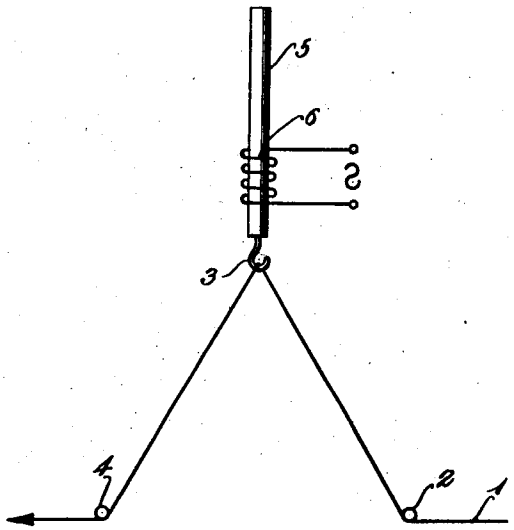
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THREAD GUIDE

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Inventor

Victor Emanuel Gonsalves

By Albin F. Knight

Attorney

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THREAD GUIDE

Victor E. Gonsalves, Arnhem, Netherlands, assignor to American Enka Corporation, Enka, N. C., a corporation of Delaware

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7 Claims. (Cl. 242—157)

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This invention relates to thread guides and is more particularly concerned with a thread guide of the low friction type.

In the manufacture of threads such as rayon, a plurality of parallel filaments are extruded into a spin bath and the resulting yarn is thereafter subjected to various aftertreatments which are performed either continuously, discontinuously, or after the thread has been wound into package or cake form. However, regardless of the mode or nature of the aftertreatment, it is universally necessary to guide the yarn in its path between the spin bath and the ultimate point of collection and in order to perform this function, several thread guides are used. The arrangement of the thread guides varies, of course, with the nature of the process and the particular installation, but since the parallel filament yarn that is led from the spin bath may be quite fragile, it is important that the friction between the thread and the various guides be maintained at a low level because high friction often results in thread breakage or the production of thread lengths that have been subjected to variable stretch.

In an effort to overcome the friction problem with regard to thread guides, it has been customary to employ guiding elements of a freely rotatable type or to provide stationary elements having a surface of low friction coefficient. The stationary type of guide even if made of smooth porcelain, still imparts considerable drag to the thread and may cause breakage and undesirable stretch.

It is therefore an object of this invention to provide a thread guide of the non-rotatable type which imparts minimum drag to a thread or yarn guided thereby, while at the same time restraining the thread or yarn against displacement in an arc in excess of 180°.

It is contemplated, according to this invention, that a thread guide be continuously oscillated through a very short path in such manner as to minimize the friction of the thread passing therethrough.

Other objects and advantages of this invention will be apparent upon consideration of the following detailed description of a preferred embodiment thereof in conjunction with the annexed drawing, the single figure of which discloses a thread guide and associated oscillating means constructed in accordance with the present invention.

Referring now to the drawing in greater detail, the reference numeral 1 represents a moving thread or yarn at some point in its path where guiding means is required. The thread is led over a guide bar 2 through a hook type guide 3 positioned above the guide bar 2 and then over a guide bar 4 so that a tension is created in the thread at a point in front of the thread guide 3 and another tension is created in the thread at a point beyond the thread guide 2. As a result of this threading up arrangement the tension between bar 2 and guide 3 would be substantially less than the tension between guide bar 4 and guide 3, if the hook type guide 3 were maintained stationary. However, in order that the differential tension in the path leading to the thread guide 3 and in the path leading from it may be equalized, the thread guide 3 is mounted on a core 5 of a material permeable to a magnetic field such as nickel. This core is mounted in any suitable manner by means not shown for free movement through a coil 6, the ends of which are connected to a low frequency source of alternating current, not shown. It can be seen that, when the circuit to the coil 6 is energized by an alternating current, an alternating magnetic field is created under the influence of which core 5 and the thread guide 3 attached thereto are caused to oscillate vertically. It has been found that superior friction reduction results if the core is oscillated at the rate of 10^4 cycles.

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While the oscillation of the thread guide 3 has been described in conjunction with a thread path including guide bars 2 and 4, it is to be understood that in some installations said bars may be eliminated or replaced by other thread guiding elements. It is also apparent that in lieu of the hook type thread guide other types of non-rotatable guides may be attached to the core 5 within the scope of this invention as defined in the appended claims.

What is claimed is:

1. A thread guide assembly comprising an oscillatable thread guiding element contacting a thread, and means for oscillating said element in a plane at an angle to the thread path at a rate of 10^4 cycles.

2. A thread guide assembly comprising an oscillatable thread guiding element at least partially enveloping a thread, and means for oscillating said element in a plane at an angle to the thread path at a rate of 10^4 cycles.

3. A thread guide assembly comprising an oscillatable thread guiding element at least partially enveloping a thread, a core of permeable material supporting said guide, and means estab-

lishing an alternating magnetic field acting on said core to cause the same to oscillate.

4. A thread guide assembly comprising an oscillatable thread guiding element at least partially enveloping a thread, a core of permeable nickel material supporting said guide, and means establishing an alternating magnetic field acting on said core to cause the same to oscillate.

5. A thread guide assembly comprising an oscillatable thread guiding element at least partially enveloping a thread, a pair of guide rods disposed below said element and in the thread path leading thereto and therefrom, and means for oscillating said element.

6. A thread guide assembly comprising an oscillatable thread guiding element at least partially enveloping a thread, a core of permeable material supporting said guide, a pair of guide rods disposed below said element and in the thread path leading thereto and therefrom, and means establishing an alternating magnetic field acting on said core to cause the same to oscillate.

7. A thread guide assembly comprising a thread guiding element at least partially enveloping a thread, a core of nickel material supporting said element, a pair of guide rods disposed below said element and in the thread path leading thereto and therefrom, a coil surrounding said core, and means for energizing said coil with a low frequency alternating current.

VICTOR E. GONSALVES.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,149,224	Sill	Aug. 10, 1915
2,425,090	Wilhelm	Aug. 19, 1947

OTHER REFERENCES

Radio Amateur's Handbook, 1946 edition, published by The American Radio Relay League.