

THE JOURNAL'S TEXTILE SCHOOL.

JACQUARD DESIGNING.

Lesson 1.

The qualifications for the designing of textile fabrics, requiring the Jacquard machine for its execution on the loom, are the ability of the person to arrange on his drawing or sketching paper pleasing forms in such a manner that they will repeat, in order that they can be executed on the loom and still be agreeable in the finished fabric.

The importance of free hand drawing. A reasonable amount of skill in drawing, to draw with ease and freedom, is a necessity for the person who wants to become a Jacquard designer, which, when attained, should be followed by him in practice in the technical details of ornamental pattern construction.

Under no circumstances should the student rush his study by means of taking up too early the making of original designs, and it will be found that the student who has given the most attention to free hand drawing, as well as to the principles of ornamental design, will in turn make the most successful Jacquard designer, surpassing the student who in his study has skipped too rapidly over these somewhat uninteresting subjects (to him), in order that he can take up the more interesting branch of designing (original work) to him. Too much stress cannot be laid on the importance of a thorough training in free hand drawing, from the fact that it gives freedom and position to the hand, as well as training the eye to grasp the proper position and details of figures in a design; besides this, it will impart to him the feeling for beauty of line and form that it helps to bring out in the complete design.

Sketching from woven fabrics. After having mastered free hand drawing, an excellent study for the student will be to practice drawing, by copying from good examples of woven fabrics at his disposal, or from good reproductions of such work, giving the student thus at the same time very useful lessons in the study of actually woven figured textile fabrics, although in the present instance, the study more particularly refers to imparting, freedom of drawing to his hand, besides a knowledge of the importance of the repeat of the pattern.

If dealing with multi-colored fabrics, as will be readily understood, the study previously referred to will also be to him a lesson in the harmony of color, *i. e.*, the blending of colors in textile fabrics, to produce pleasing effects.

Outlining subject. In the beginning of thus drawing (sketching), either from fabrics or from reproductions of such, it will be advisable for the student to help himself along in his work by means of "squaring-off" the subject before him, using the same principle of squaring-off on his sketching paper, a feature which, in turn, will guide him as to the proper

position and shape of each figure he is copying. As will be readily understood, the more of these squares, or lines of help, made by the student, the easier the work for him, as well as the more accurate his reproduction.

As the student proceeds in his study, less of this squaring-off process will be necessary to be done by him, until finally it would be a waste of time on his part, and then he will be able to re-draw any sketch, or idea given to him, direct from the subject, on the sketching paper, or, later on, direct on the point paper.

To illustrate this outlining of an illustration, design, fabric-sketch or actual fabric structure, to the student, the accompanying illustration Fig. 1 of a Jacquard fabric is given. In the same, letters of reference *a, b, c* and *d*, show us the four points of one repeat of the design, the same being in turn connected (see heavy lines) in order to enclose one repeat, *i. e.*, the unit of the design, which is always a most important item for the student in textile designing, since without a perfect repeat, the best design is of no use for practical work on the loom.

Outlining one repeat of the design for an expert in drawing may be all that there is required, however, considering our instruction more particular for the student, the novice in drawing, he who shall most benefit by it, we next divide:

Line *a b* in two equal parts, getting in turn point *e*, line *b c* in two equal parts, getting in turn point *h*, line *c d* in two equal parts, getting in turn point *f*, and finally line *d a* in two equal parts, getting in turn point *g*.

Connecting *e* with *f*, and *g* with *h*, will in turn divide the repeat of the pattern in four equal squares, *viz:* *a, e, i, g; e, b, h, i; i, h, c, f*, and *g, i, f, d*.

What then is in one square on the subject, the student, after mapping out his drawing, *i. e.*, sketching paper, with a corresponding network of lines, then draws in the corresponding square on his drawing paper, and when it will be readily seen that these guiding lines cannot help but be of the greatest of assistance to him in placing figures, or details of figures, in the proper place or position on his drawing paper.

This will readily convince us of the fact that the more of these lines used, the easier the work of reproducing the subject, more so when dealing with a student not well up in drawing, a person to whom it is hard work, as we might say. For this reason, drawing the two oblique lines *a-c* and *b-d* (see dot and dash lines) will prove of additional advantage to him, dividing by means of these two lines, the repeat of the pattern into 8 triangles, or units, in place of 4 squares, or units, as before.

