

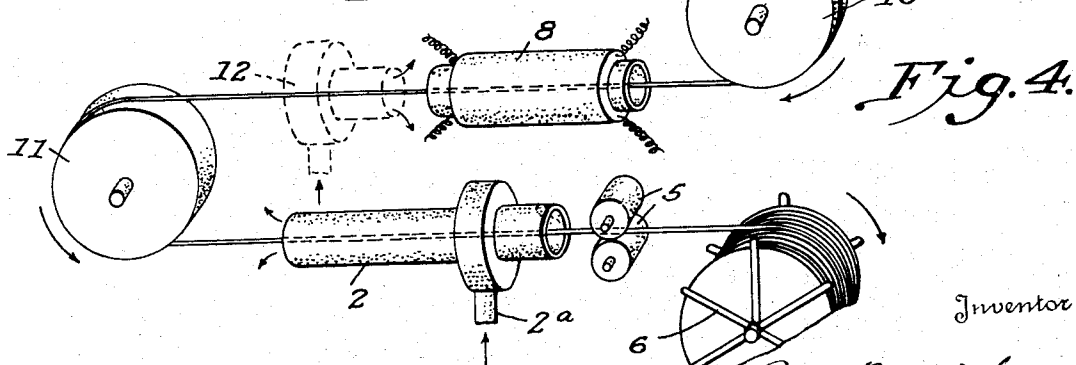
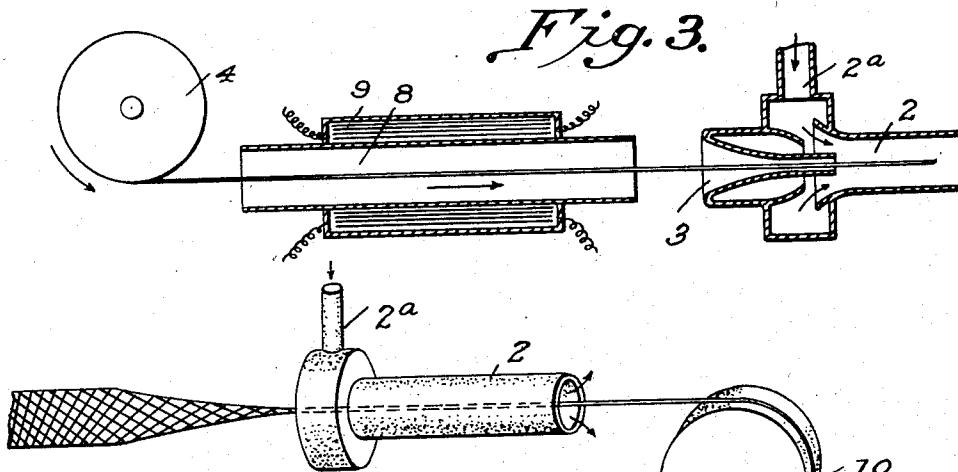
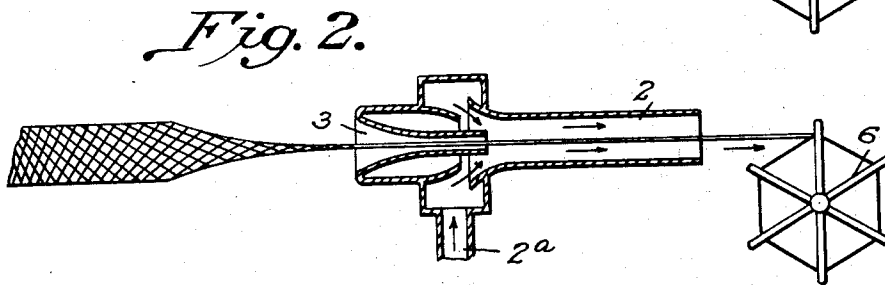
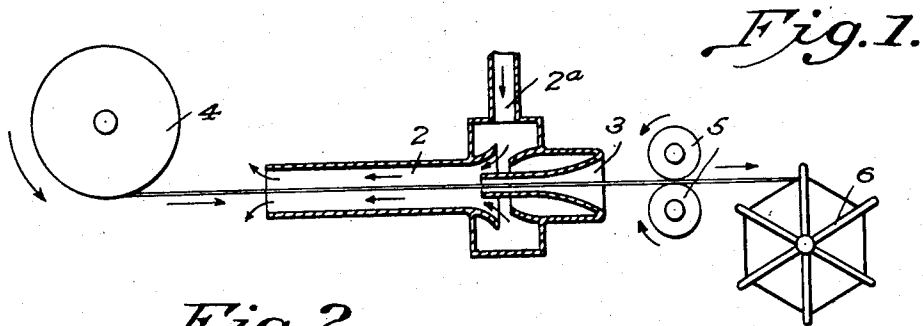
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2,302,790

METHOD OF AND APPARATUS FOR PRODUCING GLASS YARN

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2,302,790

METHOD OF AND APPARATUS FOR PRODUCING GLASS YARN

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Application October 24, 1938, Serial No. 236,773
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8 Claims. (Cl. 28-1)

In a prior United States application of Aldo Ceretti filed November 2, 1937, Ser. No. 172,423 is described a process of producing a yarn, or thread, from a strip of fibres crossing each other at a substantially constant angle by drawing the strip in a direction to the transverse general direction of the lie of the fibres, whereby a more or less substantially parallel arrangement of the fibres in the resultant yarn is produced.

