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3,232,406

RIBBON INKING DEVICE

Filed April 10, 1962

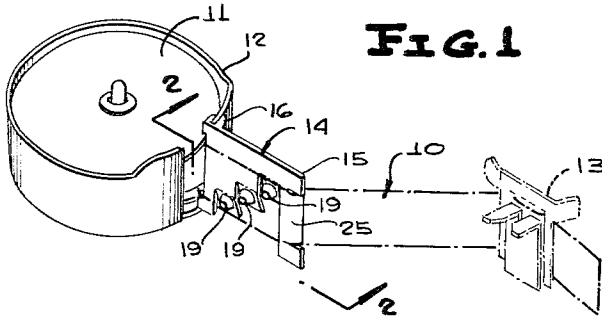


FIG. 1

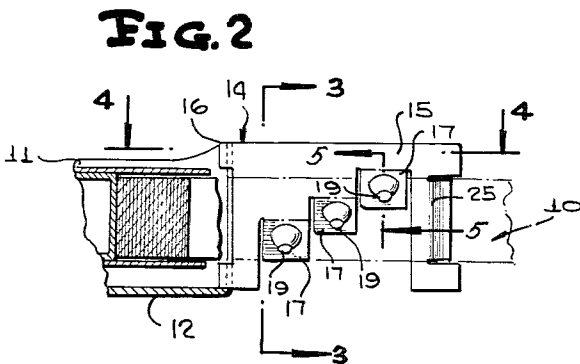


FIG. 2

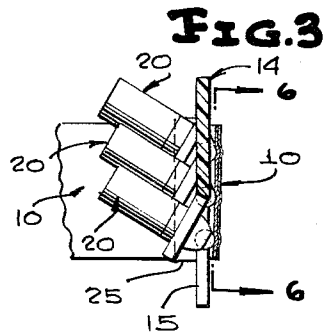


FIG. 3

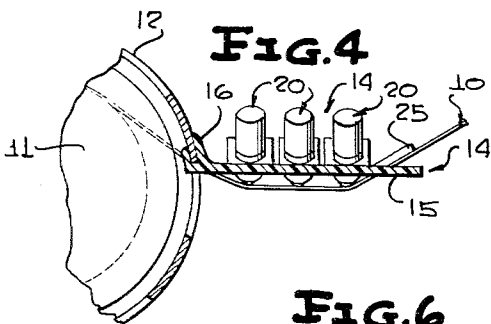


FIG. 4

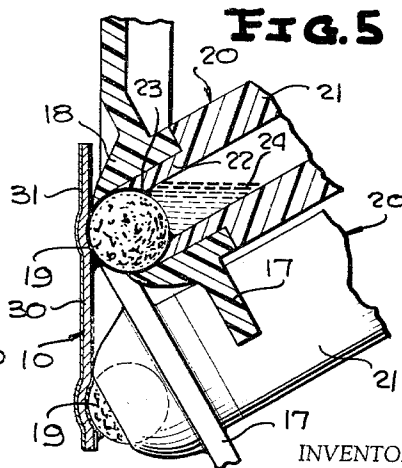


FIG. 5

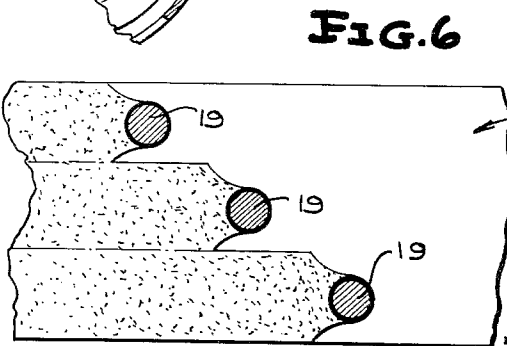


FIG. 6

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RIBBON INKING DEVICE

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1 Claim. (Cl. 197-171)

This invention relates in general to new and useful improvements in the construction of ribbons of the ink-bearing type, and means for applying ink to such ribbons.

An ink bearing ribbon used in office machines of various types, such as typewriters, in order to be long-lasting, must be provided with an abundant supply of ink. However, this abundant supply of ink is undesirable in that when the ribbon is new and matrices, such as typewriter keys, engage the ribbon, a large amount of ink is dispensed, and as the ribbon is continuously used, due to the engagement of the matrices with limited areas of the ribbon, the ink is decreased in the contact areas, and the impression resulting from the engagement of the ribbon with the paper becomes lighter and lighter. At the same time, due to the initial overabundance of ink, when the matrix engages the ribbon, there is a tendency for the filling and clogging of the minute openings in the matrix, particularly when typewriter keys are involved wherein the letters "e" and "a" fill.

In view of the foregoing, it is the primary object of this invention to provide a novel ribbon inking device which will apply minute quantities of ink to a ribbon during the use thereof so as to replenish the ink removed from the ribbon.

Another object of this invention is to provide a novel ribbon inking device which is mounted for engagement with a ribbon during the movement of the ribbon in the normal use of the ribbon, the ribbon inking device including a plurality of inking pens which will apply a minute quantity of ink over the surface of the ribbon so that the resupplying of ink is automatic during the use of the ribbon.

