

UNITED STATES PATENT OFFICE

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MANUFACTURE AND PRODUCTION OF ARTIFICIAL THREADS, FILAMENTS, BANDS AND THE LIKE

No Drawing. Application filed November 30, 1927, Serial No. 236,880, and in Great Britain January 15, 1927.

This invention relates to an improved process in connection with the manufacture and production of threads, filaments, bands and the like consisting of cellulose or a compound of cellulose, and containing in addition thereto one or more finely divided liquid or solid bodies which are more or less evenly distributed in the cellulose or cellulose compound.

10 It has already been proposed to add to, or incorporate with viscose, bodies which are not soluble therein, such for instance as petroleum jelly or oil or mineral wax, and then to project the mixture into a suitable bath, whereby the cellulose is recovered in the form of threads or filaments containing more or less of the added body. It has further been proposed in the case of viscose to effect such incorporation either by adding 15 the said ingredient to the carbon bisulphide which is employed for the xanthation of the alkali cellulose, or by mixing the said ingredient with the viscose, and in either case filtering the viscose mixture, and evacuating 20 the same, before spinning it for the production of the threads or filaments or the like. It has also been proposed to produce coloured threads by projecting a mixture containing viscose and the leuco compound of a vat 25 colouring matter through orifices into an acid setting bath, and afterwards converting the leuco compound into the colouring matter. It has also been proposed to add to the spinning solution various other organic or 30 inorganic compounds.

It has now been found that threads, filaments, bands and the like consisting of cellulose or a compound of cellulose and containing in addition thereto one or more finely divided liquid or solid bodies which are more or less evenly distributed in the cellulose or cellulose compound, may be obtained in an excellent manner by first filtering and removing the air from the viscose or other 40 spinning solution, then adding the liquid or solid body and mixing the whole completely or sufficiently while avoiding any introduction of air into the said solution, and finally 45 passing the mixture thus obtained to the

spinning machine, where it is converted into threads, filaments, or the like.

The following example is given as showing one method of introducing the body, which is hereinafter referred to in this example as oil, into the spinning solution, which is referred to as viscose, but the invention is not restricted thereto. 55

Example

The oil may be placed in a vessel under pressure caused by compressed air, and allowed to pass from the containing vessel through a feed pump, which delivers the desired quantity of oil per unit of time, and which may for instance be similar to the pumps which are employed for feeding the viscose to the spinnerets of a spinning machine. The oil thus supplied by the feed pump passes along a pipe which joins with the pipe which supplies viscose for a number of spinnerets, and the mixture of viscose and oil thus obtained passes through a series of finely perforated plates, and then into a vessel, which may consist of a widening made in the pipe, and which contains a paddle or the like rotated at a speed sufficient to mix adequately the viscose and the oil. The more or less homogeneous mixture of viscose and oil so obtained is passed from the mixing vessel along the main feed pipe, and thence to the various pipes which feed the separate spinnerets of the spinning machine after passing through the usual feed pump and the final filters, if so desired, before arriving at the said spinnerets. Care must be taken that no air is allowed to pass with the oil into the viscose, and also that during the subsequent operations of the mixing of the oil and the viscose, and the passage of the mixture to the spinnerets, no air is allowed to enter the said mixture. If the distance to be travelled by the mixture between the said mixing apparatus and the spinning machine be sufficient to allow a partial separation of the added body from the viscose to take place, the mixture may be submitted to a further mixing operation shortly before it reaches the spinnerets, it being understood that such further mixing 100

operation must also be carried out without allowing any air to enter the mixture.

The specification of British Patent No. 181,902 describes the production of coloured filaments by adding a leuco vat colouring matter to viscose which is then mixed, filtered, ripened, evacuated and spun. According to the present invention, however, the leuco vat colouring matter may be added in the form of an alkaline solution, the feed pump for the said solution and the mixing apparatus being arranged in a manner similar to that already described the rate of supply by the feed pump being regulated according to the depth of colour desired in the finished thread.

As examples of solid bodies which may be added according to this invention may be mentioned carbon black and china clay, which are particularly suitable for incorporation in coarser filaments, such as monofil, the said solid body being first mixed with a liquid, whereupon the mixture is freed from air and then fed to the spinning solution as already described.

