

TYING-UP A JACQUARD HARNESS

Straight Through, in Two Sections.

This system of tying-up a Jacquard harness is used in the manufacture of fabrics in which two different kinds, or systems of warps, are used in their construction; each system of which is interlaced by a different design, or method of interlacing warp and filling, independent of the other system of warp and the same filling, or a second system of filling, as the case may require.

TWO SYSTEMS OF WARP, ONE SYSTEM OF FILLING.

Fig. 1 is a diagram, given to explain this system of tying-up Jacquard harnesses, showing in perspective view the bottom board of the Jacquard machine and the compass board of the loom.

To simplify matters to the reader, we used for illustrating subject a 200 Jacquard machine, using one-half of its capacity, *i. e.*, one hundred needles, for each section of the tie-up, or each system of warp.

The principle observed in illustration and referred to in explanations also explains to the reader the procedure for tying-up a Jacquard harness, for this sys-

tem under consideration. We have used for illustrating subject, a 4-row machine, so as to simplify matters to the reader (the fewer lines thus drawn in diagram more clearly explains the subject) practical work call-

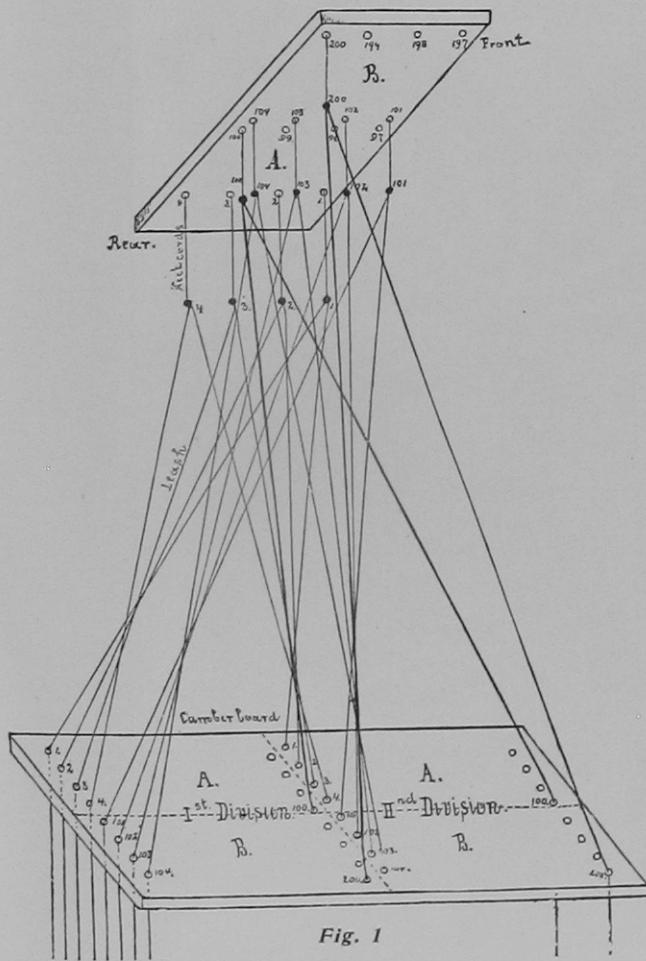


Fig. 1

tem of fabric formation, for any size of Jacquard machine; also, whether the two systems of warp threads used are of equal or unequal value to each other, items regulated by the construction of the fabric



Fig. 2

ing for 8-row machines in connection with 200 or 400 Jacquards, or 12-row machines in connection with 600 Jacquards.

The bottom board of the Jacquard machine as well as the compass board of the loom, are shown, in the illustration, divided into two sections, indicated in each instance respectively by:

- A for rear section, or section No. 1.
- B for front " " " No. 2.

The compass board, besides being arranged for two sections (to explain the principle of tying-up in two sections) is at the same time (but only for the sake of an example) arranged for two divisions, width ways; two harness cords are for this reason required for each leash. This arrangement of divisions, however, has nothing to do with the principle of tying-up the Jacquard harness which forms the subject of this article, since in place of using two divisions, we might have used three, four, or more divisions, without departing from the principle explaining the tying-up of a Jacquard harness in two sections; the number of divisions to be used is regulated by the width of the fabric in reed, and its warp-texture.

Examining our illustration, we find, as mentioned before, the Jacquard machine and the compass board (in its depth) divided into two even parts. In one part of the compass board (the rear or A) we thread only the leashes from needles 1 to 100, and in the other part of the compass board (the front or B) we thread the leashes from needles 101 to 200.

Examining now compass board, we find:

The first row to contain leashes 1 to 4 of section

The third row will contain leashes 9 to 12 of sec

tion *A*, and 109 to 112 of section *B*, and so on; each



Fig. 3

A, and 101 to 104 of section *B*.

The second row will contain leashes 5 to 8 of section *A*, and 105 to 108 of section *B*.

division of the tie-up finishing on its last row (25th) with leashes 97 to 100 of section *A* and 197 to 200 of section *B*.

