April 7, 1959 J. W. H. BISHOP 2,880,840

CLEAN CHANGE RIBBON SPOOL AND ASSEMBLY

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FIG. 1.

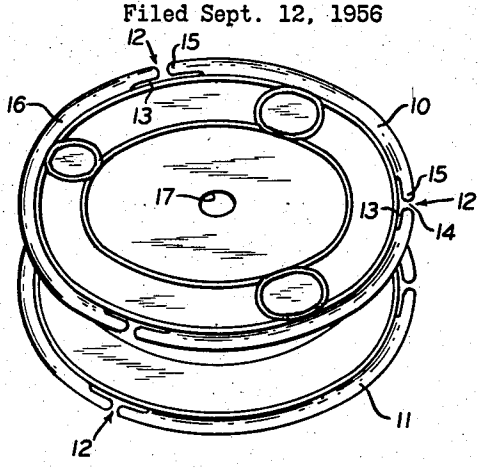


FIG. 2.

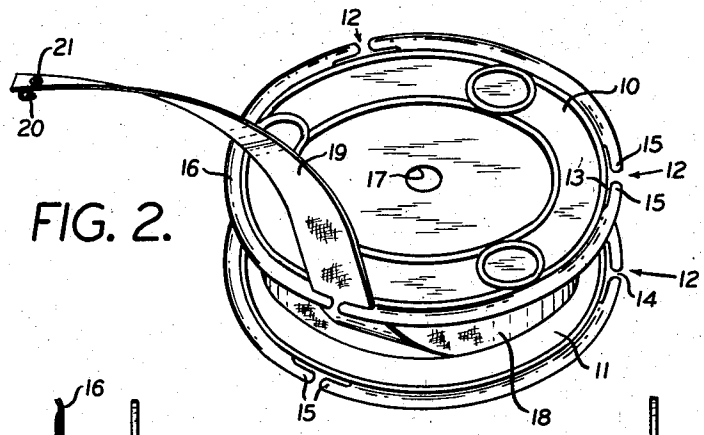


FIG. 3.

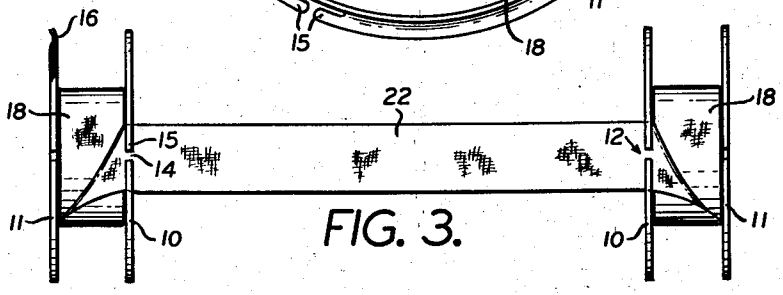
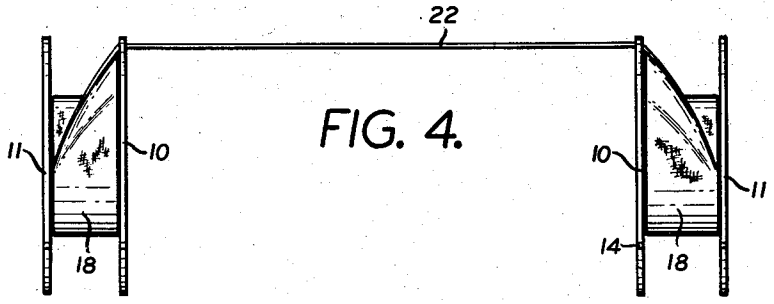


FIG. 4.



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CLEAN CHANGE RIBBON SPOOL AND ASSEMBLY

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12 Claims. (Cl. 197—175)

The present invention relates to inked ribbon spools for typewriters and other business machines and aims to provide certain improvements in such spools and to an assembly of such spool and an inked ribbon wound thereon.

The changing of an inked ribbon on a typewriter or other business machine without soiling the fingers of the operator and its concomitant annoyance and loss of time is a recognized problem of long standing. Also coincident with said problem is that of holding the free end of a wound ribbon so that it will not unwind or spiral off the ribbon spool.

