June 12, 1934. H. W. JEWELL 1,962,309

INKING DEVICE FOR PRINTING RIBBONS

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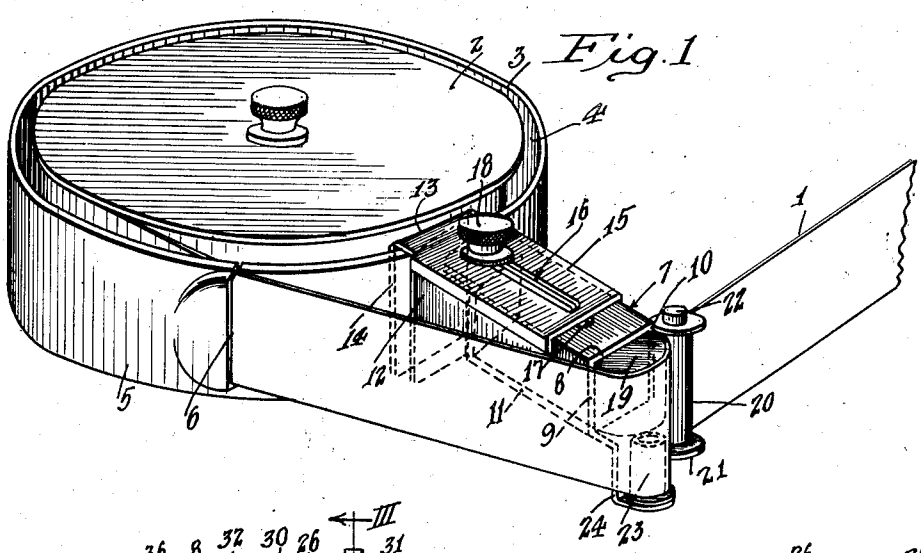


Fig. 1

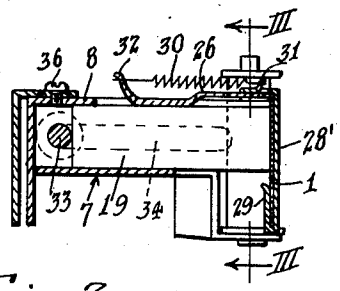


Fig. 2

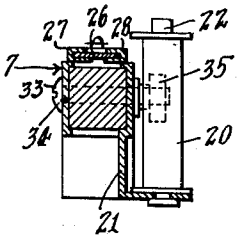


Fig. 3

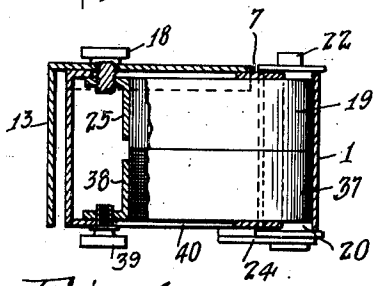


Fig. 4

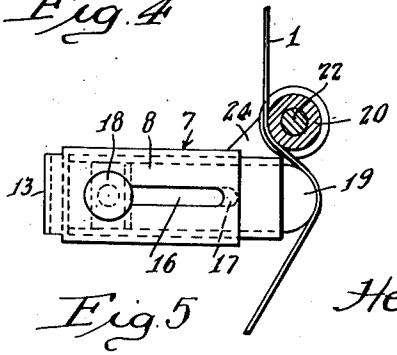


Fig. 5

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INKING DEVICE FOR PRINTING RIBBONS

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17 Claims. (Cl. 197—171)

My invention relates to inking devices for printing ribbons, and has particular reference to a device for re-inking ribbons employed on writing or printing machines, such as typewriters, adding machines, and the like.

In writing or printing machines employing a ribbon as the means of supplying the ink necessary for the writing or printing, it has been the practice to employ a relatively thin ribbon of suitable textile material impregnated with the desired ink in such manner that when type was pressed against the printing surface with the ribbon interposed therebetween, a quantity of ink would be pressed from the ribbon to the printing surface having the configuration of the face of the type. Such ribbons, however, are usually fed by some suitable feeding device past the printing surface so that a fresh surface of the ribbon is presented to impact all successive type.

