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BAIL FOR TYPEWRITERS AND THE LIKE

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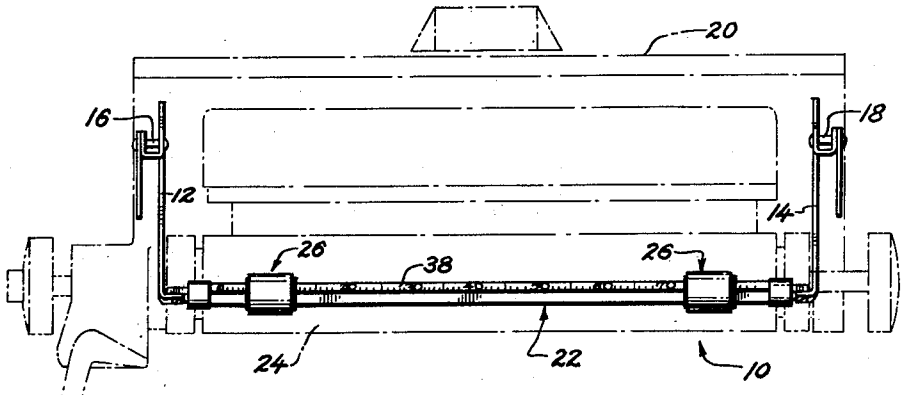


Fig. 1

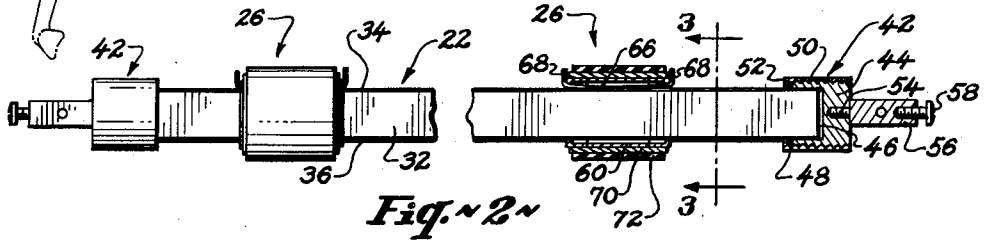


Fig. 2

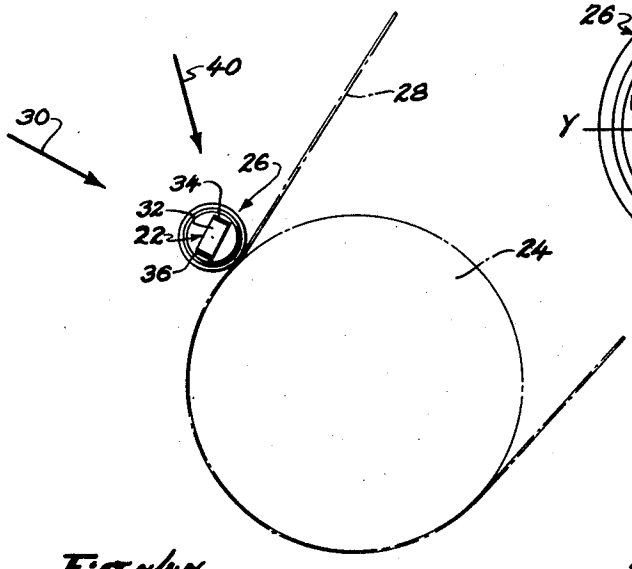


Fig. 4

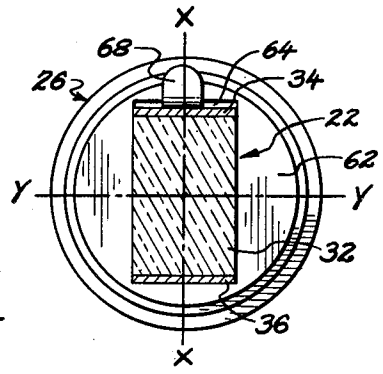


Fig. 3

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BAIL FOR TYPEWRITERS AND THE LIKE

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The present invention relates generally to a bail for typewriters and the like, and is particularly directed to improvements in the bails of typewriters which support rollers for holding the paper against the platen during the imprinting thereof, the assembly of the bail and rollers being commonly referred to as a paper lock assembly.

