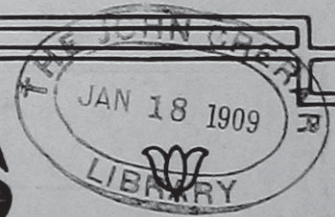




Posselt's Textile Journal



A Monthly Journal of the Textile Industries

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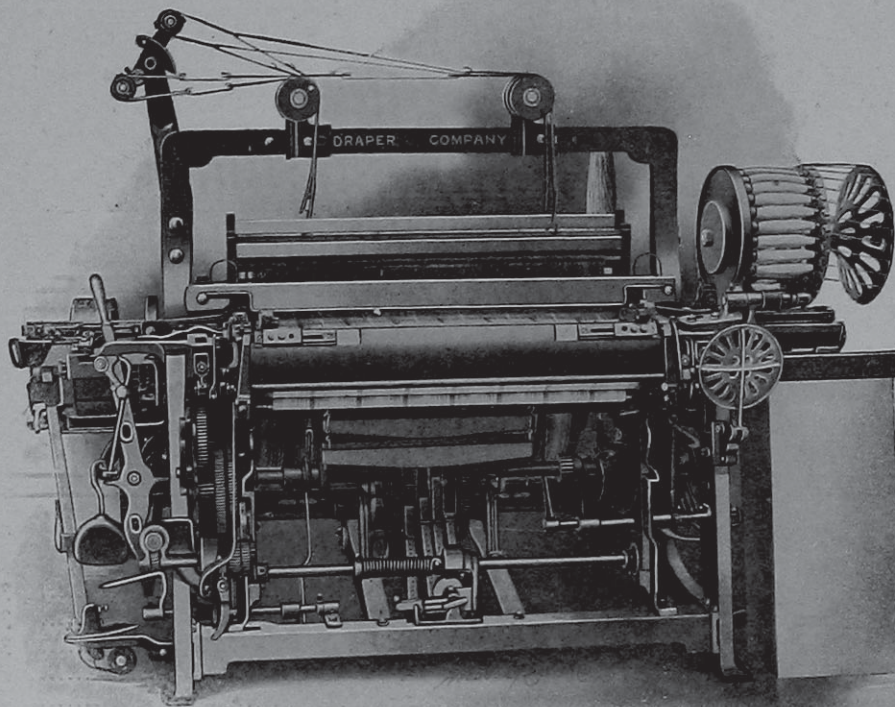
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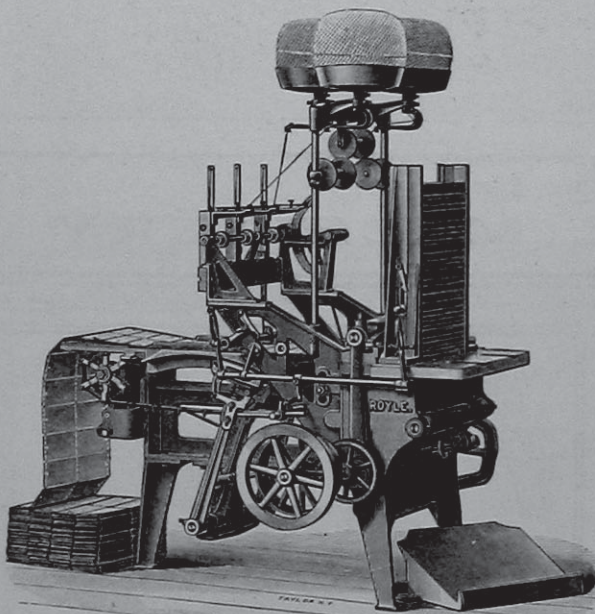
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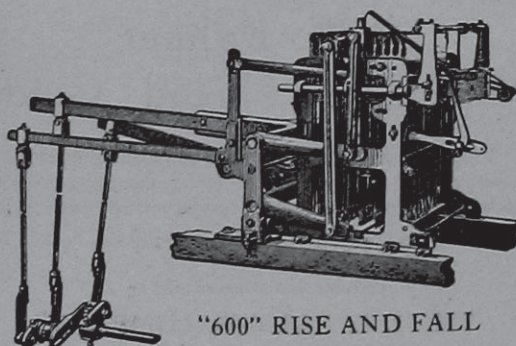
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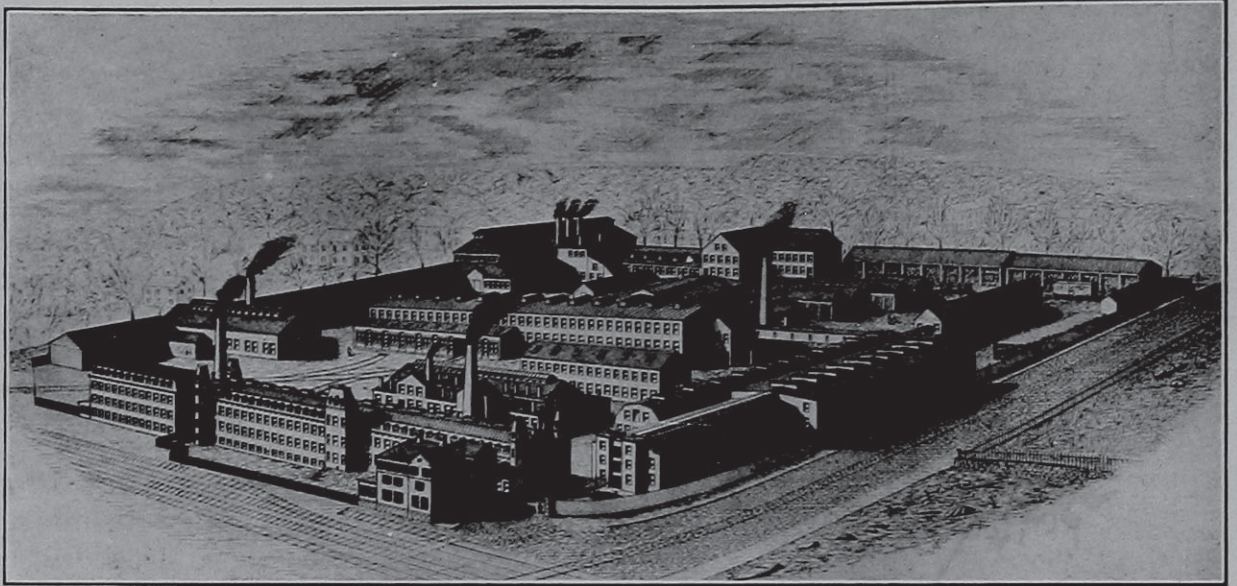
