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THREAD GUIDE

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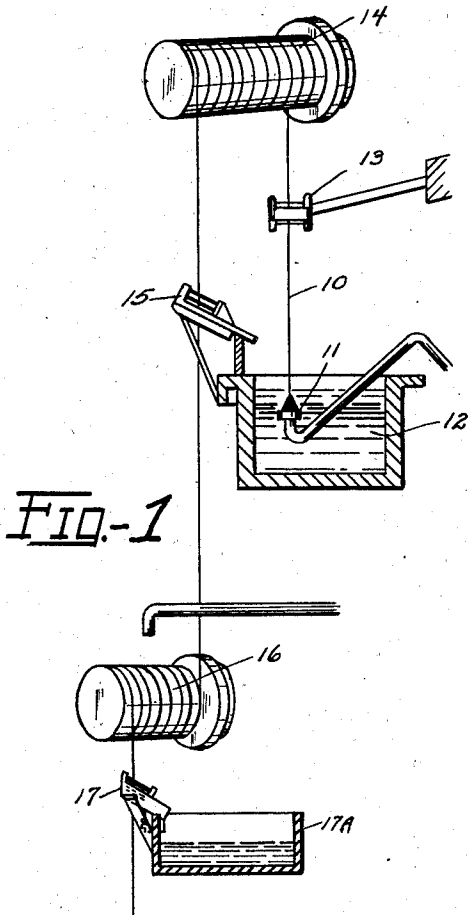


FIG-7

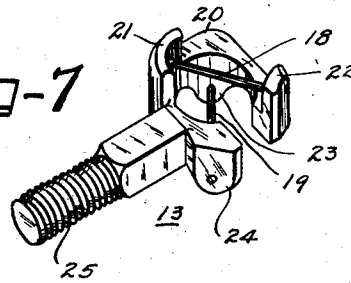


FIG-2

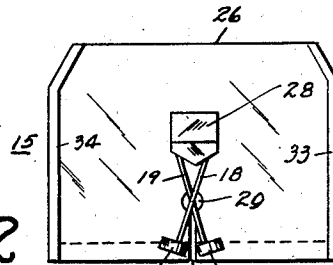


FIG-3

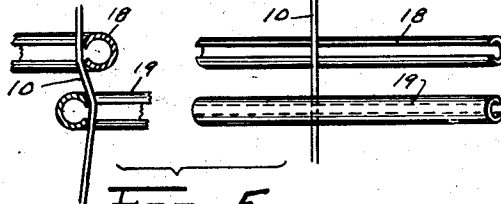
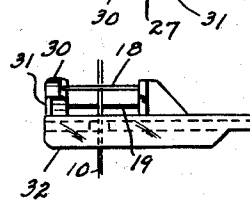
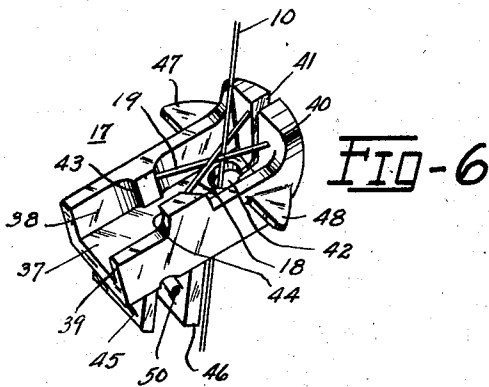
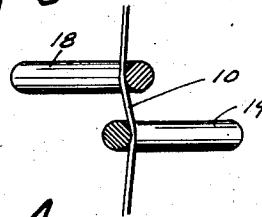


FIG-4



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## UNITED STATES PATENT OFFICE

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## THREAD GUIDE

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7 Claims. (Cl. 242—157)

This invention relates to a yarn or thread guide and, more particularly, it relates to a guide for wet yarn or thread which will wipe the yarn or thread substantially free from liquids adhering thereto.

The invention will be described with reference to its use in connection with the production of viscose rayon by the continuous process although it is to be understood that the invention may also be used in connection with other processes and, in general, is adapted for use wherever wet threads, whether natural or synthetic, are to be simultaneously guided and wiped free from adhering liquid.