Keeping up the affair of lining-off the subject to be re-drawn, in order to still more simplify the work for the student, divide each previously quoted square

into four squares again, as done in our example by means of dotted lines jk , lm , no and pq , which will, in turn, result in dividing the repeat of the subject into $(4 \times 8 =) 32$ triangles or units, when the work to reproduce the design thereby will have been immensely simplified for the student, he laying out for this purpose a corresponding network of lines on his drawing paper, the guide lines assisting him as to position and size of figures to be re-drawn, since what

free and easy hand for drawing, and for which reason, as the student proceeds with his study, it is in his interest to always use less and less of these guide lines until the time arrives when, with the exception of the unit of one repeat, they are of no value to him.

Enlarging and reducing. Another valuable study for the student will be the process of enlarging and reducing sketches, or designs submitted, by means of this squaring-off process, from the fact that this sub-

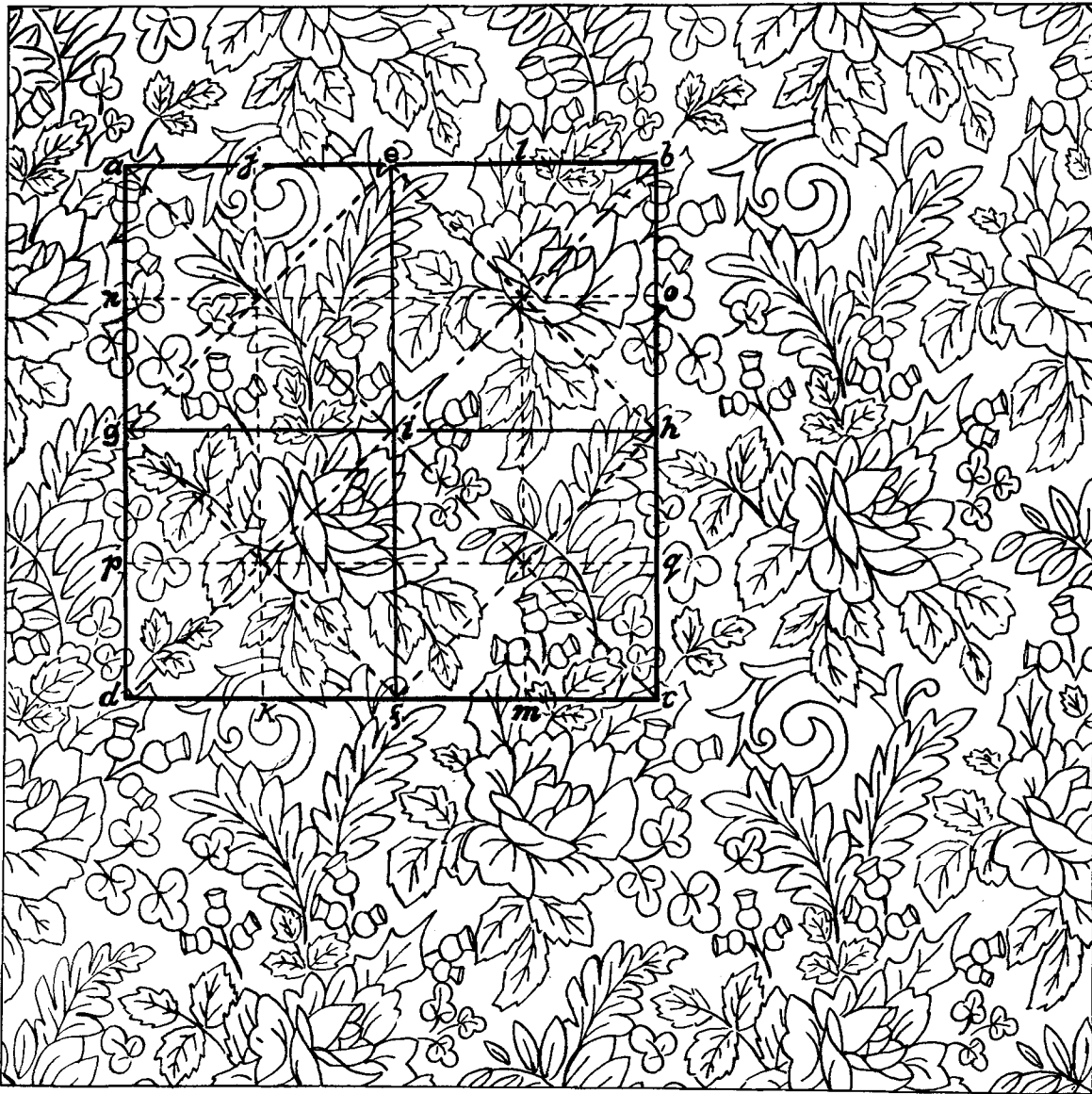


Fig. 1

is in one unit in the subject has to go into its corresponding unit on his drawing paper.