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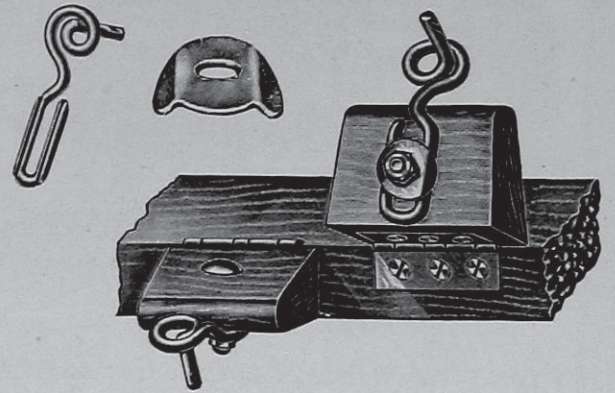
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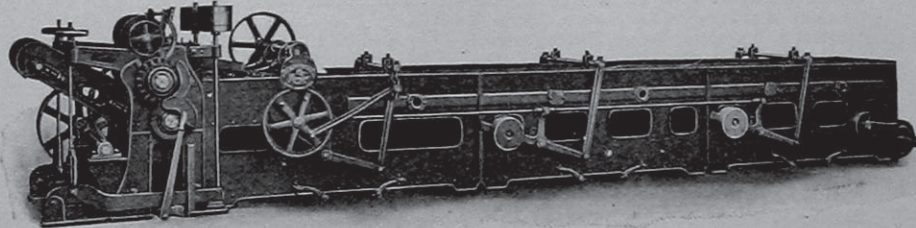
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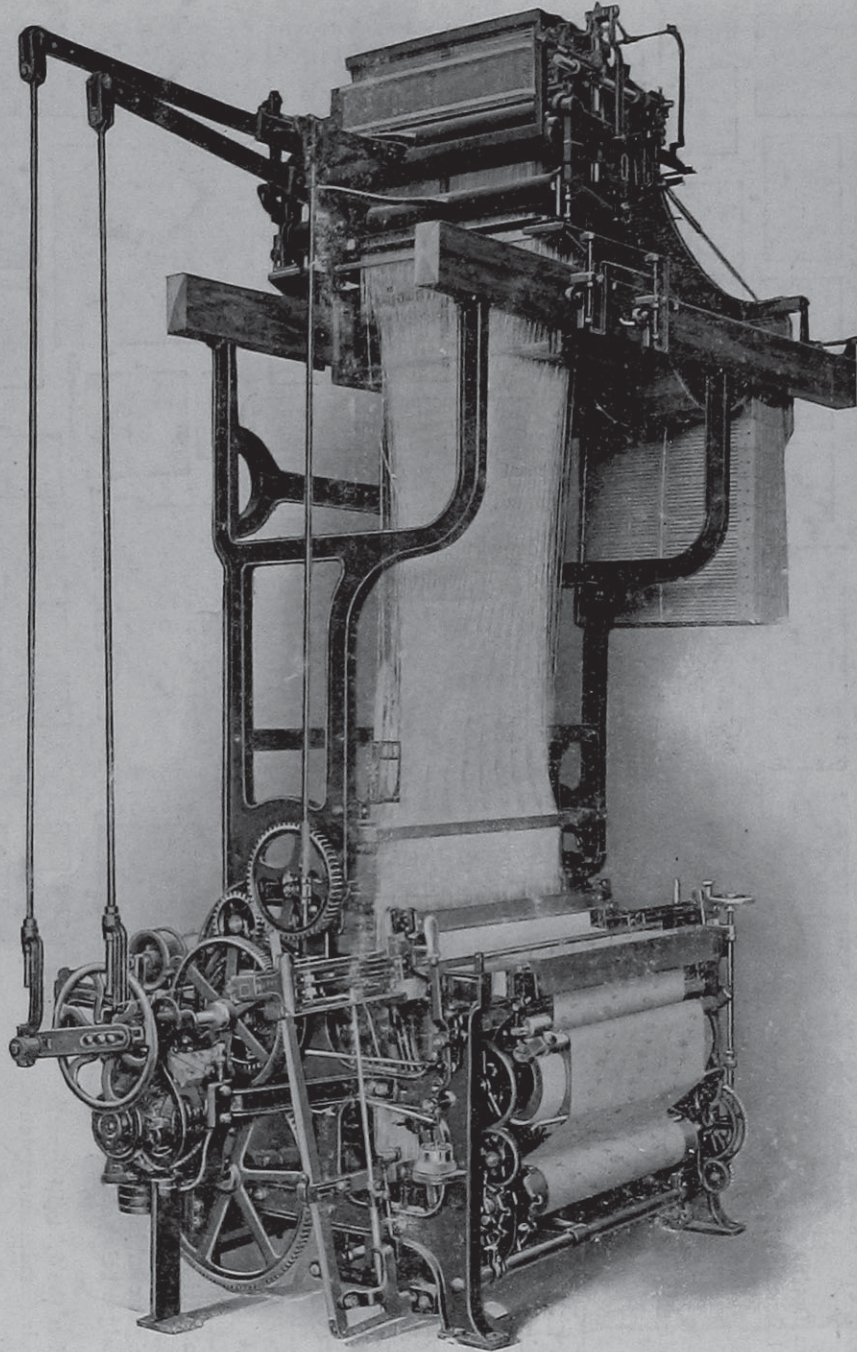
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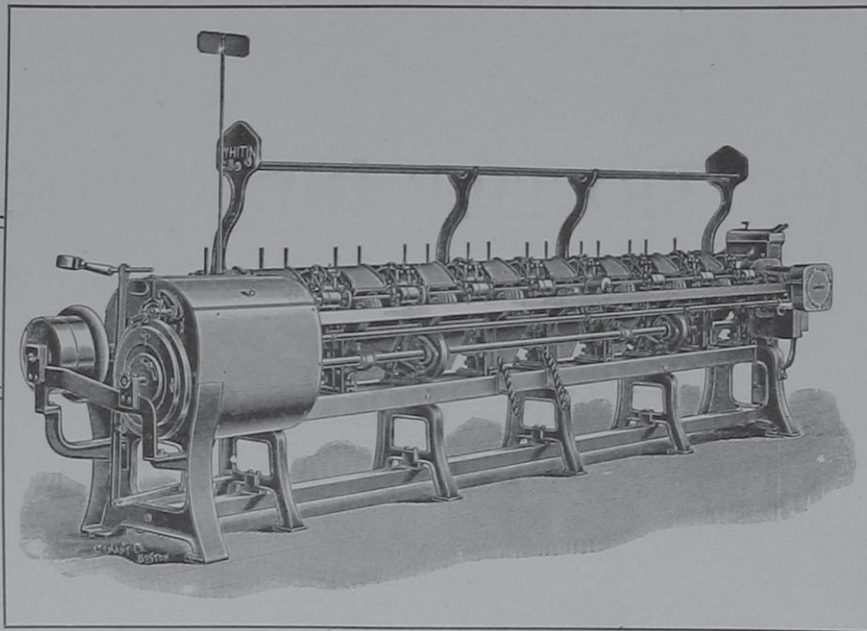
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Posselt's Textile Journal

