Feb. 27, 1934. R. N. CORTHELL 1,949,144

THREAD SUPPLYING ADJUNCT

Filed Nov. 5, 1932

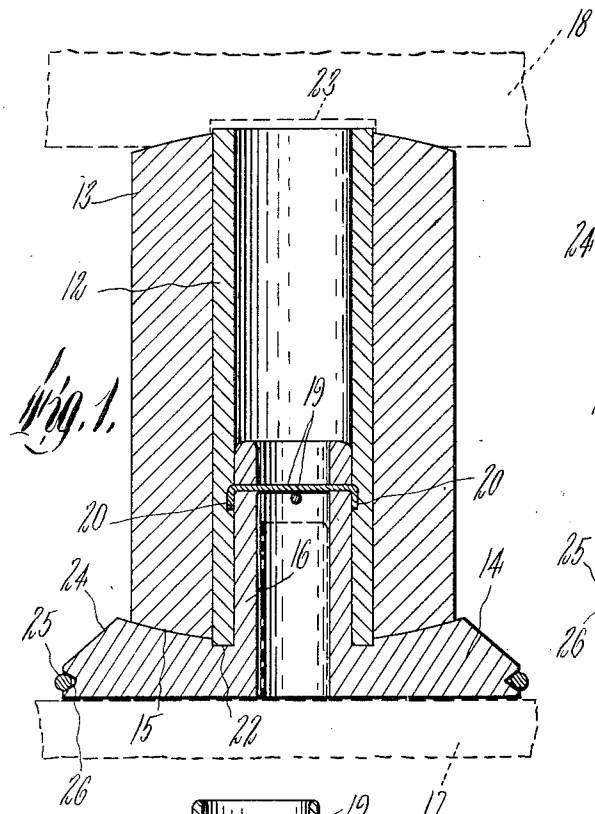


Fig. 1.

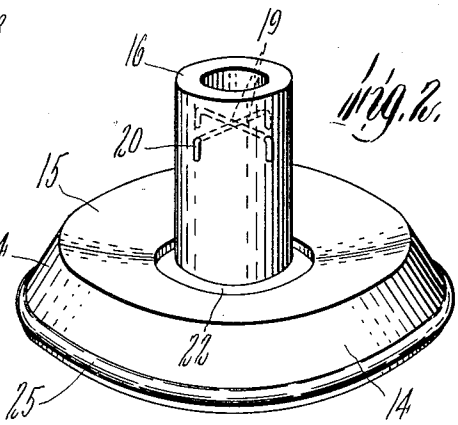


Fig. 2.

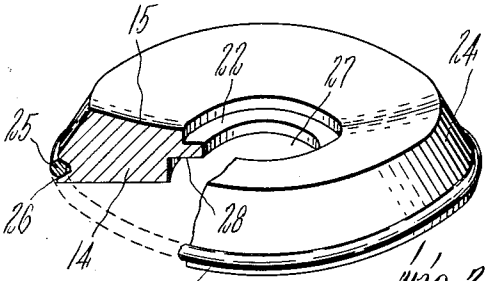


Fig. 3.

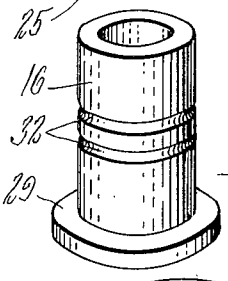


Fig. 4.

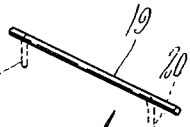


Fig. 5.

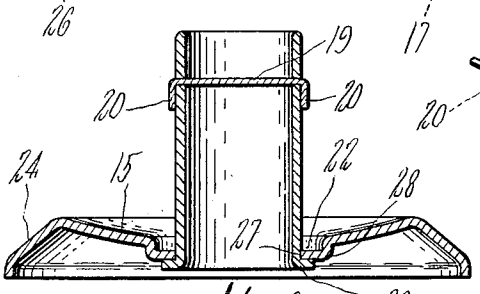


Fig. 6.

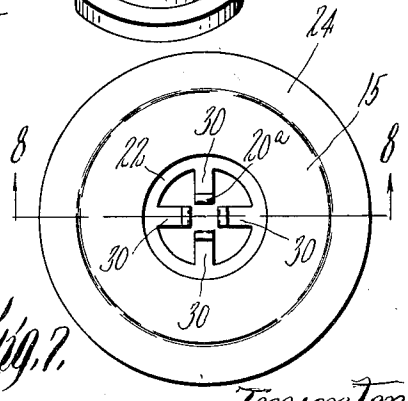


Fig. 7.

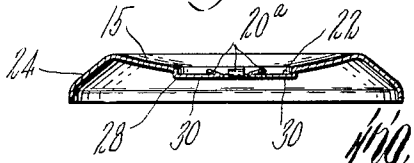


Fig. 8.

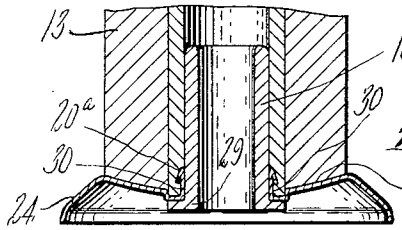


Fig. 9.