Typewriters and the like are usually provided with a metal bail pivotally mounted on the carriage and having a cross-rod portion extending parallel to the platen for movement between either a forwardly or a raised and rearwardly disposed inoperative position and a lowered and forwardly disposed operative position immediately above the platen. Rollers are mounted on the cross-rod portion of the bail for contact with the paper at locations adjacent the edge portions of the paper and just above the level of the typing zone to hold the paper against the platen. When the bail is in its operative position, the cross-rod portion thereof is disposed in the normal line of vision between the typist and the typed material on the paper, immediately above the typing zone so that it is necessary for the typist to move the bail to its inoperative position when examining or checking such typed material and then to return the bail to its operative position before the resumption of typing. Thus, when the material being typed is of a kind requiring repeated checking by the typist, for example, statistical or other reports having numeral columns or tables, considerable time may be lost by the typist in periodically moving the bail between its operative and inoperative positions. Heretofore, it has been suggested to provide a bail for typewriters and the like, wherein the cross-rod portion of the bail is formed of a transparent material to permit unrestricted viewing of the typed material without requiring the displacement of the bail to its inoperative position for that purpose. However, it has been found that the existing transparent materials are not suitable for the cross-rod portion, glass being too fragile or brittle for use as the cross-rod portion of a typewriter bail which is subjected to hard usage while the transparent plastic materials now available, such as methylmethacrylate, are too flexible and tend, after a period of use, to warp or bend.

Accordingly, it is an object of the present invention to provide an improved typewriter bail, wherein the cross-rod portion thereof is transparent, at least in the direction of normal viewing therethrough of typed material on the underlying paper, and has sufficient rigidity and toughness to withstand the normal hard usage to which it may be subjected without breaking, warping or bending.

Another object is to provide a cross-rod portion for typewriter bails of the described character which may be easily substituted for existing opaque cross-rod portions without requiring any alteration of the remainder of the typewriter structure, and which has rotatable rollers thereon to contact with the paper on the platen and capable of being adjusted along the cross-rod portion for accommodating papers of different widths.

A further object is to provide a cross-rod portion for typewriter bails of the described character, wherein the cross-rod portion, while being transparent in the direction of viewing therethrough of the underlying typed material, is formed to resist abrasion, scratching and the like resulting from the adjustment of the rollers along the cross-rod portion.

A still further object of the present invention is to provide a cross-rod portion for a typewriter bail which is transparent in the direction of viewing therethrough of the underlying typed material and which has a scale thereon to assist the typist in arranging the paper within the typewriter, and wherein the scale is disposed so as to avoid interference with normal viewing of the underlying typed material through the transparent cross-rod portion.

In accordance with the present invention, the above, and other objects, features and advantages, are obtained by providing a cross-rod portion made-up of a bar of rectangular configuration formed of a transparent plastic material having great clarity, scratch-resistance, and immunity to solvents, for example, polymerized allyl diglycol carbonate produced by the Columbia-Southern Chemical Company under the trade named CR–39, with at least the uppermost one of the relatively narrow surfaces of the plastic bar extending substantially parallel to the normal direction of viewing therethrough and having a thin, and therefore substantially flexible, strip of metal bonded thereto in order to increase the rigidity of the cross-rod portion. Further, a suitable scale may be provided on either one or both of the reinforcing metal strips for assisting the typist in laterally locating the paper in the typewriter.