THE LEASING OF THE WARP THREADS

is always done by alternately threading one harness cord from section *A* with one from section *B*, hence:

First warp thread draw in first mail of leash 1;
 Second warp thread draw in first mail of leash 101;
 Third warp thread goes in first mail of leash 2;
 Fourth warp thread goes in first mail of leash 102,
 etc., etc., until finishing the first division by drawing
 the one hundred and ninety-ninth warp thread in
 first mail of leash 100,
 the two hundredth warp thread being drawn in
 the first mail of leash 200.

The second (third, etc., not shown) division is nothing more than a repetition of the first division, using respectively the second (third, etc., not shown) harness cord and its mail, of each leash, the same as we used for the first division the first mail (or harness cord) from each leash.

To better explain subject of designing and card stamping for this system of tying-up Jacquard harnesses, illustrations Figs. 2, 3, 4 and 5 are given, representing this system of Jacquard harness mounting as applied to a

FIGURED DRESS GOODS.

Fig. 2 shows the sketch for a dress goods fabric (actual size) to be made with two systems of warp, one system of filling.

Texture: 132 warp threads and 66 picks, or 66 warp threads per inch for figure effect, 66 warp threads per inch for ground effect.

The repeat of sketch, warp ways, is $1\frac{1}{2}$ inches.

Hence $(66 \times 1\frac{1}{2} = 99, \text{ or practically } 100 \text{ ends, or hooks and needles of the Jacquard machine, each, for figure and ground warp, are needed, requiring a 200 Jacquard machine, for the execution of the fabric on the loom. In practical work, either a 400 or a 600 Jacquard machine will be used; in this instance,$

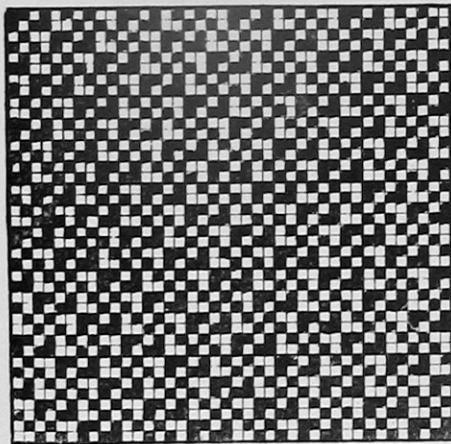


Fig. 4

cutting the point paper designs the required number of times over.

Repeat of sketch, filling ways, is $2\frac{1}{4}$ inches.

$66 \text{ (picks per inch)} \times 2\frac{1}{4} \text{ (inches repeat of sketch)} = (149 \text{ or practically } 150 \text{ picks, required for repeat (number of picks) of design.}$

Fig. 3 shows the Jacquard design (complete) required for producing the fabric, calling for 100 warp threads and 150 picks for repeat of pattern.

In tying-down the figure effects in these designs, only extra long warp floats are taken into consideration; for example, say about twelve picks being the

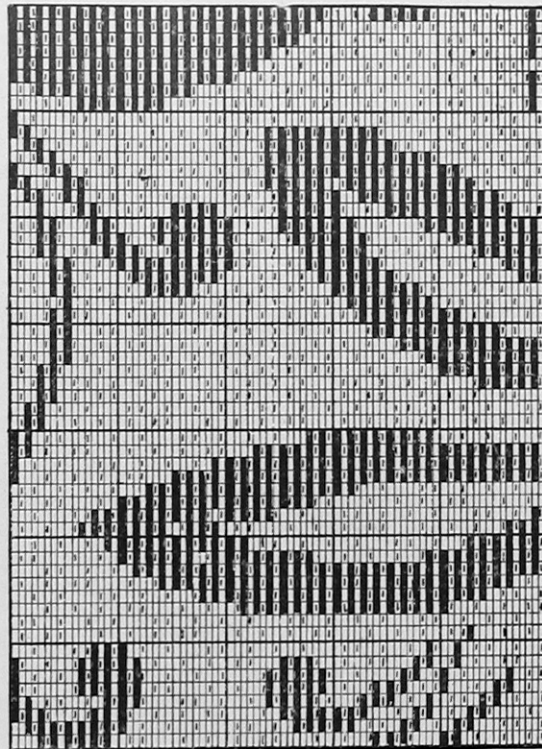


Fig. 5

longest float of a warp thread permissible in our design (but which feature is regulated by the character of the design and its texture, in connection with other fabrics).

No weave, for interlacing the ground, is painted in the design; the latter only shows the floating of the figure warp on the ground structure as is interlaced with the second system of warp threads and the filling.

We next will consider this weave for the ground structure.

The available warp threads and picks for the same are, respectively, 100 and 150, hence any weave repeating evenly into said numbers can be selected.

We used the 10 by 10 granite weave, shown in Fig. 4, the 10, its repeat either way, being evenly divisible into 100 and 150. (Four repeats of the granite weave are shown in Fig. 4.)

To more clearly show the actual interlacing of warp and filling, Fig. 5 is given, it being the analysis of the interlacing of:

- 40 figure warp threads
- 40 ground warp threads and
- 56 picks,

taken from the lower left hand corner of design Fig. 3; the figure warp is shown by *full* type, the ground warp by *dot* type.