Still another object of this invention is to provide a novel inking device which may be used for the purpose of resupplying ink to a ribbon as the ribbon has the ink supply thereof depleted so that the ink supply of the ribbon remains substantially constant at all times, the inking device including a plurality of inking pens over which the ribbon rides during the movement thereof in the use of the machine carrying the ribbon, whereby the inking pens will supply the necessary ink to the ribbon only when the use of the ribbon requires such application of ink.

A further object of this invention is to provide a novel ribbon inking device which utilizes a plurality of inking pens, each of the inking pens being of the ball point type whereby the amount of ink delivered to a ribbon during the movement of the ribbon over the inking pen will be controlled by the capacity of the ball of the ball point to carry ink, and there will be no capillary attraction of ink when the ribbon is stationary and in engagement with the ball point.

A still further object of this invention is to provide a novel ribbon inking device which is of a simple and extremely compact nature whereby it may be readily mounted on the office machine carrying the ribbon, for example on the spool support of a typewriter.

Yet another object of this invention is to provide a novel ribbon inking device which is of a construction wherein it may be readily formed at a minimum expense and readily secured to existing office machines without any modification of the office machine, and further, wherein the inking device is extremely inexpensive so that it may be of the throw-away type.

In order to further solve the problem of the clogging of the matrices of the office machine through engagement with the inked ribbon, it is proposed to provide the inked ribbon with an impervious laminate which will be directly engaged by matrices of office machines so that no ink from the ribbon will ever come into contact with the matrices.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawing.

In the drawing:

FIGURE 1 is a fragmentary perspective view showing a typical office machine ribbon installation wherein a support for one of the spools of the ribbon carries a ribbon inking device in accordance with this invention.

FIGURE 2 is a fragmentary vertical sectional view on a large scale showing more specifically the details of the ribbon inking device.

FIGURE 3 is an enlarged fragmentary transverse vertical sectional view taken along the line 3-3 of FIGURE 2, and shows the specific relationship of the ribbon inking device with respect to the ribbon.

FIGURE 4 is an enlarged fragmentary horizontal sectional view taken along the line 4-4 of FIGURE 2, and shows the specific relationship of the inking pens of the inking device and the manner in which the bracket of the inking device is secured to the ribbon spool support.

FIGURE 5 is an enlarged fragmentary transverse vertical sectional view taken substantially along the line 5-5 of FIGURE 2, and shows the specific structural details of the ink dispensing end of one of the inking pens and the relationship thereof with respect to the ribbon.

FIGURE 6 is a fragmentary longitudinal vertical sectional view taken along the line 6-6 of FIGURE 3, and shows the specific relationship of the ball points of the inking pens and the manner in which the ball points deliver ink to the ribbon.

Referring now to the drawings in detail, it will be seen that there is illustrated in FIGURE 1 a conventional ribbon installation, such as the installation of a typewriter ribbon. The ribbon is referred to by the numeral 10, and in the usual installation thereof, the ribbon 10 has the opposite ends thereof attached to spools 11. Each of the spools 11 is carried by a spool support 12. It is to be noted at this time that only one spool 11 and one spool support 12 have been illustrated. The mounting of the ribbon 10 also includes a suitable center guide 13 for the ribbon 10 wherein the ribbon 10 is supported in alignment with matrices of the office machine of which the ribbon 10 is a part, the matrices not being shown.

In accordance with this invention, the spool support 12 has been provided with a ribbon inking device 14 which is the subject of this invention. The ribbon inking device 14 has been specifically illustrated as including a bracket 15 which is provided at one end thereof with a clip unit 16 for clipping over a vertical edge of the ribbon support 12. The bracket 15 is also provided with a plurality of rearwardly and downwardly sloping ears 17, as is best shown in FIGURE 5. The ears 17, as is best shown in FIGURE 2, are both vertically and longitudinally staggered so as to be disposed in a step-like pattern. Each of the ears 17 is provided with a forwardly projecting holder portion 18 in which a ball point 19 of an associated inking pen, generally referred to by the numeral 20, is mounted. Each inking pen 20 may be of an extremely simple construction, and includes a cartridge 21. Each cartridge 21 is provided with a reduced forward portion 22 which is telescoped within the associated ear 17 and suitably secured thereto in sealed relation. The reduced forward end 22 is provided with an extreme

forward surface 23 which cooperates with the ball point 19 to control the amount of ink dispensed by the ball point 19, the ink being ink 24 disposed within the cartridge 21. At this time, it is pointed out that the ball point 19 may be of the etched type so as to control the amount of ink available for delivery to the ribbon 10.

The bracket 15 is also provided with a ribbon guide flange 25 which slopes rearwardly towards the guide 13 of the office machine. It is to be noted that the flange 25 has a height substantially equal to the width of the ribbon 10 (see FIGURE 2) and is struck from the main portion of the bracket 15.