Such ribbons, however, are usually impregnated with some form of liquid ink, which, though not drying rapidly, will dry out upon exposure of the ribbon to the atmosphere, and, moreover, after such use of the ribbon the inking material therein becomes removed from the ribbon so that later impressions made from the ribbon are faint and faded.

It is, therefore, an object of my invention to provide a device for renewing the supply of ink upon a ribbon of the character set forth in which the amount of ink supplied to the ribbon will be substantially proportional to the amount of ink removed therefrom during the printing or writing.

Another object of my invention is to provide a device for renewing the ink upon a ribbon of the character set forth in which the inking materials used to renew the supply is in the form of a relatively solid block of material.

Another object of the invention is to provide an attachment for printing and writing machines employing a ribbon in which the ribbon is fed over the attachment in such manner that a block of solid inking material therein will contact the ribbon and renew the ink supply while the ribbon is in operation.

Another object of the invention is to provide an attachment for printing and writing machines for renewing the supply of ink to ribbons thereon, in which several different colors of inking material may be applied to the ribbon at the same time.

Other objects and advantages will be apparent from a study of the following specification, read in connection with the accompanying drawing, wherein

Figure 1 is a perspective view of one form of attachment which may be employed in the practice of my invention;

Figure 2 is a vertical, sectional view through a modified form of attachment employed in the practice of my invention;

Figure 3 is a vertical, sectional view, taken along line III—III of Figure 2;

Figure 4 is a vertical, sectional view similar to Figure 2, illustrating a further modified form of my re-inking attachment and employing two different colored inks; and

Figure 5 is a top, plan view of the re-inking device shown in Figure 4.

Referring to the drawing, I have illustrated my invention as embodied in an attachment for a writing machine, such as a typewriter, in which a ribbon 1, formed of suitable flexible textile material, is wound upon a spool 2 retained within a spool cage 3 constituting an integral part of the typewriter mechanism. Ordinarily the ribbon spool 2 is of considerably less diameter than the spool cage 3 so that there is a space 4 between the outer periphery of the spool and the inner periphery of the spool cage. The usual construction of typewriter spool cages and ribbons is such that the spool cage is provided upon its vertical wall 5 with a slot 6 through which the ribbon 1 may be drawn from the spool to the ribbon carrier, not shown.

I have illustrated an attachment for renewing the supply of ink to the ribbon as it is fed from the spool 2 toward the ribbon carrier, or as it is fed from the ribbon carrier to the spool, as will be well understood by those skilled in the typewriter art, such attachment comprising a box or holder 7 which may be formed, as is indicated in Figure 3, of a single piece of suitable material, such as sheet metal, bent upon itself to form a top 8, side walls 9 and 10, and a bottom 11. A portion of the top wall 8 is illustrated as being bent downwardly at the rear of the box 7 to form a backing member 12 adapted to rest against the outside of the spool cage 3.

The box 7 is illustrated as being secured to the spool cage 3 by means of a spring slip 13 which may be formed from a suitable piece of spring material bent into the form of a right angle, one leg 14 thereof extending parallel to the backing member 12 while the other leg 15 thereof extends parallel to the top 8 of the box 7. By providing a suitable elongated slot 16

through the leg 15 of the spring clip and a similar slot 17 in the top 8 of the box 7, the spring clip may be adjustably secured to the box by means of a suitable thumb screw 18 so that the space between the leg 14 and the backing member 12 may be suitably adjusted to fit the thickness of the particular spool cage 3 to which the device is to be attached.

It will be observed that the box 7 constitutes a housing in which is received an elongated bar of inking material 19 which preferably is of such size as to just readily slide within the interior of the box 7. The bar of inking material 19 may be formed in any suitable manner, preferably comprising a composition including a suitable coloring material of the desired color mixed with wax of such character as will retain its solid form at atmospheric temperatures, but which will be sufficiently soft to permit abrasion thereof by the ribbon 1 passing over the bar with relatively small friction.

One form of inking material which I have found to be particularly applicable to my invention includes approximately 80% of a white or colorless wax, such as paraffin, mixed with a small percentage of tallow, for example 10%, to which 10% of coloring matter may be added to produce the desired color. For example, for black, approximately 2% Prussian blue and 8% carbon black may be employed, and a small quantity of mineral seal oil may be used to assist in producing a softer, waxy material. For other colors, a similar composition may be again employed, the desired coloring material being used.