In order that the invention may be fully understood, an illustrative embodiment thereof is hereinafter described in detail and shown in the accompanying drawing, which forms a part hereof and wherein:

Fig. 1 is a top plan view of a paper lock assembly including a cross-rod portion embodying the present invention as applied to the carriage of a typewriter, which is shown in broken lines;

Fig. 2 is an enlarged side elevational view, partly broken away and in section, of the cross-rod portion constructed in accordance with the present invention, and having paper engaging rollers thereon as well as fittings at the opposite ends for securing the cross-rod portion to the supporting arms of existing paper lock assemblies;

Fig. 3 is an enlarged transverse sectional view taken along the line 3—3 of Fig. 2; and

Fig. 4 illustrates the relationship of the cross-rod portion embodying the present invention to a sheet of paper held between the rollers thereon and the platen of an associated typewriter.

Referring to the drawing in detail, and initially to Fig. 1 thereof, a paper lock assembly for a typewriter is there illustrated and identified generally by the reference numeral **10**. The assembly **10** includes parallel arms **12** and **14** which, adjacent their back ends, are pivotally mounted, as at **16** and **18**, respectively, on a typewriter carriage **20**, shown in broken lines on Fig. 1. A cross-rod, generally identified by the reference numeral **22**, is supported at its opposite ends between the front ends of the arms **12** and **14**, in a manner hereinafter described in detail.

The cross-rod **22** extends parallel to the axis of the platen **24** of the associated typewriter and is movable, by swinging of the arms **12** and **14**, or extension arms attached to the arms **12** and **14** (not shown), between either a forwardly or a raised and rearwardly disposed inoperative position (not shown) and a lowered and forwardly disposed operative position immediately above the platen, as seen in Figs. 1 and 4. At least two rollers, each gen-

erally identified by the reference numeral 26, are provided on the cross-rod 22 for contact with a sheet of paper 28 (Fig. 4) supported by the platen 24 at locations disposed adjacent the edge portions of the paper and above the level of the typing zone, thereby to hold the paper against the platen in the typing zone. When the paper lock assembly is in its operative position, the cross-rod 22 is disposed in the line of vision, represented by the arrow 30 on Fig. 4, between the typist and the typed material immediately above the typing zone.

In accordance with the present invention, the cross-rod 22 is transparent, when viewed in the direction indicated by the arrow 30, so that the underlying typed material, that is, the material immediately above the typing zone, may be viewed through the cross-rod, thereby avoiding the necessity for repeatedly displacing the paper lock assembly to its inoperative position when the typed material is of a character requiring continuous checking thereof, for example, statistical reports containing numeral tables or columns.

It has been found that neither glass nor any of the transparent plastic materials is suitable alone for the production of the transparent cross-rod by reason of the fragility and brittleness of the former, and the lack of rigidity of the latter. Accordingly, the present invention provides a cross-rod 22 including a bar 32 of rectangular cross-section which is formed of a transparent plastic material of great clarity, scratch-resistance and immunity to solvents, such as, for example, the allyl cast resin produced by the Columbia-Southern Chemical Company under the trade means CR-39, and which is allyl diglycol carbonate or diethylene glycol bis (allylcarbonate) polymerized heating after the addition, as a catalyst, of either benzoyl peroxide or isopropyl percarbonate, and thin, flexible metal strips 34 and 36 adhesively bonded, for example, by a rubber base cement, to the relatively narrow surfaces of the rectangular transparent bar 32.

As seen in Fig. 2, the cross-rod 22 is mounted on the arms 12 and 14 so that, when the paper lock assembly 10 is in its operative position, the thin metal strips 34 and 36 extend substantially parallel to the normal direction of viewing, represented by the arrow 30, and are therefore substantially invisible so as not to interfere with viewing of the underlying typed material through the transparent bar 32. Further, although the plastic bar 32 and the metal strips 34 and 36 are individually flexible, in the composite rod structure having the strips 34 and 36 bonded to the surfaces of the rod 32, such metal strips reinforce the plastic bar and provide substantial rigidity, particularly about the neutral axis Y—Y (Fig. 3) extending parallel to the relatively narrow surfaces of the rod, since bending of the rod about the axis Y—Y places one or the other of the strips 34 and 36 under tension. On the other hand, bending of the reinforced or composite rod structure about the neutral axis X—X extending parallel to the relatively wide surfaces of the bar 32 is not so strongly resisted, and flexing of the rod 22 about the axis X—X is still possible, for a purpose hereinafter indicated in detail.