This feature of squaring-off a given subject in always smaller units, for the sake of easier reproduction, as will be readily understood, we might keep up, still we must not overdo it, since too many guide lines will become bewildering to the eye, and actually rather a hindrance than a help; again they will not permit the student to train his eyes to measurements, they will more or less prevent him from obtaining a

subject will be an important item for him in his practical work later, on account of the difference in his design on the point paper from that of the woven fabric.

Squaring-off woven fabrics. The squaring-off, of the fabric structure to be copied, is frequently done by means of thread run around common pins, fastened for this purpose in the proper place to the fabric structure, the latter being first tacked onto a drawing board to permit the insertion of the pins and hold them in proper position, so as to permit in turn

the thread to be run around them, the threads thus strung over the face of the fabric taking the place of lines on the drawing or the sketch.

Drawing from nature. Another useful study for the student, to obtain a good, free hand, with reference to drawing and at the same time lay the foundation for proper, future original work by him, is to draw as much as possible from such forms in nature as will lend themselves readily for decorative treatment. For example, the Analysis of Plants is a most important item, since it forms the basis of some of the best textile designs, although other natural elements should be used by the student in the same way, since they also form a basis frequently met with for figured textile designs.

Brushing up the sketch. After having obtained a fair facility in drawing with the pencil, it will be advisable for the student to use the brush frequently, which can be used in this kind of drawing more readily than the pencil, lending itself more readily for producing solid forms of varying thicknesses, since with one stroke of the brush, a form graduating in thickness from the finest point is easily obtained.

Brushing up the design, *i. e.*, a sketch, by the student will give him a better idea of how it will look in the woven fabric, from the fact that a sketch executed in outlines only, is more or less deceiving to the eye; said sketch may look or appear to the observer to be crowded, and yet when filled up with the brush, *i. e.*, brought up similar to the effect in the woven fabric, it may reveal one of the best fabric designs.

To the eye, an outline is always liable to be misleading, a feature readily explained in connection with illustrations Figs. 2 and 3, of which Fig. 2 shows us the design in outlines, and which appears crowded to the eye, whereas Fig. 3 shows the same design having its figure effect in the fabric brushed up, *i. e.*, shown in black, and which shows at once a perfect distribution of figure and ground all over the pattern, the design itself looking a great deal less complicated compared to the design in outline previously given.

This example will readily explain to the textile student the importance of considering the figure effects as solid forms, as they are almost always in the woven fabric, and *not* as outlines, because it rarely, if ever, happens that designs in textile fabrics are brought out in outline only. Certainly, if such should be the case, it then would be correct to prepare the sketch in outline only.

The best plan for the student, in preparing a fabric sketch, is to sketch the design roughly in pencil and then paint the figure or the ground effect, as the case may require, with a brush in black, or in colors, provided the affair refers to a multi-colored fabric. In the latter case, it may be found advisable for the student to first brush up the effect in black or in any other dark color, in order to first ascertain if the dis-

tribution of the effects, *i. e.*, the design in itself, is perfect. If such is then found to be the case, wash the design down with water and the sponge, let it dry, and in turn paint in the design then in the required colors. This procedure will simplify the work for the student more than if he went to work at once and painted the different colors direct on the pencil sketch, and where the design always is more or less only in its experimental stage.

Subjects to be studied. The study of Jacquard designing may be divided for the student into three subjects:

(a) the study from woven fabrics, in order to gain familiarity with the different fabric structures, motives, materials and treatment. It will be also of advantage, if in connection with this affair, the student makes a study of old examples of decorations as found in art galleries, museums, illustrated works of art on this subject, etc., which will enable him to become familiar with the various treatments of ornaments of different periods and countries, besides it will teach him the change of fashion. It will educate him in the formation of modern designs from older masterpieces in the art, discovering the beauties of the latter and how to turn them to value in his work, both with reference to design as well as color. By this we mean to say, not for him to duplicate these older designs, no matter how interesting they may become to him, from the fact that they would be of no value to the manufacturer of the present day; but simply to take such ideas from them as can be used by him to advantage in modern designs.

