The Various Types of Moiré Effects and Their Production

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(*Concluded from February issue, page* 1626)

Figure 32. Reed with movable dents. Ger. Pat. W. Kreuels, Krefeld, No. 152,706, Kl. 86, of January 31, 1903.

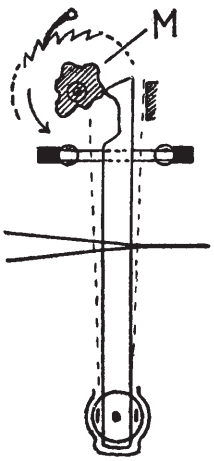


Figure 32
Moiré Weave Reed with Movable Dents and Pattern Roller for Figured Moiré, as for instance like Figure 33.

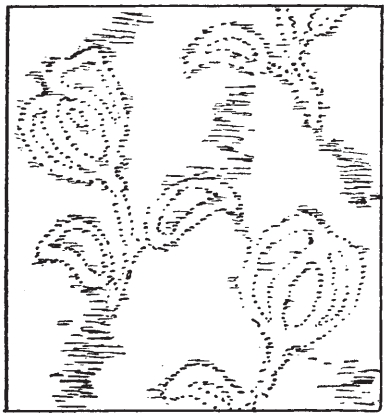


Figure 33
Figured Moiré produced with the Weave Reed (Figure 32).

With this patent, distinct moiré figures, as flowers in Figure 33, or coats-of-arms, butterflies, ornaments, etc., can be produced. If the pattern roller M is fixed in a position which puts all dents in the same direction, plain cloth is woven. This arrangement makes it possible to weave borders with moiré figures on aprons, shawls, etc. The pattern sketch is transferred to the pattern roller M (which is made out of hardwood) with tracing paper and engraved. One dent of the roller makes one pick in the weave and a complete revolution represents the pattern repeat. By exchanging the roller M, various designs can be woven.

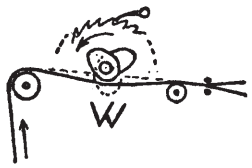


Figure 34
Roller with Humps for Figured Moiré attached to Loom near Warp Beam.

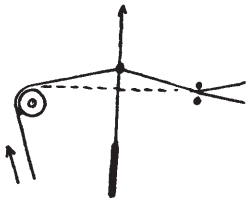


Figure 35
Jacquard Attachment near Warp Beam for distortion of Picks during Weaving for Figured Moiré.

Figure 34. A roller W with uneven humps slowly revolving close to the warp beam is pressing down the warp threads in certain places, thereby creating distortions of the picks. This can easily be demonstrated at a running loom by pressing down with the thumb a section of threads and again releasing them. In this way we are getting weave imperfections according to Figure 39. With this hump roller, only large moiré effects can be produced. (Moiré-galoche.)

Figure 35. Jacquard attachment for distortion of picks during the weaving process. Ger. Pat. Pénicaud Malâtre & Co., Paris. No. 158,184, Kl. 86C, of June 21, 1903.

With this attachment very small and various effects with long pattern repeats can be produced. The jacquard machine must do its action when the batten closes and can, therefore, not be utilized at the same time for the shed. A special jacquard machine will be needed for stripe effects with jacquard designs.

In the following we will present some arrangements for the distortion of picks in the weaving. To enable a distortion of the picks, their number per inch must not be too high; furthermore, smooth organzine silks are best adapted for this kind of work.

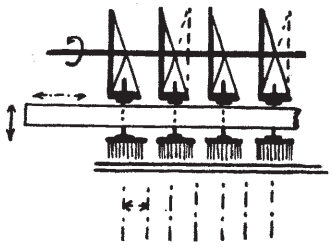


Figure 36
Rod with Whirling Brushes for Moiré-Eyed effects, as shown in Figure 37.