As a modification of the process according to this invention the body, whether insoluble or soluble which it is desired to add, may be mixed with a small quantity of the spinning solution so as to make a more or less concentrated solution or suspension of the said body in the said spinning solution, which is subsequently added at a measured rate, if necessary after filtration and removal of air, to the main body of the spinning solution which main body has already been filtered and freed from air.

By the use of the process according to the present invention, I am enabled to obtain more uniform products than have been produced by the processes hitherto described, and also the degree of lustre can be more easily controlled. The said process also offers further special advantages in the case of the addition of such compounds to viscose as tend to age the viscose rapidly, as the addition is enabled to be made only a short time before the mixture is led to the spinning machine and the period during which the said addition can exercise its ageing effect on the viscose is thus reduced to a minimum.

It is to be understood that the process according to the present invention includes the addition to the spinning solution of a body which during the spinning and/or subsequent operations becomes converted into the body which it is desired shall be contained in the finished threads, filaments, bands and the like. As an illustration of this, is mentioned the addition to viscose of a leuco vat colouring matter, which during spinning and/or subsequent operations, is converted into the vat colouring matter itself as already referred to.

It will be understood that the addition made to the spinning solution according to the process of this invention must not be such as will prevent the spinning operation from taking place.

What I claim is:—

1. In the production of artificial threads, filaments, bands and the like consisting of cellulose or a compound of cellulose, and containing in addition thereto petroleum oil or petroleum jelly more or less evenly distributed in the cellulose or cellulose compound, a process comprising the following steps: first filtering and removing the air from the spinning solution, then passing the filtered and de-aerated spinning solution towards the spinning machine, and during this passage, while the spinning solution is no longer in bulk, adding the petroleum oil or petroleum jelly and mixing the same while avoiding any introduction of air into the said solution, and passing the mixture thus obtained to the spinning machine.

2. In the production of artificial threads, filaments, bands and the like consisting of cellulose or a compound of cellulose, and containing in addition thereto one or more finely divided liquid or solid bodies which are more or less evenly distributed in the cellulose or cellulose compound, a process comprising the following steps: first filtering and removing the air from the spinning solution, then passing the filtered and de-aerated spinning solution towards the spinning machine, and during this passage, while the spinning solution is no longer in bulk, adding the filtered and de-aerated mixture containing the said body and a small quantity of the spinning solution, and then mixing the whole while avoiding any introduction of air into the said solution, and passing the mixture thus obtained to the spinning machine.

3. In the production of artificial threads, filaments, bands and the like consisting of cellulose or a compound of cellulose, and containing in addition thereto a finely divided liquid, more or less evenly distributed in the cellulose or cellulose compound, a process comprising the following steps: first filtering and removing the air from the spinning solution, then passing the filtered and de-aerated spinning solution towards the spinning machine, and during this passage, while the spinning solution is no longer in bulk, adding the liquid and mixing the same while avoiding any introduction of air into the said solution.

4. In the production of artificial threads, filaments, bands and the like consisting of cellulose or a compound of cellulose and containing in addition thereto a finely divided liquid, more or less evenly distributed in the cellulose or cellulose compound, a process

comprising the following steps: first filtering and removing the air from the spinning solution, then passing the filtered and de-aerated spinning solution towards the spinning machine, and during this passage while the spinning solution is no longer in bulk, adding a leuco vat colouring matter in the form of an alkaline solution and mixing the same with the spinning solution while avoiding any introduction of air thereto.

5. In the production of artificial threads, filaments, bands and the like, consisting of cellulose or a compound of cellulose, and containing in addition thereto a finely divided liquid, more or less evenly distributed in the cellulose or cellulose compound, a process comprising the following steps: first filtering and removing the air from the spinning solution, then passing the filtered and de-aerated spinning solution toward the spinning machine and during this passage, while the spinning solution is no longer in bulk, adding a filtered and de-aerated solution containing a leuco vat colouring matter in the form of an alkaline solution mixed with a small quantity of the spinning solution and then mixing the whole while avoiding any introduction of air thereto.

In testimony whereof I have signed my name to this specification.

WILLIAM HENRY STOKES.

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