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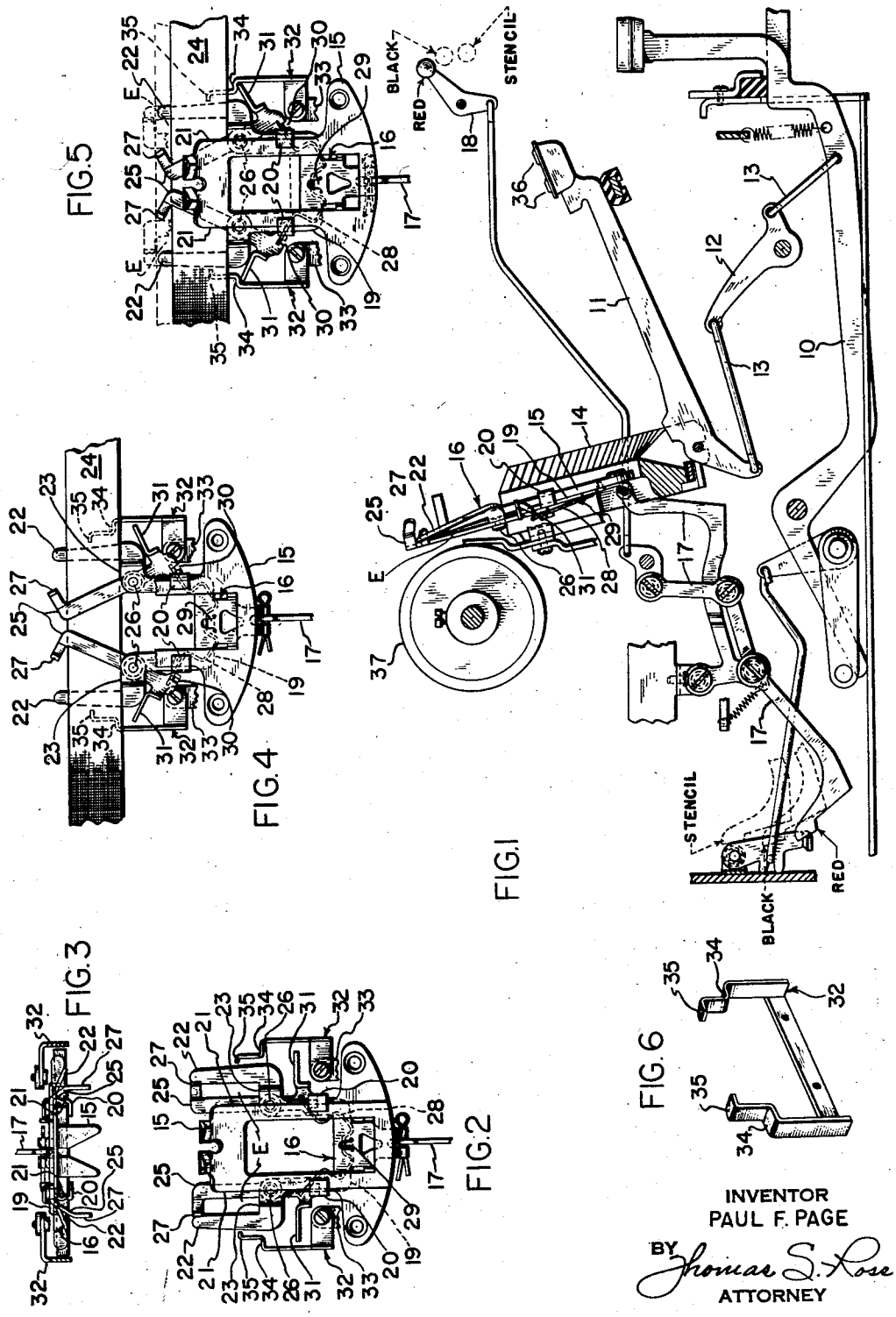


FIG. 1

FIG. 4

FIG. 5

FIG. 3

FIG. 2

FIG. 6

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RIBBON CARRIER FOR TYPEWRITERS AND LIKE PRINTING MACHINES

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9 Claims. (Cl. 197—170)

This invention relates generally to typewriters and like printing machines, and more particularly to typewriter ribbon carriers of the vibrated type, such as are illustrated and described in U. S. Patent #2,509,862, issued May 30, 1950, to Elmer H. Dreher.