Vol. IV.

January, 1909.

No. I.

THE MANUFACTURE OF OVERCOATINGS AND CLOAKINGS.

Beavers.

(Continued from page 174, Vol. III.)

(3) ARRANGEMENT OF WARP AND FILLING 2 : 1.

This arrangement comprises the most frequently met with beaver weaves, resulting in what we may call "a most perfect face and construction of a fabric, consistent with cost and production;" permitting, if so desired, for the sake of cheapness of fabric, the use of a cotton back warp and a heavy count of back filling, without deteriorating the face of the cloth. On account of the importance of this system of beaver weaves, seven examples are given, each being a weave (some more than others) met with in practical work.

Fig. 17 illustrates such a beaver weave, having for its face the 3-harness, warp effect, twill (*a*) see *full* type; for its back the same weave (*b*), see *cross* type, and for stitching the two plies the 3-harness filling effect twill (*c*) running in the reverse direction from that of face and back weave, see *circle* type.

d, is the complete double cloth, *i. e.*, beaver weave, repeating on 9 warp threads and 9 picks. Crochet type used in presenting this weave has been selected to correspond to that used in connection with diagrams *a*, *b*, and *c* so as to simplify its method of construction to the student.

The small *dot* type in the complete weave, and which was not quoted before, indicates the rule of any perfect double cloth structure, *viz*: "raise all the face warp on every back pick."

The stitching is done with the back warp into the face filling, according to rule governing perfect construction of regular double cloth.

Fig. 18 shows us the most extensively met with beaver weave, having for its face the 4-harness uneven sided broken twill, warp effect (*a*) see *full* type.

for its back weave the 4-harness straight twill, warp effect (*b*) see *cross* type, and

for its stitching the 4 by 8 skip twill, filling effect, skipping filling ways, (*c*) see *circle* type.

d is the complete double cloth weave, *i. e.*, beaver weave, repeating on 12 warp threads and 12 picks.

Crochet types in diagrams *a*, *b*, *c* and *d* are again selected to correspond. Small *dot* type in diagram *d* shows the raising of the back warp on every back pick.

This four harness broken twill, warp effect, is the weave *par excellence* for producing a nice, close, full nap; the weave which comes nearest to the plain broadcloth weave, a weave which will show no twill effect whatever on the face of the fabric. In other words, this broken twill takes the place of the plain weave in connection with heavy weight fabrics, and where the plain weave is more or less out of question to be used. On account of the importance of this

broken twill as a weave for producing a perfect face, for face finished fabrics, two or more examples of it 19 and 20 are given.

Fig. 19 *a*, face weave—4-harness broken twill, warp effect. *b*, back weave—same as face weave. *c*, stitching—8-harness satin, filling effect. *d*, complete double cloth, *i. e.*, beaver weave, repeating on 24 by 24; constructed with crochet type to correspond with that used in diagrams *a*, *b* and *c*.

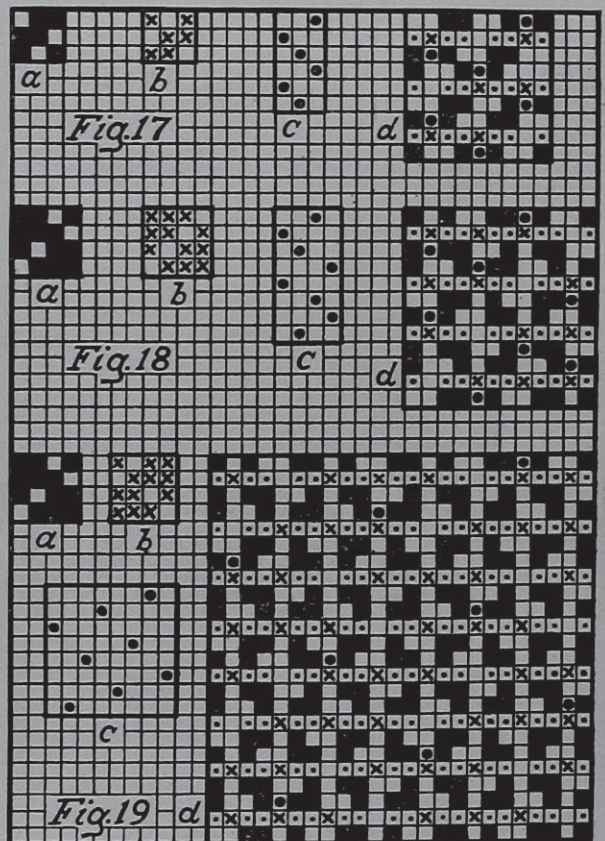
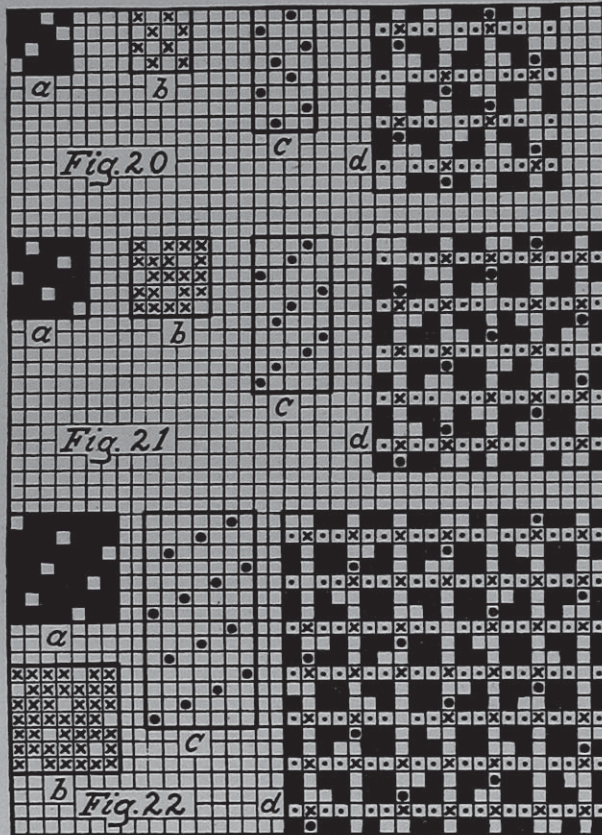


