

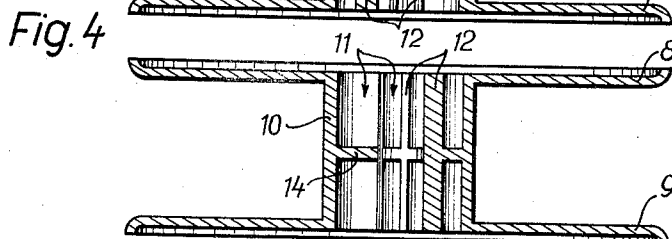
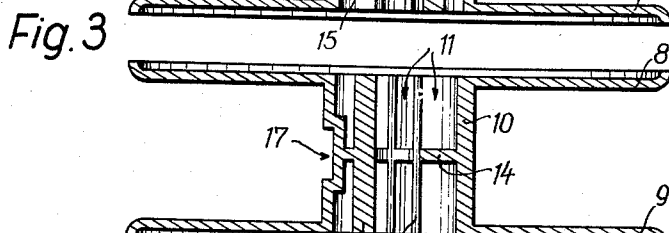
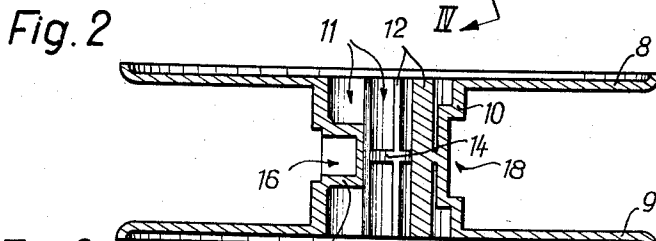
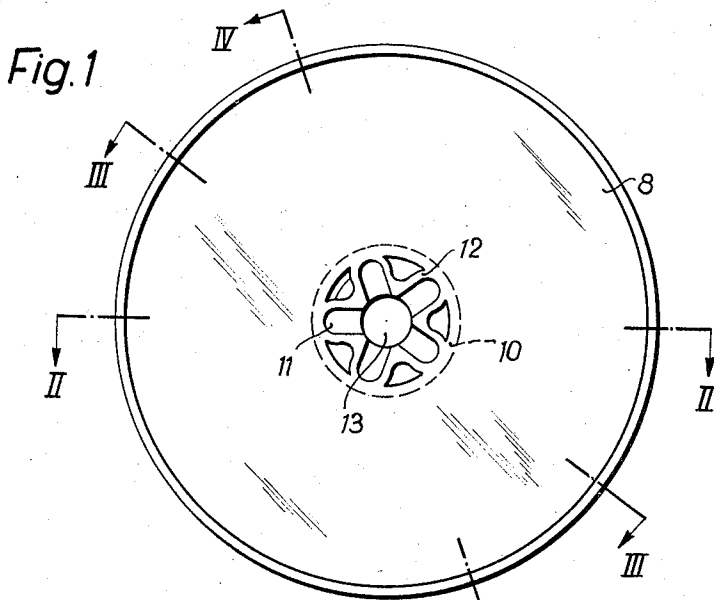
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P. REGENTROP ET AL
SPOOLS FOR TYPEWRITER RIBBONS

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2 Sheets-Sheet 1



INVENTORS
PAUL REGENTROP
WALTER FASTENRATH

By

K. H. H. H. H.
att

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Fig. 5

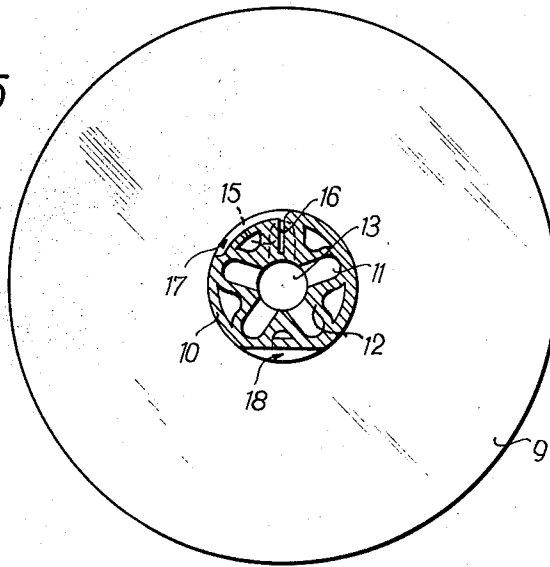


Fig. 6

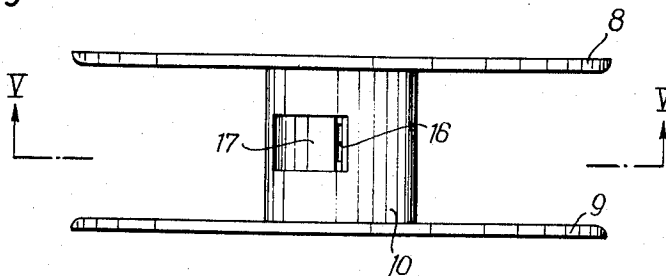
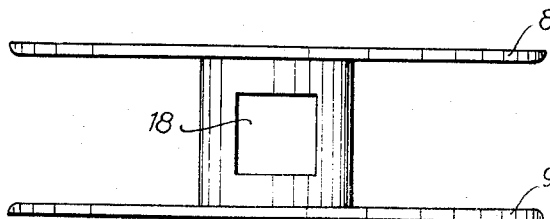


