THE CONSTRUCTION OF GRANITES.

Granites are a system of weaves similar to crêpe weaves, the construction of which was dealt with in a serial article during last year. Similar to the latter system of weaves, the object aimed at in designing them is to produce small broken up effects upon the face of the fabric they are used for.

Granites have for their foundation any one of our filling effect satin weaves, which in turn have for their foundation an interlacing of warp and filling distributed as good as we can arrange the same, in turn providing the best possible foundation for the resulting granite. In some instances twill weaves, distributed warp or filling ways or both ways, may be made use of for a foundation, but the number of good granites thus obtained will always be limited; their construction is referred to and illustrated with examples of weaves at the end of this article.

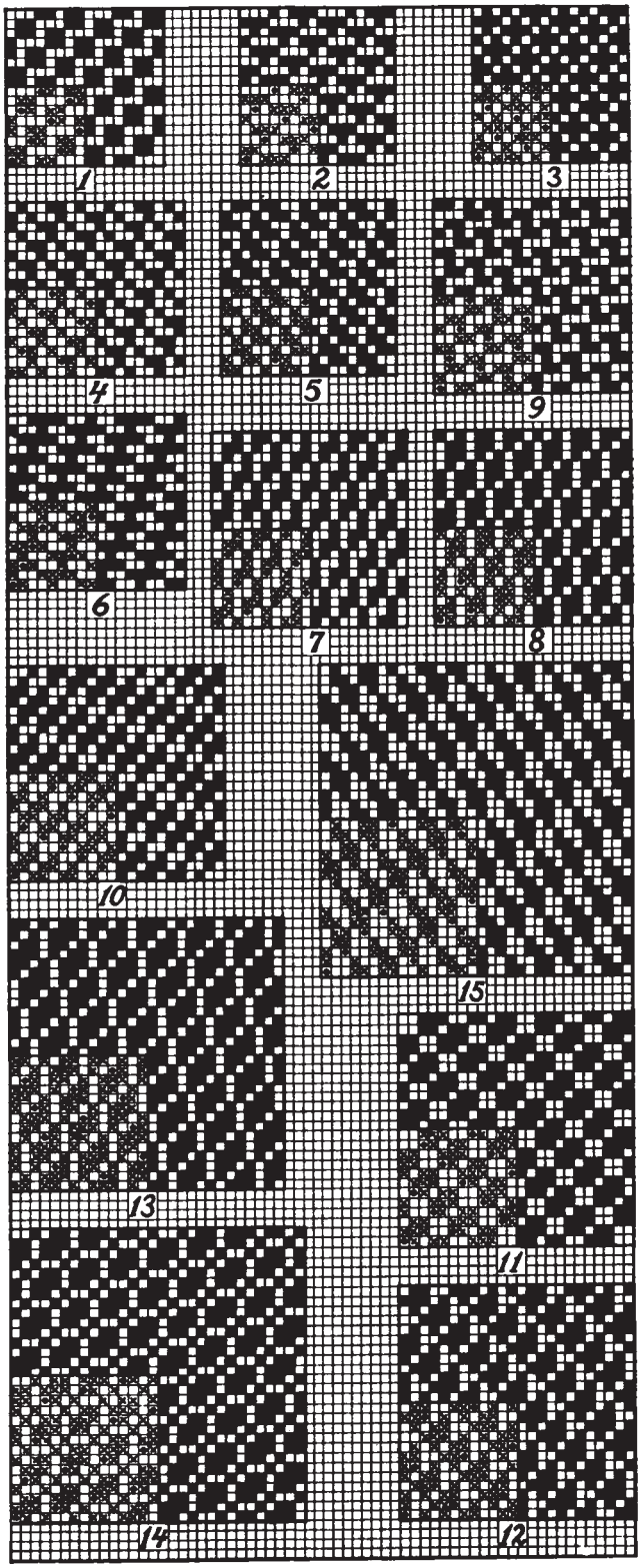
Using satin weaves for the foundation indicates to us that the repeat of the satin weave selected, if used in its pure state, indicates at the same time the repeat of the resulting granite and for which reason an 8-harness satin thus used will produce a granite repeating on 8 warp-threads and 8 picks, etc. If the satins are distributed, the units taken plus the units missed indicate the repeat of the granite, and for which reason the 8-harness satin, considering one end taken one end missed (warp and filling ways) will result in a granite repeating on (8 ends taken + 8 ends missed =) 16 warp-threads and 16 picks.