In the production of viscose rayon by the continuous process, a cellulosic solution, commonly termed viscose, is extruded through a spinneret into a coagulating bath to form a thread. This thread is then led from the coagulating bath to a thread-advancing, thread-storage reel. From this reel, the thread is conducted to a series of thread-advancing, thread-storage reels on which various chemical treating operations are performed. It is desirable that the treating fluids applied to the thread on the thread-advancing reel at some stages of the process be removed as nearly as possible before the thread is subjected to another liquid processing operation on the next succeeding reel.

The thread guide of this invention provides an effective and simple means for guiding the thread in its passage from the coagulating bath to the various processing reels and simultaneously removing from the wet thread a substantial amount of the adhering processing liquids. The guide is advantageously so constructed that the liquid which it wipes from the wet thread is returned to the processing liquid collecting troughs associated with the various thread-advancing reels.

The invention will be more fully described by reference to the accompanying drawing in which:

Figure 1 is a diagrammatic representation of a portion of a continuous processing apparatus for the production of viscose rayon;

Figure 2 is a plan view of one form of thread guide embodying the invention;

Figure 3 is an end elevation of the thread guide of Figure 2;

Figure 4 is a sectional representation of a portion of the thread guide members;

Figure 5 represents a modified form of the thread guide members of the device:

Figure 6 is a perspective view of another embodiment of the invention; and

Figure 7 is a perspective view of a third modification of the invention.

As shown in Figure 1, a viscose thread 10 is formed by the extrusion of a viscose solution through the spinneret 11 into the coagulating bath 12. The thread 10 is withdrawn from the bath and passed through thread guide 13 which simultaneously wipes adhering coagulating bath therefrom. The thread is then conducted to the thread-advancing reel 14. After leaving this reel, the thread is passed through a second thread guide 15 which also simultaneously wipes adhering processing liquid therefrom. The thread guide 15 is positioned at an angle so that processing liquid wiped from the thread will be returned to the coagulating bath 12. After passing through the thread guide 15, the thread 10 travels around another thread-advancing reel 16 where further processing liquid is applied. After leaving this reel, the thread passes through another yarn guide 17 which also simultaneously wipes processing liquid from the wet thread. The thread guide 17 is mounted on the side of a trough 17A which collects processing liquid dripping from the thread collected on the thread-advancing reel. The thread guide is positioned at an angle so the processing liquid which it removes from the wet thread is returned to the trough 17A. After leaving the thread guide 17, the thread may pass on to other thread-advancing reels for further processing treatment. Similar thread guides may be interposed between the various reels to remove processing liquid from the thread prior to each subsequent thread-treating stage.

The thread guides 13, 15 and 17 are shown in more detailed fashion in the other figures of the drawing. Thus, the guide 13 is illustrated more fully in Figure 7. A pair of rod members 18 and 19 are crossingly mounted, forming a bifurcation, in a supporting structure 20 having two pairs of projections 21, 22 and 23, 24, the rod members being positioned therein in planes substantially parallel to one another. The supporting structure 20 has a threaded extension 25 which is inserted into a receiving supporting member generally shown in Figure 1 positioning the guide 13 in the path of thread 10.

Guide 15 of Figure 1 is illustrated more fully in Figures 2 and 3 of the drawing. As there shown, the guide comprises a base plate 26 having a slot 27 extending to one edge thereof. The slot terminates in a circular hole 29 through which the

thread passes. Crossingly - positioned rodlike members 18 and 19 are supported by means of abutment 28 and upright supports 30 and 31 which are, in turn, positioned on the base plate. The base plate is provided on its under side with a flange 32 extending around three of its sides. Flange 32 provides additional strength to the base plate as well as a means for mounting the plate at an angle. The upper surface of the base plate is provided with ridges 33 and 34 at either side which aid in directing liquid which might collect on the base plate to flow back to the coagulating bath as shown in Figure 1. The face of abutment 28 is preferably angular to enable the wiped fluid flowing down the rodlike members 18 and 19 to flow readily off the abutment onto the base plate for return to the coagulating bath. The base plate and its various associated parts are advantageously made of lead or other suitable material which is not affected by the coagulating liquid. The rodlike members 18 and 19 are made of a hard, noncorrosive, nonabrasive material such as, for example, tungsten carbide.

The thread 10, as shown in Figure 4, is bent around the rodlike members 18 and 19 in passing through the bifurcated thread guide. As a result, liquid adhering to the thread is wiped therefrom and flows down the rod peripheries.