Figure 36 shows an arrangement of perpendicular whirling brushes distorting the picks in a spiral movement. The adjoining brushes may also be set for reverse or contrary movement. If necessary the apparatus can be lifted from the cloth and removed sideways. The cloth is running below the brushes over a small table and while the brushes are in action, the cloth is not moving. This is a good method to produce large-eyed moirés, as shown in Figure 37.

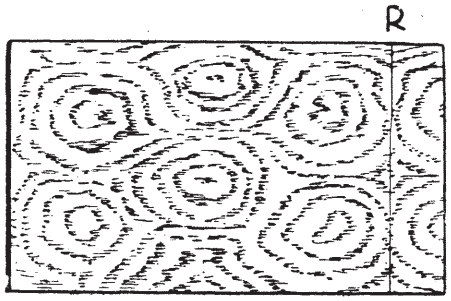


Figure 37
Large Eyed Moiré produced by Whirling Brushes (See Figure 36).

Figure 38. Ger. Pat. Pastor, Krefeld, No. 98,890, Kl. 8, of August 19, 1898.

The pattern roller M being moved by the cloth has small humps of rubber, cork, felt or similar substance, or the design has been engraved into the roller itself. A roller B, with steel wire bristles, or the lamella roller S, distort the picks only at points where the cloth is supported by the humps. The elastic lamella plates are made of horn or spring steel, and are attached in a transposed manner, thereby

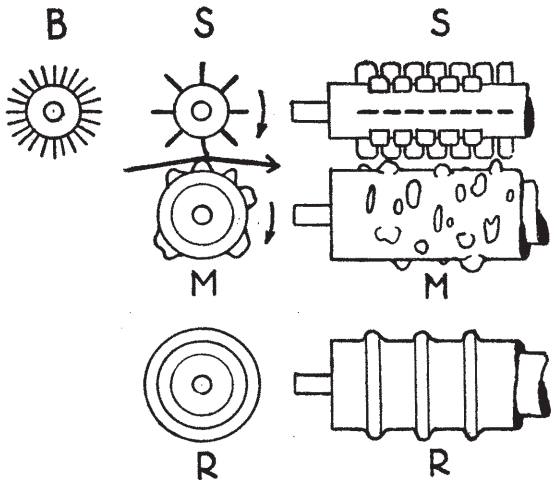


Figure 38
Distortion of Picks in the Weave by means of a Brush Roller B, or Lamella Roller S, working against Pattern Roller M. The ring Roller R produces an undulating Moiré, as shown in Figure 41.

covering the entire cloth surface equally. The right side of the cloth runs below over the pattern roller. The tie silk moirés with small figures are generally produced by this process. On the small knot of a tie, only small figures or narrow stripes with moiré français will show effectively.

Figure 39. Tie silk moiré with multi-color warp print effects. (Chiné.) Figure 40 shows the framed field of Figure 39 with transparent light and the distorted picks. In the cloth the ribs are twice as dense and the warp threads are four times as dense as in Figure 40. The ring roller R in Figure 38 creates an undulating moiré, as shown in Figure 41.

Figure 42. Tie silk rayon cloth. Light brown moiré effects and satin stripes, alternately one stripe each dark brown and one stripe each in dark and light brown. The repeat is in the center between the two stripes. Figure 43 is a transparent view of the tie silk cloth of Figure 42, magnified four times. The dark spots on the left side where the cloth has been folded are the distorted picks being influenced by the scraping roller S in Figure 38, working against the left side of the cloth.

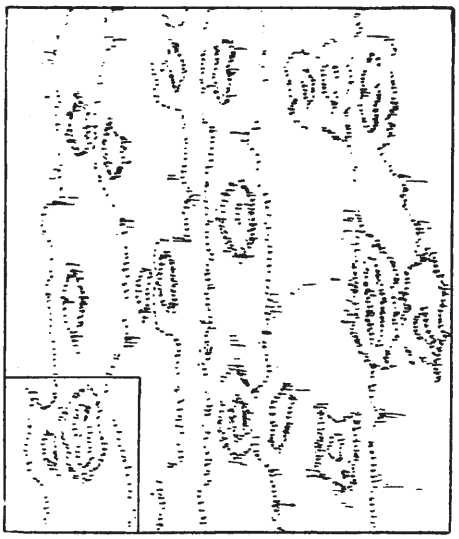


Figure 39
Tie Silk Moiré with small Figures made with Equipment shown in Figure 38.

