Posselt's Textile Journal

Vol. XXX **January, 1922** **No. 1**

The Moiréing of Silk Fabrics.

Moiré effects are obtained in various ways. The most simple process consists in running the fabric under heavy pressure between two rollers. One of these rollers which can be heated from inside has the pattern desired in the fabric engraved on its circumference, the other roller serving as a pressure roller for bringing the fabric into contact with the engraved roller. The fabric is passed in its open width, thoroughly stretched out (by running it first over expander rollers) between the bite of the two rollers when the pattern as engraved on the heated roller is impressed upon the face of the fabric. By heavy pressure and a clear engraving of the pattern on the roller some excellent moiré patterns are in this way produced. Every revolution of the engraved roller produces one repeat of the pattern on the fabric, except with shorter patterns when two or more repeats of the pattern may be engraved on the circumference of the roller.

Another moiré, but of a more or less distinct character, is produced by stitching together at their selvages two fabrics (having the same width) throughout their entire length, they being placed face to face. These two fabrics are then wound in this condition upon a hard wood roller and covered with a long linen or cotton apron, which finally is stitched to itself, thus fully covering the roll of fabric. Two rolls of cloth thus treated are then put in a roller mangle and operated upon under pressure for about one-half hour, when the pieces are taken off the rollers. To bring up the moiré effect more prominently, the procedure is repeated.

In place of using two fabrics thus sewed together, only one piece may be used. The same is then folded in its middle and with its face inside, its two selvages thus resting (stitched together) upon each other.

Most suitable for these indistinct moiré effects are all silk or half silk taffetas, in which the warp-threads by means of a coarse texture and a heavy count of yarn used, produce rather pronounced rib effects.

A most regular pattern can also be obtained by means of decatizing, using in connection with it a coarse woven linen or cotton fabric as an apron or lining. The fabric to be treated is wound in connection with this coarse fabric structure, *i. e.*, apron or lining referred to, upon the decatizing cylinder with its face towards the lining, or two fabrics may be treated at the same time, running the coarse fabric lining between their face. Decatizing is then done in the usual manner. The most suitable fabrics to be treated by this moiré process are cheap articles with a smooth weave.

In late years, means have been provided to moiré also less closely textured fabrics. Formerly, one of the main features for a good moiré effect was a closely woven fabric, using a rather high count of yarn for the filling, with from 40 to 50 picks per inch, whereas at present for lower grades of fabrics in moiré finish, from 62 to 88 picks are used and this in connection with a higher count of material. In many instances high counts of worsted or cotton yarns are used for the filling. Although a higher number of picks are used, the fabric is of a lighter weight texture.

Besides the materials quoted for the filling, schappe and artificial silk are also used, the latter more particularly for cheaper dress articles, and not for trimming or complete dress fabrics.

The formerly made all-silk moiré with their close, stiff texture, proved too heavy for the use of complete dresses, jackets or cloaks, also in most cases it was too expensive for the average consumer, whereas the light-weight moirés now made are more adapted for the present demand of light drapings, nearly as well as smooth dress, hence their extensive use for dresses, waists, draperies of all kinds, as well as trimming for cloaks and hats.

Most durable moiré fabrics can also be produced on the loom. They are distinguished from such as are produced by finishing by their greater strength, also by producing more pronounced light and shade effects. Most of the moiré fabrics thus produced on the loom, as will be readily understood, are expensive, more particularly such as are produced by means of fancy, *i. e.*, Jacquard weaving. In the latter instance compound harness weaving is mostly employed, the warp-threads being for this purpose entered in groups of two, three or more threads in each mail of the Jacquard harness. The Jacquard then produces the figure effect of the desired moiré pattern, whereas the individual warp-threads, previously referred to as being drawn in group of two, three or more threads in each mail of the Jacquard harness, are operated in detail by means of the front, *i. e.*, compound harnesses by the taffeta weave; again if so desired the single warp-threads may be operated by a Jacquard harness minus these compound harnesses, the Jacquard machine then operating the figuring for the moiré effect as well as the interlacing of the ground. This method of producing moiré effects by a plain tie-up Jacquard harness means more work for the designer as well as more cost to the mill then using compound harnesses, but the outlines of the moiré effect by using the plain Jacquard harness can be better shaped since every thread is then under the control of the designer. To accommodate various tension of the warp-threads, several round whip rods must be entered back of the harness.

Considerably easier than by the use of the Jacquard machine is the construction of moiré fabrics by means of reeds that are movable to and fro. This procedure refers more particularly only to light silk fabrics, in fomer years made extensively in the silk industry of Crefeld, the prominent silk city of the Continent. These silk moirés are exclusively interlaced by means of the taffeta weave, since by means of its close interlacing the filling appears more pronounced between the interstices of the warp-threads, and thus forms places which upon a plain taffeta weave produce a most beautiful moiré with light and shadow effects.

By means of shifting the tension of a portion of the warp-threads in different positions all over the warp, other fancy effects in moiré can be produced; one procedure we will explain more in detail. Introduce in place of the regular whip-roller, or previous to the whip-roller a wooden roller with engraved and

depressed surfaces, the raised surface being produced by means of pasting raised surfaces (papier maché) onto the wooden roller, to suit the pattern desired. By these high and low surfaces and over which the warp yarn has to travel, alternately more or less tension is exerted upon the warp-threads, by means of which the picks will be brought more or less close to the fell of the cloth in the loom, in turn producing a clear moiré effect in the woven goods.

