Nov. 21, 1933. L. ZAPF 1,935,787

GUIDE

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Fig. 1.

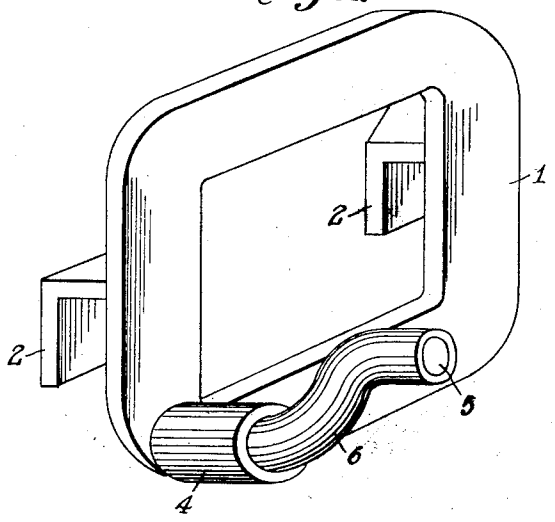
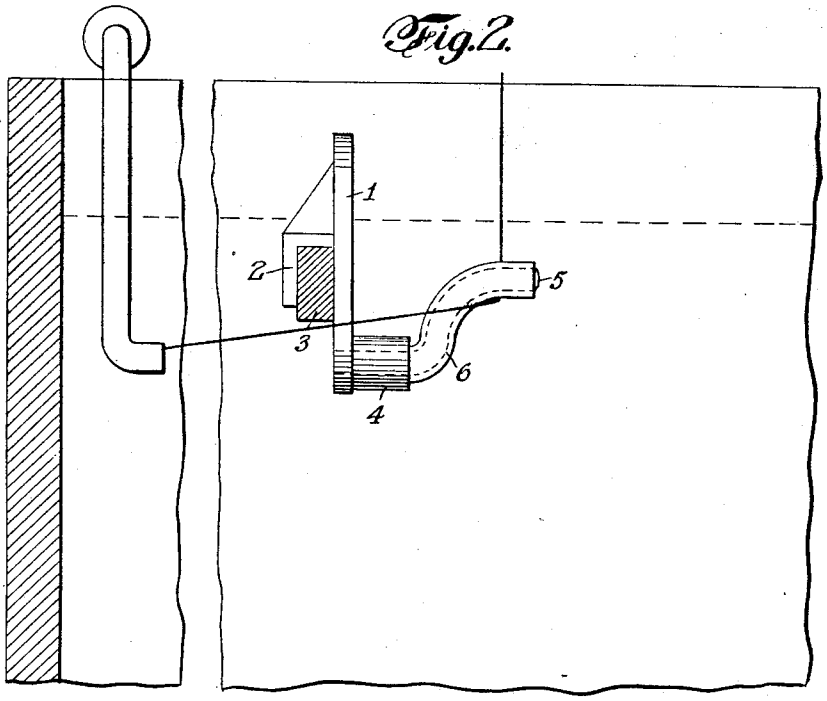


Fig. 2.



Louis Zapf INVENTOR

BY

Wm. S. Sutherland

ATTORNEY

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GUIDE

Louis Zapf, Old Hickory, Tenn., assignor to Du Pont Rayon Company, New York, N. Y., a corporation of Delaware

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6 Claims. (Cl. 18—8)

This invention relates to the art of producing artificial thread and more particularly to means for guiding the thread at some stage in the production thereof and/or serving as a source of imparting tension thereon.

In the manufacture of artificial thread, particularly according to the viscose process, the viscose is ejected through a nozzle or spinneret into a coagulating bath or medium. In this bath the thread is directed by a guide or series thereof disposed at various positions therein. In addition to functioning as a directing means, these guides have been used as a source of imparting tension on the thread whereby a stretch is obtained beyond the guide. The stretching of the threads during coagulation improves the tensile strength of the final product.

The guides used prior to this invention were made of glass, glazed porcelain and the like because of their low cost, their ease of manipulation into the required shape and the resistance to the usual coagulating bath. It has been found that the tension developed by the friction of the thread on the guide used prior to this invention was extremely variable under apparently the same conditions. This resulted in the production of batches of non-uniform thread.

I have found that, if the stationary guides formed from and including soft rubber surfaces or the like are used, the resulting products will be substantially uniform when manufactured under the same conditions.

It is therefore an object of this invention to provide a stationary guide which will not only function to direct the thread in the course of its manufacture but also to impose a more uniform tension thereon, whereby the uniformity of the threads produced under substantially the same conditions will be substantially increased.

Another object of this invention is to provide a stationary guide for directing the thread in the course of its manufacture and/or impose a substantially uniform tension thereon, said guide being formed of or having a surface of a resilient material, such as rubber, or formed of or surfaced with isolantite.