(b) he will have to study the principles of construction of designs as well as color harmony, in order to get foundations for new designs as well as a thorough understanding of the laws observed in connection with both.

(c) it will be advisable for him to study designing from nature, in order to get new ideas, this being a subject of the greatest importance to any textile designer, it being the source from which most all ornament has been derived.

Points to be considered before starting sketch.

With reference to the practical side of making new designs, the student has to consider the purpose to which the finished fabric is put, as well as the kind of yarn to be used, *i. e.*, whether it is to be a cotton, silk, wool or worsted, or a union fabric. He must also be aware of the counts of the yarns to be used, as well as the texture of the fabric under consideration, *i. e.*, the number of warp threads and picks per inch. Another point which requires careful consideration is the weave to be used; whether it is to be single cloth, or a combination of two systems filling and one system warp, or two systems warp and one system of filling, or double cloth, or 3-ply cloth, etc., etc. Another feature to be known by him, before being able to suc-

cessfully prepare a new design, is the style of finish of the fabric, *i. e.*, whether it is to be a threadbare finish (singéd or sheared) or whether it refers to a velvet, or a nap finish, etc., etc.

The designer must also know the compass of the Jacquard machine, as well as the principle by which the Jacquard harness is tied up, which, in connection with texture of the fabric, then guides him in the size of the design (one repeat) in the fabric. It will readily be understood by the student, that, the finer the counts of the yarn and the higher the texture, *i. e.*, the more warp threads and picks per inch used in the construction of the fabric, the more details in the design will be permissible, when, naturally, a threadbare finish of such fabrics will increase the clearness of the pattern, rather than dull it.

nature of the material, as well as the high texture generally used, as compared to cotton, wool or worsted, and then every part of it can be worked out fully in detail. However, we must remember that, in connection with these fabrics as well as any other fabric structures, better results are generally obtained by treating the design boldly, producing required variations in the design, whenever possible, by change in weaves, in this way giving the silk threads a chance to display their luster to the greatest advantage. At the same time we must take into consideration, that, the less broken up the floating of the warp, the higher the lustrous effect produced in the fabric, for which reason, prominent warp floating weaves, like for example, satins-warp effect, etc., will preserve this luster in the silk warp superior to any other weave.

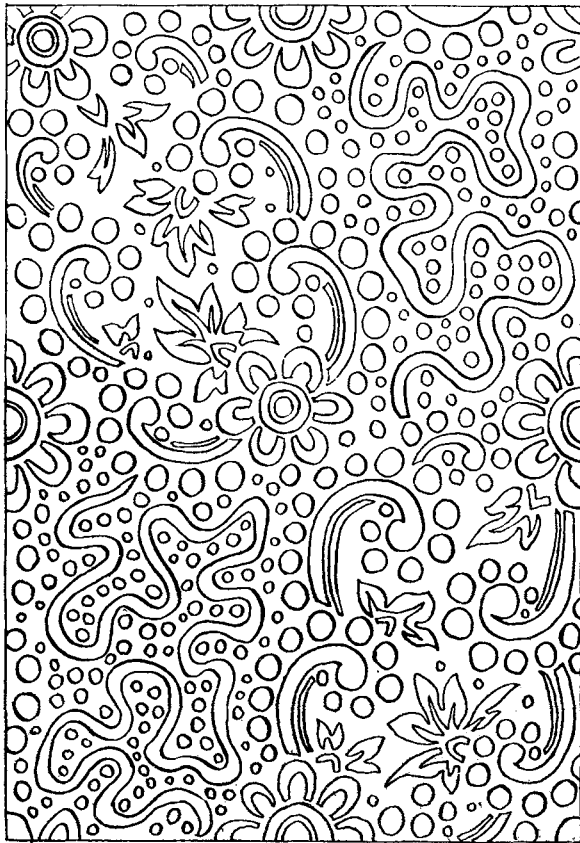


Fig. 2

The proper development of intricate designs in fabrics calls for fine counts of yarns in connection with a high texture of warp and filling. This feature, as will be readily understood refers to any kind of yarn used, whether silk, cotton, linen or worsted. It will demonstrate to the student, that, in most instances, the higher the texture of the fabric under consideration, as well as the larger the capacity of the Jacquard machine at his disposal, the easier the task to produce well developed, pleasing designs.

