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Table of Contents

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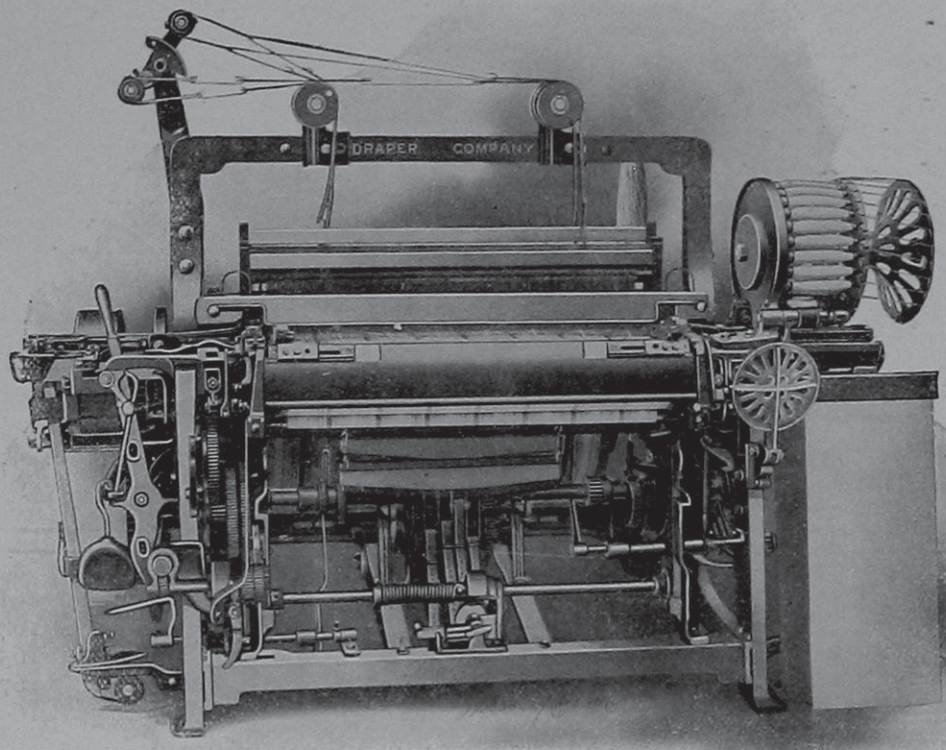

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Posselt's Textile Journal

Vol. III. **December, 1908.** **No. 6.**

JACQUARD DESIGNING.

(*Continued from page 142.*)

HONEY-COMB BED-SPREADS.

These fabrics are single cloth structures, made with 2, 3 or 4 ply heavy cotton yarn for warp and filling, 3 ply yarn being the one most often used. The name is derived from the characteristic *Honey-comb Weave* used extensively in the make-up of these fabrics for ground between the centre-figure and border, also sparingly in the design of centre and border.

FIG. 51.

PRINCIPLE OF CONSTRUCTING HONEY-COMB WEAVES.

In these weaves, squares are to be formed by floating (more or less) part of the warp and filling threads. These warp and filling threads will float on the face opposite to the back of the fabric; also on the place where the longest floating warp and filling thread interweaves, will be formed a groove on the back of the fabric and *vice versa* on the face. Hence we get the peculiar appearance of the fabric known as honey-

comb. The difficulty for the designer consists in so arranging the weave that when the warp floats on the face, the centre point of this float will form the centre point for the filling float on the opposite side of the fabric. And again, when the centre point of the filling float is taken into consideration on the face of the fabric and we put a needle straight through the fabric on the designated spot, the point of the needle will meet the centre of the warp float on the rear side of the fabric.

The plainest and at the same time, most frequently met with honey-comb weave is the one used in our illustrations, *i. e.*, the one repeating on 8 warp threads and 8 picks. If dealing with high textured fabric structures, this weave then may be enlarged both ways so as to repeat either on 10 warp threads and 10 picks or 12 warp threads and 12 picks, etc. In connection with the 10-harness honey-comb weave, the largest warp float is then over 9 picks, and that of the filling over 7 warp threads, this affair being extended in connection with the 12-harness honey-comb weave to floats of over 11 and 9 threads respectively.

Sub-divisions of Honey-comb weaves are obtained by:

(1) Run a single line, of a pointed twill, having 1 *up* and *x down*, pointed warp and filling ways, thus forming a check standing on one corner. Next put into every other square (considered in a diagonal direction) the required warp float. Every square left empty may in connection with larger repeats of weaves be outlined by one row (1 *down* 1 *up*) of risers.

(2) Run a double line of a pointed twill 1 *up* 1 *down* 1 *up* and *x down* pointed warp and filling ways for the main check, and proceed as with the preceding division.

(3) Divide the repeat of the weave into four even squares and fill two alternately taken squares with the plain weave. Next insert into one of the squares as was left empty, a single line of a bold filling effect twill, placing its mate warp effect twill line in the other square as was left empty. One repeat of a pointed twill, respectively filling and warp effect, may be used in place of the two effects of the plain twill previously mentioned; again, pure warp and filling floats only may be used in place of said twill line effects.

Considered all around however, the regular honey-comb weave, as shown in illustration accompanying this article, as well as its mate weaves repeating respectively on 10 *by* 10 and 12 *by* 12 ends, and which are used in connection with higher textures, will give the most satisfactory results. The sub-divisions of honey-comb weaves have only been referred to so as to make the subject complete, since off and on, they will be met with in practical work.