Reference is now made to FIGURE 6, wherein it will be seen that as the ribbon 10 moves from right to left, and the ribbon 10 rides over the ball points 19 of the inking pens 20, ink will be delivered to the ribbon 10 by the ball points 19 in an amount so as to apply ink to the surface of the ribbon 10 over the desired area thereof. It is to be understood that the amount of ink delivered to the ribbon 10 by the ball points 19 may be definitely controlled by controlling the configuration and size of the pores formed in the ball points 19. It is also pointed out at this time that when the ribbon 10 is stationary, such as when the office machine of which it is a part is not being used, the ribbon 10 remains in contact with the ball point 19, but since the ball points 19 have no means for effecting capillary attraction of the ink 24 from their respective cartridges 21, there will not be a continuous flow of ink from the ball points 19 to the ribbon 10, as would occur with other types of pen structure.

It is to be understood that the amount of ink dispensed in each movement of the inking device 14 will be substantially equal to the amount of ink removed from the ribbon in the normal use thereof. When the ribbon 10 is continuously reversed, such as it is in a typewriter, it may be desirable to provide two inking devices 14. However, this is not absolutely necessary in that sufficient ink could be applied by the inking device 14 during the movement of the ribbon 10 thereover to compensate for the double movement of the ribbon over the matrix of the office machine. It is, however, pointed out at this time that the inking device 14 may be quickly snapped loose from the spool support 12, and is primarily held in place on the spool support 12 by the tension of the ribbon 10 and the action of the clip portion 15 in the manner best illustrated in FIGURE 4.

The usual inked ribbon is formed of a suitable fabric which has been impregnated with ink. This fabric may be formed of such materials as cotton, silk or the like. At the present time, it is necessary that the cloth be heavily inked due to the necessity of the ribbon having a long life. Further, the ink, of necessity, extends entirely through the cloth of the ribbon and as a result, not only does the ribbon engage the paper to which an impression is to be transferred, but also engages the matrix of the office machine, such as the typewriter key. This results in the application of ink to the typewriter key or other matrix unnecessarily, and there is an accumulation of ink on the matrix which must be continuously removed therefrom at intervals and which if not removed will result in the clogging of the matrix.

Heretofore, it has not been feasible to provide a typewriter ribbon with a protective layer so as to prevent the transfer of ink to the matrix of the office machine in that the use of such a protective layer will prevent the proper transfer of ink from the cloth of the ribbon during the ink transferring operation. However, since the ink of the ribbon is now being replaced as used, in accordance with this invention, it is not necessary that the ink deeply penetrating into the cloth of the ribbon be transferred in the use of the ribbon. As a result, it is now possible to utilize a ribbon which is of a composite construction, which is best shown in FIGURE 5. The ribbon 10 includes a cloth layer 30 which is saturated with ink

in the customary manner, although the initial amount of ink carried by the cloth layer 30 need not be the same as found in present ribbon construction. In addition to the ink saturated layer 30, the ribbon 10 also includes an impervious layer 31, which is suitably laminated to the cloth layer 30 and which may be laminated thereto prior to the inking of the cloth layer. It is proposed that the impervious layer 31 be formed of one of the many soft resilient plastics which may be readily bonded to a cloth and which will have sufficient flexibility and resiliency to permit the transfer of the configuration of the matrix therethrough and which will immediately return to its normal planar configuration so as to avoid false impressions at a later use of the same area of the ribbon.

From the foregoing, it will be readily apparent that the ribbon inking device, which is the subject of this invention, not only permits the proper resupplying of ink to a ribbon at all times during the use thereof so that the impression resulting from the ribbon will remain of a constant shade, but also permits the use of a ribbon which has an impervious layer engageable with a matrix so as to prevent the undesired transfer of ink to the matrix engaging the ribbon.

From the foregoing, it will be seen that novel and advantageous provision has been made for carrying out the desired end. However, attention is directed to the fact that variations may be made in the example inking device and ribbon disclosed herein without departing from the spirit and scope of the invention, as defined in the appended claim.

I claim:

In combination with an inked ribbon subject to removal of ink therefrom in use of the ribbon and when the ribbon is mounted for movement in the use thereof on spools and said spools are carried by spool supports, ribbon inking means for dispensing a quantity of ink to the ribbon corresponding generally to the quantity of ink removed in the use of the ribbon, said ribbon inking means including a support bracket, said support bracket comprising a substantially flat, elongated body having a central portion terminating at opposite transverse edge portions, a first of said edge portions defining a clip unit having at least a pair of spaced opposed arms for receiving therebetween and resiliently gripping a vertical edge of a spool support, the other of said transverse edge portions defining a ribbon guide flange angularly related relative to the central portion of said body, said guide flange and the arms of said clip unit being positioned at one and the same side of said body, a plurality of vertically and longitudinally staggered means at said central portion for supporting a plurality of inking pens, each of said means including an opening, each opening having an axis angularly related to the central portion of the bracket passed which the ribbon is moved, and each of said pens having a dispensing end received in and projecting beyond an associated one of said openings whereby the dispensing ends are spaced and offset with respect to each other for applying ink to selected portions of the ribbon.

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75 ROBERT E. PULFREY, *Primary Examiner.*