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PACKAGE OF FLEXIBLE MATERIAL
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2,738,145

Fig. 1.

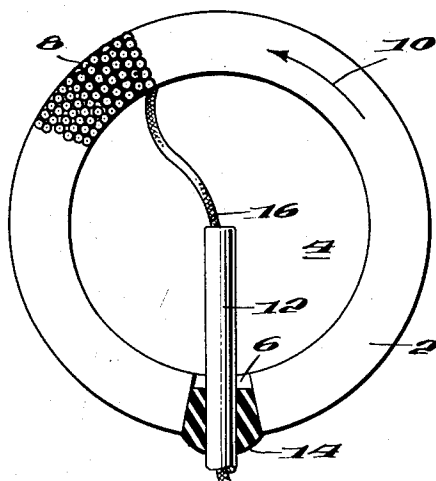


Fig. 2.

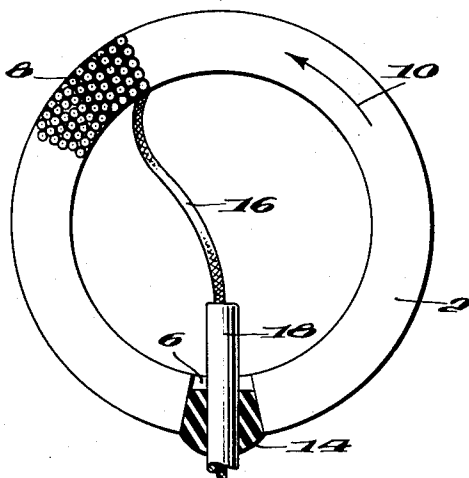
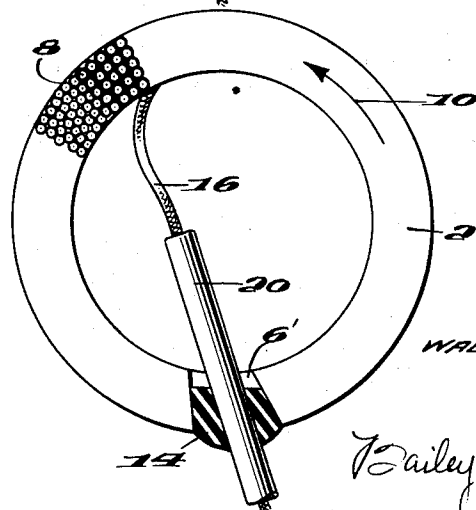


Fig. 3.



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2,738,145

PACKAGE OF FLEXIBLE MATERIAL

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10 Claims. (Cl. 242—159)

The invention relates to packages of flexible material, and more particularly to an arrangement for facilitating the withdrawal of material from such packages. It is more especially directed to the withdrawal of material from packages in which the twist is equalized so that kinking and snarling are avoided.

The invention is applicable to packages of flexible material wound in a body around an annular core space and having an opening through the body into the core space through which the free inner end of the material is withdrawn, and is especially valuable in conjunction with a body formed of a plurality of coils each forming at least one figure 8. Such packages are described in my applications S. N. 693,441, filed August 28, 1946, now Patent No. 2,634,923, and S. N. 107,165, filed July 28, 1949, now Patent No. 2,634,922, and in my applications entitled "Winding Flexible Material," Serial Nos. 344,874 and 344,875 executed of even date herewith.

In my Patent No. 2,634,922, a package is described in which a tube is inserted through and is secured in position in the radial opening. This is a rigid tube having its inner end, which forms the annular guiding surface for the flexible material, substantially at the center of the core space.

Even with such a tube, the inner coils are still likely to come loose two or more at a time, which may cause tangling of successive coils so as to interfere with the withdrawal, and kinking or bending may also occur especially as the material is being withdrawn from the area around the opening.

The principal object of the present invention is to provide an improved arrangement for dispensing material from such packages.

Another object of the invention is to provide an arrangement in which kinks and snarls are more surely avoided.

A further object of the invention is to provide an arrangement which is less likely to cause several coils to come loose at the same time.

In withdrawing material from such packages, there is some danger that several coils may come away from the body at the same time and become entangled, since the pull of the flexible material may be transmitted through several successive loops. The present invention reduces the danger of this entanglement, by adhesively holding the coils within a limited area, this area being so located as to interfere to the least possible degree with the withdrawal or paying out of the material. This prevents the release of more than one coil at a time, so that there is no interference.

Another object of the invention is to provide a package in which this result is achieved.