Currently there are two methods of preventing unwinding of a business machine ribbon from its spool during handling before wrapping by the manufacturer or handling after unwrapping by the ultimate user prior to mounting the spool on a machine. One method is to tuck the free end of the ribbon into the gap between the edges of the wound ribbon and an adjacent spool flange. A second method is to apply a ribbon clip over the ribbon near where the ribbon ends. The disadvantage of tucking the ribbon in, is that with the ribbon being moist with ink, the end becomes creased so that when untucked it does not lie flat in the same plane as the rest of the wound ribbon. This makes it difficult to hook the free end of the ribbon onto the fastening device in the empty spool to which it is being attached. If a metal hook eyelet is attached to the end of the ribbon, which is necessary in a considerable number of cases, the effect of tucking in is even worse as in most cases it will cause the hook eyelet to move off-line from its proper position for attaching to the fastening device on the spool, which position should be along the center line of the ribbon and facing toward the end of the ribbon. The disadvantage of using a ribbon clip is the added expense of the clip and the difficulty of getting a clip to actually hold properly on the ribbon. Furthermore, both of the foregoing methods cause the hand of the operator to become soiled with ink as both the tucked end and the clip must be removed manually before attempting to fasten the ribbon end on the empty spool.

During the manufacturing winding operation, the attaching of an eyelet, a hook eyelet or the folding over of a section of the free end and the eyeleting thereof to form a loop (for the Royal standard machine spool) is either done by a secondary operator or time is wasted by a skilled winding operator by having to stop and put the hook eyelet on manually. Up to the present time no machine is commercially available to automatically feed and set the hook eyelet.

Numerous proposals have also been made to facilitate mounting the free end of a ribbon onto an empty spool without soiling the fingers of the operator, for example, by the use of special metal or plastic attachments to the end of the ribbon, or coating the free end of the ribbon with a substance such as silver or gold spray or silver or gold dip which is impervious to ink. And even with such attachments or coating, the inked ribbon must be manually handled when it is to be inserted in the ribbon guides of the machine and causes soiling of the fingers of the operator.

The present invention has among its various objects: (1) to provide a ribbon spool which will overcome the objections to conventional ribbon spools with respect to holding the free end of a wound ribbon against spiraling off the spool; (2) to provide a ribbon spool formed with means for holding a ribbon wound thereon against spiraling off the spool; (3) to provide a novel spool as set forth in (1) and (2) without adding appreciably to the cost of the spool or interfering with the operation thereof; and (4) to provide an assembly of an inked ribbon and a spool or spools which will enable an inked ribbon to be applied to or removed from a business machine without soiling the fingers of a operator's hand.

The foregoing and other objects of the invention, not specifically enumerated, are accomplished by forming in one or both flanges of a conventional inked ribbon spool one or more slots, preferably of T-shape, with the upright of the T extending through the peripheral edge of the flange and with the crosshead portion of the T extending substantially parallel and in close proximity to the outer edge of the flange and into and through which slot a portion of the inked ribbon extends and is held against accidental longitudinal movement. The portion of the inked ribbon which extends beyond the spool may be an end portion or an intermediate portion, in which latter case an assembly of two spools and a ribbon is provided. With such two spools and ribbon assembly an operator when inserting a new ribbon or removing a ribbon which is to be replaced, can accomplish such task by controlling the ribbon while holding the spools, one in each hand, and utilizing the ends of the tongues provided by the T-slots as a hook or holding means for engaging the ribbon when manipulating the ribbon up or down or laterally in the course of guiding the ribbon through or removing it from the ribbon guides. The novel character of the ribbon spool and the combination thereof with the ribbon will be better understood from the detailed description which follows, when considered in connection with the accompanying drawing wherein:

Figure 1 is a perspective view showing a ribbon spool embodying the invention;

Fig. 2 is a view similar to Fig. 1 showing the manner in which the end of a wound ribbon is held against spiraling off the spool;

Fig. 3 is a top plan view of an assembly consisting of two spools and a ribbon wound in part on each spool with an intermediate part of the ribbon held against accidental movement for facilitating mounting the ribbon and spools on a typewriter or other business machine; and

Fig. 4 is a front elevation of the spools and ribbon assembly shown in Fig. 3.

