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RIBBON ATTACHING MEANS

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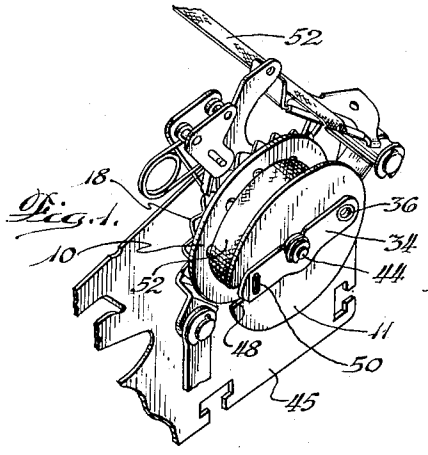

Fig. 1.

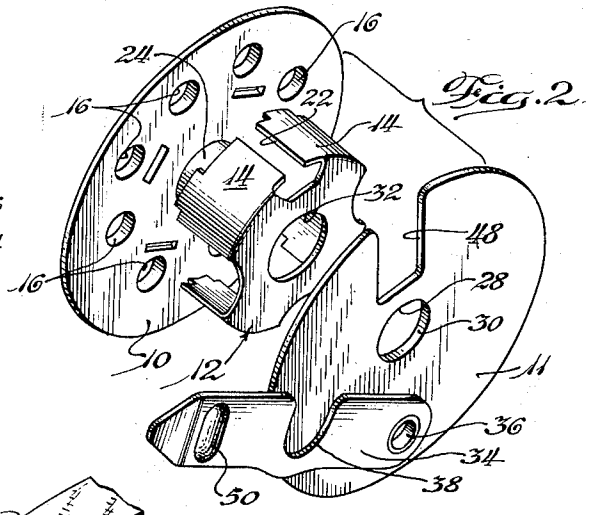

Fig. 2.

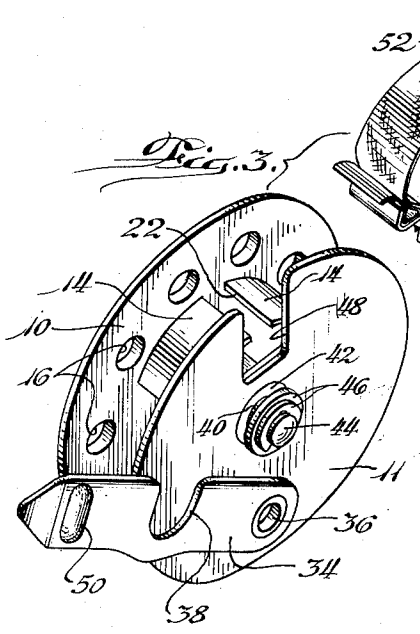

Fig. 3.

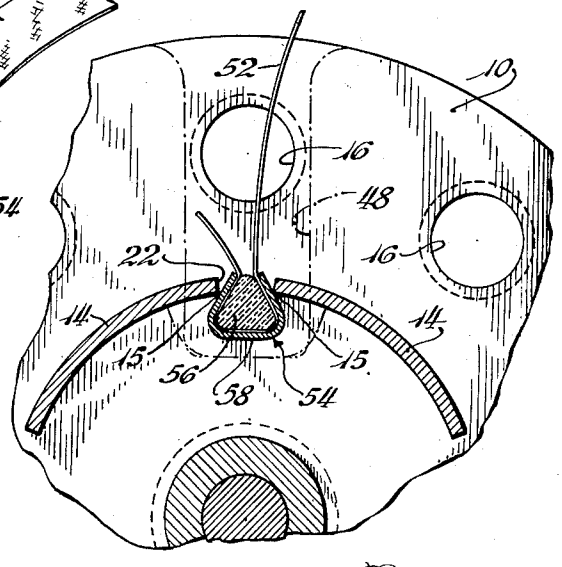

Fig. 4.

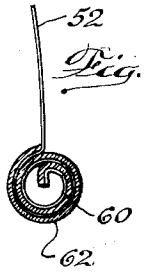

Fig. 5.