Preferably, a scale 38 (Fig. 1) is engraved, imprinted, or otherwise formed on the exposed surface of the upper reinforcing metal strip 34 to assist the typist in laterally locating a sheet of paper within the typewriter. As seen in Fig. 4, the scale 38 on the surface of the upper strip 34 can be easily read when the typist leans forward from the normal position and views the rod 22 in the generally downward direction represented by the arrow 40. On bails having a forwardly inoperative position, a scale formed on the lower reinforcing metal strip also assists the typist in laterally locating a sheet of paper within the typewriter when the bail is in the forwardly inoperative position.

As seen in Fig. 2, mounting assemblies, generally identified by the reference numeral 42, are provided at the opposite ends of the cross-rod 22 for securing the latter to the arms 12 and 14. Each of the mounting assemblies 42 may include a body 44 having a recess 46 opening at one end and into which the adjacent end of the rod 22 is secured by suitable adhesive. A disk 48, formed with a rectangular opening, conceals the recess 64 and the adhesive. A sleeve 50 is screwed onto the externally threaded outer surface of body 44 and, at one end, is formed with an inwardly directed, radial flange 52 which engages against the peripheral portion of the disk 48 to hold the latter against the body 44 with the end portion of the rod 22 within the recess 46. The body 44 in the illustrated embodiment is also formed with a hole opening in the direction away from the recess 46 to receive a stud 54 on an adaptor 56. The adaptors 56 of the mounting assemblies 42 can be replaced in order to accommodate the cross-rod 22 for mounting on any existing typewriters, and may be provided with tapped openings extending laterally and longitudinally, respectively, to receive screws 58 which secure the adaptors to the arms 12 and 14, when the front ends of the arms are bent inwardly, as in Fig. 1, or when the arms merely abut against the free ends of the adaptors.

As seen in Figs. 2 and 3, each of the rollers 26 preferably includes a cylindrical body 60 having end walls 62 formed with rectangular openings 64 (Fig. 3) through which the cross-rod 22 loosely extends. The openings 64 are substantially larger than the cross-rod 22, particularly in the direction of the axis X—X of the latter, and a bowed strip 66 of spring metal extends through the body 60 along the reinforcing strip 34 and has its opposite ends bent outwardly, as at 68, away from the cross-rod to overlie the ends 62 of the cylindrical body. A bushing 70 is rotatable upon the body 60 and may be formed of metal or Nylon, that is, a polyamide resin made by the polymerization of a hexanethylenediamine salt of adipic acid. Finally, a rubber sleeve 72 is mounted upon the bushing 70 and is rotatable with the latter on the body 60. As seen in Figs. 2 and 3, the bent ends 68 of the spring strip 66 extend radially beyond the contacting surfaces of the rubber sleeve 72 and the bushing 70 and thereby limit the axial movements of the bushing 70 and sleeve 72 relative to the cylindrical body 60.

It will be noted that the bent ends 68 extend only a short distance beyond the contacting surfaces of the rubber sleeve 72 and the bushing 70, whereby to permit the removal of a worn rubber sleeve, which can readily be slid off the bushing over the bent ends 68 and over the end of the cross-rod, and a new sleeve substituted therefor.

From the above, it is apparent that the bowed spring strip 66 bears, adjacent its opposite ends, against the upper edges of the openings 64 and, at its central portion, against the upper surface of reinforcing strip 34, thereby to take up the play between the body 60 and the cross-rod 22 and to frictionally hold the related roller 26 in its adjusted position along the cross-rod. Further, since the spring 66 bears against the metal strip 34 at the top of the cross-rod and the opposite or lower edges of the openings 64 bear against the metal strip 36, it is apparent that the wearing action resulting from movement of the rollers 26 along the cross-rod is imposed, for the most part, against the reinforcing strips 34 and 36 which, being formed of metal, are better able to withstand the wear than the plastic resin of the transparent bar 32. Accordingly, the transparency of the bar 32 is maintained, as scratching and abrasion of the transparent plastic material is avoided.