The inked ribbon spool of the invention follows generally the construction of conventional inked ribbon spools which consist of a pair of disc members or flanges **10** and **11** mounted at the opposite ends of a central hub having means thereon (not shown) for securing or anchoring an end of an inked ribbon for facilitating winding the ribbon on the spool and differs primarily from such conventional spools in that the flanges adjacent their peripheries are formed with one or a plurality of slots **12** equally spaced circumferentially of the spool.

Each slot **12** is preferably substantially T-shaped with the crosshead portion **13** of the T extending substantially parallel and in close proximity to the outer edge of the flange and the upright portion **14** of the T extending inwardly from the outer edge of the flange. Preferably the transverse dimension of the upright portion **14** is

greater than the transverse dimension of the crosshead 13, which latter is only sufficiently greater than the thickness of an inked ribbon to permit free insertion of the ribbon thereinto and has a length somewhat greater than the width of such inked ribbon. The T-slot 12 provides a pair of tongues 15 which are preferably rounded at their free ends. The peripheral portion of the flanges 10 is preferably formed as a struck-up bead or rib 16 to reinforce the peripheral edges of the spool. The flanges 10, as is conventional, are each formed with a central opening 17 for accommodating a spindle on a business machine.

In Fig. 2 of the drawing there is shown an assembly of an inked ribbon and a spool and the manner in which an inked ribbon 18 which is wound on the spool is held against spiraling off of the spool. This is accomplished by the free end portion 19 of the ribbon being folded over to extend substantially parallel to the axis of the spool and then inserted into the slot. Such insertion is readily accomplished by folding a portion of the free end of the ribbon medially and inserting the folded edges into the relatively wide upright portion 15 of the T-slot and then pulling on the free end of the ribbon to cause it to flatten out and engage within the crosshead portion 13 of the T-slot. The free end of a ribbon when thus inserted into the slot of a spool, as shown, will be held against accidental movement and, of course, from spiraling off the spool. In many makes of inked ribbons the free end thereof is provided with a hook 20 which is riveted to the ribbon by an eyelet 21.

It will thus be seen that with a ribbon and spool assembly such as shown in Fig. 2, the exposed free end portion 19 may be readily hooked or anchored to an anchoring means on the hub of an empty spool in the course of changing a ribbon without soiling the hands of an operator. By virtue of the fact that the free end portion 19 of the ribbon is held against longitudinal movement, it will be appreciated that the hooking-on operation can be readily accomplished after which, by tilting the spool held in the hand, the gripped end portion may be disengaged from the T-slot and wound onto the empty spool.

In Figs. 3 and 4 there is shown a ribbon and spool assembly comprising a pair of spools, each of the type shown in Fig. 1 and above described, to each of which one end of the ribbon is anchored and a portion of the ribbon is wound and an intermediate portion 22 of from 2 to 4 inches in length is held against accidental displacement by being locked into a T-slot of each of the spools in a manner analogous to that shown and described with respect to Fig. 2. A ribbon and spool assembly such as shown in Figs. 3 and 4 will enable an operator to use a ribbon on most types of business machines without having to touch the inked ribbon at any time and thus avoid soiling the operator's fingers. For example, when it is desired to apply a new ribbon to a machine an operator will hold one spool of the assembly in each hand, whereupon the ribbon may be easily slipped through the machine ribbon guides if the two spools are advanced toward and up to the ribbon guide in a vertical or semi-vertical position. When it is desired that a ribbon on a machine be replaced, the operator will lift each of the spools off from its spindle, taking one spool in each hand and utilizing either of the leading edges or ends of the tongues 15 formed by the slots, as a hooking device, which permits the hooking onto the top or bottom edges of the ribbon thereby permitting the ribbon to be moved up or down or laterally in the ribbon guides so that the ribbon may be disengaged from the guides. By having the slots in close proximity to the peripheral edges of the spool flanges it will be readily appreciated that manipulation of the ribbon by the spools while held in the hands of the operator in the manner aforementioned can be readily accomplished since the spools can be brought into close proximity to the ribbon guides adjacent the platen. Popular typewriters in the United States to which the present invention is applicable so that the ribbon changing is made completely clean are the Underwood (electric, standard and portable), the Royal (electric, standard and portable), the Remington (electric, standard and portable), the Corona (electric, standard and most portables) and the R. C. Allen (standard and electric).