Fig. 20, *a*, face weave—4-harness broken twill, warp effect. *b*, back weave—the plain. *c*, stitching—the 4-harness broken twill, filling effect. *d*, complete double cloth, *i. e.*, beaver weave, repeating on 12 by 12; constructed with crochet type to correspond with that used in diagrams *a*, *b* and *c*.

A beaver weave often met with in connection with the best grades of beaver cloth made, or imported; a weave extensively used for this purpose on the Continent, is given in diagram Fig. 21, the same having the 5-harness satin, warp effect, for its face (*a*) and back (*b*) weave. The stitching of both plies is done with the 5-harness skip twill, filling effect, given in diagram *c*. The complete weave *d*, repeats on (5 ×

3 =) 15 warp threads and 15 picks. Crochet type is used to correspond in all four diagrams.

Fig. 22 shows us a beaver weave, which can only be used with extremely high textured goods, on account of its loose interlacing single cloth weaves, combined in a double cloth structure, the 7-harness satin being the weave used, with its warp effect for interlacing face (a) and back (b) structure, and its filling effect (c) for combining them into one fabric. The



beaver weave obtained (d) repeats on 21 warp threads and 21 picks, and is a weave seldom met with, except when referring to an extra fine imported article and where price is of minor importance.

(To be continued.)

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SILK FROM FIBRE TO FABRIC.

(Continued from page 171, Vol. III.)

Wild Silks.

(3) THE TUSSAH SPECIE.

This was one of the first known wild silks, it being also known as, *Tasar*, *Tussa*, *Tussar*, *Tusseh*, *Tusser* or *Tussore* silk, and is the product of the Indian Tusser silk worm, *Antheraea Mylitta*. Tussah, however, is the name most frequently if not universally met with in this country. All names quoted have for their origin the Indian work *tusuru*, the weaver's shuttle.

The Tussah worm is met with all over India with the exception of the districts *Rajpootana*, *Kashmir* and *Butan*, and is known by the natives under various names, those most often met with being *Tasare*, *Tusseh*, *Guti*, *Bughy*, *Kolisura*, *Ksatkuri*, etc.

It is also found in China in the districts of *Ss-tschuen*, *Kueitscheu*, *Shantung* and *Honau*, and where the cocoons are collected to a considerable extent.

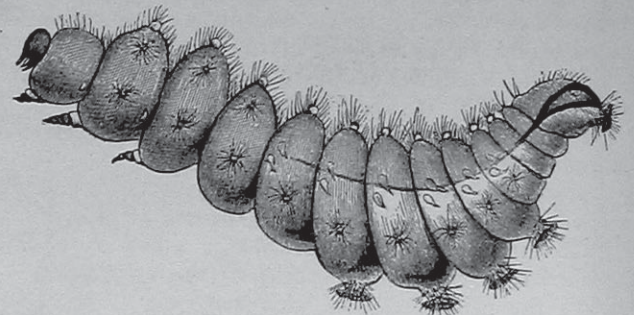
The worm lives on a great variety of plants and changes its skin five times. When fully grown, its average length is from 14 to 15 cm and its thickness 3 cm.

The natives consider five different breeds:

(1) *Dabah*, comprising about $\frac{1}{3}$ th of the total harvest, spinning a cocoon of exceptionally large size (nearly 2 inches long), of a dark gray, nearly black color, a strong fibre, not extra rich in quality, but easily reeled. The cocoon gives under pressure of the fingers, exerted on its side parts.

(2) *Monga*. These are of a light gray color, somewhat smaller than the *Dabah's* (about $1\frac{1}{2}$ inches long) but considerably richer in silk, hence more valuable. They resist the pressure of the fingers, and comprise about $\frac{2}{3}$ ths of the total harvest.

(3) *Bogaï*. This is the smallest cocoon, of a light gray whitish color, easily reeled, and similar to the *monga* specie resists the pressure of the fingers. It furnishes the bulk, about $\frac{1}{3}$ ths of the total harvest.



TUSSAH SILK, LARVA.

(4) *Laria*, *Laringa*. The same is no special sub-specie, *i. e.*, refers to more of an intermixing of the former three sub-species. The dominating color is gray; connections thin, the cocoons soft and poor in silk. This sub-specie without doubt has its origin in sick worms, and comprises about $\frac{1}{3}$ th of the total harvest.

(5) *Dshryi*. Produces a bright color cocoon, with thin, short connections, rather difficult to reel, and comprises about the $\frac{1}{3}$ th part of the harvest.

The natives can readily distinguish these subspecies of the Tussah worm, however, they have the poor trait of mixing them, in turn making trouble to their customers by giving unreliable delivery.

In a commercial way, however, only three typical races are known, viz.: such as from Calcutta, from



TUSSAH SILK, COCOON FASTENED TO TWIG.

Bombay and from Ceylon. In the first two, there is found little difference, whereas in connection with those from Ceylon the male moth is of a dark red brown and the female of a golden yellow. Quality and quantity of silk, however, depends less on the race of the worm, but depends solely on the plant upon which it feeds, the soil and the climate. In its wild state, the tussah worm, as a rule, breeds only once a year, whereas if partly cultivated, two, three or more breeds a year are the result. In the southern parts of India, it is claimed, there is always more than one breeding during the year.

About five weeks after the larva has completed its cocoon, and has passed through its chrysalis (pupa) stage by casting its skin, the tussah moth then bores its way out through the cocoon, the threads having



TUSSAH SILK, COCOON OPENED SHOWING CHRYSALIS.

been previously softened on this spot by an excreted juice, and immediately begins to pair in order to maintain its specie. The male moth being of a dark brown-red color, and the female of a brown-yellow color, measuring from 7 to 8 inches across its wings, from one end to the other, when flying. Across both wings there runs a violet band, each wing being provided with a transparent yellow and violet or purple-red eye shaped spot.