From this, it will be readily understood that silk fabrics will lend themselves more readily to the formation of complicated designs, on account of the

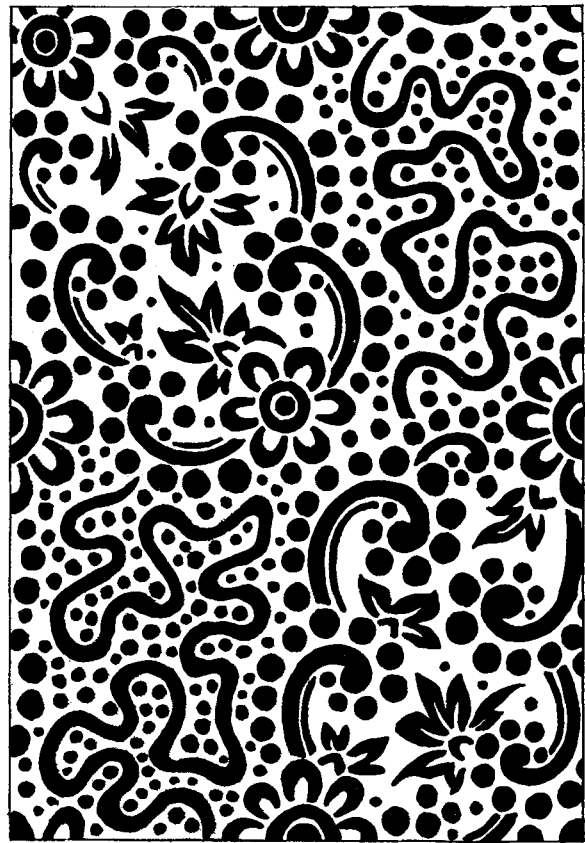


Fig. 3

Points thus mentioned also refer to cotton fabrics, constructed with high counts of yarn and a lustrous Sea Island, or Egyptian, or a Mercerized cotton fibre.

A great deal more care and judgment, however, will be required in connection with mohair or lustre worsted yarn, when such is used for figuring purposes in a textile fabric, and when it is desired that the lustre of the material is to be brought out to its fullest extent. In order to accomplish this, it is well to use these yarns for figure, using in connection with them, for the back ground, a non-lustrous cotton, worsted or woolen yarn; using at the same time as bold a figure as is possible in connection with as large a

floating of the warp as is permissible, consistent with strength to the fabric, in fact only tie down the warp floats wherever absolutely necessary, so as to preserve in this way the lustre to the mohair or the worsted yarn. In connection with these yarns, it will be well for the designer to carefully study the effect, *i. e.*, the influence on the lustre of the yarn, produced by each system of weaves, and then the designer will notice that some weaves, for example, satins, large twills, etc., will reflect light directly to the eye, and consequently bring out the lustre of the yarn to its fullest extent, whereas other weaves, for example, small broken-up effect weaves, like granites, etc., will tend to lean towards the reverse. Besides the lustre itself, the fineness of the fibre will play an important part, the same also referring to the staple, *i. e.*, the length of the fibre, since it will be readily understood that a shorter staple will result in yarns having a somewhat rougher surface, on account of the increased number of points projecting from the surface of the yarn. For which reason, do not cut up your figures in the pattern too much in detail, using at the same time, whenever possible, the most simple weaves only for the interlacing of warp and filling.

Questions:

(1) Take sketch Fig. A, of a leaf, ruled with ten squares each way, enlarge it twice, three times, and four times, its size on drawing paper, using a similar net work of lines in your sketches. This will give three examples to be drawn by you.

