Sept. 4, 1951 C. W. CRUMRINE 2,566,930

PAPER BAIL MECHANISM FOR TYPEWRITERS

Filed July 23, 1948 2 Sheets-Sheet 1

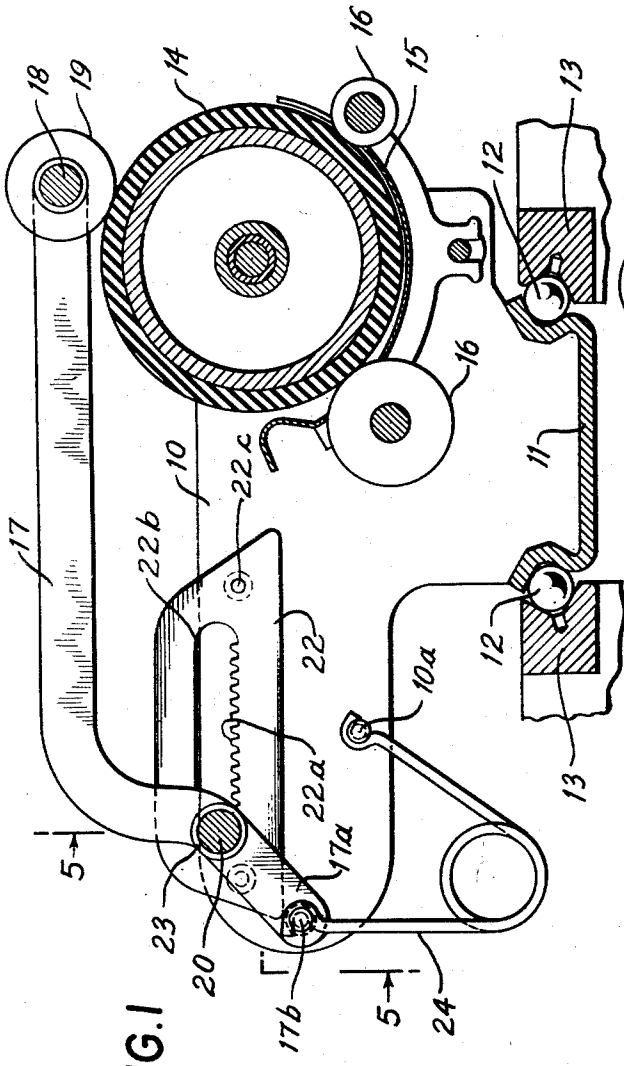

FIG. 1

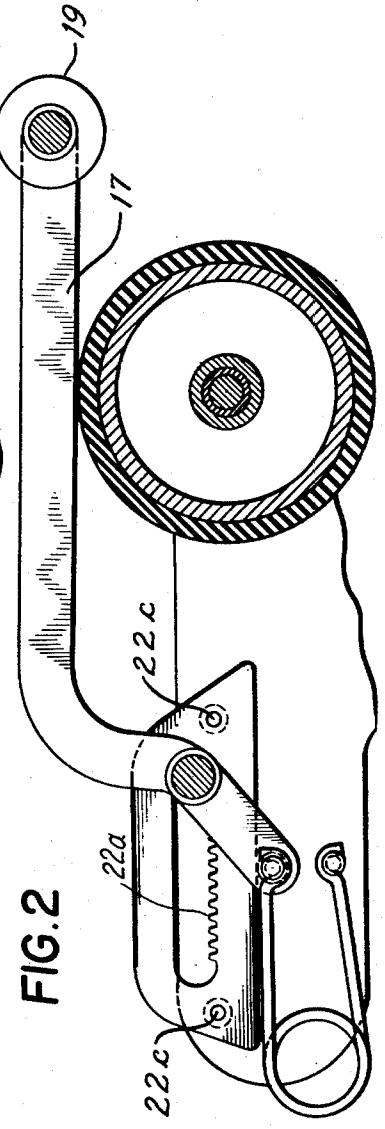

FIG. 2

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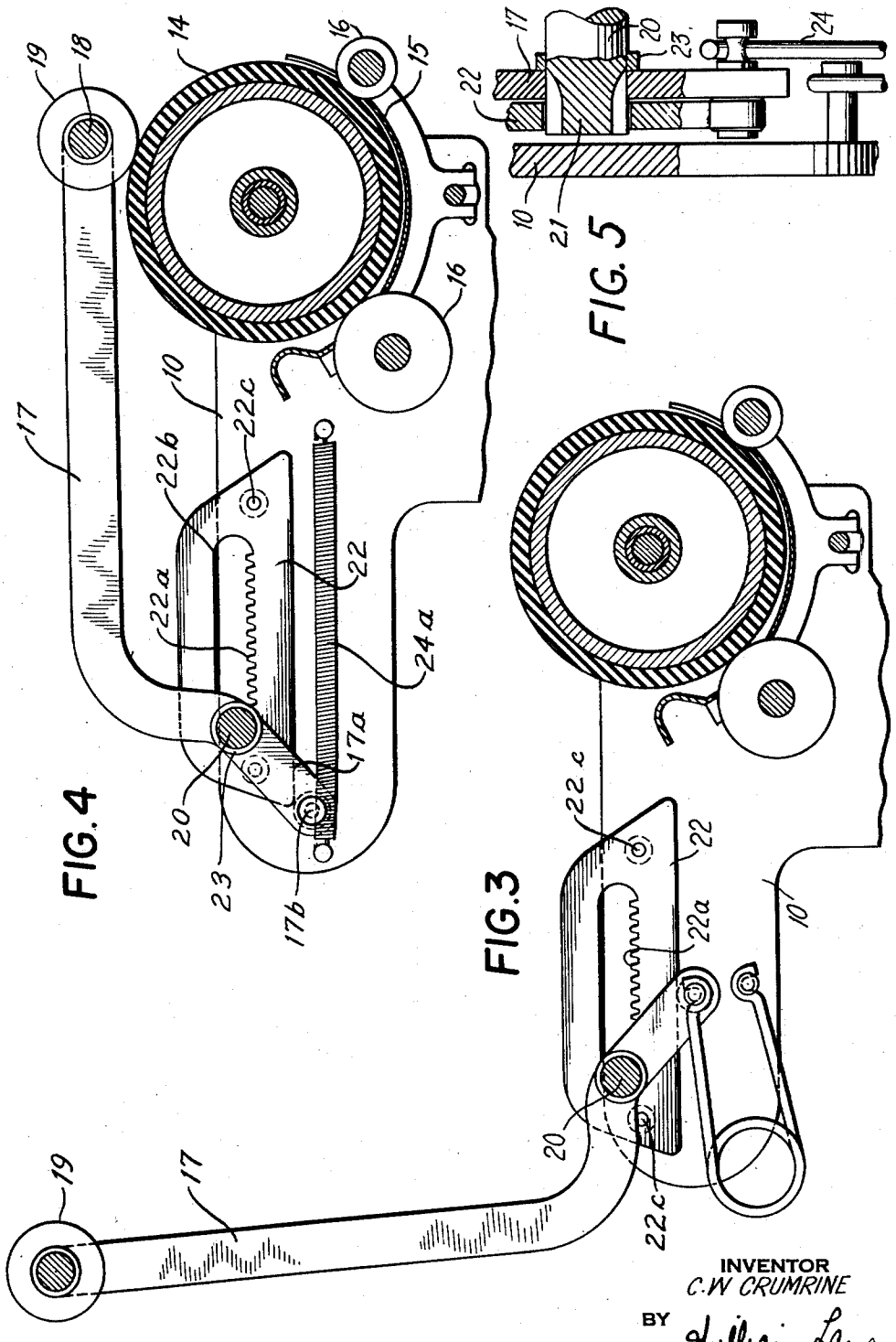

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PAPER BAIL MECHANISM FOR TYPEWRITERS

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10 Claims. (Cl. 197—138)

1

This invention relates to typewriting machines.

The primary object of the present invention is to provide an improved paper bail suitable for use on the carriages of typewriters and other office machines.

An object is to provide a paper bail which may be set in a plurality of positions to facilitate the insertion of work sheets around the platen of the typewriting machine.

An object is to provide a paper bail mechanism which is very simple and yet is capable of being set in several different positions to suit the convenience of the operator.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a vertical section through the carriage of a typewriting machine showing the paper bail mounted thereon.

Fig. 2 is a view similar to Fig. 1, but showing the paper bail drawn horizontally forwardly toward the operator.

Fig. 3 is a view similar to Fig. 1, but showing the paper bail set in its extreme rearward inclined position.

Fig. 4 is a vertical section showing a modified form of retaining means for holding the paper bail in its different set positions.

Fig. 5 is a large scale section on the line 5—5 in Fig. 1.

In the drawings, the carriage frame is designated 10 and includes the channel shaped member 11, the sides of which are formed as grooves to retain the usual antifriction rollers or balls 12 by means of which the carriage is movably mounted on the guiding rails 13. The carriage rotatably supports the usual platen 14 and is provided with a paper deflector 15 having pressure rollers 16. The carriage may also be provided with the usual paper table which has been omitted from the drawing to avoid confusion in showing the parts connected with the paper bail. The foregoing parts may all be conventional and their specific construction plays no important part in the present invention, but are shown purely for sake of completeness.