It will be observed that the position of the attachment on the spool cage is such that the ribbon 1, in passing over the outer end thereof, is deflected considerably from its normal path from the spool cage to the ribbon carrier, so that the normal tension placed upon the ribbon to feed it from the spool cage to the ribbon carrier will be sufficient to cause the ribbon to be drawn tightly against the extending end of the block 19 of inking material. In order to insure that a sufficient frictional engagement will occur between the ribbon 1 and the block of inking material 19, a guide roller 20 may be employed, rotatably mounted upon a suitable extending bracket 21 which may be formed, as is indicated in Figure 3, by an outwardly struck portion of the body material of the box.

Preferably the roller 20 is rotatably mounted by means of a pin bearing 22 which extends slightly beyond the upper end of the roller 20 to permit the roller 20 to have a considerable vertical movement as the ribbon 1 is moved upwardly and downwardly in the normal operation of the writing machine. As will be observed from an inspection of Figure 1, the surface of the roller 20 over which the ribbon 1 extends, is considerably to the rear of the outer end of the bar of inking material 19 so that as the ribbon 1 is drawn across the bar it will be pulled into relatively tight engagement with the end of the bar.

In Figure 1 I have illustrated the attachment as including only a single bar of inking material which has a depth substantially equal to one-half the width of the ribbon 1, such device being adapted to reinking a ribbon which may have two separate color portions thereon so that the inking material 19 will restore or re-new the ink upon one-half of the ribbon while the other half of the ribbon is not re-inked.

As will be understood by those skilled in the art, it is the common practice to make the ribbon double the width required for the particular writing machine so that the ribbon may be shifted from a lower position to a higher position, and thus present different inking surfaces in the two positions. This is particularly useful where the ribbon is to be used for two color impressions, the upper half of the ribbon bearing one color, while the lower half of the ribbon bears the other color, the ribbon being shifted from one position to the other in the ribbon carrier to present the desired colored surface to the type.

When only one color is to be restored to the ribbon, the attachment shown in Figure 1 may be used and the bar of inking material 19 need only be one-half the width of the ribbon. Thus an auxiliary support should be provided for the lower half of the ribbon and such support is illustrated as comprising a short roller 23 mounted upon a suitable forwardly extending bracket 24 formed integrally with the bottom 11 of the box 7.

The outer end of the block of inking material 19 should be adjusted into substantial alignment with the outer surface of the roller 23 and such adjustment may be made as is indicated in Figure 1 by threading the thumb screw 18 into an angle bracket 25 extending downwardly into the interior of the box 7 so that by loosening the thumb screw 18 the angle bracket 25 may be moved forwardly to push the block of inking material outwardly into any desired position. Thus as the inking material is worn away by the ribbon 1 passing thereover the thumb screw and angle bracket may be adjusted to press the inking material again to a position aligned with the roller 23.

It will thus be observed that the thumb screw 18 and angle bracket 25 constitute a screw and nut arrangement which not only serves to adjust the position of the bar of inking material 19 but also constitutes the bolt and nut attachment for securing the spring clip 13 to the box in the desired adjusted position.

It may be desirable to pass the ribbon 1 between the bar of inking material and a relatively solid backing member in order to insure a sufficient pressure and a sufficient solid backing for the ribbon to permit the desired amount of abrasion between the ribbon and the bar of inking material.

Such construction is illustrated in Figures 2 and 3 in which the outer end of the top 8 of the box 7 is struck upwardly, as at 26, adapted to slidably receive a pair of ears 27 and 28 formed upon a backing plate 28'. The main body of the backing plate 28' is illustrated as extending vertically, the lower end of which is bent inwardly and upwardly, as at 29, to form a guide through which the ribbon 1 may pass. In this form of the device the roller 23 may be dispensed with, as the guide 29 will hold the ribbon in the desired position in alignment with the outer end of the bar of inking material 19.