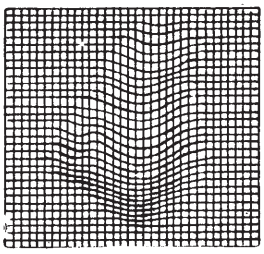


Figure 40
Pick Distortions in the Framed Field of Figure 39.

Figure 41
Undulating Moiré made with Ring and Lamella Roller (Figure 38) or Calender Disc Roller, as shown in Figure 22.

The section on the other side of the fold has not been scraped, and has straight-lying filling. The doubled cloth is run through the calendar and thereby the distorted picks produce small moiré eyes symmetrically to crease R where the cloth has been folded. The veins running in the direction of the warp are the result of rectangular crossings of the picks. Only the taffeta binding produces moiré, the satin stripes remaining plain, as they cover each other through the folding of the cloth.

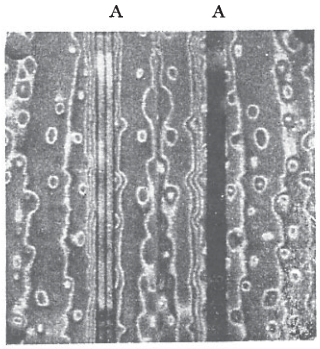


Figure 42
Tie Silk Cloth with Small Figure Moiré and Satin Stripes A. Warp is Organzine 17 to 19 Denier. 22 Dents per cm. 5 Threads per Dent. Filling: 140 Denier Rayon. 25 threads per cm.

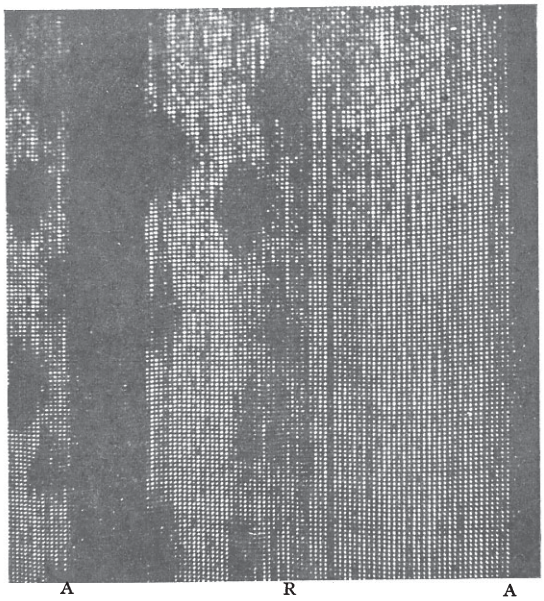


Figure 43
Transparent view of Tie Silk Cloth in Figure 42. R is Folded Crease and A Satin Stripes. Left: Treated with distorted filling. Right: Untreated straight filling.

Figure 44. Sketch of attachment by Wirth, Zurich. The pattern rollers M are working against the carding needles N, distorting the picks when coming in contact with the cloth.

There are certain signs which prove that moiré figures have been produced by distorting the picks. First, the designs are not in a rectangular position to the filling; second,

they have dark margins at transparent view, and third, they show slight chafings at the left side of the cloth. However, these last two

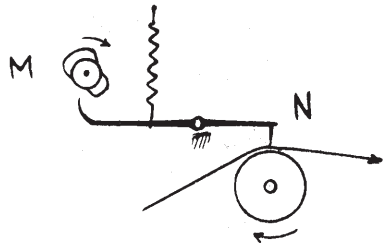


Figure 44
Attachment for distortion of Pick Ribs by means of Needle Lever N, governed by Pattern Roller M.

points only show in the half of the cloth which has been manipulated by scraping. If we should happen to have a clipping from the half of the cloth which has not been scraped, it is often very difficult to ascertain how the moiré effect has been produced.