Fig. 7



INVENTORS

PAUL REGENTROP
WALTER FASTENRATH

By

Karlinski, atty

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SPOOLS FOR TYPEWRITER RIBBONS

Paul Regentrop and Walter Fastenenrath, Wuppertal-Elberfeld, Germany

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7 Claims. (Cl. 197—175)

This invention relates to office equipment, and more particularly to spools for typewriter ribbons and the like. Spools for typewriters and other office machine ribbons usually comprise two circular lateral discs or flanges which are spaced by a hollow cylindrical core on which the ribbon is to be wound. For the purpose of mounting the spool on the spool carrier pin of the typewriter or other office machine, a cylindrical guide is provided in and co-axial with the core; with metal spools, this guide may be provided, for example, in the form of a small tube inserted in the core. The two lateral discs or flanges are provided with apertures; in standard spools, three such apertures are displaced relative to one another by 120°, and any one of these apertures may be engaged by the driving pin arranged on the typewriter or other machine, of the ribbon transport mechanism. It is also customary to have a sheet-metal strip with a point for attaching the ribbon thereon, mounted on or punched from the core.

It is the primary object of the present invention to provide an improved spool for typewriter ribbons and the like, which is made all in one piece from an artificial material by injection moulding in a faultless, uniform manner and at a maximum saving of material.

In the prior art, it has been suggested to manufacture spools for typewriter ribbons and the like from artificial material in a manner such that they are made in two or more cast or injection moulded components which are assembled by being cemented together. This mode of manufacture, however, involves difficulties with respect to the precise matching of the components and the secure attachment of the components with one another. It has also been suggested to manufacture typewriter ribbon spools from artificial material all in one piece, but spools of this type so far disclosed, had such drawbacks or deficiencies as to render them unacceptable for use on a commercial scale. Thus, for example, British Patent 508,162 discloses a spool for typewriter ribbons made in one piece from artificial material, which simply imitates the spools made from metal in that the hollow cylinder forming the core and the guide tube coaxially arranged therein, for the spool carrier pin, are replaced by a thick-walled hollow cylinder the outside wall of which is to form the core while its inner wall is designed to constitute the guide for the spool carrier pin. This concept, however, implies such material differences between the wall thicknesses of the hollow cylinder and the lateral discs, that when typewriter ribbon spools cast or injection moulded on the afore-noted principle, are cooled, stresses are bound to arise which render cracks or fissures in the finished product unavoidable. Manifestly, this disclosure failed to appreciate that in the manufacture of typewriter ribbon spools from artificial material all in one piece, it is one of the most essential requirements that the wall thicknesses of all parts must be essentially equal if prohibitive stresses and their disastrous results are to be avoided following the cooling of the cast or injection moulded product.

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Another prior art disclosure, French Patent 1,077,921, involves another typewriter ribbon spool made all in one piece from artificial material, taking into account the afore-noted requirements as to substantially equal wall thicknesses of all component parts of such a spool, but this disclosure suffers from a number of other deficiencies. For example, the spool is provided with a central tube designed to mount the spool on the spool carrier pin of the typewriter. This tube, however, is connected with the spool proper only by way of narrow and thin bridges, each of which is provided with an aperture, one single such aperture being provided on each side of the spool. This connection between the tube and the spool is extremely weak and, moreover, yielding, so that the spool lacks the firm hold and secure mount which any such spool needs. Since the tube over the largest part of its circumference, is surrounded by a free space, the spool is not readily mounted on the spool carrier pin. Moreover, this carrier pin readily enters this free space in the course of mounting the spool, and this more readily as on each side of the spool only one follower aperture is provided, a feature which in itself militates against a ready mounting of the spool. Thus, the spool can be mounted only when the carrier pin is painstakingly inserted into the tube and the follower pin is accurately introduced into the follower opening. Finally, the manufacture of the spool involves material difficulties with respect to casting technique. In order to form the follower apertures in the spool, corresponding moulding pins must be used in casting. It is well known that in casting, the artificial mass flows around such molding pins to form, at the juncture behind the pin, a sort of welding seam, which, on cooling, is known to lead readily to fissures.

The invention aims at providing a typewriter ribbon spool made all in one piece from artificial material by casting or injection moulding, which eliminates any and all of the drawbacks of prior art spools exemplified above and thus constitutes a spool which is thoroughly satisfactory for use on a commercial scale and the manufacture of which does not give rise to any difficulties of casting technique. In pursuit of this aim, the present invention contemplates providing a spool from artificial material all in one piece and made by casting or injection moulding wherein the follower openings customary so far with this type of spool are replaced by radial recesses the walls of which form bridge portions emanating from the central cylindrical opening provided for mounting the spool on the carrier pin, and extending to the hollow core. According to a preferred embodiment of the invention, these bridge portions are interconnected by a transverse wall extending from the carrier pin engaging opening to the core.