Other weaves met with in the construction of these fabrics are the *Plain weave*, used extensively for working the ground portion in centre and border designs, *Regular Twills, Pointed Twills* and *Satins*, Filling or Warp effect or both, for working the various figure portions of centre and border designs.

The most satisfactory weave for the ground in the centre design is the common plain weave, since the same permits a clear cutting off, *i. e.*, the figures appear prominent, clear and distinct cut off, at their outline; at the same time giving a somewhat raised appearance to said figure parts composing the design, and for which satins are used for smooth effects and regular and pointed twills according to special effects required.

With reference to the Jacquard harness, the same is in most cases arranged for *Point tie-up*, one repeat of said tie-up covering the entire width of the fabric, and in which instance the design is then similarly arranged to also repeat on the point principle, filling ways. Some designs are made, *i. e.*, Jacquard harness tied up on *Point* or *Straight through* for centre design with a *Section tie-up* for the border portions of the fabric.

Sketch and Point-paper Design.

We will now explain the subject with a practical example and which will guide the reader as to construction of other designs, as well as changes in tie-up or texture required.

Sketch Fig. 51 shows us one quarter of such a Honey-Comb Bed-spread fabric. In the same, the black effect is designed to represent plain woven ground; clear white, to represent the figure effect executed in satin; the Honey-comb effect for ground and in one instance for figure (centre part of smaller figure) being shown in imitation as to its appearance in the fabric, in our sketch. The regular and pointed twill effects are shown by black lines on white ground.

The figure is to be produced by the filling, thus satins and twills mentioned, refer to *filling-up* or filling for face effects, *i. e.*, if for example referring to the 8-harness satin, we mean, use the 1 *up* 7 *down* 8 leaf satin arrangement, and in the same manner use the common and pointed twills. Thus black squares in the point paper or working designs Figs. 52 and 53 (both being parts of actual design taken from centre) means filling up.

Fig. 52 shows the left hand lower portion of our sketch, 168 warp threads and 240 picks, executed on squared (8 × 8) design paper.

Fig. 53 shows the centre of the smaller point design, as shown complete in sketch thus worked out on squared design paper, this being done to show the honey-comb weave executed on squared design paper, Fig. 52 not showing this weave.

In most cases, these fabrics are made with an even warp and filling texture calling for this reason either for 8 × 8 or 12 × 12 squared design paper, or point paper as more frequently called. This even texture for warp and filling gives the honey-comb weave and pointed twills a good chance to balance, *i. e.*, gives a most satisfactory effect.

As a rule, 1200 Jacquard machines are used for the manufacture of these fabrics, tied up as mentioned previously, on the Point Tie-up.

Sketch Fig. 51, if carried out (in accordance as shown by means of the parts of the working design, Figs. 52 and 53) on point paper, calls for 1200 needles, *i. e.*, a 1200 Jacquard machine has to be used, leaving

FIG. 52.

the usual *reserve rows* of the machine for the selvage, and which interlaces on the plain weave or two picks in a shed, if the pure plain weave should be found to be too tight a weave to use.

This will give us 2399 warp threads (1200×2=2400—1, on account of using one centre end only) for complete warp for the design, plus says 6 to 8 double ends for selvage for each side; requiring at the same time 1156 Jacquard cards (repeated from centre and reversed) for weaving it.

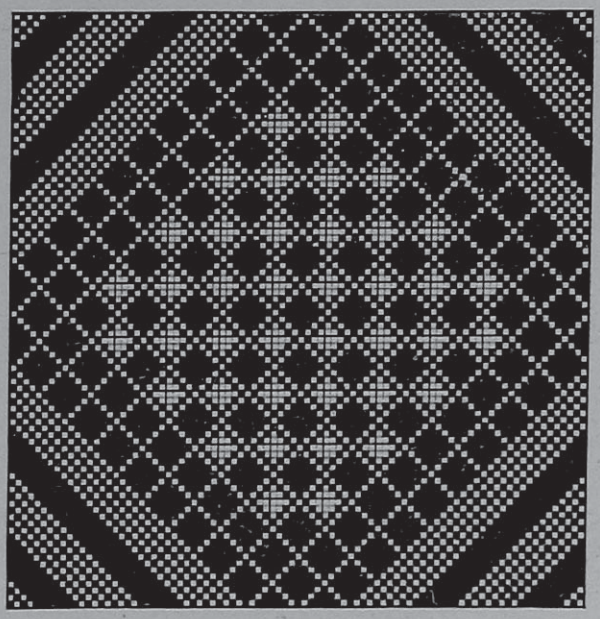


FIG. 53.

The most frequently met texture for these fabrics is about 28 to 30 warp threads and picks per inch, although in lower grades, one or two picks less may be used.

With a texture 28 ends, the size of our spread then will be (2400÷28=85$\frac{5}{7}$) about 85$\frac{1}{2}$ inches fabric, plus $\frac{1}{4}$ inch selvage on each side, or 86 inches total width of fabric. As to its length, we then find the same to be (1156×2=2312÷28=) 82$\frac{4}{7}$ inches, exclusive of the margin of about one inch at each end (plain) required for hemming.

With a texture 29 ends, the size of our spread then will be (2400÷29=) 82$\frac{3}{4}$ inches fabric, plus $\frac{1}{4}$ inch selvage on each side, or 83$\frac{1}{4}$ inches total width of fabric. As to length of spread with this texture, we then find the same to be (2312÷29=) 79.72 or practically 79$\frac{3}{4}$ inches long, exclusive of the margin for the purpose of hemming and which is woven in plain at each end.