It is to be noted that the cross-rod portion 22 being formed of a rectangular bar of transparent, plastic material having a flexible metal strip bonded to at least one of the relatively narrow surfaces thereof, and preferably to the upper and lower narrow surfaces, as in the drawing, avoids the tendency of the plastic material to warp or bend about the axis Y—Y thereof, while some degree of flexibility of the cross-rod portion 22 is maintained

about the axis X—X. This last mentioned flexibility is of importance, in that it permits the cross-rod portion 22 to flex slightly about the axis X—X for ensuring uniform contact between the rollers 26 and the paper against the platen 24 when the paper lock assembly 10, in its operative position, is loaded by the usual springs (not shown) acting on the arms 12 and 14. Heretofore, the paper lock assemblies of certain typewriters have been provided with floating mountings at the opposite ends of the cross-rod portions thereof in order to permit slight displacement of the cross-rod portions for ensuring uniform contact between the rollers on the cross-rod portions and the paper against the platens. However, the limited flexibility of the cross-rod portion embodying this invention about the axis X—X makes it unnecessary to provide such floating mountings for the opposite ends of the cross-rod portions.

Although an illustrative embodiment of the invention has been described in detail herein and shown in the accompanying drawing, it is to be understood that the invention is not limited to that particular embodiment, and that various changes and modifications may be effected therein without departing from the scope or spirit of the invention as defined in the appended claims.

What is claimed is:

1. A cross-rod portion for the paper lock assembly of a typewriter and the like; said cross-rod portion comprising an elongated, rectangular bar of transparent plastic material, and thin metal strips extending along and adhered to two opposed surfaces of said bar to resist bending and warping of the latter about the neutral axis of the bar extending parallel to said two opposed surfaces, while permitting viewing of typed material through said bar in directions generally parallel to said neutral axis.

2. A cross-rod portion for the paper lock assembly of a typewriter and the like; said cross-rod portion comprising an elongated, rectangular bar of transparent, polymerized allyl diglycol carbonate, and a thin metal strip extending along and adhered to at least one of the relatively narrow edge surfaces of said bar to resist bending and warping of the latter about the neutral axis of the bar extending parallel to said narrow edge surfaces, while permitting viewing of typed material through said bar in directions generally parallel to said neutral axis.

3. A cross-rod portion for the paper lock asembly of a typewriter and the like; said cross-rod portion comprising an elongated, rectangular bar of transparent, polymerized allyl diglycol carbonate, and thin metal strips extending along and adhered to the opposed, relatively narrow edge surfaces of said rectangular bar to resist bending and warping of the latter about the neutral axis of the bar extending parallel to said narrow edge surfaces, while permitting viewing of typed material through said bar in directions generally parallel to said neutral axis.

4. In the paper lock assembly for a typewriter and the like; the combination of a cross-rod portion including an elongated, rectangular bar of transparent plastic material and thin metal strips extending along and adhered to the opposed, relatively narrow edge surfaces of said bar to resist warping and bending of the latter about the neutral axis of the bar extending parallel to said narrow edge surfaces, while permitting viewing of typed material through said bar in directions generally parallel to said neutral axis; and roller assemblies on said cross-rod portion each including a body having rectangular openings at its opposite ends through which said cross-rod portion loosely extends, and a spring member interposed between said body and one of said metal strips of the cross-rod portion to take up the play between the latter and said body and to frictionally hold the related roller assembly in any adjusted position along the cross-rod portion, with the wear resulting from movement of said roller assemblies along the cross-rod portion being principally absorbed by said metal strips of the latter.