We wish to emphasize once more that all moiré effects previously described always were produced with cloth folded together. By making figured moiré with distorted picks, including moiré français, it is only necessary to distort the filling in one-half of the width of the cloth. However, for some effects the distorting should be done in both halves, across the entire width of the cloth. The latter manipulation produces quite a variety of moiré figures, depending whether the places with distorted picks fall together or next to each other.

II

The Production of Genuine Moiré in Single Running Cloth with a Channelled Roller

The channels practically substitute the ribs of one-half of the cloth. Figure 45, Jacquard cloth with moiré repp and motifs of satin ribbon. This moiré cannot be produced by doubling the cloth, which runs single through a calendar with channeled roller, as in Figure 48. Various moiré effects can be produced with repp cloth by running same through a channeled roller and giving the cloth some kind of a distortion. Figure 46. Calendar roller with screw thread channels which have a very steep symmetrical ascension in the center. In single running cloth a peaked moiré, as shown in Figure 47, can be made. In all

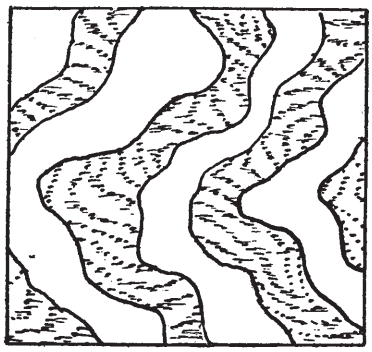


Figure 45
Jacquard Cloth with Moiré Ground.

Figure 46
Roller with Screw Thread Channels for production of Peaked Moiré.

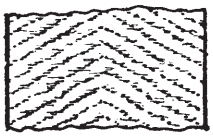


Figure 47

these cases the density of the channels on the roller must correspond precisely with the density of the pick ribs in the weave. Moirés produced in this manner have not such pronounced veins and mirrors as moirés made by doubled cloth.

III

Genuine Moiré on Ribbons

On wide ribbons a moiré français can be made by means of doubling and carding. However, for narrow ribbons, a calendar with channeled rollers is used, as in Figure 48. The ribbon runs over a carding dent Z, which distorts the ribs of the picks. The straight channels of the roller cross the distorted pick ribs, and thus create a moiré français. As aforesaid, in this procedure, the density of the roller channels must correspond precisely with the density of the pick ribs of the tight running ribbon. The smoothing and heating of the paper roller P is done by the lower steel roller G; for double face moiré ribbon the calender Figure 49 is used. The engraved paper roller channeling is kept sharp by the lower channel roller R. Same also serves for heating

paper roller. All rollers must precisely correspond in running. As a rule, the paper roller is twice as thick as the steel rollers. The

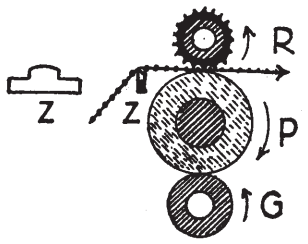


Figure 48
Calender for Ribbon Moiré with Channel Roller R and Card Z, Heating Roller G, Paper Roller P.

channeled roller with groove E is used for a wide ribbon, with a satin stripe between a small and a wide moiré stripe. The groove can also be applied to the paper roller. The card Z must correspond with the moiré stripe parts of the rollers.

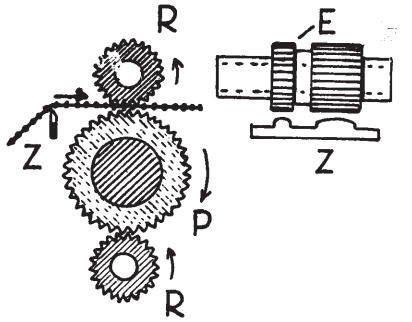


Figure 49
Calender for double-faced Moiré Ribbon. R = Channeled Rollers. P = Paper Roller with Channel Pressing. Z = Card for Distortion of the Pick Ribs.