The attachment by means of which the cocoon remains fastened to its branch is greatly in favor of the cocoon *i. e.*, the silk raised, since if the larva would spin its cocoon and only attach it to a leaf, as is the case with species of wild silk which only remain a few weeks in its pupa condition, some of the cocoons would drop off with the leaf and be destroyed by insects or the weather. The wild, *i. e.*, once a year breeding tussah moth needs however more than eight months for its sleep, for which reason the larva, by instinct, winds its silk thread first several hundred times around a twig, elongating then this arrangement into a thick cord, on the end of which it forms the cocoon, the entire affair being of a surprising construction and beauty of form. The thread, in forming the cocoon, is laid most regularly zigzag-like; its length being from 1200 to 1400 *m.* (about 1300 to 1550 yards), of which however only from 500 to 600 *m.* (about 550 to 650 yards) can be reeled off. The cocoon contains two kinds of silk, the connection and the outside network as first spun being of a reddish color and several times interrupted, a feature which is not the case with the other portion *i. e.*, the actual cocoon. The average dimensions of a tussah



TUSSAH SILK, FEMALE MOTH.

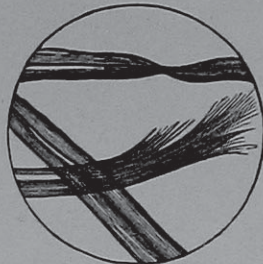
cocoon are 50 *mm* long by 30 *mm* wide, weighing, minus chrysalis 120 *mg.* In commerce however, we meet frequently smaller cocoons of later harvests, for instance such as measuring only 36 by 23 *mm* and of which about 500 are contained in one *kg*, furnishing about 400 *g* silk and 600 *g* chrysalis. 12 to 15 *kg* fresh or 4 to 6 *kg* dry cocoons are necessary to wind 1 *kg* Grège.

The raising of tussah silk is carried on in India with great care, combined with religious transactions, more particularly so in the central districts of Chanda and Bilaspore. The raiser (Dheemur) constructs himself for this purpose a portable tent, to be used by him for protection against the weather, as well as for sleeping purposes during about 50 days, the time required for raising. When at work, he carries on his head a flat, pointed basket, about 1 $\frac{1}{4}$ *m* in diameter, used for carrying worms from one tree to another. During the entire duration of raising, the Dheemurs devote all their time and care only to the silk worms, since the Hindu believes that the Tussah moth is the

representation of their idol Mahadeo and his power of destruction Civa; the eyes on their wings he worships as Chakra, the holy sign of his idol Wischneu. Only after the last cocoon has been spun, and after offering his idol Mahadeo a goat, pig, or chicken and squirt their blood onto the cocoons, does the Dheemur return to his home and former style of living.

The cocoon trade in India is in the hands of the pattuahs, which have their agents, called paikars travel all over the country. The measure used, is the number of cocoons expressed by karry (1280 cocoons), puns (80 cocoons) and grindahs (4 cocoons). Previously to the sale, the Dheemur cuts off the connection to the cocoon (by which it was fastened to the twig) and gives them away, to suit his whims. The drying, *i. e.*, the baking of the cocoons is considered by the Hindu as a sin, for which reason no young persons can be had for this work, only old women and old men doing the work, and then only when driven to it by poverty.

The reeling of the cocoons is yet carried on by the natives in some instances in the primitive ways formerly used exclusively, whereas in most cases modern reels and procedures are gradually taking their place.



TUSSAH SILK, FIBRES MAGNIFIED

Tussah silk is now extensively used. The articles which gave it the first prominent start as a textile fibre of commerce was the manufacture of *seal cloth* (Imitation or Half-silk or Near-silk plush) in 1880, and for which fabrics the fibre is spun and not reeled. On account of its peculiar lustre, stiffness and durability, this fibre is specially well suited as the fibre par excellence for long fibred plushes. In the same way, tussah silk has found its way into the manufacture of velvets on account of its greater lustre. For certain classes of tapestry, upholstery and table cloth fabrics, on account of the stiffness of its fibre, tussah silk has obtained a stronghold, no other fibre can duplicate. It is also used extensively in the manufacture of trimmings, etc.

Tussah silk, besides being a considerably stiffer and harder fibre compared to the soft, pliable true silk, at the same time possesses a characteristic glass like lustre and glitter, which corresponds with its structure as a flat fibre, in opposition to the round true silk fibre; she glitters, since on account of its slight twist, the rays of the light will not be reflected in all directions as is the case with true silk but will reflect it only in glittering points and short dashes. Although this characteristic feature of raw silk may be considered as a disadvantage, it must be remembered

that more particular fancy yarns, like for example, spun silk yarns, having tussah for its basis, more especially the medium shades, will receive a pleasing, glittering appearance. In the woven fabric itself this lustre will be increased on account of the flat structure of the fibre. This glittering effect, characteristic to tussah yarns, makes them specially well adapted for embroidering purposes, even light colors presenting a pleasing appearance, since they do not present that sharp lustre that true silk does. Fancy tussah yarns can be used, with good results, either alone or with true silk yarns upon fabrics having a wool basis. A special kind of embroidery fabric in which tussah finds use, is made successfully in Japan, and consists in producing the figure partly in tussah, and partly in flat color prints.

Besides the true tussah thus far explained, there are sub-species of tussah, but which so closely resemble true tussah that neither quoting nor describing them is necessary from a commercial point of view; authorities after describing them indicating at the same time that most of them cannot be distinguished from the true tussah fibre.

(To be continued.)

HOW TO MAKE JACQUARD DESIGNS.

To facilitate explanations as well as to simplify matters to the reader, the accompanying two illustrations are given, and of which Fig. A shows us, for an example, a sketch for a dressgoods fabric to be worked out on point paper.

Examining this sketch, we find it to contain four complete repeats, *i. e.*, two each way. It is always advisable to execute more than one repeat each way in a Jacquard sketch, it will save disappointment later on in the woven fabric. One repeat only, if used in preparing a sketch, does not show whether the design is well balanced, or if it will show streaks in the woven fabric, where then any number of repeats of this design are shown side by side in either direction. It is for this reason why any imperfect balancing of any portion or Figure in the one repeat of the sketch will show streaks in the fabric, which to prevent, is a strong point in favor of the designer, and which will more than repay the trouble of drawing more than one repeat each way in connection with his sketch. It will also be easier for the Manufacturer as well as the salesman to thus grasp the idea of the sketch and in turn decide whether the same is up to demands or changes are desired, or possible not worth the expenses of having working design made, and cards cut, *i. e.*, not a desirable pattern, hence discarded in that stage. If sketching only one repeat, not only may streaks form themselves warp ways or filling ways in the fabric, but they are apt to show also in oblique directions.