The thread guide 17 of Figure 1 is shown in more detailed fashion in Figure 6 of the drawing. As there shown, the guide comprises a trough-shaped base member 37 having two side walls 38 and 39 and an end wall 40. The end wall is provided with a slot 41 which extends to the adjacent portion of the base member and terminates in the circular hole 42. The sides 38 and 39 are provided with ridges 43 and 44, and the crossingly positioned rodlike members 18 and 19 are mounted at one end in these ridges. The other ends of the rodlike members are mounted in the end wall 40 on opposite sides of the slot 41. To facilitate mounting of the thread or yarn guide on the thread-processing machine, as illustrated in Figure 1, the guide is provided with supporting members 45 and 46. The member 46 is provided with a threaded opening 50 through which a setscrew may be inserted for engagement with the part of the thread-processing apparatus on which the guide is to be mounted, as into the side of trough 17A. The ears 47 and 48 of the guide may also be used to provide additional support for the guide.

Figure 5 illustrates a modified form of the rodlike thread guide and wiping members. As there shown, these members are tubular in form and are provided with a longitudinal slot adapted to engage the thread being passed thereover. Liquid will be wiped from the thread and, in part, will run down the surface of the hollow portion of the rodlike members. Of course, when such rodlike members are used, the lower ends thereof should project through the structure on which they are supported. Thus, for example, if such members are used in a thread guide, such as is illustrated in Figure 6, the ends of the rodlike members supported by ridges 43 and 44 should project through the ridges so that liquid collected in the hollow tubular portion of the rodlike members may be free to flow readily back to the thread-processing liquid troughs.

Throughout the foregoing description, reference has been made to the use of two guiding and wiping rod members. Generally, two are usually sufficient. It may be desirable, however, to have the thread wiped more thoroughly by passing it

through a plurality of rod members as, for instance, three or four rod members crossingly mounted above each other and advantageously in substantially parallel planes.

The thread guide supporting structure may be constructed of a variety of materials depending upon the particular use to which the guide is to be put. Thus, for example, if the liquids to be removed from the thread passing through the guide are of a corrosive nature, the guides may advantageously be made of suitably resistant materials such as, for example, lead or, in some cases, cast aluminum. The rodlike thread-contacting portions of the device should advantageously be made of a material which is sufficiently hard to resist wear due to the passage of thread thereover and should also be capable of resisting the corrosive action of any fluids adhering to the yarn. As previously indicated, tungsten carbide may be used with particular advantage for this purpose although glass and other suitable materials may also be used if desired.

Although the foregoing description of the invention shows the application of the yarn guide to the production of viscose rayon by the continuous process, it is to be understood that the guide may also be used in connection with other processing operations. The guide may be used with advantage whenever it is desired to guide and simultaneously remove from a thread or threadlike materials substances which are adhering thereto.

I claim:

1. A guide for yarn and the like comprising two members crossingly positioned one above the other forming a bifurcation for guiding said yarn, the yarn bearing on each of said members while passing therethrough, and supporting means for said members.

2. A guide for yarn and the like comprising at least two rod members crossingly positioned and spaced one above the other in substantially parallel planes forming a bifurcation for guiding said yarns, the yarn bearing on each of said members while passing therethrough, and supporting means for said members.

3. A guide for yarn and the like comprising at least two rod members of substantially circular cross-section crossingly positioned one above the other in substantially parallel planes forming a bifurcation for guiding said yarns, the yarn bearing on each of said members while passing therethrough, and supporting means for said members.

4. A guide for yarn and the like comprising at least two longitudinally slotted rod members crossingly positioned one above the other forming a bifurcation for guiding said yarn, the slots of said members being positioned to face the yarn being guided, said yarn bearing on both sides of said slots of each of said members while passing therethrough, and supporting means for said members.

5. A guide for yarn and the like comprising two longitudinally slotted tubular members crossingly spaced one above the other forming a bifurcation for guiding said yarn, the slots of said members being positioned to face the yarn being guided, said yarn bearing on both sides of said slots of each of said members while passing therethrough, and supporting means for said members.

6. A guide for yarn and the like comprising a trough-shaped base member having an end wall and two side walls, said end wall and the portion of the trough-shaped member adjacent thereto

being provided with a slot, a pair of rods crossingly positioned one above the other and supported by said side and end walls, said rods being arranged so that they cross above said slot.

7. A guide for yarn and the like comprising a base member having an opening and a slot extending from said opening to one edge of the

member, a pair of rods crossingly positioned one above the other and supported by said base member, said rods being arranged so that they cross above said opening and slot.

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