

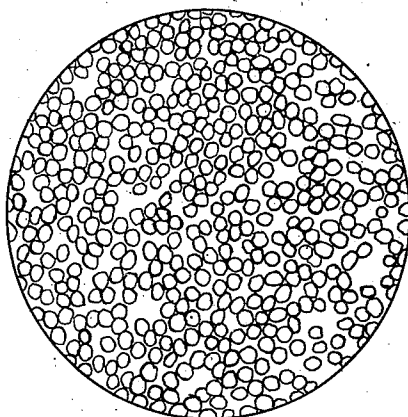
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ARTIFICIAL YARN, PARTICULARLY ARTIFICIAL SILK YARN

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ARTIFICIAL YARN, PARTICULARLY ARTIFICIAL SILK YARN

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This invention relates to an improvement in artificial yarns, particularly artificial silk yarns.

Artificial yarns, particularly artificial silk yarns, are composed of a large number of continuous individual filaments which are comparable to the fibres of ordinary yarns. The finer is the individual filament, the softer is the artificial silk yarn, and the more nearly in value is it to that of natural silk. Even in the production of artificial silk yarn, one can go below the fineness of the filaments of natural silk yarn and retain the unity of the individual filaments. There is, however, in this connection a limit, and in fact it is determined by the resistance of the individual filaments, (the lower limit lies at about 1 denier per individual filament). If the individual filaments are too thin, they tear, and the yarn has, as the expression has it, "broken filaments". This breaking of the filaments may take place either before or after stretching.

We have succeeded in producing an artificial yarn of increased resistance, and in fact, by subjecting the cellulose thread, after it has been brought to a certain stage, to a further stretching outside the precipitating bath. For example, with silk produced from cuprammonium cellulose solution, an increase in resistance of 100 per cent has been obtained by stretching the yarn while still in the plastic condition outside the spinning funnel and after the stretching effected in the spinning funnel. The increase in resistance depends upon the degree of stretching.

It is possible according to the invention, with a silk having an increased resistance of this kind, to reduce the individual filaments of the yarn below 1 denier for the individual filaments without danger existing of breaks and the formation of broken filaments either before or after stretching, that is thus, to form cellulose silk yarn from individual filaments of increased resistance and having a titer of less than 1 denier. With this, such a yarn presents the same soft lustre as natural silk. Yarns of this kind are new and form a product of previously unknown qual-

ity with regard to softness, flexibility, and resistance, as well as covering power.

By subjecting the thread produced by initially stretching filaments from a copper oxide ammonia cellulose solution, to a subsequent stretch spinning process, a yarn may be produced having, for example, a titer of 120 deniers and made up of individual filaments each of which has an essentially circular cross-section and a titer of 0.71 deniers with a tear resistance of 264 grams per 100 deniers in the dry condition and 185 grams per 100 deniers in the wet condition.

The accompanying drawing is an enlarged cross-section through a yarn according to our invention made from copper oxide ammonia cellulose solution by the stretch spinning process. Each individual filament has an essentially circular cross-section while the individual filaments of other artificial silk yarns have a flat, elongated, oval-shaped or kidney-shaped cross-section.

The denier is a measure of the fineness of the thread which is usual in the silk industry. The number of deniers is equal to the weight in grams of a thread of 9,000 meters in length.

The formerly known yarns of artificial silk, the individual filaments of which possessed a fineness below 1.5 deniers, had, at the most, a tear resistance of 170 to 185 grams in the dry condition, and 85 to 95 grams in the wet condition. Yarns with individual filaments, the titer of which lies under one denier, have not essentially been known. The yarns according to the invention, on the other hand, the individual filaments having titers of 1 denier and below, have a resistance of at least 220 grams per 100 deniers in the dry condition, and 140 grams per 100 deniers in the wet condition.

The resistance figures given were ascertained with a thread humidity of 11 per cent for the dry condition, and in the completely wetted condition respectively at room temperature. For the tests, the so-called Schopper strength testing apparatus or serimeter was used for working on a free piece of yarn of 50 centimeters length. The speed of tearing amounted to 50 centimeters per minute.

The titer of the yarn was likewise ascertained with 11 per cent thread humidity.

The yarn produced in accordance with the invention has about double the resistance of the artificial silk which has been known hitherto. Moreover, it has the same lustre as natural silk and attains to or exceeds this in relation to the feel and resistance, as the individual filaments are finer than those of natural silk. Owing to these properties, the material is capable of being used to an increased extent for the production of textile products, and particularly for such products which are to be washable.

What we claim is:—

1. Yarn of artificial origin comprising filaments with an individual titre of less than 1 denier, said yarn having a dry strength of at least 2.2 grams per denier and a wet strength of at least 1.4 grams per denier.

2. Artificial silk composed of filaments with an individual titre less than 1 denier, said silk having a dry strength of approximately 2.64 grams per denier, and a wet strength of approximately 1.85 grams per denier.

In testimony whereof we affix our signatures.

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