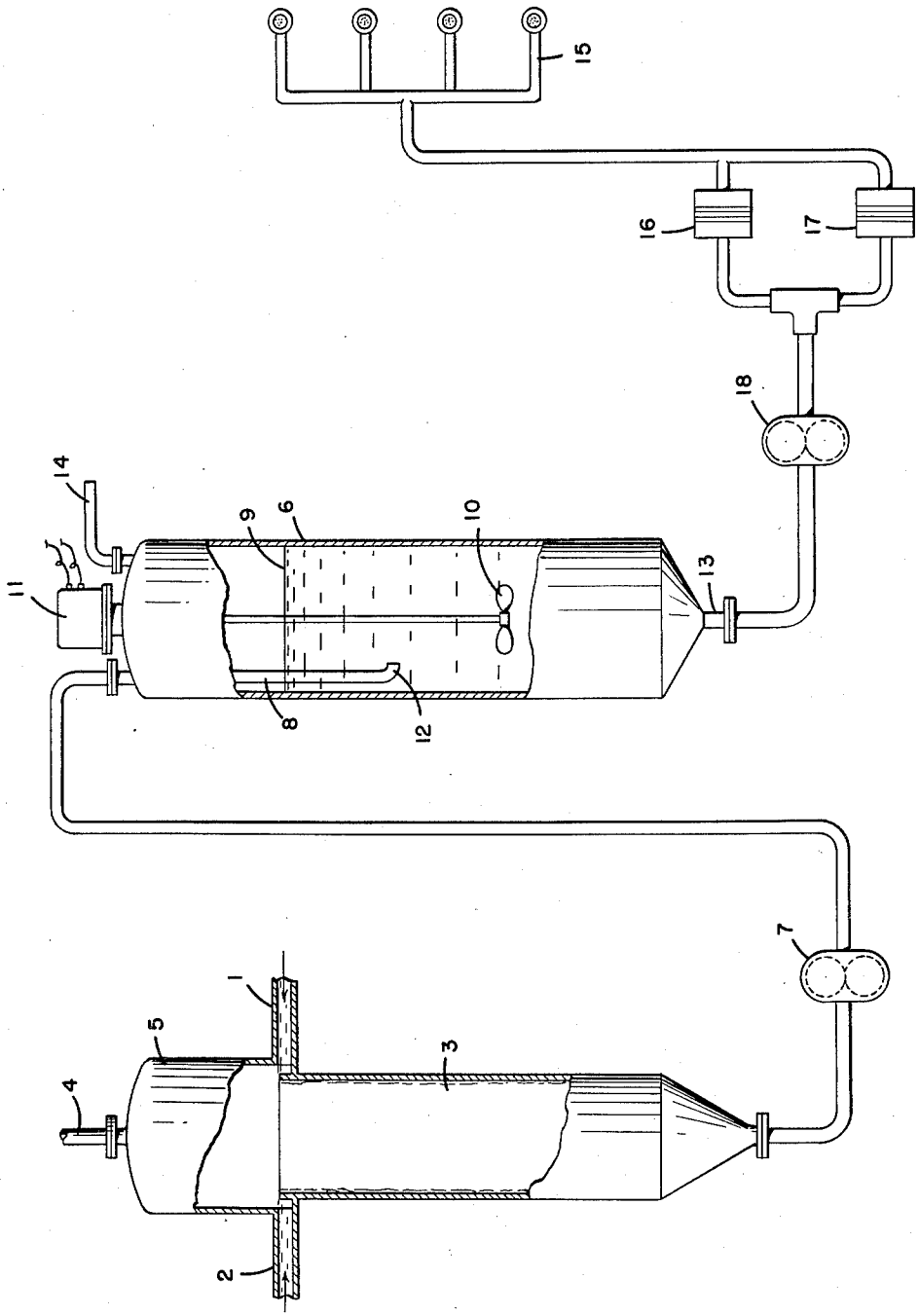
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CONTINUOUS VISCOSE DEGASIFICATION

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CONTINUOUS VISCOSE DEGASIFICATION

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This invention relates to a method and apparatus for supplying and controlling the character of viscose between aging tanks and spinning machines.

The physical properties and the quality of synthetic textiles materials and particularly those spun and extruded from cellulose xanthate or viscose vary considerably with the aging of the xanthate. Furthermore, the amount of gas or air within the xanthate which is supplied to the spinning machines may be quite critical since contained gas bubbles passing into the spinneret often cause broken filaments, spinneret plugging and inferior yarn. Such undesired results occur when the gas content of the viscose exceeds approximately .002% by volume.

In a "dead end" viscose supply system wherein viscose is pumped directly from aging tanks to spinning machine without any intermediate storage or re-circulation, difficulty has been encountered in providing satisfactory deaerating apparatus which will reduce the gas content of the viscose to a figure which permits spinning of satisfactory yarn. Even when conventional deaerators were installed in the viscose lines between the aging tanks and the spinning machines, poor quality yarn was still obtained. It has been discovered, however, that the use of a combined deaerator and degasification chamber in each of the viscose supply lines facilitates a rapid removal of entrapped gases and provides a solution of cellulose xanthate which is highly satisfactory for spinning operations. The effect of the deaerator on the viscose was found to be such that the material pumped from the deaerator could be satisfactorily supplied directly to the spinning machine without intermediate venting of the same to substantially atmospheric pressure within the degasification chamber. A theory advanced for this unexpected phenomenon is that the direct pumping of the viscose from the deaerator to the spinning machine did not allow sufficient time for entrapped and/or dissolved gas bubbles to free themselves from the viscose. Experience has thus indicated that the treatment to which the viscose is subjected in a high vacuum deaerator, described generally in United States patent to Copeland, 2,355,057, must be modified or specially treated when such a deaerator is used in a dead-end viscose system.