The rule for constructing granites is: After inserting your foundation satin, filling effect, add additional risers at the top or bottom, on either side, or in an oblique direction, uniform throughout the weave to every riser of the foundation satin, being careful not to produce fancy twill effects, a feature that will occur if not proceeding carefully in the construction of the new granite. There is no harder or more tedious class of weaves to be constructed than new, perfect granites, they will not come alone, but require patience to construct on the part of the designer or the students, as the case may be. Not every attempt made by him will result in a perfect granite, more failures will result than good weaves, this being the reason why some of these granites can be considered as standard weaves to the industry, *i. e.*, they can not be improved by new combinations.

In constructing these granites it will be a good plan to lay out the foundation satin for more than one repeat (say two repeats each way) and carry the construction of the granite over the repeat each way. It will more readily show you whether you have a good or an imperfect idea, or weave. Add the additional risers to your satin foundation gradually, one at a time, all over the repeat of the weave, and not in quantities, since in the latter case you will find risers running into risers belonging already to another foundation spot, and in fact, in many instances nothing else but a floating misery in place of a weave would result. This unavoidable trouble in constructing new granites will indicate to you to keep a record of all good weaves of this class you are to come in contact with.

To illustrate the construction of these granites, the accompanying two plates of weaves are given, representing some of our most popular granites.

As mentioned before, we may use the foundation satin either all over the point paper, or we may miss one or two threads between each thread we considered for the satin. Weaves Figs. 1 to 15 are constructed by the first mentioned system; weaves Figs. 16 to 24 by the latter mentioned method, whereas weaves Figs. 25 to 27 show distributed twills for foundation.



Granites Constructed with a Straight Satin Foundation.

Considering Weaves Figs. 1 to and inclusive 15, the construction of some excellent granites is given. The different type used for showing the formation

of the weave has been selected uniformly for every example, thus:

Dot type = foundation satin.

Cross type = spots, *i. e.* risers added to every foundation spot.

Full type = three additional repeats of the weave to the repeat showing its construction.

The foundation satins used in these fifteen examples, also the repeats of the granite weaves, are thus:

Figs. 1, 2 and 3, the 8-harness satin = 8 × 8.
Figs. 4, 5 and 6, the 9-harness satin = 9 × 9.
Figs. 7, 8 and 9, the 10-harness satin = 10 × 10.
Fig. 10 the 11-harness satin = 11 × 11.
Figs. 11 and 12 the 12-harness satin = 12 × 12.
Fig. 13 the 14-harness satin = 14 × 14.
Fig. 14 the 15-harness satin = 15 × 15 and
Fig. 15 the 16-harness satin = 16 × 16.

(*To be continued.*)

The Finishing of Cleaning and Dusting Cloths.

Dusting cloths and glass-cleaning cloths are produced largely from cotton and from linen separately or in association with each other. For the light and cheap qualities made of cotton it is the general custom to use a bleached warp along with grey filling, whereas for the general qualities both the warp and the filling used are bleached. Colored stripes are introduced mostly in red and blue.

Ordinarily they are woven double-width, and in some cases treble, and the cloth is then cut and is commonly known as splits.

Great care has to be exercised in the weaving of these cloths, and it is very important that all warp yarns used should show the greatest possible regularity and strength, and this means that they should be sized properly. Cotton warps for this purpose are sized the best with a size made from potato starch associated with dextrine, Irish moss, and, according to circumstances, additions of tallow, glycerine, and soap.