From the foregoing detailed description, when considered in connection with the accompanying drawing, it will be readily appreciated that I have provided a novel spool for inked ribbons whereby the wound ribbon is held from spiraling off the spool and also an inked ribbon and spool assembly whereby the task of changing a ribbon on a business machine such as a typewriter and the like, is greatly facilitated and without the operator touching the inked ribbon and soiling one's hands.

While I have shown and described a preferred embodiment of my invention, it is to be understood that changes in details of construction such as the shape of the T-slots, their arrangement, and the manner in which the ribbon engages in said slots, may be resorted to within the range of mechanical skill without departing from the spirit of the invention as claimed.

What I claim is:

1. A spool for an inked ribbon comprising a hub having means for anchoring the end of an inked ribbon to the hub and a flange extending perpendicularly outward from at least one end of the hub, said flange having a slot therein extending inwardly from the outer periphery of the flange with an inner portion of the slot extending substantially at a right angle to a radius of the spool and in close proximity to the outer periphery of the flange.

2. A spool according to claim 1, wherein the slot is substantially T-shaped with the crosshead portion of the T extending substantially parallel and in close proximity to the outer periphery of the flange.

3. A spool according to claim 2, wherein the flange is a thin disc and there are a plurality of T-slots circumferentially spaced at the periphery of the disc.

4. A business machine inked ribbon and spool assembly comprising a spool having a hub and a flange extending perpendicularly outward from the hub, said flange having a slot therein extending inwardly from the outer edge of the flange with an inner portion of the slot extending substantially at a right angle to the radius of the spool, means on the hub for securing thereto the end of an inked ribbon, and an inked ribbon wound on the hub with one end of the ribbon anchored to the securing means on the hub and the other end of the ribbon extending through the slot in the flange and held thereby from unwinding.

5. An assembly according to claim 4, wherein the slot in the flange is T-shaped with the free end of the upright portion of the T terminating at the outer edge of the flange, and wherein the transverse dimension of the head of the T-shaped slot is much less than the transverse dimension of the upright portion of the T.

6. An assembly according to claim 4, wherein the slot in the flange is T-shaped with the free end of the upright portion of the T terminating at the outer edge of the flange, wherein the transverse dimension of the head of the T-shaped slot is much less than the transverse dimension of the upright portion of the T and the head of the T-shaped slot is at least as long as the width of the inked ribbon.

7. An assembly according to claim 4, wherein the free end of the ribbon on the spool is folded over to extend substantially parallel to the axis of the spool before it is passed through the slot.

8. A business machine inked ribbon and spool assembly comprising a pair of spools each having a hub and a flange extending perpendicularly outward from one end of the hub, means on each hub for securing thereto the end of an inked ribbon, an inked ribbon the ends of which are secured to the respective hubs and the ribbon being

wound in part on each of the spools leaving an intermediate portion of the ribbon unwound on the spools, and means on said flanges engaging said intermediate portion of the ribbon to hold it against unwinding from either spool yet permitting release of the held portions of the ribbon solely by movement of a spool relatively to the ribbon.

9. An assembly according to claim 8, wherein the means on the flanges engaging said intermediate portion of the ribbon consist of a slot in each flange extending inwardly from the outer edge of the flange with an inner portion of the slot extending substantially at a right angle to the spool axis in close proximity to the outer edge of the flange.

10. An assembly according to claim 8, wherein the slot

in each flange is T-shape and the transverse dimension of the upright portion of the T is greater than the transverse dimension of the crosshead portion of the T.

11. An assembly according to claim 10, wherein the ends of the upright portion of the T are rounded away from the slot.

12. An assembly according to claim 10, wherein the intermediate portion of the ribbon where it leaves the wound portion on each spool is folded over itself before it engages in the slot in the flange.

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