A suitable spring 30 may be employed connected between an upwardly struck lug 31 on the backing member 28' and a similar lug 32 struck upwardly from the top 8 of the box 7 to provide the necessary tension, drawing the backing plate 28' toward the bar of inking material 19 so as to securely press the ribbon 1 into engagement with the outer end of the bar of inking material. This spring tension may be suitably selected to

provide the desired frictional contact, without unnecessarily producing strains upon the ribbon 1.

In the form of the device shown in Figures 2 and 3, the adjusting device for adjusting the position of the bar of inking material, may comprise a screw 33 passing through a suitable slot 34 in each of the side walls of the box 7 and having upon its outer end a thumb screw 35 so that by adjusting the position of the screw 33 in the slots 34 the screw may be brought to bear against the rear end of the block of inking material 19, and press the same to any desired outward position. Also, in the form of the device shown in Figure 2, the spring clip 13 may be secured to the box 7 in any suitable manner, as by means of a screw 36 to permit the same to be adjusted to the desired position necessary to clamp the attachment upon the spool cage 3.

My device is equally adaptable to the reinking of multi-colored ribbons, as is illustrated in Figures 4 and 5, in which the box 7 is illustrated as being twice the width of that shown in Figure 1, to provide space for two blocks of inking material 19 and 37. The block 19 may be of one color, say black, while the other block, 37, may be of another color, for example, red. In this form of the device the spring clip 13 may be secured, as was described with reference to Figure 1, through the length of the thumb nut 18 to the angle bracket 25, which, as was hereinbefore explained, permits adjustment of both the spring clip and the position of the block 19 relative to the box 7. Also, a similar angle bracket 38, secured by a thumb screw 39 extending through a slot 40 in the lower side of the box 7, may be employed for the purpose of adjusting the position of the block of inking material 37.

In this form of the device no roller 23 is necessary, since substantially the entire surface of the ribbon 1 bears against the combined surfaces presented by the outer ends of the blocks 19 and 37. Thus one-half of the ribbon 1 will be re-inked with inking material of one color, while the other half of the ribbon will be re-inked with inking material of the other desired color.

While I have illustrated my invention as embodied in the form particularly adaptable to typewriters, it will be apparent to those skilled in the art that by changing the mounting means, backing plate 12 and spring clip 13, the device may be readily adapted to any other type of printing device employing a ribbon as the ink carrier. For example, time clocks, adding machines, multigraph machines, and similar printing devices may be provided with the modified forms of my attachment for the purpose of re-inking the ribbons employed with such devices.

While I have shown and described the preferred embodiment of my invention, it is to be understood that I do not wish to be limited to any of the details of construction shown herein, except as defined in the appended claims.

I claim:

1. In a device for supplying ink to printing devices employing a ribbon, a block of solid inking material, and means for mounting said inking material in the path of movement of the ribbon to cause the ribbon to bear against said block.

2. In a device for supplying ink to printing devices employing a ribbon, a block of solid inking material, an open ended box for reciprocably mounting said block of inking material with the end thereof exposed, means mounting said box stationarily in the path of movement of the ribbon, and means for guiding the ribbon over the exposed end of said block to cause said ribbon to bear against the exposed end of said block.

3. In a device for supplying ink to printing devices employing a ribbon, a block of solid inking material, an open ended box for reciprocably mounting said block of inking material with the ends thereof exposed, means mounting said box stationarily in the path of movement of the ribbon, means for guiding the ribbon over the exposed end of said block to cause said ribbon to bear against the exposed end of said block, and means for adjusting the position of the exposed ends of said block relative to the path of movement of said ribbon.

4. In a device for supplying ink to printing devices employing a ribbon, a pair of blocks of inking material, each having a depth equal to substantially one-half of the width of the ribbon, means mounting said blocks one upon the other in the path of movement of said ribbon, and means for guiding said ribbon into contact with said block to cause said ribbon to bear against said blocks with one-half the width of said ribbon in contact with one of the blocks and the other half of the width of the ribbon in contact with the other of said blocks.

5. In a device for supplying ink to printing devices employing a ribbon, a pair of blocks of inking material, each having a depth equal to substantially one-half of the width of the ribbon, means mounting said blocks one upon the other in the path of movement of said ribbon, means for guiding said ribbon into contact with said block to said ribbon to bear against said blocks with one-half the width of said ribbon in contact with one of the blocks and the other half of the width of the ribbon in contact with the other of said blocks, and means for adjusting each of said blocks relative to said ribbon.