Considering our sketch, and which may represent either an original idea, a design given for reproduction, or a copy from a woven fabric, to be reproduced, we notice four repeats given in square *a, b, c, d*.

Square *a, e, f, g*, shows one repeat of design and which is all that we have to take into consideration

in connection with preparing the working design—for the card stamper—on point paper.

The next points to be taken into consideration are (a) texture of the fabric, (b) size of Jacquard machine and (c) the tie-up of the Jacquard harness we deal with, or at our disposal, or we intend to have tied-up.

PLANNING FOR THE WORKING DESIGN.

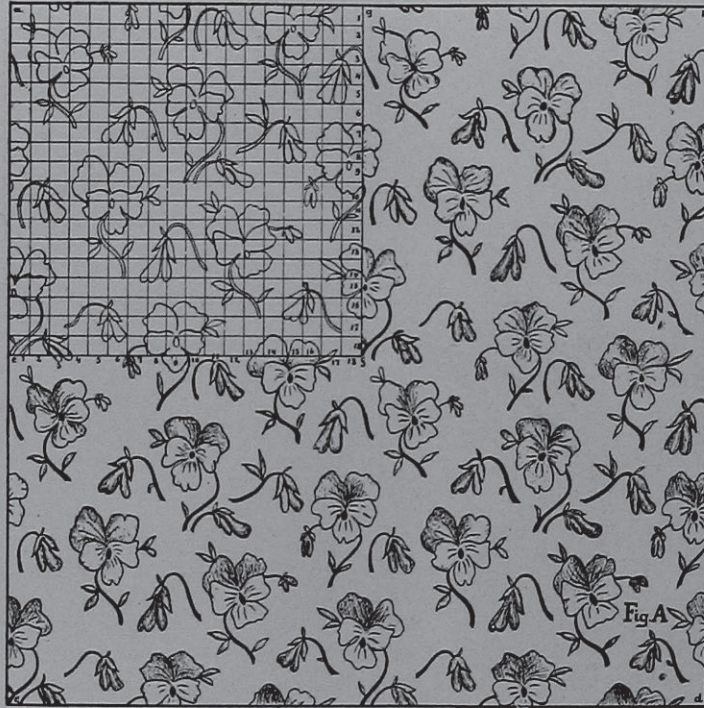
Supposing texture of fabric structure (in finished condition) desired is 75 by 75, *i. e.*, a balanced texture with 75 ends each of warp and filling per inch; and that we have a 600 machine, tied-up straight, using 48 rows of said machine, at our disposal.

Repeat of design *a, e, f, g*, measures not quite 2 inches, *i. e.*, by actual measure 1.92 inches, both warp and filling ways.

75) we must use a balanced ruled point paper, *i. e.*, either a 12 by 12, or a 8 by 8 paper. We selected the latter, although the first would require no ruling-over at the cutting of the cards for the machine.

ENLARGING SKETCH.

Having selected the proper point paper to use, we then have to enlarge the one repeat of our design to the size it will occupy on the point paper, and what is always best done by the squaring-off process, *i. e.*, cover sketch with a certain number of small squares in proportion to the corresponding larger squares it will occupy on the point-paper. An experienced designer or sketcher will transfer sketch on the point paper direct, without any ruling-off procedure, or at the most, use only a few guide lines; again the reader or any person to whom sketching



Texture of fabric is 75 warp threads and 75 picks per inch in finished fabric.

Thus $75 \times 1.92 = 144$ warp threads and 144 picks of filling, are required to produce one repeat of the pattern.

Size of Jacquard machine was quoted at 48 rows of a 600 machine.

A 600 machine is a 12 row machine.

Hence $48 \times 12 = 576$ needles, of this 600 machine, are in use, or to be used, *i. e.*, tied-up, for work, in the Jacquard harness.

$576 \div 144$ (repeat of pattern) = 4 repeats of the pattern to one division of the tie-up.

Having successfully planned for texture, Jacquard machine and tie-up of the Jacquard harness, we next will devote our attention to planning for the working design on the point paper. For the same, on account of the balanced texture of the finished fabric ($75 \times$

does not come natural, he then may prefer a close ruling-off, in order to get a perfect reproduction of the sketch on the point paper.

In the interest of the reader we will take the latter standpoint *i. e.*, cover the sketch with as close a net work of lines as is desirable. Having our paper ruled in eights, we will select the latter as our guide of ruling in the sketch, requiring in this instance no special ruling for the point paper, since there we will consider our heavy lines.

We thus find that we have to square-off correspondingly our sketch into ($144 \div 8 =$) 18 squares each way, to correspond to the 18 heavy squares each way as are required for the complete point paper design. This squaring-off is clearly shown in our sketch and indicated respectively by numerals of references 1 to 18 at the right hand side and at the bottom of the one repeat.

It will be noticed that in this one repeat we kept

the figures *i. e.*, the design in outlines, with no shading, as is shown in the other three repeats of the design in said sketch. Always adhere to this in your working sketch—shading is of no value—only produce your figures in outlines, or if any special effects in larger designs are required indicate the latter in outlines on the figure. At the same time, in connection with our sketch or design, we will find later on when dealing with the point paper design, that the compass of threads (warp and filling) at our disposal is not sufficient to warrant any shading to be introduced.

TRANSFERRING SKETCH ON THE POINT PAPER.