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THREAD SUPPLYING ADJUNCT

Robert N. Corthell, Auburn, Maine

Application November 5, 1932
Serial No. 641,383

4 Claims. (Cl. 242—121)

This invention relates to adjuncts for supplying thread to high speed sewing machines and the like.

The invention as a whole is embodied in an adjunct which includes a commercial cop composed of a tubular cop tube, or core, and an annular body of thread wound thereon; and a cop support composed of a circular base having a rigid smooth surfaced annular concave antifrictional face on which the inner end of the thread body is seated and against which it is pressed by longitudinal compression of said body, so that said inner end is conformed closely to said rigid face, and a tubular spindle-engaging bushing fixed to and projecting from the center of the base and inserted in and firmly engaged with the cop core.

The chief object of the invention is to provide a close joint between the inner end of the thread body and the base, which first prevents loose convolutions of thread dropping from the thread body from being interposed between the inner end of the body and the base, and thus caught and prevented from freely unwinding as required by the call of a sewing machine; and secondly, permits free unwinding of the thread convolutions forming the inner end of the body, and contacting with the base, said convolutions being adapted to slip freely on the antifrictional face of the base while they are being unwound, so that all of said convolutions may be freely unwound until the thread is entirely removed from the cop tube.

Another object is to provide, as an article of manufacture, a commercial cop support, adapted to rotate freely on a spindle, and to be quickly and conveniently engaged with the cop and function therewith to produce the results above indicated.

Other objects and advantages will hereinafter appear.

Of the accompanying drawing forming a part of this specification,—

Figure 1 is a sectional view of the preferred form of adjunct embodying the invention.

Figure 2 is a perspective view showing the support shown by Figure 1 separated from the cop, the base and bushing elements of the support being integral with each other.

Figures 3 and 4 show in perspective the base and bushing elements of the support formed separately and separated from each other.

Figure 5 shows in perspective the wire member hereinafter described.

Figures 6, 7, 8 and 9 show other forms of support, each including separately formed base and bushing elements.

The same reference characters indicate the same parts in all of the figures.

Referring first to Figures 1 and 2, 12 designates the core and 13 the thread body of a commercial cop in common use, the core being usually of compressible material, such as paper.

The cop support includes a circular base 14 having a rigid antifriction face 15 on which the inner end of the body 13 is seated, and a tubular spindle-engaging bushing 16 fixed to and projecting from the center of the base and inserted in the core 12.

The base and bushing are preferably integral with each other as shown by Figure 1, and are preferably made of wood by a turning operation which imparts a smooth surface to the concave antifriction face 15.

The thread body 13 is longitudinally compressed so that its inner end is conformed closely to the face 15, the compression being caused by applying a pressing member 17 to one side of the base, and another pressing member 18 to the outer end of the thread body, said members being shown by dotted lines in Figure 1, and operated to force the bushing into the core and longitudinally compress the thread body.

I provide automatically acting securing means fixing the bushing 16 to the core to maintain the compression and the conformation of the inner end of the thread body to the base face 15. In the embodiment shown in Figures 1, 2, 5 and 6 said means is embodied in a wire member 19 extending through the bushing 16, and having ends 20 which are bent inwardly toward the base and bear on the periphery of the bushing, said ends constituting one way acting dogs which indent portions of the internal surfaces of the compressible core 12, and are arranged to offer minimum resistance to the entrance of the bushing into the core, and automatically and positively prevent the separation of the bushing from the core, and maintain the longitudinal compression of the thread body. Other securing means may be employed, such as a coating of glue applied to the periphery of the bushing, the compressing pressure being continued until the glue sets.

The face 15 is concave, and adapted to impart a convex form to the inner end of the thread body, as shown by Figure 1.

The usual cross winding operation which forms the thread body 13 on the cop 12 leaves the ends of the body slightly convex and compressible, so

that, although said ends do not originally have the prominent convexity shown by Figure 1, the original convexity of the inner end of the thread body is increased by the longitudinal pressure exerted and maintained on said body until said end conforms closely throughout its entire area to the concave top face 15 of the base, and thus acquires the convex form shown by Figures 1 and 9. A very close joint is therefore formed between the inner end of the thread body and all portions of the concave top face 15 on which it bears, the closeness of the joint continuing during the entire operation of unwinding the thread body from the core.

When the adjunct is conditioned as shown by Figure 1, the thread body being under longitudinal compression, the close joint formed as above stated prevents the possibility of loose thread convolutions dropping from the body from being interposed and locked between the body and concave face of the base. At the same time the smooth antifriction face 15 permits the free outward slipping of the thread convolutions forming the inner end of the body and contacting with the concave face 15 during the entire period while they are being unwound, there being no objectionable drag or resistance to the unwinding of said convolutions, so that the thread may be freely unwound until it is entirely removed from the core 12.

In case the ends of the core 12 project slightly from the ends of the thread body as shown by Figure 1, the base 14 may be provided with an annular recess 22 surrounding the bushing 16, and receiving the projecting inner end of the core, although this is not essential if the core ends do not project. The pressing member 18 may have a recess 23 arranged to receive the projecting outer end of the core, so that the pressing member acts only on the outer end of the thread body.

