29 in rear of the forward rail 12.

105 The rock-shaft lies beneath the inwardly-inclined portion of the rail, and it is held

in such position for rocking movement by means of headed members 30, screws in the present instance, which engage with the base-plate. The heads of the screws co-operate with the rail 12 to provide a rocking mounting for the rock-shaft, and said shaft is provided at its inner end with a second arm 31, which engages above a lug 32 bent down from the deflector. Referring to Figures 4 and 5, it will be noted that the lug 32 is struck out from the material of the deflector, the struck-out portion being bent downward and forward to engage beneath the arm 31.

The arrangement is such that, when the lever 24 is moved to its extreme position in one direction, as indicated in dotted lines in Figure 3, the cam-arm 27 will be so placed with respect to the radial arm 28 of the rock-shaft that the arm 28 will be temporarily locked against forward movement, and the lever will be temporarily locked against rearward movement, and this locking will continue until the parts are released by moving the forward end of the lever upward. The release-lever 24 is limited in its movement toward release position by a stop-pin 33 which engages an inwardly-extending flange 34 on the adjacent cheek-plate of the carriage, said cheek-plates being flanged inwardly at their tops and front, as shown in Figures 3 to 5, inclusive.

The feed-rolls 21 hold the work-sheet closely against the platen below the printing line, and a feed-roll 35 is arranged above the printing line, said roll extending the full length of the platen, and engaging the platen just forward of the highest part thereof, as shown in Figures 3 to 5. The ends of the roll are journaled in bearings 36 at the forward ends of arms 37, which are pivoted at their rear ends on a shaft 38 connecting the cheek-plates at the rear of the carriage, and forming a part of the carriage. Each arm has a bearing 39 engaging the shaft and held thereon, and at its forward end each arm has an inwardly-bent lug 40. The journal pins of the roll 35 are annularly grooved, as shown at 41, and set screws 42 are threaded through the lugs 40 to engage the grooves. The engagement of said screws with the grooves prevents longitudinal movement of the roll in its bearings and also prevents movement of the arms 37 away from the roll. The screws 42 extend forwardly, as shown in Figure 1, and serve as handles to be grasped when swinging the supporting frame for the feed-roll, constituted by the arms 37.

Feed-roll 35 is held in operative or inoperative position by means of a spring 43 which is secured to one of the cheek-plates at the rear of the carriage. The adjacent arm 37 of the swinging support has a rearward ex-

tension 44 against which the spring bears, the engagement being such that, when the roll is in the full-line position of Figure 5, the spring acts to press the roll against the platen, while, when the parts are in the dotted-line position of this figure, the spring acts to hold the swinging support elevated with the roll in inoperative position.

The paper-deflector is provided at its forward edge with lugs 45, one of the lugs being between the feed-rolls 21, while the others are near the ends of the platen. Each of these lugs 45 is bent downwardly from the deflector edge at an angle corresponding to the angle of inclination of the printing plane of the type-faces, and parallel with such plane. The lugs are perforated, as shown at 46, and a plate 47 is connected to the lugs by shouldered studs 48 which pass through the perforations and are engaged by nuts 49 on the under side of the lugs. The studs 48 are shouldered, so that the plate 47 is spaced away from the lugs, as shown in Figure 6, and the plate carries a pair of paper-scales 50 and 51, the scale 50 being above the scale 51 and offset rearwardly therefrom, as shown. Paper-fingers 52 are mounted to slide on the plate 47 toward and from each other, and these fingers are curved to conform closely to the curvature of the platen, and are of a length to extend from near the feed-rolls 21 to near the roll 35. The paper-fingers have any suitable means, indicated at 53, to slidably engage the plate, and the shouldered stud permits the fingers to move freely past the lugs 45. The paper-fingers move between the scales, and co-operate with both, said fingers being in front of the upper scale and behind the lower scale.

Referring to Figure 5, it will be noted that, when the deflector is swung to release position, there is a clear open space between the same and the platen. The paper-fingers and the paper-scales are carried by the forward edge of the deflector, so that, when it is moved to release position, the paper-fingers and the scales are carried therewith. The upper feed-roll, when swung into the dotted-line position of Figure 5, is entirely free from the work-sheet, and, when the deflector is operated to release the feed-rolls 21, with the upper roll in elevated position, the work-sheet is entirely free from the platen. The spring 43 is effective to hold the roll 35 in operative or inoperative position, and, in order to lessen friction during the swinging of the roll, the engagement between the spring and the extension is by means of a roller 54 journaled on the extension.

A shaft 62 supports a pair of paper-table-extension fingers 55. These fingers are pivoted on the shaft, as indicated at 56, to swing parallel therewith or at right angles thereto, and each finger has a lateral arm

57 provided with a stop-lug 58 for engaging the shaft to limit the swing of the finger to a position at right angles to the shaft. Each finger is also provided with a finger-piece 59 which limits its inward swinging movement to a position substantially parallel to the shaft.

A paper guide and guard 60 is supported by the carriage-frame in rear of the left end of the platen, and in the plane of said end, and between the platen and the line-spacing wheel, indicated at 61. The top of the guide is at about the level of the top of the platen, and the forward edge thereof extends slightly within the circumference of the platen. The guide assists in the placing of the work-sheet on the platen, and prevents the moving of the sheet too far to the left where it might pass into the field of the line-spacing wheel.

