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METHOD OF PRODUCING MULTICOLORED
THREADS

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This invention relates to artificial threads and to the method of making the same. More particularly it relates to a multicolored thread which presents a chiné effect and to the method of
5 preparing the same.

Prior to this invention, threads presenting chiné effects were prepared by twisting together a plurality of differently unicolored threads which were prepared either by spinning colored solu-
10 tions containing the desired or appropriate dye-stuff or by spinning the thread in the usual manner and subsequently dyeing it as desired. The assembled threads forming the desired product were highly twisted in order that the various
15 colors appeared with sufficient frequency on the same side in the final thread. This required the component threads to be of sufficient denier to successfully withstand the operation. As a consequence, the final thread was characterized by
20 a relatively large denier, the denier of the final thread being the sum of the deniers of the individual component threads.

I have found that I can produce multicolored threads presenting chiné effects and comprising
25 a plurality of individual and differently unicolored artificial and/or multicolored filaments by simultaneously feeding a plurality of differently colored spinning solutions in a side by side relationship, and preferably without any substan-
30 tial intermixing, to a single extrusion device as, for example, a spinneret, extruding said solution therethrough and twisting the filaments.

It is therefore an object of this invention to produce a multicolored thread having chiné
35 effects and comprising a plurality of differently unicolored artificial and/or multicolored filaments twisted together, said filaments preferably being directly spun as, for example, by the well known dry spinning process.

Another object of this invention is to provide a multicolored thread as set forth in the preceding paragraph and wherein the groups of filaments in the same length of the thread are differently
40 colored.

Another object of this invention is to provide a method of directly producing multicolored threads presenting chiné effects and formed of a plurality of differently unicolored and/or multi-
50 colored artificial filaments which comprises simultaneously feeding a plurality of differently colored spinning solutions in a side by side relationship, and preferably without any substantial mixing thereof, to a single spinneret and extruding said
55 solution therethrough.

Additional objects will appear from the following description and appended claims.

In accordance with the method constituting one part of the instant invention a plurality of differently colored spinning solutions are simul-
60 taneously fed to and spun through a single spinneret.

In one embodiment of the method, streams of the differently colored solutions are combined in the immediate vicinity of the spinneret and fed
65 in a side by side relationship without any substantial intermixing to the spinneret. Upon extrusion through the spinneret there will result a plurality of differently unicolored filaments which, when twisted together, will give a multi-
70 colored thread presenting chiné effects.

When the streams of the plurality of differently colored spinning solutions are combined at a point not too remote from the spinneret and fed to the
75 spinneret in a side by side relationship, the boundaries between the different streams of the different solutions will be constituted by a mixture of said different solutions. Consequently, some of the filaments produced upon extrusion
80 through the spinneret possess a hue corresponding to that resulting from the slight intermixing of the two adjacent streams. In addition, a plurality of the resulting filaments will also be multi-colored.

In the preferred form of the invention, the
85 differently colored spinning solutions are fed from suitable sources of supply to a plurality of separate spinneret supply pumps or feeding diaphragms of the type usually employed in the spinning of artificial thread. The out-puts of these
90 feeding devices are fed into a single pipe of relatively short length which is directly connected to the spinneret in spinning position, whereby the composite solution is spun. In this procedure the strata of the differently colored solutions are more
95 or less separated from each other by a zone in which the two adjacent strata are intermixed to a greater or less degree.

The preferred embodiment also contemplates twisting the filaments to produce the final thread
100 in an operation combined with the production of the thread as, for example, by feeding the group of filaments to a cap twister or equivalent device disposed in close proximity to the filament producing apparatus.

The colors of the resulting filaments depend to a great extent on the relative quantities of the different spinning solutions supplied to the spinneret. Thus by varying, either continuously or
105 at predetermined intervals of time, the relative

quantities of the different spinning solutions constituting the delivery to the spinneret, the resulting filaments may be unicolored and/or multicolored, as desired.

5 The principles of the method hereinbefore described are applicable to any process for producing artificial threads. It is particularly adapted to the dry spinning process wherein appropriately colored solutions of cellulose derivatives, such as
10 cellulose nitrate, cellulose esters, cellulose ethers, cellulose formamate, and the like are employed.

Threads constituting another part of this invention and which may be prepared, as previously described, comprise a plurality of individual unicolored and/or multicolored artificial filaments
15 twisted together.

By reason of the direct mode of manufacture of the filaments and threads the latter may be made of any denier and filament count. In
20 many cases in the same length of thread, the component filaments are of different colors. When woven into fabrics, there is produced an extremely variegated chiné effect which is very irregular on the surface of the fabric, a feature which
25 is most desirable and heretofore difficult to secure.

In order to more clearly explain the nature of the invention, the following specific illustrative embodiments are given. It is, of course, to be
30 understood that these specific modifications are not intended to limit the nature of the invention.

Example 1.—A bi-colored thread possessing chiné effects may be prepared by employing two cellulose acetate spinning solutions, one colored
35 blue and the other yellow by appropriate coloring agents. The two solutions are fed by means of separate pumps into the pipe directly connected with the spinneret and thereafter are spun in accordance with the well known principles of
40 the dry spinning process. The filaments issuing from the apparatus were conducted to a thread twisting device.

Upon examining the unit filaments over a length of one centimeter of a 100 denier thread
45 having 32 filaments prepared as just described it was found that 10 filaments were blue, 19 filaments yellow and 3 filaments of a shade intermediate yellow and blue.

Example 2.—A multicolored chiné thread was prepared by simultaneously spinning together
50 four cellulose acetate solutions colored blue, yellow, red and black respectively.

These four solutions united after the feeding pumps were supplied to a single pipe connected directly with the spinneret holder and spun according to the dry spinning process.

Upon examination of a 100 denier thread having 32 filaments there were found 6 blue filaments, 6 yellow filaments, 5 red filaments, 8 black filaments and 7 filaments of a variegated color. Upon examination of one meter of one group of the variegated filaments it was found that 10 centimeters of one filament were colored blue and 90 centimeters black; another filament was found to consist of 50 centimeters colored black and 50 centimeters colored red while in a third 15 centimeters were colored yellow, 30 centimeters reddish yellow and 55 centimeters red.

Since it is obvious that various changes and modifications may be made in the above description without departing from the nature and spirit thereof, this invention is not restricted thereto except as set forth in the appended claims.

I claim:—

1. A method of directly producing multicolored artificial threads which comprises simultaneously feeding streams of a plurality of differently colored spinning solutions in a side by side relationship through a single pipe to a single spinneret and extruding said solution therethrough.

2. A method of directly producing multicolored artificial threads which comprises simultaneously feeding streams of a plurality of differently colored spinning solutions in a side by side relationship through a single pipe to a single spinneret and dry spinning the composite solution.

3. A method of directly producing multicolored artificial threads which comprises simultaneously feeding streams of a plurality of differently colored spinning solutions in a side by side relationship through a single pipe to a single spinneret, extruding said solution therethrough, and twisting the filaments together.

4. A method of directly producing multicolored artificial threads which comprises simultaneously feeding streams of a plurality of differently colored spinning solutions in a side by side relationship through a single pipe to a single spinneret, dry spinning the composite solution, and twisting the filaments together.

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