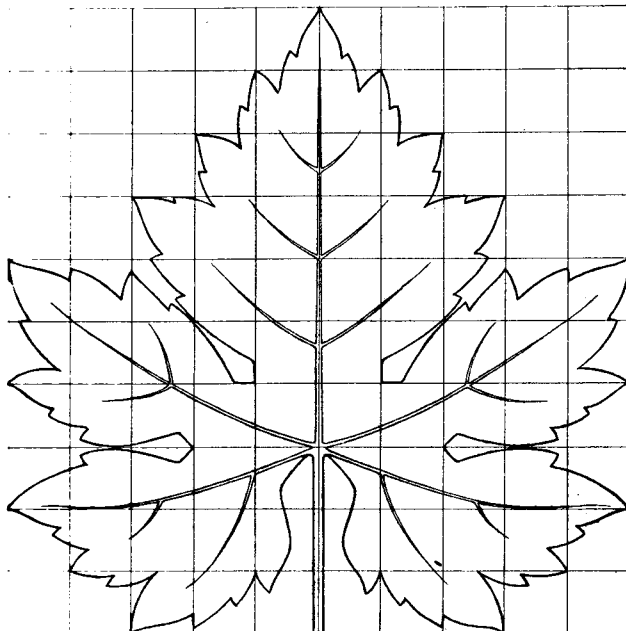


Fig. A

(2) Take sketch Fig. B and enlarge it twice, and three times, its size, using again the net work of lines given correspondingly in your sketches, in order to assist you in your work. You will notice that in this instance, less lines are used in the design, in order to train you to obtain a free, easy, hand in drawing.

This will give two sketches to be produced by you.

(3) Take unit of design *a, b, c, d* in Fig 1, and enlarge it to 24 inches square on your drawing paper. drawing for this purpose on design given, the following additional net work of lines: connect *l-o, j-q, n-m, p-k, n-j, p-l, k-o, m-q*.

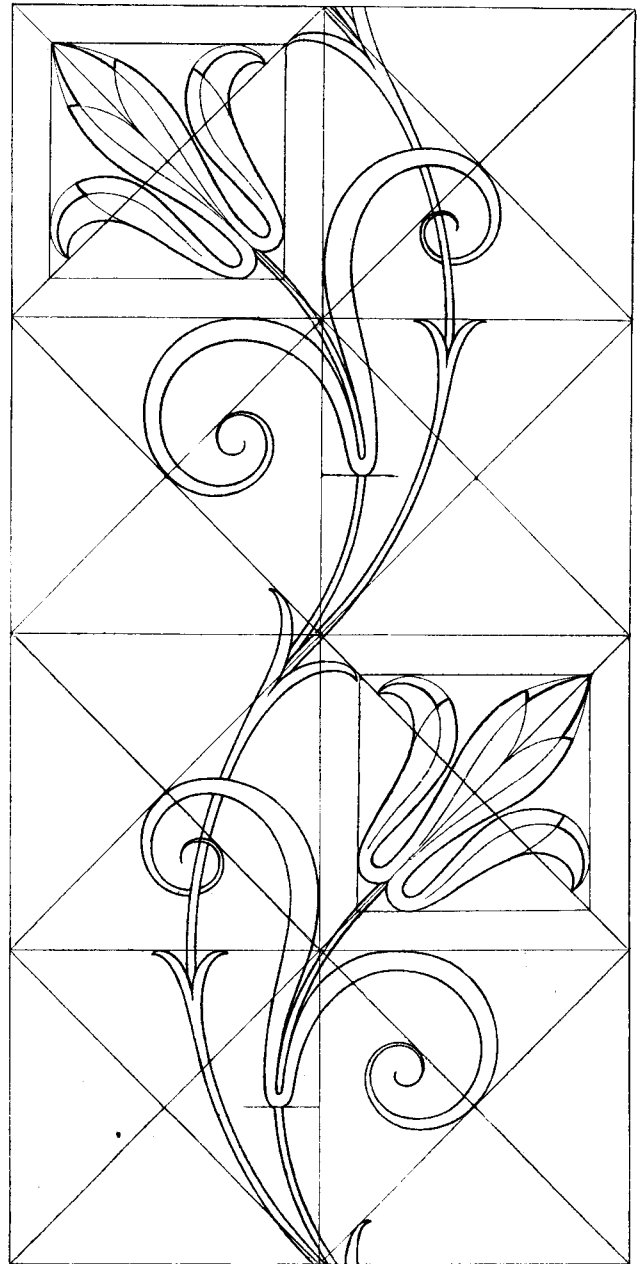


Fig. B

(4) Take the same unit of design *a, b, c, d* in Fig. 1, and redraw it, minus additional lines on your design paper, 16 inches square.

(5) Reproduce one repeat, actual size, from a woven fabric, and then trace three additional repeats (one to the right, one below, and one oblique to the first and below the second) in order to show proper connecting.

(6) Enlarge one repeat, of answer 5, five times its size—taking the repeat from the centre of answer 5.