(*To be continued.*)

From Canada:

E. A. Posselt:—There is no doubt in my mind that your Journal is one of the best, *if not the best* Journal published. I can assure you that I look forward to receiving every issue, and would like to see more subscribers here, as it would not only help the Journal along financially, but would also help along every subscriber. W. D., 12-2-08.

SUSPENDER-WEBS, HORSE-REINS, ETC.

A Treatise on Narrow Ware Fabrics.

(*Continued from page 132.*)

Double Cloth Weaves, Stitching Both Structures.

In this case, we either (1) use a separate warp (Binder warp) or (2) stitch the back warp onto the face filling or *vice versa* (3) the face warp onto the back filling.

(1) USING A SPECIAL BINDER WARP.

This arrangement is the one most often met with in connection with *Suspender Webs, Horse Reins*, etc. By it the ribbon fabric is sub-divided by means of two ends weaving single cloth, into a series of hollow *i. e.*, hose structures, the same running side by side, parallel with the warp threads, and which hollow cords are, as a rule, filled with rubber and stuffer warp threads. The weave used for the two ends, interlacing with single cloth, is either the plain (*taffeta*) or more frequently the 2 by 4 rib weave, warp effect.

Fig. 76 shows us such a Suspender weave, interlaced with *taffeta*.

The arrangement of warp threads used in the *gamut* is:

2 ends, interlacing with warp rib (warp threads 1 and 2, see *cross* type), *i. e.*, single cloth,
3 ends, face warp (warp threads 3, 4 and 5, see *black* type)
1 end, back warp (warp thread 6, see *dot* type)
1 end, rubber (warp thread 7, see *rectangle* type)
1 end, stuffer warp (warp thread 8, see *circle* type)
1 end, back warp (warp thread 9, see *dot* type) and
3 ends, face warp (warp threads 10, 11 and 12, see *black* type).

—

12 ends, in repeat of pattern.

The rubber and the stuffer warp threads (7 and 8) rest in the hose weaving portion of the fabric.

As will be readily understood, this repeat of the pattern is duplicated as often as required by the width of the suspender webs to be made (2 repeats only are given in our example) closing the web on the right hand side with 2 ends rib weave, *i. e.*, single cloth, the same as it was started on the left hand side.

Fig. 77 shows us a Suspender weave using the 3-harness twill, warp effect, for the interlacing of face and back warp.

The arrangement of warp threads used in the *gamut* is:

2 ends, warp rib, single cloth (*cross* type)
3 ends, face warp (*black* type)
2 ends, back warp (*dot* type)
1 end, rubber warp (*rectangle* type)
1 end, stuffer warp (*circle* type)
3 ends, face warp (*black* type)
2 ends, back warp (*dot* type)

—

14 ends, in repeat of pattern.

Two repeats of this pattern, plus 2 ends single cloth (selvage on right hand side of web), are given in the weave plan.

Fig. 78 shows us a weave for horse reins, arranged with one end face to alternate with one end back, warp and filling ways in the double cloth sections of the fabric, using also a stuffer warp (see *rectangle* type) and warp rib, *i. e.*, two ends single cloth (see *cross* type) for uniting the double cloth structures in one fabric.

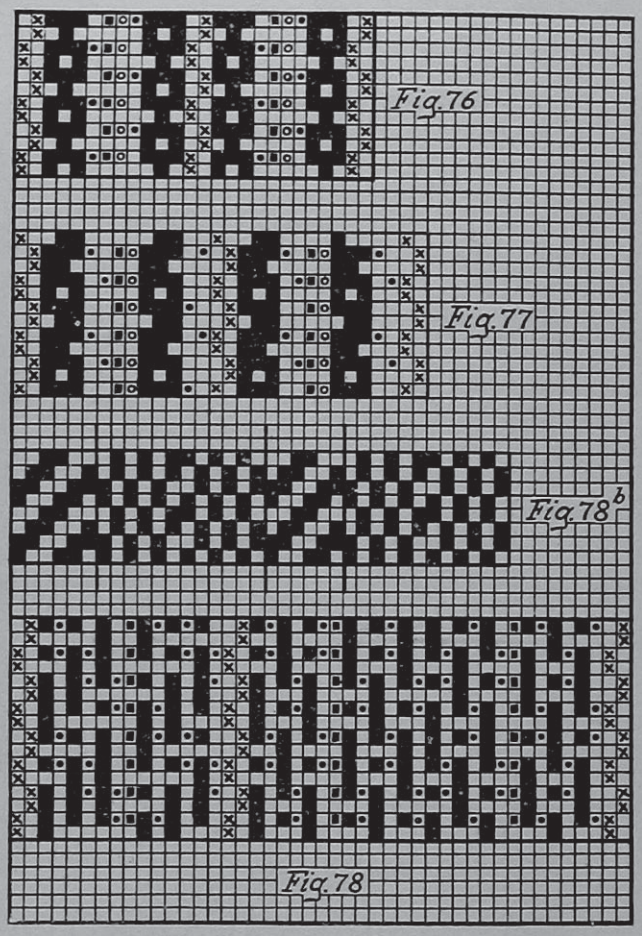


Fig. 78 *b* shows two repeats of the face weave (the same for both sides) of the fabric, the heavy lines showing where the two warp threads, weaving single cloth (2 by 4 warp rib), cut into the fabric structure.

(To be continued.)