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE

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RIBBON ATTACHING MEANS

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Application September 25, 1951, Serial No. 248,173

5 Claims. (Cl. 197—175)

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My invention relates generally to means for attaching inking ribbons to spools for use in adding machines, typewriters, and similar office machines and equipment.

It is an object of my invention to provide an improved ribbon spool hub and an improved ribbon end which may be easily detachably secured to the hub by sliding the ribbon end laterally through a retaining slot in the hub.

Another object is to provide an improved inking ribbon which does not come into contact with the fingers while it is being attached to the ribbon spool.

Another object is to provide an improved inking ribbon which can be manufactured readily and cheaply by automatic machinery.

Another object is to provide an improved means for attaching an inking ribbon end to a spool in a manner such that the ribbon will be tightly held as the ribbon is wound on the spool in either direction.

Other objects will appear from the following description, reference being had to the accompanying drawings, in which:

Fig. 1 is a perspective view of a ribbon spool, including the improved hub, with a ribbon wound in part therearound, shown as mounted upon a machine, such as an adding machine;

Fig. 2 is an exploded perspective view of the ribbon spool and of the improved hub;

Fig. 3 is an exploded perspective view of the spool and the ribbon;

Fig. 4 is a fragmentary sectional view through the spool hub, showing how the ribbon is anchored to the hub by means of one form of the novel ribbon end; and

Figs. 5, 6, and 7 are transverse sectional views of variants of the ribbon end.

The ribbon spool comprises a pair of discs 10 and 11 joined by the hub 12, the latter being a stamping comprising a plurality of arcuate legs 14 which are suitably staked to the disc 10. Two of these legs, shown at the top in Fig. 2, have arcuate extensions to form a relatively narrow slot 22. The disc 10 is provided with a plurality of pierced, flanged openings 16 for receiving a driving lug of an operating ratchet wheel 18. The disc 10 also has a central opening surrounded by an inwardly turned bearing flange 24. The disc 11 is provided with a central opening 28 surrounded by an inwardly extending flange 30. The flange 30 is inserted in a hole 32 formed at the center of the hub stamping 12.

A locking lever 34 is pivotally mounted on a pierced flange 36 and has a U-shaped notch 38

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for engagement in an annular groove 40 formed in one end of a sleeve 42 which is staked to and forms a hub for the ratchet wheel 18, the latter being freely rotatable on a stud 44 fixed to the frame plate 45 of the machine, and being held thereon by a keeper 46.

The disc 11 is provided with a radial, generally rectangular notch 48 extending inwardly from the periphery of the disc 11, this notch being located in alignment with the slot 22, which is formed by the spacing apart of two adjoining legs 14 of the hub 12. The notch is made wide enough to permit ready passing therethrough of the ribbon end when the ribbon is being secured to the spool or removed therefrom. The locking lever 34 is provided with a detent projection 50 which, as shown in Fig. 1, is resiliently held in the notch 48 to maintain the lever in the position in which it is in locking engagement with the groove 40.

The ribbon 52, for use with the form of spool which has been described, has its end portion secured to an anchoring end structure 54, the axial dimension of which is about the same as the width of the ribbon 52, or slightly shorter. This end structure comprises a core 56, generally triangular in cross section, around which the end portion of the ribbon is clamped by a bent metal strip or clip 58. The core 56 preferably consists of an extruded or molded slightly compressible and elastic plastic, such, for example, as a polyamide resin. Other materials, such as fiber or wood, may be used.

The largest transverse dimension of the anchoring member 54 is substantially greater than the width of the slot 22, but is less than the width of the notch 48. Thus, when the anchoring structure 54, with an end of the ribbon 52 held therein, is slipped laterally through the notch 48 and into the slot 22, any tension on the ribbon in winding it around the hub 12 will cause the member 54 to be wedged or anchored firmly in the slot 22 against the internal edges 15 of the legs 14, as shown in Fig. 4. Tension on the ribbon increases the clamping effect of the clip 58. When the ribbon is unwound from the hub 12, however, as for replacement with another ribbon which is provided with similar anchoring means, the end structure 54, along with the end of the ribbon secured thereto, can be passed easily through the slot 22 and notch 48.