Other objects will appear from the following description, appended claims and accompanying drawing forming a part of this specification and in which:

Figure 1 is a perspective view of one form of the guide constituting this invention.

Figure 2 is a sectional view of the coagulating bath illustrating one manner in which the guide may be disposed in the bath.

Referring to the drawing wherein like reference numerals designate like parts, the reference numeral 1 designates a bracket formed of a material capable of withstanding and resisting the coagulating bath. On the rear of the bracket there is formed lugs 2 whereby the bracket may be suspended in the bath by positioning said lugs on the side of the bath or, as illustrated in Figure 2, on a rail 3 extending longitudinally through the bath. The bracket 1 is formed with a boss 4 in which there is securely and rigidly mounted a core 5 which forms a support for a sleeve 6 formed of rubber tubing disposed on said core. For the purposes of this invention the material from which the core is made is of no consequence so long as it is resistant to the coagulating bath. It may be formed of glass, porcelain, hard rubber, synthetic resins, etc. The relative sizes of the core 5 and the sleeve 6 are such that the rubber tubing does not rotate about the core or is unduly stretched thereon but presents a soft, yielding surface. As the diameter of the tubing increases, the arc of contact which the thread makes with it and therefore the tension increases. Accordingly, the size of the tubing that may be used depends on the tension desired, precautions, however, being taken to observe the relation of the sizes of the core and tubing as above mentioned.

In the drawing, the guide comprising the core 5 and the rubber sleeve 6 is illustrated as curved. It is, of course, to be understood that the definite and specific shape of the guide forms no part of this invention and it is within the purview of this invention to form said guide in any desired shape.

As above stated, the sleeve 6 is formed of rubber. Preferably, the rubber used for this purpose is a soft, substantially pure rubber which contains little foreign material. In the coagulating bath in which the guide may be disposed, sulphur is present. It is therefore necessary that the sleeve be made somewhat resistant to vulcanization, or otherwise the sulphur in the bath will react with the rubber and form a material harder than that desired and which will not possess the required characteristics. Preferably, a rubber tubing is used which contains a very high percentage of pure gum, approximately 90%—95%, and which has been so prepared as to be capable of vulcanization only with difficulty. A product known as "Faultless No. 276/90% rubber tubing" possesses the required characteristics and properties.

In many set-ups a plurality of guides are used to effect the tension and stretch. It is obvious

that a plurality of the guides herein described may be used. These guides may be arranged in any desired order. If desired, they may be used in combination with the guides hitherto used.

Various other materials may be used to function similarly to the rubber coated guide or guides above-described. For instance, isolantite, which is a fine grained and unglazed porcelain, may be used. This material, however, gives to a less degree the same uniform results which are obtained with the guides of the preferred form.

In the manufacture of artificial thread, guides are used to direct the threads which have passed through the coagulating bath in their passage to the collecting device. It has been found that the guides above-described, when used in these instances, produce very satisfactory results. It is, therefore, within the scope of this invention to use the guides herein described at some stage in the production of artificial thread, such as within the coagulating bath or outside of the coagulating bath.

I claim:

1. An apparatus for producing artificial thread, comprising a coagulating bath, means to spin a solution therein, and a stationary guide having a resilient rubber surface disposed in said bath to direct the threads therethrough and impose a substantially uniform tension on the threads.

2. An apparatus for producing artificial thread, comprising a coagulating bath, means to spin a solution therein, and a stationary guide having a resilient rubber surface disposed in said bath to direct the threads therethrough and impose a substantially uniform tension on the threads, said guide comprising a core having a rubber sleeve disposed thereon.

3. An apparatus for producing artificial thread comprising a coagulating bath, means to spin a solution therein, a collection device to receive the spun thread and a stationary guide having a resilient rubber surface to impose a substantially uniform tension on the thread passing thereover disposed intermediate the spinning bath and the collection device.

4. An apparatus for producing artificial thread comprising a coagulating bath, means to spin a solution therein, a collection device to receive the spun thread and a stationary guide having a resilient rubber surface to impose a substantially uniform tension on the thread passing thereover disposed intermediate the spinning bath and the collection device, said guide comprising a core having a rubber sleeve disposed thereon.

5. An apparatus for producing artificial thread comprising a coagulating bath, means to spin a solution therein, a collection device to receive the spun thread and a stationary guide having a resilient rubber surface to impose a substantially uniform tension on the thread passing thereover disposed intermediate the spinneret and the collection device.

6. An apparatus for producing artificial thread comprising a coagulating bath, means to spin a solution therein, a collection device to receive the spun thread and a stationary guide having a resilient rubber surface to impose a substantially uniform tension on the thread passing thereover disposed intermediate the spinneret and the collection device, said guide comprising a core having a rubber sleeve disposed thereon.

LOUIS ZAPF.