Moiré effects sometimes appear in the woven fabric when not desired; for instance in damask fabrics designed with large Jacquard patterns, and where the ground work is in taffeta or a closely interlacing weave and the figure in satin; the latter to be no set figures, but to run connecting one to the other over the full width of the fabric. This then will readily explain that in some instances the tight weaving ground extends somewhat from the fell of the cloth and towards the reed, *i. e.*, the filling is brought by means of these satin figures out of its smooth straight line, and receives more beating up by the lay in the tight weaving ground compared to that of the figure, producing frequently moiré impressions which by means of their lustre are seen in a fabric in which they are not desired.

This disadvantage requires the attention of the designer, and can be overcome by him by dividing the plain or tight weaving portions and satin portions against each other, in order that these two differently interlacing weaves balance throughout the fabric. The satin figures in the design must for this reason be so arranged that all warp-threads weave equal parts of the tight weave as well as the satin weave, for the reason that the tight (plain, etc.) weave takes up more than the satin. Adding extra warp beams will not overcome the trouble.

Provided it happens that a moiré effect is produced which is not wanted, the following procedure will overcome the trouble, *i. e.*, take out the moiré effect: The whole fabric is wound upon a weavers beam, running stiff paper all the width of the fabric between the layers. Provided the fabric is over (50m =) 55 yards long, divide it in two equal parts, since otherwise the good effect of the process to be explained becomes uncertain. The fabric thus wound up is kept for about eight days in a dark, somewhat moist room. In the summer time, in dry hot weather, moisten the air in the room by placing in the latter receptacles containing water, which is made to condense and thus combine with the air and produce the necessary moisture to the room; be careful not to overdo it or the silk will lose its elasticity. The moiré effect, by means of this damp air (at the most 15 deg.) will then disappear quicker than if using dry air. After leaving the fabrics for some eight days on the beam they were wound upon, they then are taken off and are ready for the market, the moiré effect having disappeared.

DEGREASING FIBROUS MATERIALS.

A method of cleaning or degreasing different kinds of fibrous materials, designed chiefly to meet the cleaning of cotton waste, has been easily attempted. The chief feature is that the process is carried out without the assistance of volatile, inflammable, and explosive hydrocarbons. It is well known that the purification of or removal of the grease from fibres, except by soap and water—a process not always advisable,—is attended by many difficulties. The cause is, according to general opinion, that the mineral oils, as also hydrocarbon compounds belonging to the fatty series, cannot combine with metals or metallic oxides, and consequently form unsaponifiable bodies; that they are therefore also completely insoluble in water, and cannot be washed out of the goods by the washing materials generally used. This is, however, far from being the case. Observations which have frequently been made in practice have shown that mineral oils under the influence of certain reagents alter very easily, lose their oily properties, and are converted into soapy liquids completely emulsifiable with water.

It has been repeatedly observed that cleaning waste or rags which are soaked with mineral oil when thrown together in a heap become heated so that they ignite spontaneously. This phenomenon can be accounted for by the mineral grease spread over such a large surface becoming so speedily oxidized that the heat liberated thereby suffices to produce self-ignition. The process of oxidation of the mineral grease taking place on the textile fibre produces alteration in its physical properties, causing the bulk to change into a soapy liquid easily emulsifiable in water—that is the oil is divided into very tiny drops, assuming a milky appearance, and cannot then be separated from the water, even after standing a long time.

These mineral oils thus emulsifiable with water, and separated from the fibres to be purified in the following manner, are adapted in the purified state to serve as excellent solvent and cleansing media for removing any impurities still remaining in the fibres after the removal of the grease by mechanical means. In the chemical processes usually employed the more volatile hydrocarbons of the fatty or aromatic series, such as are contained in petroleum or in gas tar, are employed, by aid of which grease is to be brought into solution. The disadvantage of this method is obvious if its physical properties are considered; only the excessive inflammability and danger of explosions need be referred to.

The substance from which the fat is to be removed is placed in a hermetically-closed vessel and heated by means of steam to over 100° Celsius until a slight excess pressure (over that of the atmosphere) appears in the vessel, when the melted mineral grease, converted into a thin fluid, is pressed out of the fibres by means of strong hydraulic pressure. The mineral fat separated in this manner is run into a vessel where it is heated for two hours, with continuous stirring, at a temperature of from 130 to 150° C., and then left to settle. The layer of thin oil on the top is then separated from the under layer of soapy grease. The thin mineral oil is purified by filtration, and can be used again. The thick and emulsified grease, on the other hand, is treated with 5 per cent. of lime, mixed to a pulpy mass, and boiled for three hours. The lime compound thus formed, after cooling and settling, is separated from the dirty liquid underneath, washed with water, and decomposed with 1 per cent. of muriatic acid.

The mineral grease freed from the surplus muriatic acid is treated with a quantity of pure water and mixed with 3 per cent. ammonia soda. The soapy emulsion then resulting on reboiling is employed to wash the fibre which is not yet quite freed from the impurities adhering thereto, and after being used for this purpose can be purified in the said manner and used again as means for washing, or be employed as an excellent substance for making wagon-grease.