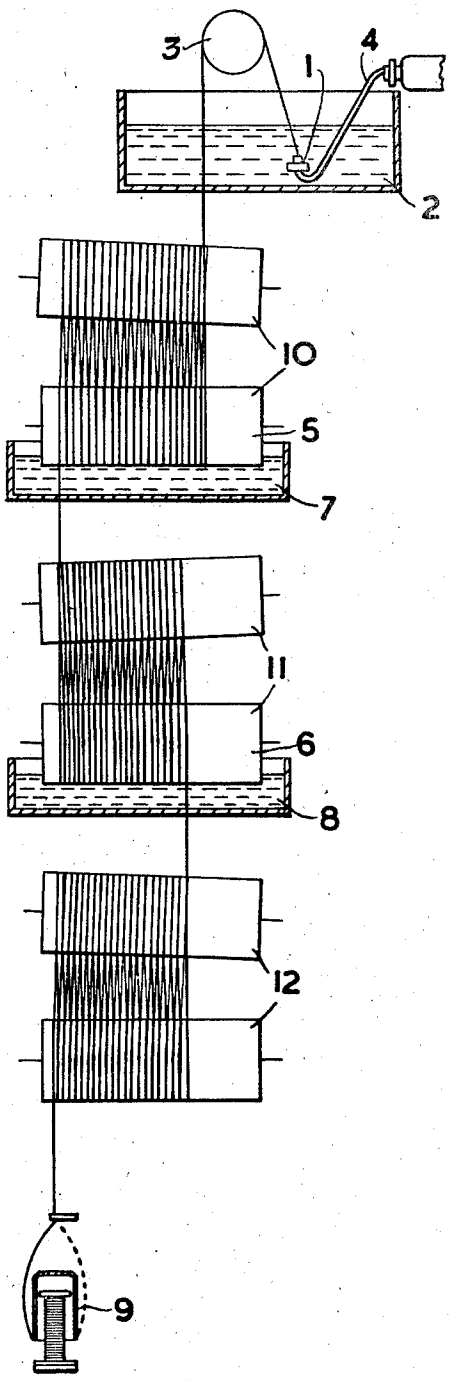
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MANUFACTURE OF ALGINATE THREADS

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MANUFACTURE OF ALGINATE THREADS

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It has already been proposed in British patent 541,848 in the spinning of alginic acid or metal alginate yarns to coat the filaments with oil during or immediately after coagulation and before they have had opportunity to adhere together, and it has been stated that the most convenient method consists in dispersing the oil in the coagulating bath using an emulsifying agent, which may be cationic in character, for example, cetyl pyridinum chloride, or a tertiary alkyl ammonium chloride.

I have now found that when manufacturing alginate threads by projecting an aqueous solution of alkali alginate into a suitable coagulating bath and then treating the thread in the form of helices on a thread-advancing device, such for instance as a pair of rollers with inclined axes, the presence of oil on the thread is deleterious, since it causes the helices to run together and this interferes with the proper treatment of the thread. I have found, however, that good results can be obtained if the thread be treated in the absence of oil with a solution containing a small proportion of a wetting agent which is either cationic or non-ionogenic in character. As instances of such compounds may be mentioned lauryl pyridinium sulphate, cetyl pyridinium chloride and the non-ionogenic water-soluble compound obtainable by the action of ethylene oxide on an aliphatic alcohol or acid containing more than 8 carbon atoms in a chain. It is convenient to add the wetting agent to the coagulating bath, and also to maintain a small proportion thereof in all the subsequent treating liquids, including the final washing liquor.

The accompanying diagrammatic drawing shows a front elevation of an apparatus which can be used for carrying out the process of my invention. This drawing is given by way of illustration only and does not form part of my invention.