6. In an attachment for typewriters employing a ribbon mounted within a spool cage, an elongated open ended box, means for clamping said box to said spool cage with the open end thereof extending outwardly from said spool cage, a block of solid inking material reciprocably received in the open end of said box and having one end thereof exposed, and means for guiding said ribbon from said spool cage across the exposed end of said block to cause movement of said ribbon relative to said block to supply inking material from said block to said ribbon by abrasion.

7. In an attachment for typewriters employing a ribbon mounted within a spool cage, an elongated open ended box, means for clamping said box to said spool cage with the open end thereof extending outwardly from said spool cage, a block of solid inking material reciprocably received in the open end of said box and having one end thereof exposed, and means for guiding said ribbon from said spool cage across the exposed end of said block to cause movement of said ribbon relative to said block to supply inking material from said block to said ribbon by abrasion, and means for adjusting said clamping means.

8. In an attachment for typewriters employing a ribbon mounted within a spool cage, an

elongated open ended box, means for clamping said box to said spool cage with the open end thereof extending outwardly from said spool cage, a block of solid inking material reciprocably received in the open end of said box and having one end thereof exposed, means for guiding said ribbon from said spool cage across the exposed end of said block to cause movement of said ribbon relative to said block to supply inking material from said block to said ribbon by abrasion, a longitudinal slot in said box, a bracket in said box, and means for clamping said bracket to said box, including a screw engageable with said bracket through said slot whereby said bracket may be adjusted to press said block of inking material outwardly of said box.

9. In an attachment for typewriters employing a ribbon mounted within a spool cage, an elongated open ended box, means for clamping said box to said spool cage with the open end thereof extending outwardly from said spool cage, a block of solid inking material reciprocably received in the open end of said box and having one end thereof exposed, means for guiding said ribbon from said spool cage across the exposed end of said block to cause movement of said ribbon relative to said block to supply inking material from said block to said ribbon by abrasion, a longitudinal slot in said box, a bracket in said box, means for clamping said bracket to said box, including a screw engageable with said bracket through said slot whereby said bracket may be adjusted to press said block of inking material outwardly of said box, said clamping means comprising a resilient angle member having a portion thereof extending across the top of said box and another portion extending parallel with the rear of said box, a slot in said first named portion coinciding with the slot in said box, whereby said screw is employed for adjustably clamping said clamp to said box.

10. In a device for supplying ink to printing devices employing a ribbon, a block of solid inking material, an open ended box for reciprocably mounting said block of inking material with the ends thereof exposed, means mounting said box stationarily in the path of movement of the ribbon, means for guiding the ribbon over the exposed end of said block to cause said ribbon to bear against the exposed end of said block, a backing member extending over the exposed end of said block, and means for yieldingly pressing said backing member toward said block to press said ribbon between said backing member and said block.

11. In a device for supplying ink to printing ribbons, a block of solid inking material, means for holding said block with at least a portion of its surface exposed, and means for guiding said ribbon into contact with said exposed surface.

12. In a device for supplying ink to printing ribbons, a block of solid inking material, means for holding said block, and means for guiding said ribbon into contact with said block.

13. In a device for supplying ink to printing ribbons, a block of solid inking material, means for holding said block in the path of movement of said ribbon, and means for guiding said ribbon into wiping contact with said block.

14. In a device for supplying ink to printing ribbons, a block of solid inking material, a holder therefor exposing at least a portion of the surface of said block, and means for guiding the surface of said ribbon into wiping contact with the exposed surface of said block.

15. The method of supplying ink to printing ribbons which consists in passing a ribbon in wiping contact across an inking material which is solid at normal temperatures.

16. The method of supplying ink to printing ribbons which consists in preparing an inking material of coloring matter in a vehicle which is solid at normal temperatures, and passing the surface of said ribbon into wiping contact across said solid inking material.

17. The method of supplying ink to printing ribbons which consists in preparing an inking material of coloring material in a vehicle which is solid at normal temperatures, allowing said vehicle to become solid and then passing the surface of said ribbon in wiping contact across said inking material.

HECTOR W. JEWELL.