Fig. 5 shows a second form of anchoring member. A short length of the ribbon 52 is impregnated with glue or other hardenable adhesive, and rolled into a small coil. If desired, a strip

60 of ink-impervious paper or other suitable material may be pressed against the adhesive impregnated portion of the ribbon, after which the end portion of the ribbon and adherent strip are rolled into a spiral coil 62, as shown in Fig. 5. The diameter of the roll 62 should be greater than the width of the slot 22, but less than the width of the notch 48.

Fig. 6 shows a third form of anchoring structure, which is similar to that shown in Figs. 1 to 4, except that the core 66 and clip 67 are cylindrical in cross section.

Fig. 7 illustrates a fourth form of anchoring member 68, in which the end of the ribbon 52 is secured in a three-bight metal clip 68 formed of metal strip, which is of the same width as the ribbon. The strip and ribbon are folded together in a suitable metal forming machine, in a manner such that the ribbon is firmly held by the clip.

The herein disclosed means for securing the end of an inking ribbon to a spool are very simple, inexpensive, and effective. The anchorage of the ribbon will withstand a force as great as the tensile strength of the ribbon, and therefore is desirable for use in calculating machines in which the ribbon tension may at times be relatively high. In attaching the end of the ribbon to a spool, and in the removing of it therefrom, it is not necessary to touch the ribbon itself. The clip at the ribbon end forms a clean handle when attaching the ribbon to the spool, and due to its stiffness and weight, makes it easy to shake the ribbon end through the notch 48 when removing the ribbon.

The clips and cores, particularly of the form shown in Figs. 1 to 4, may be attached to the ribbon ends and the ribbon anchored to and wound upon its spool by automatic machinery at small cost. Visual inspection, to make certain that the end of the ribbon is attached to the spool, is possible. The spool may be used on machines having horizontal, upwardly, or downwardly extending spool carrying shafts or pins.

While I have shown and described a preferred embodiment of my invention, and several modifications thereof, it will be apparent that numerous additional variations and modifications thereof may be made without departing from the underlying principles of the invention. I therefore desire, by the following claims, to include within the scope of the invention all such variations and modifications by which substantially the results of my invention may be obtained through the use of substantially the same or equivalent means.

I claim:

1. In combination, an inking ribbon spool having two side wall discs and a central hub, the hub including means forming a relatively narrow slot for the free passage of the end portion of a ribbon, one of said discs having a relatively wide notch extending radially inward from its periphery in alignment with and exposing the end of said slot, a locking lever pivoted on said disc and having a detent part engageable in said notch to hold the lever in locking position, and an inking ribbon extending through the slot in the hub and having anchoring means at the end of the ribbon within the hub, said means being of greater thickness than the width of the slot in the hub and of less thickness than the width of the notch in the disc.

2. The combination set forth in claim 1, in which the anchoring means comprises a core of length substantially equal to the width of the ribbon having the end portion of the ribbon wound around it, and a clip embracing the core and clamping the ribbon against it.

3. The combination set forth in claim 2, in which the core is generally triangular in cross section.

4. For use in a calculating machine, the combination of a plurality of sheet metal assembled stampings, including two side wall discs and a central hub, the hub including means forming a relatively narrow slot for the free passage of the end portion of a ribbon, one of said discs having a relatively wide notch extending radially inward from its periphery in alignment with and exposing the end of said slot, a locking lever pivoted on said disc and having a detent part engageable in said notch to hold the lever in locking position, and an inking ribbon extending through the slot in the hub and having anchoring means at its end, said anchoring means including a core and a clip clamping the end portion of the ribbon around the core.

5. An inking ribbon having its end portion rolled in a spiral coil and impregnated with a hardened adhesive, and a layer of ink-impervious material adhering to the outer surface of the coil.

ERHARD M. LIPPERT.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
887,472	Gammeter	May 12, 1908
930,327	Wheeler	Aug. 3, 1909
1,304,021	Carter	May 20, 1919
1,902,007	Wood	Mar. 21, 1933
2,006,663	Weis	July 2, 1935