IV

Genuine Moiré Stripes Between Satin Stripes, on So-Called Rayés

It is necessary that the stripes are distributed in the warp disposition in such a way that when doubling the cloth, the repp stripes fall closely together. At the same time, the selvages of the cloth must run parallel. Generally, moiré français is produced by running the repp stripes over a dented rod in front of the calender. Should the edges not fit closely together, it will happen that parts of the repp stripe on one side will be without moiré. The plain calender rollers can only be used, when the repp stripes have more warp ends and consequently are thicker than the satin stripes. The latter, therefore, will be laying somewhat deeper than the former. For heavy protruding satin stripes, the paper roller must be cut down in their places, as shown in Figure 50.

Figure 50
Calender Paper Roller with Cuttings for Satin Stripes (Rayé) between the Moiré Stripes.

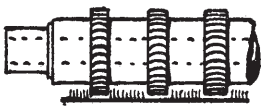


Figure 51
Calender Roller with Curved Channels on Rings for Moiré Stripes to be used for Velvet Goods.

By doing so, the pressure of the roller will only meet the repp stripes. The paper roller will produce moiré français on the repp stripes. If velvet with moiré stripes is to be made, it is advisable to use curved channels for the repp stripes, which will prevent the velvet cloth from coming in contact with the dented rod. (See Figure 51.)

V

Non-genuine pressed moiré (Gauffrage-moiré) can be made on a plain satin weave. The materials best adapted for such a process are warps of single end raw silk, organzine or rayon, with plain cotton filling, or mercerized cotton.

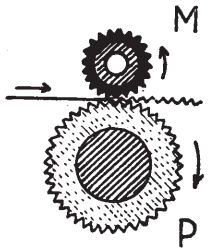
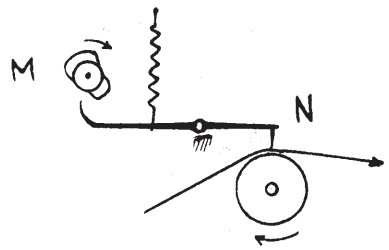


Figure 52
Moiré-Gauffrage Calender for Pressed Moire on Plain Satin Weave. M is the Pattern Roller with Moiré Gravure. P is the Pressed Paper Roller.

Figure 52. Calender for gauffrage-moiré. The heated pattern roller M can be of steel or brass material, or consist of a brass shell mounted over a steel core. The design of the pattern roller will impart itself to paper roller

they have dark margins at transparent view, and third, they show slight chafings at the left side of the cloth. However, these last two



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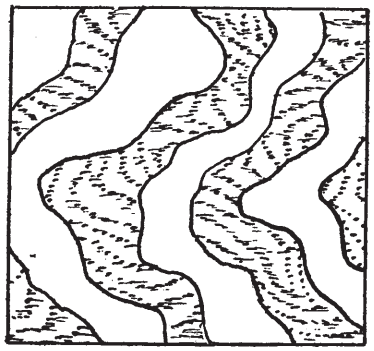

Figure 45
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Figure 46
Roller with Screw Thread Channels for production of Peaked Moiré.

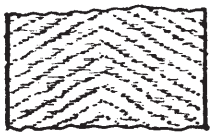

Figure 47

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P. The pressing of the paper roller is done by letting the calender run empty for a short time; the paper roller should be somewhat

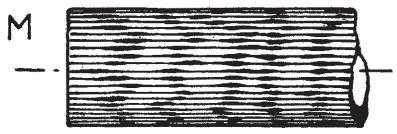

Figure 53
Moiré Pattern Roller (Shell) for Pressed Moiré.

moistened. The moiré design (Figure 53) is applied to the channeled roller by hammering down the channels in certain places, according to the effect desired. This requires quite some artistic skill on the part of the engraver, who is using genuine moiré as his model. Very odd and a great variety of moiré designs can be produced by this process. However, they