5. A paper lock assembly for the carriage of a typewriter having a sheet supporting platen; said paper lock assembly comprising a pair of spaced apart support arms for pivotal mounting on the typewriter carriage, a cross-rod extending between said arms and secured at its opposite ends ot the latter, and rollers on said cross-rod to hold the sheet against the platen immediately above the typing zone when said paper lock assembly is in an operative position; said cross-rod including an elongated, rectangular bar of transparent plastic material arranged, when the assembly is in its operative position, with the relatively wide surfaces of the bar extending substantially parallel to the tangent to the platen at the line of contact of said rollers with the sheet, and a thin metal strip extending along and adhered to at least the upper one of the relatively narrow surfaces of said transparent bar to resist bending and warping of the latter about its neutral axis parallel to said narrow surfaces, while permitting viewing of typed material on the sheet through said bar in directions generally parallel to said neutral axis.

6. A paper lock assembly for the carriage of a typewriter having a sheet supporting platen; said paper lock assembly comprising a pair of spaced apart support arms for pivotal mounting on the typewriter carriage, a cross-rod extending between said arms and secured at its opposite ends to the latter, and rollers on said cross-rod to hold the sheet against the platen immediately above the typing zone when said paper lock assembly is in an operative position; said cross-rod including an elongated, rectangular bar of transparent plastic material arranged, when the assembly is in its operative position, with the relatively wide surfaces of the bar extending substantially parallel to the tangent to the platen at the line of contact of said rollers with the sheet, and thin metal strips extending along and adhered to the opposed relatively narrow surfaces of said bar to resist bending and warping of the latter about its neutral axis parallel to said narrow surfaces, while permitting viewing of typed material on a sheet held against the platen through said bar in directions generally parallel to said neutral axis, at least one of said metal strips having a scale on the exposed surface thereof for assisting the typist in laterally positioning a sheet within the typewriter.

7. A paper lock assembly for the carriage of a typewriter having a sheet supporting platen; said paper lock assembly comprising a pair of spaced apart support arms for pivotal mounting on the typewriter carriage, a cross-rod extending between said arms and secured at its opposite ends to the latter, and rollers on said cross-rod to hold the sheet against the platen immediately above the typing zone when said paper lock assembly is in an operative position; said cross-rod including an elongated, rectangular bar of transparent plastic material arranged, when the assembly is in its operative position, with the relatively wide surfaces of the bar extending substantially parallel to the tangent to the platen at the line of contact of said rollers with the sheet, and thin metal strips extending along and adhered to the opposed relatively narrow surfaces of said bar to strongly resist bending and warping of the latter about the neutral axis parallel to said narrow surfaces, while permitting limited flexing of the cross-rod about the neutral axis of said bar parallel to said wide surfaces for ensuring uniform contact of said rollers with the sheet and also permitting viewing of typed material through the transparent bar in directions generally parallel to said narrow surfaces.

8. A paper lock assembly according to claim 7; wherein said transparent bar is formed of polymerized allyl diglycol carbonate to provide relatively great clarity, scratch-resistance and immunity to solvents.

9. A paper lock assembly according to claim 8; wherein at least one of said metal strips has a scale on the exposed surface thereof to assist the typist in laterally positioning a sheet within the associated typewriter.

10. A paper lock assembly according to claim 7;

wherein each of said rollers includes a body having rectangular openings at its opposite ends through which said cross-rod loosely extends, a bushing rotatable on said body and carrying a rubber outer sleeve, and a bowed spring between said body and one of said metal strips to take up the play between said body and cross-rod and to frictionally resist movement of the roller along said cross-rod, whereby said metal strips protect the transparent bar from wear resulting from movement of the rollers along the cross-rod.

11. A paper lock assembly according to claim 10; wherein the opposite ends of said bowed spring project through said rectangular openings of the body and extend radially outward slightly beyond the contacting surfaces

of said bushing and rubber sleeve whereby to limit axial movement of the bushing and sleeve while permitting removal and replacement of the rubber sleeve from the bushing while the bushing is retained on the cross-rod.

References Cited in the file of this patent

UNITED STATES PATENTS

1,636,129	Going	July 19, 1927
2,163,944	Helmond	June 27, 1939

FOREIGN PATENTS

244,359	Switzerland	Mar. 17, 1947
435,977	Germany	Oct. 22, 1926