The present invention has for its object to increase the parallelism of the fibres by subjecting the yarn, prior to the time it is reeled, to a current of air having a relatively high velocity in respect to the movement of the yarn whereby a combing effect on the yarn is produced.

The present invention has an additional object in providing means by which the fibres in the yarn may be tempered and thus set in their parallel relation given by the preceding part of this invention.

Referring to the accompanying drawing in which corresponding parts are designated by corresponding marks of reference,

Figures 1 and 2 are alternative means of carrying out the first object of this invention; namely, combing the yarn by the action of an air blast.

Figure 3 is a diagrammatic view illustrating instrumentalities by which tempering of the yarn is effected according to the second feature of the invention.

Figure 4 represents the several embodiments of my invention before referred to as embodied in an unitary structure for the production of a yarn, the fibres of which are substantially parallel throughout except for such helicoidal twisting as may be desired and which may be tempered when in place in the yarn.

In Figure 1 the web or mat is shown to be delivered from the drum 4 to the reel 6 on which it is wound as the yarn. In its passage from the drum to the reel it passes through the nozzle 2 through which strong currents of air are blown in a direction against the movement of the fibres under the pull of the reel 6 and through a pair of pressing rolls 5. The nozzle 2 is of the aspirator type; that is to say, not only are the fibres subjected to the drag of the air introduced into the nozzle from the source of supply by the pipe 2a but also to the high velocity current produced in the aspirator opening 3. Under such conditions, the fibres tend to straighten out and become parallel.

In Figure 2 the arrangement is the same except that the air currents instead of being against

the direction of draw of the yarn are in the same direction as the draw.

The nozzles may be provided with means to produce the tangential introduction of air therein so as to cause the fibres to become helicoidal.

In Figure 3 I have shown interposed between the drum 4 and the nozzle 1 a heating chamber 8 consisting of a tube surrounded by a cylindrical electrical heating element 9 whereby the fibres become heated prior to their entry into the nozzle where they are suddenly chilled by the air blast. This heating and rapid chilling serves to temper the fibres and yarn.

In Figure 4 I have shown my invention as embodying all of the several features before described. In this figure the yarn is first subjected to the air currents moving in the same direction as the yarn. It is then passed around a reversing drum 10 and passed through the chamber 8 of Figure 3, after which it passes around a second reversing drum 11 and through a nozzle similar to that shown in Figure 1 and compression rolls 5, similar to Figure 1, to be wound on the reel 6. I have also shown in dotted lines in this figure a supplemental air-combing and chilling tube 12 interposed between the heating chamber 8 and the drum 11.

Having thus described my invention what I claim as new and desire to secure by United States Letters Patent is:

1. The hereinbefore described method of preparing a yarn of glass fibres comprising pulling a mat of crossed fibres in a direction at an angle to the lay of the fibres and during such pull subjecting the pulled yarn to a high velocity air current moving parallel therewith.

2. The hereinbefore described method of preparing a glass yarn which consists in pulling a mat of fibres and during the pulling subjecting the fibres to a tempering action.

3. The hereinbefore described method of preparing a glass yarn which consists in drawing the yarn from a mat of crossed fibres, and applying to the yarn during the drawing thereof a current of high velocity air moving substantially parallel with the yarn and in a direction opposite to the travel of the yarn during the drawing operation.

4. The hereinbefore described method of preparing a glass yarn which comprises pulling a yarn from a mat of crossed fibres and during the pulling subjecting the yarn to a tempering action and to a high velocity air current moving parallel therewith.

5. The hereinbefore described method of preparing a yarn of glass fibers comprising drawing

a mat of crossed fibers in a direction at an angle to the lay of the fibres and during such drawing subjecting the yarn to a high velocity air current moving parallel therewith and in the direction of the movement of the yarn being drawn.

6. The hereinbefore described method of rendering parallel fibres of a glass mat laid in predetermined crossed relationship which includes passing a current of high velocity air around the mat and converting the same into a yarn.

7. In an apparatus for preparing yarn from glass wool, the combination of a drum for supporting and supplying a strip of glass fibres, a

reel for exerting a pulling action on the yarn, and an aspirator nozzle through which the yarn passes, so constructed and arranged as to direct its blast of high velocity air in a direction parallel to the yarn passing therethrough.

8. In an apparatus for preparing yarn from glass wool, the combination of a drum for supporting and supplying a strip of glass fibres, a reel for exerting a pulling action on the glass wool to form a yarn, and a heating chamber through which the yarn passes from the drum to the reel.

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