When it is required to add to the weight of the cloths, such weighting materials may be used as china clay, magnesium sulphate, and sulphate of soda. The china clay is fastened on to the threads by the starch or dextrine. Magnesium sulphate must be employed with care, and no soap should be associated with it, otherwise a precipitate is formed of an insoluble fatty acid compound.

Sizes that have been prepared and are not used at once should be protected from deterioration by the addition of an antiseptic. Sulphate of copper, borax, and alum are serviceable antiseptics, or the size may be preserved by the addition of a small amount of carbolic acid, salicylic acid or formaldehyde. In recent times formaldehyde has found much use as an antiseptic. It appears on the market as an aqueous solution under the name of formaline or formol.

In heavy sizing it is perhaps as well in some circumstances to leave out the somewhat costly dextrine, and instead to solubilize the potato-starch by means of a diastase product.

With these classes of cotton fabrics, woven from rather heavily-sized warps, it is not usual to submit the cloth after it leaves the loom to the ordinary finishing treatments, and perhaps the best results are obtained in this respect by using also sized filling. Heavily sized cloths must not be too soft after the weaving, but are generally required to exhibit a certain degree of hardness. To satisfy this general requirement the more, it is sometimes deemed advisable to associate some linen threads in the cloth.

Warps to be heavily sized are preferably treated on the slashing machine, but great care ought to be taken to avoid drying the warps too sharply on the drum. As a matter of fact, it is better to leave a certain amount of moisture in the warps and then they will submit better to the weaving operation.

About the only finishing the cloths with heavily-sized yarns require is a course of steaming, and this is of great importance. The steaming gives a full feel to the cloth, more especially if the cloth after steaming is laid down in the rolled-up state for a few hours. This procedure has for its object the equalizing of the moisture throughout the material.

Afterwards the cloth is calendered on the friction calender to impart a certain amount of gloss. A damping of heavily-sized cloths is not advisable unless they have been starched after leaving the loom. Damping followed by calendering makes the pieces of a ragged character, whereas steaming is beneficial to the feel and the quality of the goods.

When the warps have not been heavily sized, the resulting cloths require finishing, because they lack in body and feel, especially the thinner qualities. These sorts of cloths are generally finished so as to give them the appearance of linen, but apart from all that the finisher may do in this respect, much depends in endeavoring to imitate linen with cotton upon the sort of warp and filling yarns employed, and upon the nature of the weave. The thicker the warp and the higher the counts of the filling, the better will the resulting fabric, within certain limits, yield to the operations of finishing.

In the finishing, starch pastes are applied, a portion of the starch of which has been solubilized by diastase. Associated with the paste are such bodies as magnesium sulphate, syrup, tallow, wax or soluble oil. The paste is applied to one side only of the cloth—of course the reverse side—by means of the ordinary starch mangle. The thickness of the starch paste is regulated according to the quality of the cloth.

After the starching, the cloth is dried by passing over steam-heated copper cylinders and allowed to lie for some six hours or so to cool off. It is then damped by machine, allowed to lie a further six hours, and then beetled once on each side, under strong pressure, and subsequently hot calendered on each side.

According to the gloss and flatness desired, the cloth may be calendered on the ordinary five-bowl friction calender. Textile Mercury.

New Jersey's Woolen and Worsted Industry.

The 36th annual report of the Bureau of Statistics of Labor and Industries of New Jersey gives the following figures regarding the woolen and worsted industry in the State in 1913.

There were altogether 28 factories, with a total capital of $40,111,947, of which $8,164,594 was for land and buildings, $8,610,610 for machinery and tools, and $23,336,743 for stock process. The cost value of material used in this industry was $25,431,604, and the selling value of the product $39,431,811. The average number of people employed totaled 14,727. The total amount paid in wages to these people was $6,486,099, making an average yearly earning of $440,42 per employee.