THE MANUFACTURE OF PLUSHES, CARPETS, ETC.

Specially translated from *Die Florgewebe* for POSSELT'S TEXTILE JOURNAL.

(Continued from page 340, Vol. II.)

Double Moquettes.

Great results were expected from it when the same in the early 90's were first practically introduced, not only on account of the greater production of the double plush loom as compared to that of the wire plush loom, but also for the reason that the three pile threads of each dent need only be present once for two fabric structures. The first methods of weaving them, Ger. patents 85,505, 85,508, U. S. patent 411,085, etc., are only of historical interest of the industry, the practical introduction dating with the invention of the two section jacquard machine. Until a few years ago the *over* pile threads were made to interlace with the lower fabric structure, using a separate stuffer warp for the upper structure; again, in some instances one of the fabric structures was woven with two picks and the other with three picks, etc.

Modern constructed jacquards, by means of improvements introduced, permit an even dividing of the *over* pile threads, *i. e.*, result in two similar constructed fabrics. Fig. 15 shows us the section of such a fabric. The same resembles the wire moquette shown in Fig. 12 in the former article, one binder warp answering the case, since on account of no wire necessary, the picks can be more readily entered.

The warp used must be of the best material only, on account of the great tension put onto it. For a binder warp use a 3/24's twist and size it, in order to increase durability as well as feel of the fabric. The filling is also used in a sized condition, in order to replace to some extent the missing pile threads, a feature which certainly makes these fabrics less durable than the wire moquettes. For the pile warp use 2/16's worsted (filling twist) in place of using a 2 fold 2/32's yarn and thus obtain a cleaner face.

Next designate two sections of the harness for the face structure and two for the lower structure, the jacquard machine being for this reason divided into two sections. In section 1 (upper fabric structure) the bottom board of the machine is movable and the griffe fixed, whereas in section 2 (lower fabric structure) the reverse is the case, *i. e.*, the bottom board of the machine is fixed and the griffe movable. If the needles in section 1 hang on the bars of the fixed griffe, the warp threads carried by them are then in the upper or high shed, again, if the needles of section 2 rest on the fixed bottom, the warp threads carried by such needles are then in the lower shed. This is the position the machine assumes by every beating up of the lay, every time the bottom board of section 1 is raised the griffe of section 2 is lowered. When the lay moves backwards, bottom board and griffe change position, in turn taking the needles as designated by the pattern cards along with it.

This explains that one card is required for every pick. The operation of forming the two sheds is thus: Suppose the first or figure pick for the upper structure is to be introduced. The lay is beating up, the threads of section 1 stand high and those of section 2 low. All threads of section 1 must now remain hanging on the fixed griffe, *i. e.*, must be cut. At the same time such threads of section 2 as are required by the pattern in the formation of the pile must be raised, *i. e.*, also cut.

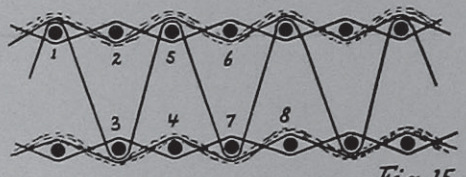


Fig. 15

For the second, *i. e.*, the ground pick of the upper structure, all threads must be lowered, requiring an empty card for this reason.

For the third pick, *i. e.,* the figure pick of the lower structure, all threads of section 2 must remain down, while at the same time the threads of section 1, taking part in the formation of the pile, must go down. Cut for this reason such of the threads of section 1 as take no part in the formation of pile, in order that they remain up.

On pick four, *i. e.,* ground pick of the lower structure, all threads must be raised, *i. e.,* cut.

The entire procedure thus explained may be summed up thus:

For figure pick of upper structure cut all of section 1 plus figure of section 2.

For figure pick of lower structure cut all of section 2 plus figure of section 1.

For ground pick of upper structure cut nothing.

For ground pick of lower structure cut all.

Griffe, bottom and cylinder of the jacquard machine are operated either by crank, closed or open eccentrics. As will be readily understood on account of the difference of its take up, every pile warp thread must come off its own warp spool, provided with its own let off, *i. e.,* tension cord arrangement. By this arrangement more tension is exerted on the pile warp than if the same was coming from a regular warp beam, for which reason an extra amount of tension must be put on the binder warps to keep the two fabric structures apart from each other during weaving.

In order not to require too large a shed, the shaft harnesses for the binder warp are placed next to the reed, *i. e.,* in front of the jacquard harness.

The time when the shaft harnesses pass each other greatly influences the height of the pile. For instance, if harnesses cross at the moment the reed strikes the fell of the cloth, no matter what amount of tension there is put on the binder warp, a rather low pile will be the result; again the greater the permissible difference between the moment of beating up the filling and the crossing of the shaft harnesses, the higher the resulting pile will be. The most satisfactorily constructed double plush looms are those where at the moment of the lay beating up, *i. e.,* striking the fell of the cloth when the harness of the upper fabric are at the highest possible point they can be raised, and those of the lower fabric at the lowest possible point of shedding.

The greatest of care must be exercised while dressing and beaming the binder warp, since the least variation in said tension will influence the height of the pile, in fact careless work in that way might result in bare places in the pile surface. If noticing such places, try and remedy them by placing paper upon the needle rolls. In the same way the pile warp threads need a different tension according to the amount of pile weaving they are subjected to, for which reason different weights (from 10 to 50 g. = 155 to 775 grains) must be kept on hand.

