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APPARATUS FOR SPINNING FILAMENTS

Filed June 25, 1962

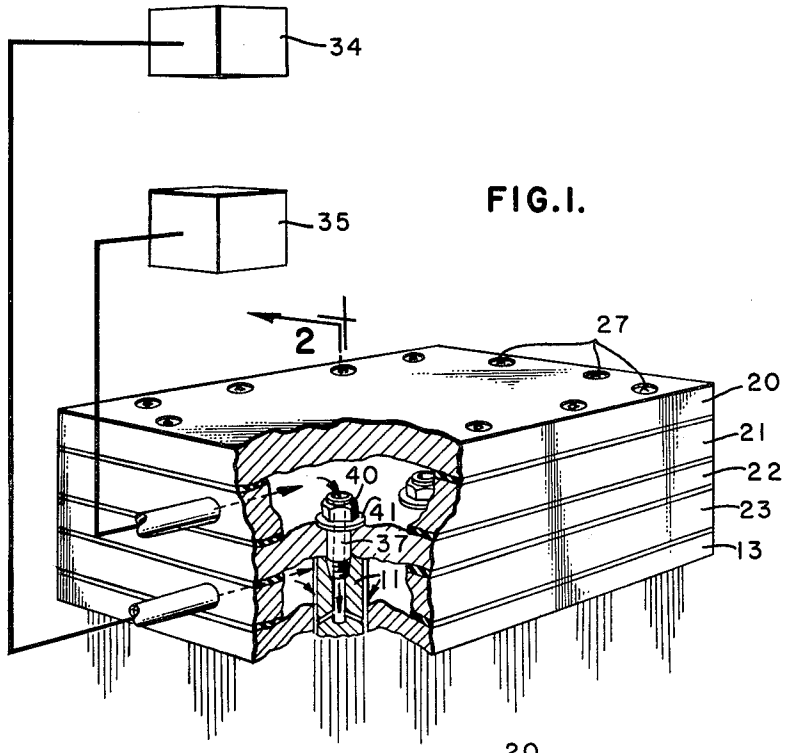

FIG. 1.

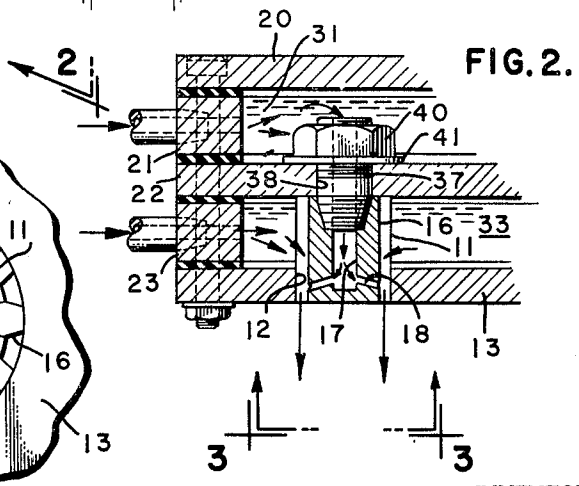

FIG. 2.

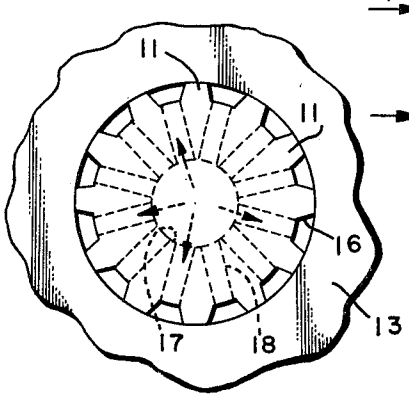

FIG. 3.

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APPARATUS FOR SPINNING FILAMENTS

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This invention relates to apparatus for spinning filaments and more particularly to apparatus for forming conjugate filaments.

One of the major disadvantages of conventional conjugate spinnerettes is that they are complicated and expensive to manufacture. The manufacture of most conjugate spinnerettes requires great precision and care. With this in mind, one of the objects of this invention is to provide novel and improved apparatus for spinning conjugate or composite filaments.

Another object of this invention is to provide a conjugate spinnerette which is simple and easy to construct.

A further object of this invention is to provide a conjugate spinnerette which is made up of a plurality of longitudinally milled manifolds which are mounted in bores in a plate.

One embodiment of the present invention contemplates a conjugate spinnerette wherein a generally tubular manifold or insert is mounted in a bore in a support member. The periphery of the manifold or insert is provided with a plurality of longitudinal grooves which serve as spinning orifices, these grooves being connected to the interior of the manifold. A first spinning solution is forced through the manifold into the grooves while a second spinning solution is forced into the grooves from the exterior of the tubular manifold. The two solutions exit from the grooves as conjugate or composite filaments.