It will be noted upon an inspection of Figure 2 that the paper-release mechanism, which includes the rock-shaft, engages the paper-deflector at about the center, so that, when the shaft is rocked to move the deflector to release the work-sheet, the deflector moves evenly, maintaining the distance between the forward edge thereof and the platen uniform.

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, the combination with a platen, of a feed-roll above the printing line and extending completely across the platen, means pivoted at the rear of the platen to support the roll for swinging movement away from the platen, including arms extending forwardly from the pivotal point, one of said arms having a rearward extension, a roller journaled at the extreme end of said extension, and a leaf-spring pressing against said roller, whereby to hold said feed-roll against the platen or in released position.

2. In a typewriting machine, the combination with a platen, of a feed-roll extending across the platen above the printing line, arms pivoted adjacent the rear of the platen and extending forwardly adjacent the ends of said feed-roll, means for detachably securing the feed-roll to the free ends of said arms, one of the arms having a rearward extension, and a leaf-spring pressing against said extension, whereby to maintain said feed-roll against the platen or released therefrom.

3. In a front-strike typewriting machine, the combination with a platen, of feed-rolls co-operating therewith below the printing line, a swingably-supported paper-deflector below and behind the platen, the feed-rolls being journaled upon said paper-deflector

adjacent the forward edge thereof, and paper-fingers carried by said paper-deflector such that when the latter is swung to release the feed-rolls, said paper-fingers are released therewith.

4. In a typewriting machine, in combination, a platen, a paper-deflector below and behind the platen, a plurality of paper-scales carried by the deflector at its forward edge, the scales offset laterally, a plurality of paper-fingers between the scales co-operating with both, adjustable longitudinally thereof, and conforming closely to the curvature of the platen, and feed-rolls above and below the fingers.

5. In a typewriting machine, in combination, a platen, a paper-deflector below and behind the platen, a plurality of paper-scales carried by the deflector at its forward edge, the scales offset laterally, a plurality of paper-fingers between the scales co-operating with both, adjustable longitudinally thereof, and conforming closely to the curvature of the platen, and feed-rolls above and below the fingers, the upper roll extending the full length of the platen.

6. In a typewriting machine, in combination, a platen, a feed-roll co-operating with the platen above the printing line, and a mounting for the roll including forwardly-extending arms having bearings for the ends of the roll, an inwardly-extending lug at the forward end of each arm, and a set screw threaded through each lug, the roll having annular grooves for engagement by said screws.

7. In a typewriting machine, in combination, a platen, a feed-roll co-operating with the platen above the printing line, and a mounting for the roll including forwardly-extending arms having bearings for the ends of the roll, an inwardly-extending lug at the forward end of each arm, and a set screw threaded through each lug, the roll having annular grooves for engagement by said screws, said screws having heads extending forwardly and serving as handles to lift the roll.

8. In a typewriting machine, a carriage including a base having an upstanding flange at its forward edge serving as a shift-rail, and paper-release-operating means including a rock-shaft journaled behind the flange, said shaft having an arm at the middle of the platen operating the paper-release.

9. In a typewriting machine, a carriage including a base having an upstanding flange at its forward edge, serving as a shift-rail, paper-release-operating means including a rock-shaft journaled behind the flange, said shaft having an arm at the middle of the platen operating the paper-release, and means including a lever pivoted coaxially with the platen to oscillate the

rock-shaft and to lock it with the feed-rolls in release position.

10. In a typewriting machine, a carriage including a base and connected end plates, the base having upstanding flanges at its side edges, serving as shift-rails, paper-release mechanism including a rock-shaft lying behind one flange, and headed members engaging the shaft to hold it in place.

11. In a typewriting machine, a carriage including a base and connected end plates, the base having upstanding flanges at its side edges, serving as shift-rails, paper-release mechanism including a rock-shaft lying behind one flange, and headed members engaging the shaft to hold it in place, said members detachably connected with the base.

12. In a typewriting machine, a carriage, a platen, a swingable paper-table carrying feed-rolls at the forward edge thereof, and means for swinging the table to release or apply said feed-rolls including a rock-shaft journaled on the carriage, an arm carried by one end of said rock-shaft and engaging the paper-table, an arm at the other end of said rock-shaft, and a lever coaxial with the platen and engaging the last-named arm to oscillate the shaft when the lever is vibrated, the parts arranged to lock the paper-table in released position when the lever is at the extreme of its movement in one direction.

13. In a typewriting machine, a carriage comprising a base having upstanding flanges

at its front and rear edges, serving as shift-rails, and upstanding portions at its ends, serving as end plates for the carriage, said portions flanged inwardly at the top and front.

14. In a typewriting machine, a carriage comprising a base having upstanding portions at its front and rear edges, serving as shift-rails, each portion bent inwardly toward the base, then upwardly and outwardly to form a trough to cooperate with a similar trough on the shift-frame to provide a bearing race.

15. In a typewriting machine, a carriage including a base having shift-rails at its front and rear edges, said rails portions of the base bent inwardly, and then outwardly to form troughs having walls substantially at right angles to each other, operating mechanism for the paper-release including a rock-shaft lying behind the forward rail, and means including the rail for holding the shaft in place.

16. In a typewriting machine, the combination with a platen, of feed-rolls co-operating therewith below the printing line, a roll co-operating therewith above the printing line, paper-fingers between the rolls conforming closely to the curvature of the platen and adjustable toward and from each other, and a paper-table for supporting the lower feed-rolls and the paper-fingers and movable with respect to the platen to release the rolls and fingers from the platen.

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