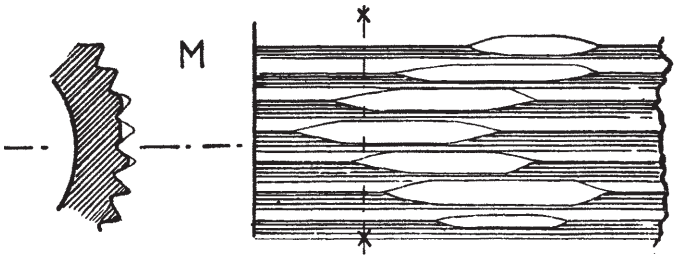

Figure 54
Channels showing the hammered down Moiré effects on Roller M (strongly magnified).

generally have a somewhat stiff and artificial appearance, as also the design repeats too regularly after one circumference of the pattern roller. These non-genuine moirés also show the moiré effects on the left side of the cloth. This pressing is not consistent against ironing, humidity or pressure, and can, therefore, only be used for certain articles, as decorative portières, carnival costumes and cheap pocket linings, and so on. Moiré-Gauffrage can also be applied to wall paper, leather and leather imitations.

VI

Moiré-Gauffrage on Repps Weaves (Half-Genuine Moiré)

With moiré gravure, a very distinct and pronounced moiré can be produced, which is not possible with the methods for production of genuine moiré, by doubling the cloth. These gravure rollers are also used for ribbed weaves by using a calender as shown in Figure 48. However, distinctly repeating repps moirés of this kind are not as attractive as genuine moirés made by cloth doubling.

VII

Pressed and Printed Moirés Produced on Relief Print Machine

(See Figure 55)

A trough F, containing the color liquid, feeds the cloth T, which in turn colors the channel points on the moiré pattern roller M; which will release color on the ribbed cloth W. By using colors on the moiré roller which are in strong contrast to the original color of the

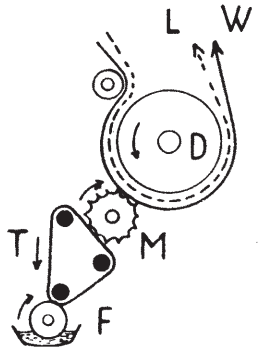

Figure 55.
Relief Print Equipment for Special Moiré effects. M is the Moiré Pattern Roller for pressing and printing of Cloth W. F is the Color Trough. T is the Color Cloth. L is the protecting Cloth. D is the Printing Drum.

cloth, very pronounced effects can be attained; for instance, the popular changeable effects. The channels of the roller should be cut pretty coarse in order to prevent them from being clogged up with coloring matter. A similar effect can be produced with the Gauffrage calender (Figure 52) by running a wax paper, colored on one side, with the cloth through the pattern roller M. The color side of this paper should cover the right side of the weave. The channels will absorb the color from the wax paper.

VIII

After having explained all the various methods of producing moiré, there is one more to be mentioned, which is by making moiré through the weave on the jacquard machine. However, effects produced in this manner can never compete with the real moirés in beauty.

Conclusion

Besides the above-mentioned various moiré methods we can find in the collections of Textile Museums a number of peculiar specimens, which were developed in the beginning of this century. If a manufacturer has found a new kind of moiré, he naturally will do his utmost to keep the process secret. Other manufacturers, trying to copy his idea, however not knowing the method, may by chance again find something similar under different conditions. The writer does not claim this treatise to be fully complete and comprehensive in every detail, for as aforesaid, manufacturers have their own methods which they will not disclose or have patented. Furthermore, very interesting investigations and theories can be developed on the influence of the reflection and interference of light, saturation of colors, fiber and thread tensions, weave composition, and so on, on moiré effects. The various machine attachments, especially moiré weaving reeds, can also be explained on a much wider scope. However, this would exceed the limitations of this article.