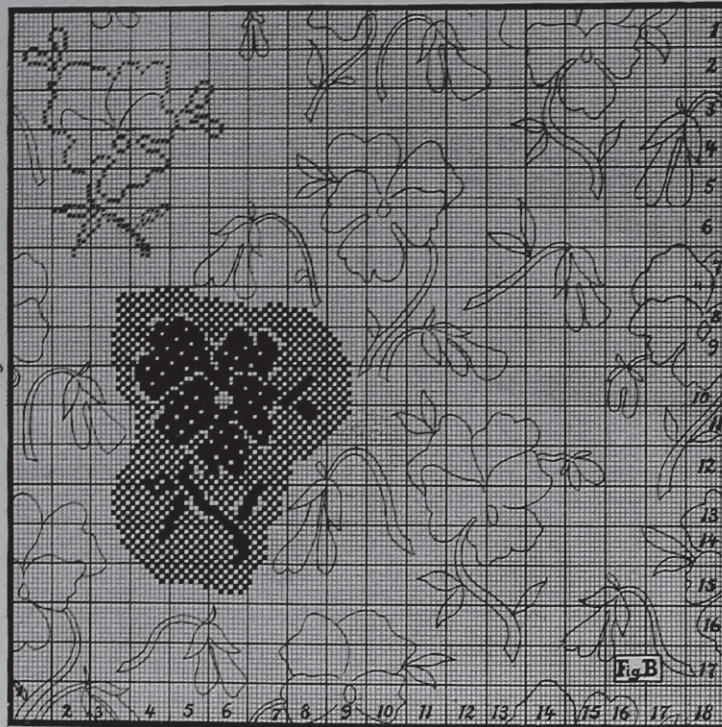
Having obtained the dimensions for our working design, 144 warp threads and 144 picks, using 8 by 8 paper, *i. e.*, 18 heavy ruled squares each way, and having ruled off the one repeat in the sketch corre-

shape of the figure under consideration. One of the main features of Jacquard designing is to produce pleasing, rounded outlines to floral designs. This outlining of the figures is shown in our working design in the upper left hand corner by *dot* type.

The experienced designer, will omit this outlining of the figure with the brush, but it will be found of advantage to the learner.

PAINTING THE DESIGN.

No matter which course is taken, the main object to be accomplished is to paint up the figure solid (vermilion is the paint to use) *i. e.*, produce the contrast between figure and ground on the point paper; the first in color, the other left empty. In preparing and applying the paint, be careful that you use your paint not too thick. You don't want to cover the small squares of the point paper, they must show clear



spondingly, we next have to transfer, *i. e.*, enlarge the latter onto the point paper as clearly shown in diagram Fig. B, using the network of squares in the sketch and the working design as a guide for this purpose.

The next to be done is outlining in squares and when we then follow our pencil lines on the working design with the brush, using a weak vermilion paint which afterwards is readily taken up by final filling up of the figure with paint, without leaving any heavy paint marks at the outline. Use every square the pencil line takes in, *i. e.*, calls for, at the same time, more particularly with such small figures as our example, whenever possible add grace to the figures, by what is understood that whenever the outline strikes a small square towards one end, we then have to use judgment whether said square is called for, *i. e.*, advisable to use by the figure, taking in this instance the

and distinct *through* the paint, since you must see them later on when inserting the weave in the figure portions of the design, as well as when cutting the cards from the completed design for the loom.

INSERTING WEAVE IN THE FIGURE.

Having the figures painted in a solid but transparent vermilion so as to distinguish them prominently from the ground, we must next introduce the weave into said figures. Which weave to use depends on the nature of the design, the character of the fabric, its texture, etc., in fact this is a question which practical experience only can solve.

For example, a satin weave will be used when a smooth surface covering is required, using an 5-harness satin in connection with lower textures, an 8-harness with higher textures, etc., *i. e.*, using the range of satins from 5 to 16-harnesses, as the texture

of the fabric under consideration directs. If dealing with large figures, these satin weaves are also admirably adapted for shading certain effects, from its deepest to its lightest tone. Figure effects in our example are too small for taking up this subject of shading. Twills, in all their varieties of subdivisions are another system of weaves extensively used, more so when the nature of the figure invites these twill lines or effects on its face. They also may be used in shaded effects.

The proper weave selected, now paint the same in a somewhat heavy white paint in its proper small squares upon the red figure. Use a separate brush for the white, and see to it that the white covers the red solid and prominently all over the small square, in order to facilitate the work for the card stamper.

In our example we selected the 8-harness satin, as shown in the one figure worked out complete.

Where different parts of one figure meet on the design, for example, the lobes of a flower, or different colorings are seen, or leaves join or over-lap a stem or another leaf, such places must then be separated prominently in the design. An irregular twill line may serve the purpose admirably, again 2, 3 or 4 ends plain weave, running along the separating line, as shown in pencil through the vermilion, may produce the desired effect.

INSERTING THE WEAVE IN THE GROUND.

Which weave to use for this purpose depends again upon the character and the texture of the fabric. In our example we used the plain *i. e.*, the taffeta weave, as the silk designer calls the same.

Insert your weave all over the ground portions of the design, close up to the figure but without touching or disfiguring the latter.

It is at this stage where the skill of the designer, *i. e.*, experience, comes into play, since points placed may either help or hurt the general appearance of the figure, however a few mistakes made and in turn corrected (washed out) will soon teach whether to place a spot of the ground weave near to or not, next to the figure effect.

Having finished our Jacquard design, the next to be done is to go carefully over the outlines of the design where ground and figure join and see that by accident no excessive floats have been left, *i. e.*, escaped the notice of the designer. Although some extra trouble, it will repay itself to him, as well as save the annoyance to the fixer to punch or paste up holes in the set of cards on the loom, after said floats show in the woven fabric and must be corrected.

Before closing the article, remember that neatness in drawing, careful and distinct painting of the design on the point paper, filling-in squares complete, with a brush clipped specially for this purpose so as to suit the size of the small square, using his paint just heavy enough to cover the paper but not heavy enough to cover the black lines of the point paper, will go far towards starting without trouble a new set of cards on the loom, as well as producing a perfect design in the woven fabric.

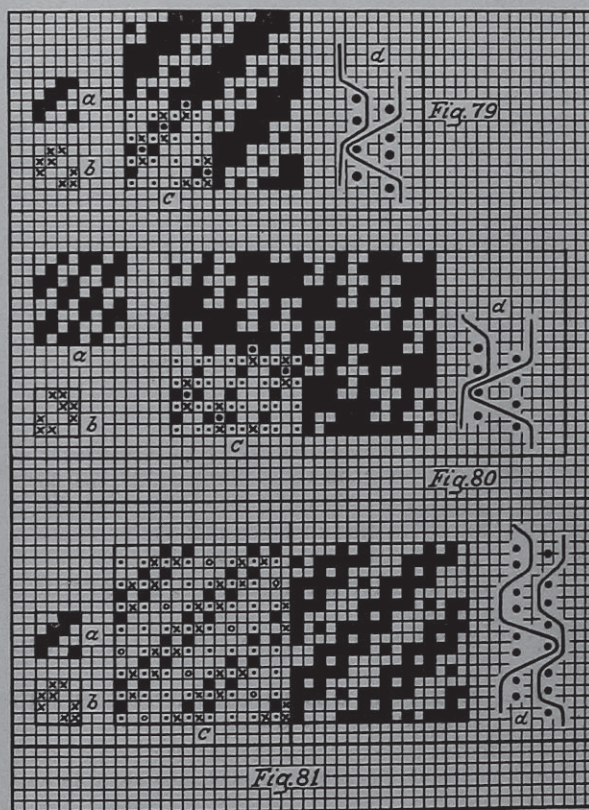
RIBBONS, TRIMMINGS, EDGINGS, ETC.