The paper bail comprises the side arms 17 of which there is one adjacent each carriage side plate and at their forward or right-hand ends (Fig. 1), the arms 17 support the cross rod 18 on which is mounted the paper bail rollers 19. As

2

is usual in typewriting machines, only two rollers 19 need be provided and they may be slidably mounted on the rod 18 so as to be adjustable in accordance with the width of the work sheets wrapped around the platen 14. The paper bail arms 17 are loosely pivotally supported on a cross shaft 20, the ends of which loosely abut the inside faces of the carriage side plates so that the shaft 20 is capable of horizontal motion of translation from left to right and vice versa.

In order to prevent one end of the shaft from moving to right or left more than the other when the shaft is shifted bodily, the ends of the shaft may be formed as pinions 21 (Fig. 5) and each of the pinions rests on and meshes with rack teeth 22*a* formed on the lower edge of a horizontal slot 22*b* in a plate 22, there being a plate 22 and a pinion 21 adjacent each side plate of the carriage. These plates 22 are secured to the side plates as by means of screws or rivets 22*c*. In order to facilitate disassembly and keep arms 17 parallel, the shaft 20 may be provided with collars 23 adjacent the arms 17 so as to keep the arms 17 from becoming displaced along the shaft 20.

Each arm 17 has an extension 17*a* formed thereon provided with a stud 17*b* engaged by one arm of a toggle spring 24, the other arm of which engages a stud carried by the adjacent carriage side plate. The toggle springs 24 are continuously under a state of compression and, when the arms 17 are in the position shown in Fig. 1, the toggle springs urge the arms 17 in a clockwise direction to press the rollers 19 against the platen 14. This is the normal position of the paper bail while the work sheet is being typed.

When the operator desires to insert a new sheet, the bail rod 18 may be grasped at any point along its length and drawn forwardly or to the right in Fig. 1, thus displacing the paper bail to the position of Fig. 2 in which the rollers 19 are well clear of the platen. If a sheet now is inserted on the paper table and the platen rotated, the sheet may be fed directly upwardly without interference from the rollers 19. The toggle spring 24 is further compressed when the paper bail is drawn to the position of Fig. 2 and retains the paper bail in the position of Fig. 2 with arms 17 clear of the platen by pressing the studs 17*b* up against the straight underedges of the plates 22. If desired, the studs 17*b* may be provided with rollers which act as stops to hold the arms 17 slightly clear of the platen to avoid wear thereon when the platen is rotated to insert the work sheet.

If the operator wishes, the paper bail may be swung from the position of Fig. 1 to the position of Fig. 3 in which the paper bail occupies a position completely clear of the carriage, the stud 17b coacting with the underedge of the plate 22 as in Fig. 2, to act as a stop to limit counterclockwise rotation of the paper bail.

In Fig. 4 there is shown a modified form of means for retaining the paper bail in its different set positions consisting of two coil springs like 24a, one for each arm 17, stretched horizontally between two studs. In this case, the stud 17b may be grooved adjacent its head to conform to the curvature of the coils of the spring 24a. The spring 24a is slightly bent around the stud 17b in order that sufficient tension may exist on said stud to urge the arm 17 in a clockwise direction to engage the rollers 19 with the platen 14. When the paper bail is drawn forwardly or to the right (Fig. 4), the studs 17b glide over the springs 24a and the studs 17b riding on the underside of the plate 22, maintain the arms of the paper bail horizontal, as in Fig. 2, clear of the platen. In either the position of Fig. 4, or the equivalent of the position shown in Fig. 2, the paper bail may be rocked upwardly to a position similar to the one shown in Fig. 3 in which the paper bail is well clear of the platen and paper table. In rotating the paper bail, the springs 24a will be deflected downwardly and tensioned, but will close in behind the studs 17b to maintain the paper bail in the vertical position similar to Fig. 3.

One of the advantages of the paper bail is its extreme simplicity due to the fact that all of the parts necessary to maintaining the different positions are compact enough to be located close to the carriage side plates so as not to interfere with any of the carriage borne mechanism such as the column stops and the marginal stop rack which are normally located behind the platen.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail including a cross-bar having a plurality of bail rollers for pressing work sheets against the platen and a pair of side arms for said cross-bar, a cross shaft pivotally supporting said arms and having its ends provided with gear teeth adjacent said arms; a pair of racks, one for each side arm and meshing with said gear teeth, said gear teeth rolling over said racks to permit the bail rollers to be withdrawn from the platen and, when so withdrawn, maintaining the shaft parallel with the platen; and spring means coacting with said arms to yieldingly hold said rollers in engagement with said platen or in withdrawn position.