To assist in the formation of an evenly high pile has been the object of a great many inventions; for instance it has been suggested to insert flat wires between the two ground structures, and thus keep the two fabrics an even distance apart. This procedure, however, found little favor with plush manufacturers, since not only was a complicated double plush loom having a wire motion required, but at the same time production was cut down considerably.

Another attempt, but which failed completely, was to insert wires lengthwise between the two fabrics, *i. e.,* interweave said wires by means of an extra harness between the two fabric structures, said wires pulling themselves automatically out of the fabric as the weaving proceeds. This procedure, besides all its disadvantages to the weaving, at the same time ruined the reed, *i. e.,* wore it out so that one week would mean the extreme length of its life.

Another patent (Ger. patent 110,114) suggested that all threads inside of one repeat have the same amount of take up, so that a regular warp beam can be used, additional small tension weights being used to temporarily balance difference in take up caused by difference in design, or the threads were guided through a second harness on a plush roller. Another arrangement (Ger. patent 124,642) suggests a kind of compass board which in connection with two plush rollers delivers the required pile for every row of pile loops. However, all these patents failed when put to practical tests.

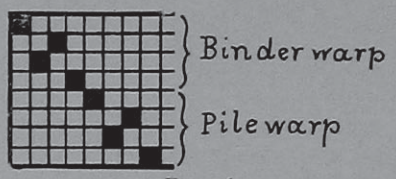


FIG. 16

Diagram 16 shows us the drafting for both, the pile and the binder warp. The pile warp is threaded transposed, in order that the two threads of one section have no chance to felt. The binder warp might be threaded straight through, but it is more practical to draft alternately one end from the lower and one thread from the upper structure. This gives us all the threads for the upper structure upon one of the lease rods, and all the threads for the lower structure below said lease rod, or vice versa. The same is accomplished by placing the harnesses alternately one for upper and one for lower structure, using in connection with it a straight draw.

Examining the working of the jacquard machine more in detail, we find several motions which can be dispensed with, also that the four jacquard cards previously referred to are not absolutely necessary. The all cut card (ground pick of lower structure) can be omitted by providing means not to move the cylinder to the needles on said pick, thus leaving the crooks of the hooks within contact of the griffe bars when they rise. To save the using of an empty card, a grating is placed between the rows of hooks of the jacquard, which on the respective pick (ground pick of upper structure) is moved backwards and thus pushes all the crooks of the hooks away from contact with the griffe bars when they rise. To simplify, *i. e.,* reduce the motion of the jacquard machine, means are provided to only alternately raise either the griffe or the bottom (Ger. patent 91,005).

(*To be continued.*)

DESIGNING AND FABRIC STRUCTURE FOR HARNESS WORK.

GRANITE WEAVES.

Granite Weaves Produced from Satins, Omitting Every Other Warp Thread on the Point Paper when Planning said Foundation Satin.

Weaves Figs. 16, 17, 18 and 19 are given to explain this sub-division for constructing granites. In connection with these weaves, as well as every other weave on said plate, we used type to correspond with granites given in our last lesson, this being done to simplify matters to the student, and when reference to the type given in last lesson at the same time refers to the present lesson, *i. e., dot* type indicates the spot of the foundation satin, filling effect, *cross* type indicates additional spots added to the foundation satin, and *square* type three repeats of the weave obtained, shown in one color.

Weaves Figs. 16 and 17 refer to 5-harness satin for the foundation weave (see *dot* type) said spot of the 5 leaf satin, filling effect, being placed on every other warp thread only, or in other words, the 5-harness satin is carried over 10 warp threads on the point paper, a feature which naturally results in a granite weave, repeating on 10 warp threads. Since we have used every pick when planning said foundation satin, the resulting granite will in this instance repeat on 5 picks, *i. e.,* the repeat of the granite obtained is 10 by 5.

In connection with weave Fig. 18, we used the 7-harness satin, filling effect, for foundation, and in weave Fig. 19, the 8-harness satin, filling effect. Points given in connection with weaves Figs. 16 and 17 refer also to these weaves and for which reason, weave Fig. 18 will repeat on 14 warp threads and 7 picks, and weave Fig. 19 on 16 warp threads and 8 picks.