The periphery of the base includes a frustoconical portion 24 sloping downwardly and outwardly from the top of the base and adapted to outwardly deflect thread coils dropping from the thread body.

When the base is made of wood and is liable to crack, or break into two or more parts, it is advisable to reinforce the base by a binding ring 25 surrounding the periphery of the base, and engaged with a peripheral groove 26. Said ring prevents the spreading or opening of the base in case it is split or cracked.

The base and bushing may be made separately in either of the forms shown by Figures 3, 4, 6, 7, 8 and 9, and secured to each other in any suitable way as by forcing the bushing into a central orifice in the base, the bushing having a tight driving fit in the orifice.

The base shown by Figure 3 has a central orifice 27 receiving the bushing, and an annular recess 28 receiving a flange 29 formed on the inner end of the bushing and limiting the insertion of the bushing in the orifice 27. The base and bushing may be made of wood, the base being reinforced as above described, and the bushing provided with core-engaging means.

The base may be of sheet material such as aluminum or fiber, pressed to the form shown by Figure 6, and provided with a central orifice 27 in which the bushing, which may be of either metal or wood, is secured. The central orifice 27 may be formed in an inwardly offset annular portion 28 which provides the recess 22, and a seat for the bushing flange 29.

The base shown by Figures 7, 8 and 9, may also be pressed from sheet material and provided with the offset portion 28 which provides the recess 22, and a seat for the bushing flange 29. The bushing receiving orifice 27 is formed in the offset portion 28, and its margin may be provided with flexible tongues 30 which are bent outward as shown, and bear on the periphery of the bushing. The outer ends of said tongues may be bent backward to form one way acting dogs 20^a functioning like the dogs 20, above described.

It will be seen that I do not employ the compressible felt cushion usually interposed between the inner end of the thread body and the base portion of the cop support. Such cushion is objectionable because the frictional margin of the cushion is liable to catch and drag dropped thread coils contacting with it, and the frictional outer side of the cushion impedes the free unwinding of the convolutions forming the inner end of the thread body. I entirely obviate these objections.

Any effort of the longitudinally compressed thread body to expand lengthwise increases the closeness of the joint between its inner end and the base face 15.

It will be understood that the base is adapted to turn on a suitable thread stand, the bushing receiving and being adapted to rotate on a spindle projecting from the stand.

The cop support characterized as described constitutes an article of manufacture which may be marketed independently. The operation of engaging the support with a commercial cop and longitudinally compressing the thread body of the cop requires no mechanism other than pressing means adapted to cause a forcible entrance of the bushing into the cop core.

It is obvious that more than one wire member 19 may be employed. Figures 1 and 2 show two said members extending at right angles with each other and providing four dogs 20.

When the bushing is secured to the core by glue, glue-receiving grooves 32 (Figure 4), may be formed in the periphery of the bushing so that more glue may be employed than would be possible if such grooves were not provided.

I claim:

1. A thread-supplying adjunct comprising a thread cop including a tubular core and an annular thread body wound thereon; and a cop support including a circular base having a rigid annular concave face to which the entire inner end of the thread body is closely conformed by longitudinal compression of said body, a tubular spindle-engaging bushing fixed to and projecting from the center of the base, and inserted in the core, and securing means positively fixing the bushing to the core and maintaining the longitudinal compression of the body, and the conformation of its entire inner end to said concave face, and thereby preventing the interposition of loose thread coils between the thread body and the base during the entire operation of unwinding the thread body.

2. A thread supplying adjunct comprising a thread cop including a tubular core and an annular thread body wound thereon; and a cop support including a circular base having a rigid annular concave face to which the entire inner end of the thread body is closely conformed by longitudinal compression of said body, a tubular spindle-engaging bushing fixed to and projecting from the center of the base, and inserted in the core, and one-way-acting dogs secured to

the cop support and acting automatically to positively engage the core and maintain the conformation of the inner end of the body to said concave face and thereby prevent the interposition of loose thread coils between the thread body and the concave face of the base during the entire operation of unwinding the thread body.

3. A thread-supplying adjunct as specified by claim 2, said one-way-acting dogs being inwardly bent end portions of wire members extending crosswise through the bushing and immovable relative thereto, said dogs being located outside the periphery of the bushing, and adapted to slip on said core when the core is being forced in one direction onto the bushing, and to engage the core to positively prevent movement thereof in the opposite direction, so that longitudinal compression of the thread body is permanently maintained.

4. As an article of manufacture, a thread cop support comprising a rigid circular base having a rigid concave antifrictional top face constituting a seat for the inner end of the thread body of a cop, and a tubular spindle-engaging bushing fixed to, and projecting from the center of the base, and formed to be inserted in and fixed to a cop core, said bushing being provided with one-way-acting dogs located outside the periphery of the bushing, and adapted to slip on said core when the core is being forced in one direction onto the bushing, and to engage the core to positively prevent movement thereof in the opposite direction, and thereby permanently maintain longitudinal compression of the thread body.

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