With such an arrangement, only one loop of each figure 8 coil is released at a time, and twist is equalized each time a loop is freed. The loops are kept in their correct relative positions at all times, and no following coil can close on or interfere with its predecessor.

I have found that the proper location for the adhesive

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area is within that one of the two quadrants in the other half of the package from the hole which is wound first in forming the package on the spindle, and preferably within angles of about 150° and 160° around the axis of the package from the center of the hole. Such a location allows some stripping action to be exerted which at least partially removes the adhesive from the flexible material and at the same time avoids forming any substantial bend in the material by the increased resistance as it is being pulled loose from the adhesive area.

Further objects and advantages of the invention will appear more fully from the following description, especially when taken in conjunction with the accompanying drawings which form a part thereof.

In the drawings:

Figs. 1 to 3 show three different modifications of the invention.

In Fig. 1, the package is formed as shown in my application S. N. 107,165, now Patent No. 2,634,922 issued April 14, 1953. In this package, there are a plurality of coils in each layer, each coil being in the form of at least one figure 8, the cross-overs of successive coils being angularly displaced around the package, the cross-overs being interrupted at the same angular position in successive layers to form the opening.

In Fig. 1, 2 represents the body of flexible material formed of several layers of figure 8 coils, 4 is the core opening and 6 the transverse hole. 8 indicates adhesive material applied in an area lying between 150° and 160° angularly around the axis of the package from the center line of hole 6. Arrow 10 indicates the direction in which the spindle rotated in forming the package, from which it will be apparent that adhesive 8 is in that one of the two quadrants opposite hole 6 which was wound first.

A tube 12 is held in hole 6 in any suitable manner, as by a body of sealing wax 14. The inner end 16 of the flexible material is brought out through this tube. In the form of Fig. 1, the inner end of the tube, which forms an annular guiding surface for the flexible material, is located substantially at the center of the core space 4.

Fig. 2 shows a similar arrangement using a shorter tube 18, which terminates short of the center of the core space.

In Fig. 3, the tube 20 is held in a position in which its axis points towards the adhesive area 8. The hole 6 in this figure is also slanted so that its axis points toward the adhesive area.

The adhesive material may be stripping lacquer, wax, plastic, cement, glue or any other suitable substance. It may in some cases be desirable to apply it in a foamy state, full of air bubbles. It may be applied to the desired area of each layer as the package is formed, or may be applied after the package is finished. In some instances, the package may be compressed endwise before the adhesive sets, as it is known can be done with universal wind packages.

With such a package, a part of the adhesive will remain behind or shatter off as each coil is released from the adhesive area. Also the passage past the annular guiding surface will wipe some of the adhesive from the flexible material. If desired, other means of completely clearing the material before use may be provided.

While I have shown a straight tube, the use of such a tube is not essential as long as the guiding surface is properly located with respect to the opening. Furthermore, the tube need not be rigid, but may be flexible or resilient, for example of the types shown in my application for Package of Flexible Material, Serial No. 344,871, filed March 26, 1953 executed of even date herewith.

The invention is applicable both to resilient or relatively rigid flexible materials, such as wire, as well as to textiles such as yarn, thread, cord or rope. However, the guiding member should have an internal cross-section

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at least somewhat larger than that of the flexible material so as to avoid frictional drag.

While I have described herein some embodiments of my invention, I wish it to be understood that I do not intend to limit myself thereby except within the scope of the claims hereto or hereinafter appended.

I claim:

1. A package of flexible material having an annular core space around which the material is wound in a body and an opening into such core space through the body of the package, said body having an adhesive impregnating said body in the quadrant which is remote from the opening and in the half of the package from which flexible material in the innermost layer of the package is withdrawn first starting from points in line with said opening longitudinally of the package, the remainder of the package being substantially free of adhesive.

2. A package as claimed in claim 1 in which said adhesive is located in an area lying between about 150° and 160° from said opening around the axis of the core space.

3. A package as claimed in claim 2 having a tube secured in said opening through which the material can be withdrawn.

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4. A package as claimed in claim 3 in which the tube points towards said adhesive.

5. A package as claimed in claim 4 in which the axis of the opening intersects said adhesive.

6. A package as claimed in claim 5 formed of a plurality of coils each forming at least one figure 8.

7. A package as claimed in claim 1 having a tube secured in said opening through which the material can be withdrawn.

8. A package as claimed in claim 7 in which the tube points towards said adhesive.

9. A package as claimed in claim 8 in which the axis of the opening intersects said adhesive.

10. A package as claimed in claim 1 in which the axis of the opening intersects said adhesive.

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