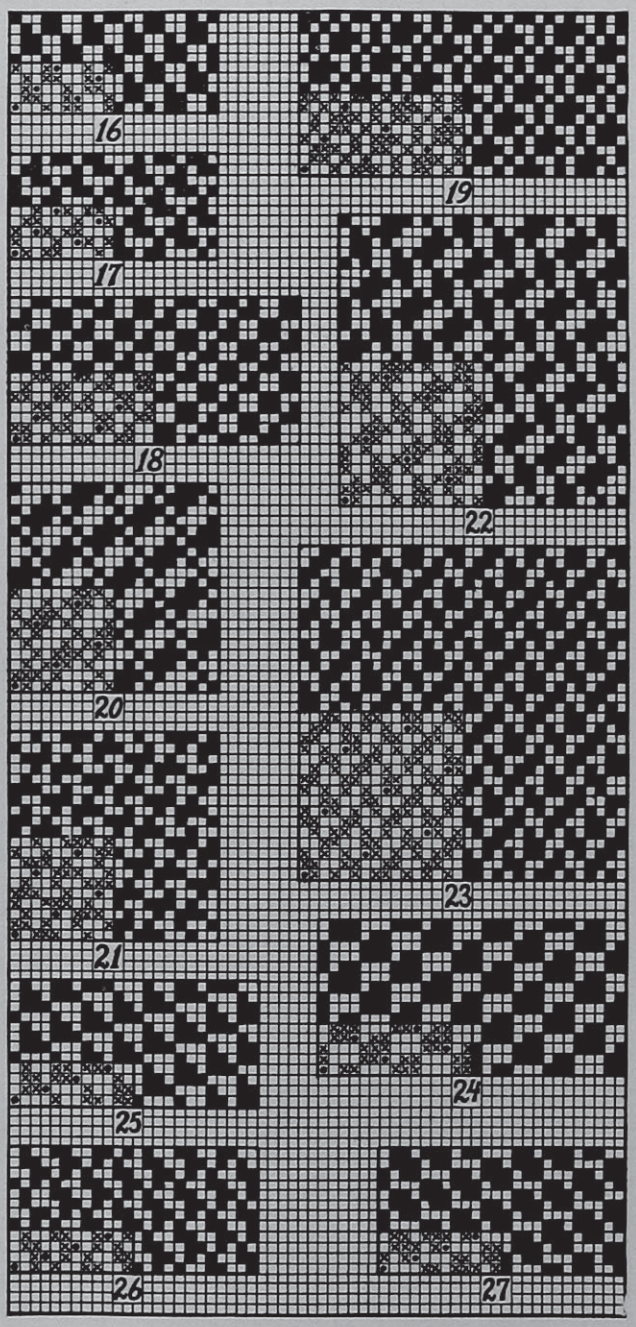
Granite Weaves Produced from Satins Omitting Every Other Warp Thread and Pick on the Point Paper when Planning the Foundation Satin.

This method of designing granite weaves is explained in connection with weaves Figs. 20, 21, 22 and 23, and of which weaves Figs. 20 and 21, refer to the 5-harness satin, filling effect (see *dot* type) considering every other warp thread and every other pick only, with the result that the granite obtained, repeats on 10 warp threads and 10 picks.

Weave Fig. 22, in the same manner, deals with the 7-harness satin, resulting in a granite repeating on 14 by 14.

Weave Fig. 23, uses the 8-harness satin in this way, with a resulting granite of 16 warp threads and 16 picks.

As will be readily understood by the student, in place of omitting one warp thread, or one pick, or both, when planning the satin, we may omit 2 warp threads, or we may omit 2 picks, or again we may omit 2 warp threads and 2 picks, when planning the foundation satin. One example will suffice *viz:* weave Fig. 24 which shows us the 5-harness satin (see *dot* type) used for the foundation of the granite, omitting when planning said foundation weave always 2 warp threads before taking another thread into consideration, and when naturally the resulting granite will repeat on (5 x 3=) 15 warp threads. Every pick in connection with this weave has been taken into consideration when planning the satin, and which procedure in turn calls for 5 picks, as the repeat of the



new granite obtained, *i. e.,* the latter will repeat on 15 warp threads and 5 picks. Six repeats of the weave have been given, one in *dot* and *cross* type, to show the construction, and five repeats in *square* type, to better show this weave. In this example, more than four repeats have been given for illustrating this granite, its bold effect in connection with the few picks used being the reason for this.

Granite Weaves having Twills for their Foundation. This sub-division of granites is fully explained in connection with weaves Figs. 25, 26 and 27, and where in connection with each example, the 1 *up* 3 *down* 4-harness twill is used as the foundation for the granite, using every third warp thread on the design paper, when planning the foundation, *i. e.,* taking then on the point paper alternately one warp thread into consideration and missing two; for which reason, the resulting granite repeats on (4 x 3=) 12 warp threads. Every pick has been taken into consideration when planning the foundation, for which reason the three granites shown, repeat on 4 picks, *i. e.,* repeat on 12 warp threads and 4 picks. As always, *dot* type shows the foundation, *cross* type the spots added to said foundation and *square* type five additional repeats of the resulting granite, in order to more properly show up the result of the weave.

Questions:

(1) Construct one new granite to repeat on 16 warp threads and 8 picks, by using the 8-harness satin for the foundation, considering in this case every other warp thread and every other pick when planning the satin on the point paper.

(2) Construct one new granite, repeating on 10 warp threads and 10 picks, by using the 5-harness satin for foundation, considering in this instance, every other warp thread and every other pick.

(3) Construct one new granite, repeating on 15 warp threads and 5 picks, having the 1 *up* and 4 *down* 5-harness twill for its foundation, using in this instance when planning said foundation, every third warp thread and every pick.

(4) Construct one new granite repeating on 10 warp threads and 10 picks, having the 1 *up* 4 *down* 5-harness twill for its foundation, using in this instance every third warp thread and every third pick, when planning the foundation on the point paper.

SILK MANUFACTURER'S COST SHEETS.

We herewith present two tables for use in the making of cost calculations in silk mills, one for Broad Silk and the other for Ribbons, both of which are comprehensive in character, correct in principle, and have worked well in practice. They are taken from "The Value of Conditioning," published by the U. S. Silk Conditioning Co., of New York, and of which Mr. James Chittick, a prominent silk manufacturing expert, is the technical adviser. A careful study of these tables, and of the explanations given, will prove of the greatest of interest and profit to silk manufacturers.

The bold face type represents the written-in calculations and the light faced type, the printed table. The various cost figures given are assumed for the purpose of illustration. Preliminary calculations, as will be readily understood, should always be checked back and verified by actual results.

Remarks Concerning the Use of these Cost Calculation Tables.

TABLE FOR BROAD SILKS.