The object of that device, as explained in the specification, is to provide a typewriter or like printing machine with an improved ribbon carrier having ribbon-receiving eyes that can be quickly and conveniently opened toward the printing point of the machine by one hand for ribbon insertion or removal and thereafter automatically closed upon being struck by any type bar block upon depression of its associated printing key.

The present invention advances the art over the Dreher patent by providing new and improved means for a ribbon carrier in which automatic closure of the eyes is accomplished by means actuated through elevation of the ribbon carrier and without the necessity of the type bar blocks striking the movable arms of the carrier as disclosed in the above patent.

Other objects of the present invention are to provide improved means for effecting automatic closure of the movable arms of a vibrated ribbon carrier in which, closure of the arms is completed well in advance of printing by the type carried by the type bars; in which danger of closing the movable arms against the stationary arms, before the ribbon is bottomed in the eyes of the carrier, is reduced to a minimum; in which the closure time for the movable arms may be adjustably varied according to different movements of different vibrator ribbon carriers; in which means are provided for preventing the movable arms from being manually opened when the ribbon carrier is occupying an elevated position; and in which automatic closure of the movable arms is not only accomplished in a positive manner but in which the arms may be actuated without loading or otherwise affecting the normal key touch of the machine.

Other objects and advantages of the invention will be pointed out in the following description and claims, and illustrated in the accompanying drawing, which discloses, by way of example only, the principal of the invention and the best mode, which has been contemplated, of applying that principal.

The invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawing in which:

Fig. 1 is a side elevational view of a single typewriter type action illustrating its cooperation with a ribbon carrier incorporating the invention, the typewriter action and ribbon carrier being shown in normal or rest position.

Fig. 2 is a detail front elevation of the ribbon carrier mounted upon the type guide and with the movable arms of the carrier shown in closed or ribbon-retaining position.

Fig. 3 is a top plan view of Fig. 2.

Fig. 4 is a front elevational view similar to Fig. 2 but showing the movable arms of the ribbon carrier in open position and with a short section of ribbon inserted within the open eyes of the carrier.

Fig. 5 is a front elevation of the ribbon carrier after being elevated to the position where automatic closure of the movable arms starts, and,

Fig. 6 is a perspective detail illustrating a modified construction of the closure elements for the movable arms.

The invention will be described and shown in the drawing as embodied in a Royal portable typewriter and, while the features of the present invention were designed primarily for embodiment in this particular make of typewriter and may be included therein without modifying or materially modifying the existing structural features thereof, it should be understood that the invention is not restricted to use in such machine, but may be applied with equal success to different types and makes of machines as will be readily apparent to those skilled in the art.

It is believed that the detailed description of the invention will be more readily understood and appreciated if it is preceded by a brief general description of a single typewriter type action and the usual means employed for vibrating or raising and lowering the ribbon carrier and ribbon to cover and uncover the printing zone as the typing keys are operated.

With reference to Fig. 1, a conventional typewriter type action is shown as comprising the usual pivoted key lever 10 which is operatively connected to a type bar 11 through a pivoted bell crank 12 and wire links 13. The type bar 10 is pivotally mounted upon a type bar segment 14 for movement therewith during case shifting operations in the usual and well known manner. Also mounted upon the type bar segment 14 is the usual type guide 15, and this type guide slidably supports the ribbon carrier 16 which will presently be described in detail.

The lower end of the ribbon carrier 16 is pivotally connected to the usual linkage arrangement indicated generally by reference numeral 17. This linkage is actuated to raise and lower the ribbon carrier upon the type guide 15 for each typing stroke of a key lever 10 as is well known to those skilled in the typewriter art. The distance or height to which the ribbon carrier 16 is raised upon the type guide 15, during a typing stroke, depends upon the setting of the conventional ribbon control lever 18 usually located at the front of the machine.