In the drawing the jet 1 supported by tube 4 is placed below the surface of the coagulating bath contained in the trough 2. A godet 3 is positioned above the level of the trough 2, while below the level of the trough are thread-advancing devices 10, 11, and 12. Each of the thread-advancing devices consists of a pair of rollers with inclined axes, for instance, of the type described in the British patent specification Numbers 319,793 and 352,454 of A. H. Junkers. The lower part of each of the lower rollers 5 and 6 of the thread-advancing devices 10 and 11 dips into treating liquids contained in the troughs 7

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and 8. The thread-advancing device 12 is made so that at least one of the rollers can be supplied with a heating medium for the purpose of drying the thread. A cap twisting device 9 is placed below the discharge end of the thread-advancing device 12 to receive the thread. The thread is conducted from the discharge end of one thread-advancing device to the receiving end of the succeeding thread-advancing device by means of a thread guide; these thread guides however, have been omitted from the drawing for the sake of clarity.

When using this apparatus, an alginate spinning solution supplied through tube 4 is extruded through the multihole jet 1 into the coagulating bath contained in trough 2. The thread obtained is withdrawn from the coagulating bath and passed twice round the godet 3. The thread is then received on the thread-advancing device 10 where it passes through the liquid contained in the trough 7.

On reaching the discharge end of the thread-advancing device 10 the thread passes vertically downwards on to the thread-advancing device 11 where it receives further treatment from the liquid contained in the trough 8. The thread next passes on to the thread-advancing device 12 where it is dried by means of the heating medium supplied to the interior of the thread-advancing device. The dried thread is finally collected on a bobbin by means of the cap-twisting device 9.

The following example illustrates the present invention without being limited to this example.

Example

A neutral 7 per cent aqueous solution of sodium alginate is extruded at the rate of 7.4 grams per minute through a nozzle containing 40 holes into a coagulating bath containing 0.07 per cent of hydrochloric acid, 5.0 per cent of calcium chloride and 0.1 per cent of cetyl pyridinium chloride. The thread coming out of the coagulating bath consists mainly of calcium alginate and alginic acid. It is drawn from the bath by means of a godet having a peripheral speed of 54½ metres per minute and passed on to a thread-advancing device having a peripheral speed of 60 metres per minute where it is converted completely to calcium alginate by treating in the form of helices with a neutral solution containing 2 per cent of calcium chloride, 0.2 per cent of calcium acetate and 0.1 per cent of cetyl pyridinium chloride. It is then passed to a second thread advancing device where, in the

form of helices, it is washed free from salts with water containing 0.1 per cent of cetyl pyridinum chloride. It is dried in the form of helices on a third thread-advancing device and finally collected on a bobbin preferably by means of a cap twisting device. The yarn obtained is approximately 100 denier when conditioned in an atmosphere of 65° relative humidity.

What I claim is:

1. A process of producing alginate threads free from stuck filaments which comprises extruding in the absence of oil an aqueous solution of alkali aliginate through a multi-hole jet into an oil free coagulating bath containing an aqueous solution of a salt of an alkaline earth metal, an acid, and a small proportion of a wetting agent chosen from the group consisting of cationic and non-ionogenic wetting agents, and winding said undried alignate threads on a revolving device.

2. A process of producing alignate threads free from stuck filaments which comprises extruding in the absence of oil an aqueous solution of alkali alignate through a multi-hole jet into an oil free coagulating bath containing an aqueous solution of a salt of an alkaline earth metal, an acid, and of the order of about 0.1% of a wetting agent chosen from the group consisting of cationic and non-ionogenic wetting agents, and winding said undried alignate threads on a revolving device.

3. A process of producing alginate threads free from stuck filaments while using thread advancing helices which comprises extruding in the

absence of oil an aqueous solution of alkali alginate into an oil free coagulating bath containing an aqueous solution of a salt of an alkaline earth metal, a mineral acid and of the order of about 0.1% of a wetting agent chosen from the group consisting of cationic and non-ionogenic wetting agents, passing the thread in the form of helices on to a thread-advancing device, treating the advancing thread with a neutral aqueous solution free from oil and containing a salt of an alkaline earth metal and of the order of about 0.1% of a wetting agent chosen from the group consisting of cationic and non-ionogenic wetting agents.

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