BROAD SILK COST CALCULATION

Date, **January 1, 1909.**

Pattern **Black Taffeta.** **Quality C. H.** 100 Yds. **35⅞** Wide.
Reeding **60/3.** Width in Reed **36.**

				Raw	
Warp	**6416** Ends Organzine	**1.65** Drams	**4.96** lbs. @	**$5.95**	**$29.51**
110 Yds.	" **2 Thd. 13/15 Den.**	"	**16/14 Turns** " "	**Jap. Ex. Fil.**	$....
.....	"	"	..... " "	.....	$....
Selvages	**108—36—1 & 2**	"	..... " "	.....	$....
Total	**6524** Ends Organzine	"	..... " "	.....	$.....
				Raw	
FILLING	**88** Picks Tram	**2.57** Drams	**3.40** lbs. @	**$5.81**	**$19.75**
	1 End 3 Thd. 3 Turns 13/15 Den. Jap. Fil. No. 1				$....
	Warping .....110 Yds.	**6524** Ends @ **3**		per C	$ **1.96**
	Twisting **6448** Ends @	**25** per M.= **1.62**		÷3	$ **.54**
	Weaving .....99 Yards, @ **7**				$ **6.93**
	Picking .....99 Yards, @ ¾				$ **.75**
	Cleaning .....99 Yards, @.....				$.....
	Finishing .....100 Yards, @ **1**				$ **1.00**
	Cards and Designs 100 Yards (on basis of.....Yards made)				$.....
	General Expenses, **4.80÷90**.....100 Yards, @ **5 1/3**				$ **5.33**
(For Piece Dye)	Dyeing and Finishing.....100 Yards, @.....				$.....
(For Ptd. Wps.)	Weaving before Printing.....110 Yards, @.....				$.....
" "	Printing .....110 Yards, @.....				$.....
" "	Rebeaming .....110 Yards, @.....				$.....
" "	Retwisting .....Ends @.....per M÷3				$.....
	Average Dyed Weight of 100 Yds. **8.17** lbs. Net cost of 100 Yds.,				**$35.77**

Organzine weighted to **24/26** oz. Tram weighted to **30/32** oz.

4 per cent. is included in above figures for waste of warp.
7 " " " " " " filling.
3 " " " " " twist take-up of warp and filling.

PARTICULARS OF COST OF SILK.

	ORGANZINE	TRAM
Raw Silk	$4.00	$3.80
Throwing	$ .70	$ .35
Dyeing	$1.00	$1.25
Winding	$ .15	$ .15
Doubling	$....	$....
Quilling	$....	$ .15
Thr. Waste.	$ .10=2½%	$ .11=3%
Total	$5.95	$5.81

CONCLUSIONS.

Net Mill Cost		$0.6577
Lowest Selling Cost 65.77÷.85		$0.7738
Estimated Selling Price,		
$0.85 Less 15%	$0.1275	$0.7225
Weekly Product, per Loom		90 Yds.

	$	%
Raw Silk	32.76	.498
Throwing	4.66	.071
Waste	.87	.013
Dyeing	9.21	.140
Winding	1.25	.019
Quilling	.51	.008
Warping	1.96	.029
Twisting	.54	.008
Weaving	6.93	.106
Picking	.75	.011
Finishing	1.00	.015
General Expense	5.33	.082
	65.77	1.000

This form is for 100 yards finished cloth. A length of 110 yards warp is assumed as enough to cover take-up in weaving and unwoven ends of warp. This can be modified for goods with more or less take-up.

The size, or dramage, of organzine and tram should be figured from Conditioning House Sizing tests, and should include an average take-up in twist of about 3%.

The weight of silk for warp and filling should include waste in weaving and preparatory processes, and is here assumed as 4% for warp and 7% for filling, a very full figure if for plain goods. This can be modified according to experience but is an item that is generally under-estimated. Weights should be figured on Raw Conditioned basis.

Waste in throwing is filled in under *Particulars of Cost of Silk* and the proper percentages will be shown by the Conditioning and Boil-off tests.

In calculating filling the full width of warp in reed should be taken as the width.

Warping cost is figured on a price for 100 ends of 100 meters (about 110 yards) length. Mills paying on another basis can use a different form.

Total length of warp is assumed as sufficient to yield 300 yards of cloth. Twisting cost for the 100

yards is therefore marked as ⅓ of the total. For other length warps use a different divisor. Extra drawing-in expense can be here included.

Weaving, picking and cleaning are based on 99 yards, as cloth when relieved from loom tension will creep in about 1%. This is recovered in finishing and is only a regain, not a gain as many suppose.

When cleaning expenses have to be made for a line of goods experience shows what percentage of pieces need cleaning and thus an average cost per yard can be arrived at.

When mills do their finishing, throwing, or printing, the market prices should appear in cost sheet, the profit or loss thereby to mill appearing in the department accounts.

Cards and Designs can be filled in according to the mill practice and character of the fabric. Special harness expenses, or loom mounting, can be here included.

General Expense should include every charge upon the mill, exclusive of specific items here provided for. It should cover interest on capital, loans, and Commission House advances, depreciation, and everything except selling expense. The view here taken is that each loom should pay its share of the expense. Thus if a 500 loom mill has an annual expense of $120,000, each loom has to be charged with $240.00 a year, or $4.80 a week.

If a cloth weaves at rate of 80 yards weekly, 4.80÷80=6 cts. will be set down. Sixty yards a week would figure 8 cents. A greater or less charge can be apportioned to different classes of looms, wide, narrow, box, jacquard, etc., but total earnings must equal total expense.