Other objects and advantages of the invention will become apparent when the following detailed description is read in conjunction with the appended drawing, in which

FIGURE 1 is an enlarged, perspective view of a spinning device illustrating the principles of the invention and showing the construction of the device.

FIGURE 2 is a fragmentary sectional view showing the arrangement of the various elements of the apparatus, and

FIGURE 3 is an enlarged end view of one of the inserts.

Referring now in detail to the drawing, a generally tubular manifold or insert **11** is shown mounted in a bore **12** in a plate **13**, the engagement of the periphery of the manifold **11** with the wall of the bore **12** being substantially a press fit. The periphery of the manifold **11** is provided with a plurality of spaced longitudinal grooves **16** (shown greatly enlarged in FIGURE 3) which extend to the face of the plate **13** to serve as spinning orifices, the end of the manifold **11** and the face of the plate **13** being in the same plane.

A central bore **17** in the tubular manifold or insert **11** is interconnected with the grooves **16** by a plurality of openings **18** which feed a spinning solution from the bore **17** to the grooves **16**. The openings **18** intersect the grooves **16** in a plane extending through the plate **13** parallel to the face thereof. In other words, the openings **18** intersect the grooves **16** at points where these grooves are closed by the wall of the bore **12** in the plate **13**.

While one spinning solution is forced into the grooves **16** from the bore **17**, another spinning solution is forced into the grooves **16** from the exterior of the manifold or insert **11**. The arrangement for accomplishing this is illustrated in FIGURE 2.

A plurality of plates **20–23** are mounted against the

plate **13** and are held in this stacked relationship by spaced bolts **27**. The plates **21** and **23** are provided with enlarged rectangular manifold openings **31** and **33** respectively, which serve as manifolds for the spinning solutions—the opening **31** being closed by the plates **20** and **22** and the opening **33** being closed by the plates **22** and **13**.

A first spinning solution fed from a source **34** flows through the manifold opening **33** and into the grooves **16** in the tubular manifold **11**. A second spinning solution fed from a source **35** flows through the manifold opening **31** and a pipe **37** to the bore **17** and from the bore **17** through the openings **18** to the grooves **16**. The two spinning solutions exit from the grooves **16** as conjugate or composite filaments.

The pipe **37** is threaded into the tubular insert **11** and extends through a bore **38** in the plate **22** to interconnect the bore **17** with a manifold opening **31**. The upper end of the pipe **37** is threaded, a nut **40** being provided on the upper end of the pipe **37**, for pulling the upper end of the tubular insert **11** up tight against the lower surface of the plate **22**. A gasket **41** beneath the nut **40** serves to prevent leakage from one manifold opening into the other.

While only a single insert **11** is shown in FIGURE 2, it is to be understood that the apparatus may include a large number of these manifolds. Inasmuch as the diameter of the insert **11** may be as small as ¼" or less, quite a number of these inserts will occupy only a small space. Thus, this spinning apparatus, in addition to being simple and easy to fabricate is capable of producing a large number of conjugate filaments.

Also, the apparatus can quickly be disassembled for repair or inspection. In case of wear or damage to one of the inserts **11**, that particular insert can be quickly replaced without a long down time.

It is to be understood that the embodiment disclosed herein can be modified or amended and that numerous other embodiments can be contemplated which will fall within the spirit and scope of the invention.

What is claimed is:

1. An apparatus for spinning filaments, comprising a plate having therein a bore, an insert mounted in the bore and having in the periphery thereof a plurality of spaced longitudinal grooves extending the length of the bore, the grooves and the wall of the bore defining spinning orifices, means attached to the plate defining a first manifold opening surrounding the insert and leading to the grooves therein, said insert having therein a central bore and a plurality of openings leading from said central bore to said grooves, said openings intersecting said grooves at points within the bore in the plate, and means defining a second manifold opening connected to the central bore in the insert.

2. An apparatus for spinning filaments; comprising first, second and third plates; means for supporting the plates in a stacked relationship and for forming a first manifold between the first and second plates and a second manifold between the second and third plates; said first plate having therein a plurality of spaced bores; a plurality of inserts extending from the second plate into and through the bores in the first plate and having therein central bores and also having in the surfaces thereof a plurality of spaced longitudinal grooves; and said grooves and bores defining a plurality of spinning orifices; each said insert having a plurality of passageways interconnecting the central bore and the longitudinal grooves; and means for securing the inserts to the second plates; said second plates being apertured to connect said central bores to said second manifold.

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