Referring now to the constructional details of the improved ribbon carrier 16, it will be clear from Fig. 2 that such carrier comprises a main plate-like member 19 which is mounted for sliding movement in a substantially vertical plane upon the type guide 15. Lateral movement of said plate-like member 19 upon the type guide 15 is prevented by ears 20 embracing the vertical edges 21 respectively of said type guide in the usual manner. The upper end of plate-like member 19 is forked to provide a pair of rigid or stationary arms 22. These arms are disposed on opposite sides of the printing zone and are preferably at an angle relative to one another as best shown in Fig. 3. The stationary arms 22 are offset in a horizontal plane to provide horizontal portions 23 which serve to support the lower edge of an inked printing ribbon 24. The ribbon carrier 16 also includes a pair of movable arms 25 which are pivoted at 26 to the rigid arms 22 below the horizontal portions 23. The upper end of each movable arm 25 has a finger piece 27 to facilitate manual rocking of the movable arms toward one another upon their pivots 26 to an open ribbon-receiving or removing position as illustrated in Fig. 4. When the movable arms 25 are in their closed position, which is the position illustrated in Fig. 2, a pair of elongated closed slots or eyes E for the ribbon 24 are defined by

the movable arms **25**, the finger pieces **27**, stationary arms **22** and their horizontal portions **23**.

The pivoted arms of the ribbon carrier **16** are normally held in the closed position of Fig. 2 by a detent spring **28**. The central portion of this spring is rigidly attached to the plate-like member **19**, of ribbon carrier **16**, by an ear **29** formed integral with said plate. The free ends of detent spring **28** are slidingly engaged to ride within notches **30** formed in the lower ends of the movable arms **25** and the action of the spring is such that the movable arms are held in either a closed or ribbon-retaining position as shown in Fig. 2 or in an open ribbon-insertion or removal position as shown in Figs. 4 and 5.

According to the present invention, the means for automatically closing the movable arms **25** after they have been manually opened for ribbon insertion or removal comprises a pair of outwardly projecting elements or lugs **31** formed integral with the lower end of the movable arms **25**. The lugs **31** cooperate with a pair of abutment members **32**, the latter being secured to a fixed part of the machine such as ears **33**.

It will be understood from Figs. 2, 4 and 5 that each abutment member **32** is provided with a pair of short horizontal portions **34** and **35** respectively. The short horizontal portions on each abutment member are offset relative to one another—both in horizontal and vertical planes.

In operating the improved ribbon carrier, it will now be apparent that, in order to open the eyes E for the purpose of inserting or removing ribbon **24**, it is merely necessary for an operator to grasp the finger pieces **27**, of the movable arms **25**, and pinch them together to rock the movable arms on their pivots **26** to the position shown in Fig. 4 where they are held by spring **28**. With the arms in this open position, depression of any typing key of the machine will cause them to be automatically closed in the following manner. As a typing key lever **10** is depressed, the ribbon carrier **16** is elevated upon the type guide **15** through the linkage **17** thus causing lugs **31** on the movable arms **25** to approach the horizontal portions **34** of the abutment members **32**. When the lugs engage said horizontal portions **34**, as shown in Fig. 5, further elevation of the ribbon carrier will cause the movable arms **25** to be rocked upon their pivots **26** to closed position before the type **36** on the type bars **11** is pressed against the platen **37**. In the event the person inserting ribbon **24** into the open eyes E fails to place the lower edge of said ribbon against the offset portions **23** of the stationary arms **22**, upward movement of the ribbon carrier will insure that the ribbon **24** is bottomed within the eyes E before the movable arms are closed against the stationary arms. This eliminates any possibility of pinching or holding the ribbon between the movable and stationary arms.

The abutment members **32** are shown in Figs. 2, 4 and 5 as being comprised of two parts but, if desired, such abutment members may be formed in one part as shown in the modified construction of Fig. 6. The advantage of making the abutment members in one piece as shown in Fig. 6 is that they are always held in parallel relation relative to one another and cannot be shifted independently of one another.

Some changes may be made in the construction and arrangement of the automatic closure means for the movable arms of the improved ribbon carrier without departing from the real spirit and purpose of the invention and it is the intention, therefore, to cover by the claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

The invention claimed is:

1. In a typewriter or like printing machine having a ribbon carrier provided with a pair of stationary arms and a pair of movable arms which together form guiding

eyes for a ribbon; the combination comprising: a first pair of elements carried by and movable with said movable arms; and a second pair of elements mounted upon said machine; characterized by the fact that said first pair of elements cooperate with said second pair of elements to effect automatic return of said movable arms from an open ribbon-insertion or removal position to a closed ribbon-retaining position in response to elevation of said ribbon carrier through depression of any printing key of said machine.