(Continued from page 165, Vol. III.)

Double Cloth Weaves Stitching Both Structures.

(2) STITCHING THE BACK WARP ONTO THE FACE FILLING.

Rule: Raise the back warp on the face pick when the joining face warp threads (the face warp thread on either side, next to the back warp thread thus raised) are in the upper shed, in order that said face ends will cover the stitch. At the same time, arrange the back weave so that a riser precedes and follows the stitch, that is, provided the back weave has two successively following risers. If there are only indi-



vidual risers in the back weave, have the same either precede or follow the stitch. This will result in an easier handling of the warp by the loom and at the same time, the fabric will present a smoother face.

The accompanying two examples will explain the subject:

Fig. 79. In the same, *a* shows the weave for the face, and *b*, the weave for the back structure. *c* is the double cloth weave, and *d* a corresponding section of the fabric structure, cut between the first and second warp thread of weave *c*.

In the latter diagram

Black type indicates the weave for the face structure,

Dot type: Raise every face warp thread on every backing pick.

Cross type shows the weave for the back structure

Circle type shows the stitching of the back warp onto the face filling (Risiers).

Arrangement of Face and Back, in Warp and Filling, is 1 : 1.

Weave for Face and Back is the 4-harness even sided twill.

Stitch: The 1 up 3 down, 4-harness twill.

Repeat of Weave: 8 warp threads and 8 picks. One repeat is shown in the different kinds of crochet type quoted before, the other three repeats are shown in one kind of type.

Fig. 80 shows us another example of this class of weaves. Letters of references and style of crochet type used correspond to those as used in the preceding example, hence will explain the subject without any further comment on it, the only difference being, that in the present instance, the arrangement of face to back warp is 2 : 1, that of the face and back filling being again 1 : 1.

Repeat of diagram *c* is 12 warp threads and 8 picks.

(3) STITCHING THE FACE WARP ONTO THE BACK FILLING.

Rule: Lower the face warp thread on the back pick when the joining back warp threads are also in the lower shed, at the same time, arrange said stitch between the two sinkers of the joining two face picks, *i. e.*, that three sinkers show in rotation lengthways in the double cloth weave.

Fig. 81 explains the subject.

Letters of references and style of crochet type used, correspond again to those used in the two preceding examples, the only difference being that *circle* type (the stitch) in this instance stands for *sinkers*, having for this reason used an open circle.

The weave used for the stitching is the 8-harness satin, filling effect.

The arrangement of Face to Back in warp and filling is 1 : 1.

Repeat of diagram c is 16 warp threads and 16 picks. Two repeats of the weave are given, one in different crochet type to show the construction of said double cloth weave, the other repeat being given in one kind of type.

(To be continued.)

THE MANUFACTURE OF PLUSHES, CARPETS, ETC.

Double Moquettes.

(Continued from page 166, Vol. III.)

Another patent (Ger. 91,005) has for its object to reduce the motion of the warp threads by inserting first the two pile picks of the upper and lower structure and afterwards the two binder picks. This arrangement, considered with the diagram of fabric structure Fig. 15, then would bring the following rotation of picks: 1, 3, 2, 4.

A still further, far reaching improvement, to reduce the motion of the jacquard machine and to simplify the construction of its mechanism rests with the Ger. Patents 104,355 (machine) and 122,885 (procedure). In this instance the principle of the two sections of the

machine is done away with, the machine having only one griffe and bottom. The procedure is thus: The arrangement of picks most frequently used is as given in diagram 17, *i. e.*, first insert the ground pick, next the figure pick. When the first pick is inserted, griffe and bottom of machine are down and consequently also all pile threads. For the second pick, in order to raise all the threads of the upper structure as well as those threads of the lower structure which then take a part in the respective design, the griffe is raised. For the third pick, raise the remaining threads by means of raising the bottom. For the fourth pick lower bottom, taking along all the threads of the lower structure as well as such of the upper structure as then take a part in the formation of the design. For the first pick of the round, by lowering the griffe, the remaining threads of the upper structure are then lowered. This then only needs one card for every figure pick. By means of Ger. patent 112,093 a further arrangement is provided, requiring only one card for all four picks. To accomplish this, in half the machine the hooks are inserted turned around, *i. e.*, with their crook pointing backwards. Next a tin plate is provided between cylinder and the needle board of the machine, and which alternately comes before the upper and the lower half of the needles, in turn throwing out of action one or the other half

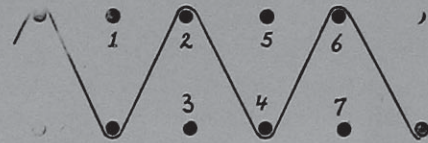


Fig. 1

of the jacquard card and when consequently the design for both figure picks can be cut on one card.

An arrangement submitted to the patent office but refused, consisted in two movable griffes and bottoms, attaining in this way the result of requiring only one card for the two figure picks, minus any further devices. The arrangement of the picks corresponds again to fabric section Fig. 15. All the warp is up by the fourth pick. The bottom of the jacquard for the lower structure then moves down, taking all the threads of lower structure which do not take part in the formation of the pile along. On the same card which thus starts the round of picks is also stamped the next figure pick; since, however, griffe and bottom of the other section of the jacquard remain up, the card does not come by this section into action. At the second pick all threads go down, accomplished by lowering both griffes as well as the bottom of the upper structure. At the third pick all the threads of the upper structure which do not take place in the formation of the pile are raised. For this purpose the griffe of the upper structure is raised. This brings the second half of the card into action. Now the card remains without any influence upon the hooks of the lower structure, since griffe and bottom remain at rest. On the fourth pick everything is raised. Since the griffe of the lower structure and the bottom of the upper structure always move uniform, both can be worked from one eccentric.