This concept, according to the invention, not only facilitates the faultless manufacture all in one piece of the typewriter ribbon spool, for example by injection moulding, but moreover assures a secure guidance of the spool on the carrier pin of the machine. This guidance is assured by the circular central openings in the lateral discs as well as the central transverse wall and the bridge portions.

In the drawings attached to this application and forming part thereof, one embodiment of the invention is illustrated diagrammatically by way of an example.

In the drawings,

Fig. 1 is a top view of a typewriter ribbon spool according to the invention,

Fig. 2 is a section along line II—II in Figure 1,

Fig. 3 is a section along line III—III in Figure 1,

Fig. 4 is a section along line IV—IV in Figure 1,

Fig. 5 is a horizontal section through the spool of Figure 1, taken along the line V—V in Figure 6, and

Figs. 6 and 7 are side views seen from the left and from the right, respectively, of the spool shown in Figure 1.

Throughout the drawings, the lateral discs are shown at 8 and 9 and the cylindrical hollow core at 10. In the place of the so far customary follower openings, the present spool is provided with radial recesses 11, the number of which, in the embodiment of the invention illustrated in the drawings, amounts to five, but which may be varied at will. The walls of these recesses 11 are formed by bridge portions 12, the inside edges of which delimit the central opening 13 and which extend to the confines of the core 10. A central transverse wall 14 interconnects these bridge portions and extends from the central opening 13 to the confines of the core 10, as seen in Figs. 2 to 4.

With one exception, the recesses 11 extend throughout the spool. Only the recess 11 shown on the left in Fig. 2, in its central portion, is interrupted by a spool body portion 15 in which a radial slot 16, best seen in Figs. 2 and 5, is disposed. This slot 16 serves for attaching, for example by cementing, the usual sheet-metal strip (not shown in the drawings) with a point for engaging the end of the ribbon when the same is to be wound on the spool. Adjacent to the slot 16, the core is provided with a recess 17 into which the sheet-metal strip with the end of the ribbon hooked onto it, can be forced in order to provide a smooth winding surface for the ribbon. The conventional window in the core is replaced, according to the invention, by a further recess 18 on the circumference of the core.

The replacement of the traditional follower apertures by the radial recesses 11, and the increase of these recesses to a number exceeding the conventional three follower openings, not only results in a material saving of artificial material in the course of manufacture, but, moreover, has the signal advantage that a non-uniform cooling of portions of different wall thicknesses, and a consequent danger of cracks and fissures being caused by non-uniform cooling, are completely avoided. The bridge portions, the wall of the core and the lateral discs all can be made with substantially the same wall thicknesses. The central transverse wall facilitates the manufacture of the spool all in one piece as one integral body and, in addition, enhances the safe guidance of the spool on the spool carrier pin.

We wish it to be understood that we do not desire to be limited to the details of construction, design and operation of the invention as outlined for purposes of illustration only, in the foregoing specification as numerous modifications falling within the scope of the appended claims and involving no sacrifice of the advantages of the invention nor any departure from the spirit thereof, may occur to a person skilled in the art.

We claim:

1. Spool for typewriter ribbons and the like made all in one piece from artificial material and including a hollow core and means on said core for mounting the spool on the carrier pin of a machine, said means comprising bridge portions extending from the wall of said core inwardly in substantially radial direction and spaced from one another, said bridge portions defining substantially radial recesses serving for use as follower openings, and the innermost confines of said bridge portions delimiting a central opening, said central opening being adapted to be engaged by the spool carrier pin.

2. Spool for typewriter ribbons and the like according to claim 1, comprising a transverse wall interconnecting said bridge portions and extending in the middle portion of the core, from the core to said central opening.

3. Spool for typewriter ribbons and the like according to claim 1, said spool comprising a core wall portion recessed and extending into one of the radial recesses, and a slot in said portion, said slot being adapted to be engaged by a ribbon fastening means.

4. Spool for typewriter ribbons and the like according to claim 3, comprising a recess disposed adjacent to said slot and adapted to accommodate the ribbon fastening means, whereby to provide a smooth winding surface for the ribbon.

5. Spool for typewriter ribbons and the like according to claim 4, wherein an additional recess is provided on the core to serve as a window.

6. In a spool for typewriter ribbons and the like of the kind cast or injection molded all in one piece from artificial material adapted to be mounted on a typewriter or similar office machine, and wherein all portions have substantially the same wall thickness, in combination, a hollow cylindrical core member, and a plurality of bridge portions extending substantially radially into the interior of said core and defining substantially radial recesses disposed in star pattern, said recesses serving as follower apertures, said bridge portions stopping short of the center of said cylindrical core at innermost edge portions delimiting a central opening, said central opening being adapted to be engaged by a spool mounting means on the machine.

7. In the spool for typewriter ribbons and the like according to claim 6, a transverse wall interconnecting said bridge portions in a plane disposed at about half the height of said core, said wall extending from the core to said central opening.

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