There are other satisfactory methods of handling this important question but there is one most common and most incorrect way of dealing with it—that is, adding for expenses a percentage of cost. Figures so obtained are seldom right and often grossly wrong and misleading.

The cost of Beaming has been here included in the General Expenses, but, if desired, it can be figured separately.

If piece dyed goods lose in length see that proper allowance is made on the cost sheet.

Weaving before Printing item is weaving in of the necessary binding picks, every yard or so, to preserve pattern.

In deciding what weightings to order, boil-off Conditioning House tests should be carefully studied so that proportion of weighting to actual silk fibre will be neither more or less than desired.

Prices on Raw silks bought on different terms should be reduced to a uniform basis. If desired all cost sheets can be made on a settled base price for the raw silks, and additions to, or subtractions from the costs so obtained can be made as required, according to market fluctuations.

Lowest selling cost is arrived at by dividing net mill cost by 85, experience showing the selling expenses and discounts of the average mill to approximate 15%.

TABLE FOR RIBBONS.

RIBBON COST CALCULATION

Date, **January 1, 1909.**

Pattern **Black Taffeta.** **Quality C. H.** 100 Yds. Width **45** Lignes.
Spaces **18.** Reeding **60/3.** Width **4** Inches.

					Raw		
Warp	**726** Ends Organzine	**1.65** Drams		**.58** lbs. @	**$5.65**		$ **3.28**
110 Yds.	" **2 Thd. 13/15 Den.**	" **16/14 Turns**	"	"	**Jap. Ex. Fil.**		$....
.....	"	"	"	"	.....		$.....
Selvages	**48=24/2** "	"	"	"	.....		$.....
Total	**774** "	"	"	"	.....		$.....
				Raw			
FILLING	**88** Picks Tram	**2.57** Drams		**.38** lbs. @	**$5.81**		$ **2.21**
	1 End 3 Thd. 3 Turns 13/15 Den. Jap. Fil. No. 1						$....
	Warping .....110 Yds.	**774** Ends @ **3**				per C	$ **.23**
	Twisting **750** Ends @	**25** per M.= **18**				÷3	$ **.06**
	Weaving, **1.80 per cut ÷18÷10**.....99 Yards, @ **1**						$ **.99**
	Picking, ¼c. per piece.....99 Yards, @ **.075**						$ **.08**
	Cleaning .....99 Yards, @						$....
	Finishing, Blocking and Boxing.....100 Yards, @ **.45**						$ **.45**
	Cards and Designs 100 Yards (on basis of .....Yards made)						$....
	General Expenses, **$12÷18÷75**.....100 Yards, @ **.89**						$ **.89**
(For Piece Dye)	Dyeing and Finishing.....100 Yards, @						$....
(For Ptd. Wps.)	Weaving before Printing.....110 Yards, @						$....
" "	Printing .....110 Yards, @						$....
" "	Rebeaming and Spacing.....110 Yards, @						$....
" "	Retwisting .....Ends @.....per M÷3						$....

Average Dyed Weight of 100 Yds. **1.42** lbs. Net cost of 100 Yds., $ **8.19**
Organzine weighted to **20/22** oz. Tram weighted to **30/32** oz.
$8.19÷10=.82
$.82÷.45=1.82

4 per cent. is included in above figure for waste of warp.
2 " " " " " filling.
3 " " " " " twist take-up of warp and filling.

PARTICULARS OF COST OF SILK.	ORGANZINE	TRAM		$	%
Raw Silk	$4.00	$3.80	Raw	3.76	.459
Throwing	$ .70	$ .35	Throwing	.54	.066
Dyeing	$ .70	$1.25	Dyeing	.88	108
Winding	$ .15	$ .15	Winding	.15	.018
Doubling	$ ...	$...	Quilling	.06	.007
Quilling	$...	$ .15	Waste	.10	.012
Thr. Waste	$ .10=2½%	$ .11=3%	Warping	.23	.028
Total	$5.65	$5.81	Twisting	.06	007
			Weaving	.99	121
CONCLUSIONS.			Picking	.08	.010
Net Mill Cost, per Ligne		$0.0182	Finishing, Blocking and Boxing	45	055
Net Mill Cost, per Piece		$0.82	General Expense	.89	109
Lowest Selling Cost 82÷85		$0.965		8.19	1.000
Estimated Selling Price, $1.10 Less 15%	$0.165	$0.935			
Weekly Product, per Loom, per Space	.75 Yds.				

Remarks given before in connection with the table of Broad Silks also applies to the cost calculation table for ribbons. An arbitrary figure of $12 a week has been assumed for the general expense per loom.

Through-colored Effects.

A method of producing effects on both sides of fabrics of cotton, raised or unraised, wool, or other fibres consists in moistening the fabric before it comes in contact with the printing rollers with a solution of gum tragacanth, of suitable consistency, to which has been added some substance which shows the property of rendering the fabric under treatment capable of being easily penetrated by the printing paste. Thus, for woollen fabrics this addition may consist of phenol; for cotton fabrics, gylcerine, glucose, or some other such substance may be employed. This preparatory mixture is applied to the cloth by one or more cylinders, which are kept moistened with the preparation. The fabric is then passed through the printing machine, and is finally run between two very smooth squeezing rollers, which cause the printing paste to pass completely through the cloth, so that the printed design shows up both on the face and the back of the material.