2. In a typewriting or like machine having a platen, a paper bail mechanism comprising a bail cross-bar having bail rollers engageable with the platen and bail side arms, spring means for urging said side arms in a direction to engage said rollers with said platen; and means to pivotally slidably mount said side arms including a

cross shaft extending parallel with the platen and pivotally supporting said side arms and provided with gear teeth at its ends, and a pair of fixed guide plates having guide slots receiving the ends of said shaft and formed with rock teeth meshing with said gear teeth to maintain the shaft parallel with the platen while permitting said shaft and said paper bail to be bodily displaced transversely of the platen to withdraw the rollers from coaction with the platen.

3. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail frame having bail rollers resting on the platen; means for pivotally slidably mounting said frame at the rear of the platen, including a pair of horizontally slotted plates and a shaft pivoting said frame and having its ends shaped to have rolling contact with the walls of the slots in said plates to compel said shaft to move parallel with the platen when the frame is drawn forwardly of the platen; and spring means acting on said frame to hold the frame in either the position in which the rollers rest on the platen, or the forwardly drawn position.

4. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail frame, support mechanism for said frame comprising a shaft for pivotally supporting the paper bail frame at one side of the platen, and support plates for the ends of said shaft shaped to have rolling contact engagement with the ends of the shaft to enable the frame to be drawn toward the opposite side of the platen while maintaining parallelism between the frame and the platen.

5. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail frame including a cross-bar having a plurality of bail rollers, and rack-and-pinion means for pivotally mounting said frame in a position in which the bail rollers rest on the platen and from which the frame may be shifted to withdraw the rollers from the platen, said rack-and-pinion means maintaining said cross-bar parallel with the platen while the frame is shifted.

6. In a typewriting or like machine having a platen, a paper bail mechanism comprising a platen support frame, a support shaft extending parallel with the platen, rack-and-pinion means mounting said shaft in said frame for movement toward and away from the platen and for maintaining said shaft parallel with said platen, a paper bail having side arms pivoted on said shaft and a cross-bar provided with feed rollers coacting with said platen when said shaft is at its most remote rearward position with reference to the platen, said rack-and-pinion means enabling said paper bail to be drawn away from said platen and forwardly thereof to facilitate insertion of work sheets around said platen; and means coacting with said paper bail to hold said shaft and said paper bail in their alternate positions and to hold said paper bail yieldingly in engagement with said platen when said shaft is in its rearward position.

7. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail including a cross-bar and side arms, means for slidably pivotally mounting said side arms to enable said cross-bar to be moved from an alternate working position in cooperation with the platen to a forward position separated from the platen in either of which positions said paper bail may be swung on said mounting to a vertical

position, and a single common spring for each of said side arms for maintaining said paper bail in any of said positions.

8. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail having a cross-bar and side arms, a cross-shaft pivotally supporting said side arms, means for slidably supporting the ends of said shaft for movement of said bail from a position in which said cross-bar cooperates with said platen to an alternate position remote from the platen, in either of which positions said paper bail may be pivoted on said shaft to elevate said cross-bar to positions more remote from said platen, and spring means coacting with said side arms to yieldingly maintain said paper bail in any of said positions.

9. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail having a cross-bar and side arms, a cross-shaft pivotally supporting said side arms, means for slidably supporting the ends of said shaft for movement of said bail from a position in which said cross-bar cooperates with said platen to an alternate position remote from the platen, in either of which positions said paper bail may be pivoted on said shaft to elevate said cross-bar to positions more remote from said platen, and spring means coacting with said side arms to yieldingly maintain said paper bail in any of said positions, said supporting means including rack-and-pinion means for maintaining

said cross-bar parallel with said platen in any of said positions.

10. In a typewriting or like machine having a platen, a paper bail mechanism comprising a paper bail having a cross-bar and side arms, a cross-shaft pivotally supporting said side arms, means for slidably supporting the ends of said shaft for movement of said bail from a position in which said cross-bar cooperates with said platen to an alternate position remote from the platen, in either of which positions said paper bail may be pivoted on said shaft to elevate said cross-bar to positions more remote from said platen, and spring means coacting with said side arms to yieldingly maintain said paper bail in any of said positions, said cross-shaft having gears secured thereto and said supporting means including racks meshing with said gears to maintain said cross-bar parallel with the platen in movement of said cross-bar to each of said positions.

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