The present invention therefore has for its primary object, the provision of an improved method for deaerating viscose in a dead-end system.

A further object of the invention is to provide an effective dead-end viscose supply system whereby viscose delivered to a spinneret has a gas content not exceeding approximately .002% by volume.

A further object of the invention is to provide a two-step deaeration method for viscose.

A further object of the invention is to provide a viscose supply apparatus having a secondary venting chamber between a primary deaerator and a spinning machine.

Further objects will be apparent from the drawing which shows diagrammatically a viscose supply system incorporating the present invention.

With reference to the drawing, the dead-end viscose supply system of the present invention includes delivery lines 1 and 2 which supply viscose from conventional aging tanks (not shown) to a primary deaerator 3. The deaerator 3 is maintained in an evacuated condition by a vacuum line 4 connected to an upper chamber 5 so as to induce a boiling of the viscose as it passes downwardly along the inside surfaces of the deaerator walls in the form of a thin film. The apparatus thus far described may, in general, be of the same arrangement as disclosed in the patent to Copeland referred to above.

As the thin film of boiling viscose moves downwardly along the inside surfaces of the deaerator 3, air and other gases contained or entrapped within the viscose are released and withdrawn through the vacuum line 4. The deaerated viscose collects at the bottom of the deaerator 3 and is continuously delivered, while still in a boiling condition, to a degasifying chamber 6 by means of a pump 7.

The degasifying chamber 6 is provided with an inlet pipe 8 which extends beneath the normal level of liquid in the chamber 6, as indicated by the character 9, and also includes an agitator 10 which is driven at a slow speed by a motor 11. The end of the inlet pipe 8 is bent at 12 to direct the viscose around the inner periphery of the chamber 6 along a generally horizontal plane. By terminating the inlet pipe 8 below the liquid level 9 turbulence of the viscose is minimized and possible air entrainment is avoided. The primary function of the agitator 10 is to impart movement to the viscose to thereby prevent channeling of viscose from the inlet pipe 8 to the chamber outlet conduit 13 and also to avoid any tendency for the viscose to vortex.

The degasification chamber 6 is opened to the atmosphere by a vent 14 so that the boiling viscose delivered into chamber 6 is subjected only to atmospheric pressure. The viscose is maintained within the chamber 6 until its boiling has stopped, and it is during this stage that residual air or gases are released to the atmosphere through the vent 14 to thus provide a viscose which is highly satisfactory for spinning purposes. The deaerated or degasified viscose is delivered to a spinning machine, indicated at 15, after being forced through filters 16 and 17 by a pump 18, in accordance with conventional practices.

In the light of the above description, it will be apparent that the method and apparatus of the present invention involve no complex procedural steps or structures. More important, the unexpected and highly satisfactory results which are achieved by the present invention render dead-end supply systems for viscose spinning machines practical, both from the standpoint of economy and the improved products which are obtained.

While preferred embodiments of the invention have been shown and described, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A method of deaerating viscose prior to extrusion including the steps of subjecting the viscose to a high vacuum in a first chamber whereby the viscose is caused to boil and a major portion of the entrapped gas bubbles are evacuated therefrom, continuously transferring the viscose to a second chamber while the viscose is still in a boiling condition, subjecting the viscose to atmospheric pressure within said second chamber whereby residual gases are free to escape from the viscose and into the atmosphere, maintained the viscose in said second chamber until boiling of the viscose stops, and delivering the viscose directly from said second chamber to an extrusion machine.

2. In a process for the production of extruded regenerated cellulose products the steps which comprise subjecting a supply of viscose to an aging treatment, continuously passing the aged viscose to an evacuated zone

whereby the viscose is caused to boil and a major portion of the entrained gas bubbles are released from the viscose, continuously pumping the boiling viscose to a second zone which is at substantially atmospheric pressure, introducing the boiling viscose into said second zone at a point below the surface of the viscose contained therein, agitating the viscose in the second zone sufficiently to prevent channeling of the same between the inlet and outlet of the second zone, maintaining the viscose in the second zone until boiling of the viscose stops, and continually delivering the deaerated viscose from said second zone to an extrusion machine.

3. Apparatus for degasifying viscose supplied to an extrusion machine including a primary high vacuum deaerator, means for supplying aged viscose to said vacuum deaerator wherein it assumes a boiling condition and a major portion of entrapped gases are released therefrom, a secondary deaerating chamber, means for delivering viscose from said primary deaerator to said secondary deaerating chamber, a vent in said secondary deaerating chamber open to the atmosphere whereby viscose is subjected to atmospheric pressure within said secondary chamber, and means for delivering viscose from said secondary

chamber directly to an extrusion machine without recirculation thereof.

4. Apparatus as defined in claim 3 further including agitating means within said secondary chamber for effecting movement of viscose to prevent channeling of the same between the inlet and outlet thereof.

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