2. In a typewriter or like printing machine having a ribbon carrier which includes a pair of stationary arms and a pair of movable arms which together form guiding eyes for a ribbon; the combination comprising: an outwardly projecting finger formed on the lower end of each movable arm; and a pair of abutment members mounted upon the machine, characterized by the fact that said fingers are brought into contact with said abutment members to effect closure of the movable arms relative to the stationary arms in response to said ribbon carrier being elevated through depression of any printing key of said machine.

3. In a ribbon carrier of the class described comprising the combination of: a pair of rigid arms; a pair of movable arms pivoted upon said rigid arms to form guiding eyes for a ribbon; a detent spring acting to hold said movable arms in a closed ribbon-retaining position against said rigid arms or in an open ribbon-insertion or removal position with respect to said rigid arms; finger pieces on the upper ends of said movable arms to facilitate manual rocking of said movable arms to said open ribbon-insertion or removal position; a pair of abutment members mounted upon said machine; and means for automatically rocking said movable arms from said open position to said closed position in response to elevation of said ribbon carrier, said last named means including an outwardly projecting member on each movable arm cooperable with said abutment members.

4. In a typewriting machine having a ribbon carrier of the class described which includes a pair of stationary arms and a pair of movable arms which together form guiding eyes for a ribbon; the combination comprising a detent spring acting to hold said movable arms in a closed ribbon-retaining position against said rigid arms or in an open ribbon-insertion or removal position with respect to said rigid arms; a finger piece on the upper end of each movable arm to facilitate manual rocking of said movable arms toward one another to said open ribbon-insertion or removal position; abutment members mounted on said machine; and means for automatically rocking said movable arms from said open position to said closed position comprising an outwardly projecting lug on each movable arm cooperable with said abutment members in response to elevation of said ribbon carrier through depression of any printing key of said machine.

5. In a typewriting or like printing machine having a ribbon carrier comprising: a pair of rigid arms; a pair of movable arms pivotally mounted upon said rigid arms to form guiding eyes for a ribbon; spring means acting to releasably hold said movable arms in a closed position against said rigid arms or in an open position relative to said rigid arms; means on the upper ends of said movable arms adapted for manual manipulation in rocking said movable arms to said open position; abutment members on said machine; and automatic means for simultaneously rocking said movable arms from said open position to said closed position comprising a projection on each movable arm cooperable with said abutment members in response to elevation of said ribbon carrier.

6. In a ribbon carrier as claimed in claim 5 wherein each abutment member is provided with an upper and a lower horizontal portion, the lower horizontal portions cooperating with the projections on the movable arms to rock said arms to a closed position and the upper horizon-

tal portions cooperating with said projections to prevent said movable arms from being manually rocked to said open position when the ribbon carrier is occupying an elevated position.

7. In a typewriter or like printing machine having a ribbon carrier of the class described which includes a pair of stationary arms and a pair of movable arms which together form guiding eyes for a ribbon, the combination of automatic closure means for said movable arms comprising: a laterally projecting part on each movable arm; a fixed abutment member cooperable with each laterally projecting part; and means adapted to elevate said stationary and movable arms in unison upon depression of any printing key of the machine, characterized by the fact that said fixed abutment members are engaged by said laterally projecting parts to effectively close said movable arms against said stationary arms in response to elevation of said arms with respect to said abutment members.

8. In a typewriter or like printing machine having a ribbon carrier provided with a pair of stationary arms and a pair of movable arms, the movable arms being pivotally mounted upon the stationary arms to form guiding eyes for a ribbon, the combination of: a projecting member for each of said movable arms; and abutment members mounted upon said machine, characterized by the fact that said projecting members cooperate with said abutment members in response to elevation of said arms through depression of any printing key of said machine to automatically rock said movable arms upon their pivots from an open ribbon-insertion or removal position to a closed ribbon-retaining position.

9. In a typewriting machine of the class described, the combination of a vibrated ribbon carrier, said carrier comprising a pair of stationary arms and a pair of movable arms, the stationary arms cooperating with the movable arms in forming guiding eyes for an inked printing ribbon; a first means on said movable arms through which said movable arms can be manually rocked to open position; a second means on said movable arms including a pair of outwardly extending members; and means carried by said machine adapted to cooperate with said last-named members for closing said movable arms during elevation of said ribbon carrier and prior to a printing operation in response to depression of any printing key on the machine.

No references cited.